

1

IN THE COURT OF COMMON PLEAS

CUYAHOGA COUNTY, OHIO

MARY LOU ZIMMERMAN,
et al.,

Plaintiffs,

-vs-

JUDGE BURNSIDE
CASE NO. 399411

THE CLEVELAND CLINIC FOUNDATION,

Defendant.

* - - -

Deposition of GENE H. BARNETT, MD, taken as if
upon cross-examination before Laura L Ware, a
Notary Public within and for the State of Ohio, at
The Cleveland Clinic Foundation, 9500 Euclid Avenue,
Room 551, Cleveland, Ohio, at 8:10 a.m. on Friday,
August 18, 2000, pursuant to notice and/or
stipulations of counsel, on behalf of the Plaintiffs
in this cause.

- - - -

WARE REPORTING SERVICE
21850 CROSSBEAM LANE
ROCKY RIVER, OH 44116
(216) 533-7606 FAX (440) 333-0745

2

APPEARANCES:

Robert F. Linton, Jr., Esq.
Linton & Hirshman
Hoyt Block Building - Suite 300
700 West St. Clair Avenue
Cleveland, Ohio 44113
(216) 781-2811,

- and -

Mark W. Ruf, Esq.
Law Office of Mark W. Ruf
Hoyt Block Building - Suite 300
700 West St. Clair Avenue
Cleveland, Ohio 44113
(216) 687-1999,

On behalf of the Plaintiffs;

James P. Malone, Esq.
Marilena DiSilvio, Esq.
Reminger & Reminger
113 St. Clair Avenue
Cleveland, Ohio 44113
(216) 687-1311,

On behalf of the Defendant.

3

GENE H. BARNETT, M.D., of lawful age, called
by the Plaintiffs for the purpose of
cross-examination, as provided by the Rules of Civil
Procedure, being by me first duly sworn, as
hereinafter certified, deposed and said as follows:
CROSS-EXAMINATION OF GENE H. BARNETT, M.D.
BY MR. LINTON:
Q. Dr. Barnett, good morning. We met a moment ago. My
name is Bob Linton. I'm here on behalf of Mary Lou
Zimmerman in a case that's been filed against The
Cleveland Clinic Foundation. I assume you've been
deposed before?
A. Yes.
Q. As you know, it's important that you understand the
questions that I ask you. I'm not a neurosurgeon.
I may ask questions that make no sense to you. If
that's the case, please stop and ask for
clarification, and I'll do whatever is necessary so
that you understand my question. Fair enough?
A. I'll do my best.
Q. You also have in front of you, I see, the chart, the
Cleveland Clinic chart for Mary Lou Zimmerman; is
that correct?
A. That is correct.
Q. This is an open book examination. I want to find

4

out as much as I can based on your independent
memory as well as what's in the record, so feel free
to look at the records at any time if necessary to
refresh your memory. Okay?
A. Okay.
Q. Do you have an independent memory of Mary Lou
Zimmerman?
A. Some.
Q. Do you have an independent memory of the surgery
itself on Mary Lou Zimmerman?
A. Not really.
Q. Anything that you would testify to concerning the
surgery itself then would be based on what's in the
records as well as your custom and practice when
doing this type of procedure; is that correct?
A. That would be correct.
Q. Do you have any independent memory of your initial
consultation with Mary Lou Zimmerman when she came
to you on August 21st of 1998?
A. That specific day, no.
Q. So again, anything that you would testify to
concerning that initial consultation would be based
on your office chart as well as your custom and
practice when meeting with patients like Mary Lou
Zimmerman; is that correct?

5

- 1 A. Yes.
- 2 Q. What independent memory do you have of Mary Lou?
- 3 A. I remember that before I ever met her that there was
- 4 a problem with appointments scheduling, which did not
- 5 take into account the need for her to see a
- 6 Cleveland Clinic psychiatrist before I saw her and
- 7 the logistical issues that **raised with** her and **her**
- 8 family and writing a letter of apology on behalf of
- 9 the office and the department to that end, so I have
- 10 a specific memory about that.
- 11 I have a specific memory of some visits in the
- 12 postoperative period, portions of those visits, and
- 13 **also some** meetings, particularly one meeting, with
- 14 the family of Mrs. Zimmerman in the postoperative
- 15 period.
- 16 Q. What do **you** remember about that family meeting?
- 17 A. Well, I remember that it occurred in an area at **H61**
- 18 that was off by the main courtyard in a lounge there
- 19 and where we were discussing prognosis and outcome
- 20 and discharge plans.
- 21 Q. Who was there?
- 22 A. I know that her husband was there. I believe that
- 23 there was a conference call with somebody, and I
- 24 can't recall exactly whom. There was at least
- 25 someone else from the Clinic there, I'm not sure who

6

- 1 that person was, and there may have been yet one or
- 2 more family members there. I can't recall.
- 3 Q. Do you remember --
- 4 A. So I remember some aspects of that meeting.
- 5 Q. Do you remember the capacity of the person from the
- 6 Clinic, whether it was someone from administration
- 7 or someone from neurosurgery?
- 8 A. I have no recollection as to who that person was.
- 9 Q. What do you remember being discussed in that family
- 10 meeting?
- 11 A. I think basically all I really remembered being
- 12 discussed was, you know, possible prognosis and
- 13 discharge planning and those elements. I don't
- 14 really recall specifics of the discussion.
- 15 Q. Would this have been late in her hospitalization?
- 16 A. I think this was later in the hospitalization.
- 17 Q. Sometime --
- 18 A. I don't know that for **sure** as to exactly when this
- 19 occurred.
- 20 Q. There were some changes in terms of anticipated
- 21 discharge dates with Mary Lou Zimmerman?
- 22 A. As I recall, yes.
- 23 Q. **Is** there anything else **you** can tell **us** about that
- 24 family meeting?
- 25 A. You know, at this point without other things jogging

7

- 1 my memory, no.
- 2 Q. You talked about some post-op visits. What post-op
- 3 visits do you have an independent memory of?
- 4 A. I think I remember a visit very early afterwards
- 5 where there **were** several family members, and again I
- 6 don't remember exactly who, although I would surmise
- 7 **that the husband was one of them**, and there was the
- 8 usual concern at that stage because of her, **you**
- 9 know, not being particularly interactive and not
- 10 talking very much, which is not uncommon, and we
- 11 forewarn people about this beforehand, and
- 12 discussing those aspects.
- 13 I recall some meeting down the road after the
- 14 infection occurred, having discussions with them
- 15 regarding infection, treatment of infection and so
- 16 on, but again, not the specifics.
- 17 Q. Are **you** able to date the first post-op visit you
- 18 recall when **you** talked about the family was
- 19 concerned about her outcome and you said this was
- 20 normal given this type of surgery?
- 21 A. Well, there's a note in the chart that on September
- 22 **23rd**, 1998 I did have a discussion with the family,
- 23 as well as another note on the 25th to that effect,
- 24 and yet another on the 28th. I really can't tell
- 25 you which of these that I'm referring to or whether

8

- 1 this is some composite.
- 2 Q. But most likely it would be during this post-op
- 3 period between the 22nd and the **28th**, the initial
- 4 conversation that **you** recall?
- 5 A. Yeah.
- 6 Q. You talked then about a discussion after the
- 7 infection developed. Again, looking at your chart,
- 8 can you give me a time frame as to when that
- 9 conversation took place?
- 10 A. The first discussion after the infection would have
- 11 been October 10th that I had with the family, and I
- 12 would note that I was away at some point, I don't
- 13 know exactly when, but my associate, Dr. David
- 14 Miller --
- 15 Q. He covered for you. At least there was a reference,
- 16 I believe, on the **Q1**?
- 17 A. He wrote a note on the 8th when I guess the
- 18 infection became apparent, and when I was back my
- 19 note suggests that I -- well, it doesn't suggest, it
- 20 states I discussed it with the patient's family.
- 21 Q. Could you read that note for **us**?
- 22 A. Events reviewed and discussed with patient's family,
- 23 patient examined, continue antibiotics, clinically
- 24 seems to have stabilized, increased steroids for
- 25 edema, **CT** and **LP** in am.

9

- 1 Q. And that is from October 10th?
- 2 A. 10th, 1998 at 245 p.m.
- 3 Q. Do you recall where you were when you went out of
- 4 town and for how long you were gone?
- 5 A. No.
- 6 Q. Do you have any -- strike that.
- 7 Do you recall the specifics of the conversation
- 8 you had with the family about the infection?
- 9 A. No.
- 10 Q. If I can talk generally about your practice as a
- 11 neurosurgeon, can you give me some idea, Dr.
- 12 Barnett, how many surgical cases you do a year,
- 13 approximately?
- 14 A. It varies. If you include radiosurgery, it's around
- 15 350 cases a year.
- 16 Q. And how do you define radiosurgery?
- 17 A. Radiosurgery is a single fraction radiation
- 18 treatment aimed at destroying or altering the
- 19 function of tissue, and in this context typically
- 20 brain or adjacent tumor or -- brain or tumor
- 21 tissue.
- 22 Q. So it actually destroys brain tissue; is that
- 23 right?
- 24 A. It can.
- 25 Q. And was radiosurgery performed on Mary Lou

10

- 1 Zimmerman?
- 2 A. No.
- 3 Q. Is there a difference between radio frequency and
- 4 radiosurgery?
- 5 A. Yes.
- 6 Q. Okay. What's that difference?
- 7 A. Radio frequency, as it pertains to this case, is the
- 8 method by which an electrode is heated that then
- 9 devitalizes brain tissue.
- 10 Q. You used the word devitalize. In simple terms,
- 11 does --
- 12 A. Kill.
- 13 Q. It kills, burns?
- 14 A. Cooks.
- 15 Q. Cooks, okay. You seemed to correct me. When you
- 16 said burns versus cooks, what's the distinction?
- 17 A. Well, it's the difference between burned eggs and
- 18 cooked eggs.
- 19 MR. MALONE: Who's in the kitchen,
- 20 that's the distinction.
- 21 Q. But either way, you've got the same result, killed
- 22 cells?
- 23 A. Well, burnt could actually lead to other undesirable
- 24 effects, just like burning your food leads to
- 25 undesirable effects, although one would still argue

11

- 1 it's cooked.
- 2 Q. But ultimately the cells that are cooked by the
- 3 electrode are killed, correct?
- 4 A. Some are, some recover.
- 5 Q. The ones obviously that were killed are permanent,
- 6 irreversibly gone?
- 7 A. By definition if they're killed, they're gone.
- 8 Q. Of the three -- strike that.
- 9 Just generally, what is the nature of your
- 10 neurosurgical practice?
- 11 A. It's varied over time. My practice in '98 probably
- 12 was about a third neuro-oncology, a third
- 13 radiosurgery, and a third trigeminal neuralgia and
- 14 other functional procedures.
- 15 Q. Are you familiar with the term psychosurgery?
- 16 A. Yes.
- 17 Q. What does psychosurgery mean?
- 18 A. Psychosurgery is a technique where surgery is used
- 19 to alter the behavior.
- 20 Q. And it's surgery to the brain?
- 21 A. Correct.
- 22 Q. Is a cingulotomy considered a psychosurgery?
- 23 A. Yes.
- 24 Q. Capsulotomy?
- 25 A. Anterior capsulotomy is considered psychosurgery.

12

- 1 Q. Leukotomy?
- 2 A. Prefrontal leukotomy would be considered a
- 3 psychosurgery.
- 4 Q. Lobotomy?
- 5 A. Prefrontal lobotomy could be considered
- 6 psychosurgery.
- 7 Q. Have you published at all in the area of
- 8 psychosurgery?
- 9 A. There was an article back I think in the early '90s
- 10 on MRI guidance for cingulotomy.
- 11 Q. Handing you your resume, which was marked as Exhibit
- 12 1, are you able to locate that in your resume?
- 13 A. 26.
- 14 Q. Any others?
- 15 A. In the journal publications.
- 16 Q. Would that be your sole publication in the field of
- 17 psychosurgery?
- 18 A. To the best of my recollection, yes.
- 19 Q. Do you currently have any publication in the works
- 20 or research projects in the works relating to
- 21 psychosurgery?
- 22 A. No.
- 23 Q. Have you lectured or taught any courses in
- 24 psychosurgery separate from anything you may have
- 25 done as part of training residents or fellows here

13

- 1 at the Clinic?
- 2 A. No.
- 3 Q. Do you keep statistics on the number of surgeries
- 4 you perform, including psychosurgeries?
- 5 A. Not specifically, no.
- 6 Q. Have you performed -- are you performing any more or
- 7 less psychosurgeries now in 2000 compared to 1998?
- 8 A. Not really.
- 9 Q. How many psychosurgeries do you do a year?
- 10 A. Typically I'd say it's about three or four.
- 11 Q. And has that number been relatively constant since
- 12 you came to the Clinic?
- 13 A. Since I started them it's been reasonably constant,
- 14 yeah.
- 15 Q. When did you start doing them here at the Clinic?
- 16 A. I'd have to guess that it was sometime in the late
- 17 '80s.
- 18 Q. Certainly it would have been by the early '90s?
- 19 A. Yes.
- 20 Q. And what type of -- what is your surgery of choice
- 21 when treating OCD?
- 22 A. My opinion, it depends on the severity of the
- 23 disorder and that for the most severe --
- 24
- 25 - - - -

14

- 1 (Thereupon, Mr. Ruf entered the
- 2 deposition room.)
- 3 - - - -
- 4 A. That for the most severe cases I typically perform
- 5 bilateral cingulotomies with bilateral anterior
- 6 capsulotomy.
- 7 Q. I'm sorry, could you repeat that, please?
- 8 A. Bilateral cingulotomy with bilateral anterior
- 9 capsulotomy, and for less severe cases offer
- 10 bilateral anterior capsulotomy either using radio
- 11 frequency techniques or using radiosurgery
- 12 techniques.
- 13 Q. Do you perform either of those procedures under the
- 14 gamma knife procedure?
- 15 A. The radiosurgery technique would be the gamma knife
- 16 procedure.
- 17 Q. That's not an invasive procedure, is it?
- 18 A. It's minimally invasive.
- 19 Q. When you say minimally invasive, what do you mean?
- 20 A. Well, there are pins from a reference frame that
- 21 puncture the scalp and engage into the patient's
- 22 skull, so it does invade the body in that sense, but
- 23 it does not physically invade the skull.
- 24 Q. Of the surgical cases that you do in psychosurgery
- 25 here at the Clinic, what percentage or how many of

15

- 1 them involve severe OCD where you're doing a
- 2 combined cingulotomy with capsulotomy?
- 3 A. Could you repeat the question, please?
- 4 Q. Sure. You said you do about three to four
- 5 psychosurgery cases since what you believe was the
- 6 late 1980s. You do a capsulotomy for severe OCD,
- 7 you do a combined cingulotomy with capsulotomy for
- 8 more severe cases. What percentage of the three to
- 9 four a year would be one versus the other?
- 10 A. Probably about half.
- 11 Q. Is there any literature that you know of that cites
- 12 the complication rate or success rate of doing a
- 13 combined cingulotomy with capsulotomy like you
- 14 perform for severe OCD patients?
- 15 A. Off the top of my head, no.
- 16 Q. Are you familiar with the literature in
- 17 psychosurgery, including cingulotomy and
- 18 capsulotomy?
- 19 A. Some of it.
- 20 Q. What is the medical basis for your belief that
- 21 severe OCD patients should undergo a combined
- 22 cingulotomy and capsulotomy procedure?
- 23 MR. MALONE: Actually, just to be
- 24 perfectly technically correct, I think those
- 25 terms should be plural. They're cingulotomies

16

- 1 and capsulotomies, not just one.
- 2 Q. Okay. And I assume that's correct, when you do this
- 3 you do bilateral capsulotomies and cingulotomies?
- 4 A. When I do what?
- 5 Q. When you do the psychosurgery on OCD patients,
- 6 severe OCD patients, you do bilateral cingulotomies
- 7 and capsulotomies; is that correct?
- 8 A. On the severe cases, yes.
- 9 Q. What is the basis for your belief that that is the
- 10 appropriate way to treat surgically patients with
- 11 severe OCD?
- 12 A. My interpretation of the literature is that there's
- 13 a higher success rate when the two are combined than
- 14 when either are done alone.
- 15 Q. And can you cite to the literature that you're
- 16 referring to?
- 17 A. No.
- 18 Q. Do you know what journal it's in?
- 19 A. No.
- 20 Q. Do you know what textbook it's in?
- 21 A. No.
- 22 Q. What journals do you subscribe to that address these
- 23 type of surgical procedures?
- 24 A. Journal of Neurosurgery, Neurosurgery, Surgical
- 25 Oncology. Rather Surgical Neurology, Neurology.

17

1 Those are the ones that come to mind. There may be
2 more.
3 Q. What medical textbooks would you refer your medical
4 students or fellows who wanted to learn more about
5 psychosurgery?
6 A. I don't know that there's a specific book that I
7 would refer them to regarding psychosurgery.
8 Q. So you wouldn't refer them to any book if they
9 wanted to read more about it?
10 A. I probably could give them a whole list to look at,
11 not that any one is particularly authoritative.
12 Q. Well, which books, if a resident or fellow said I
13 want to learn more about psychosurgery so I can
14 improve my knowledge, which neurosurgical text would
15 you refer them to on the list?
16 A. There's various neurosurgical texts and they all
17 touch on these subjects, and so I would refer them
18 to the basic neurosurgery texts for an initial --
19 Q. Which basic texts?
20 A. I mean, there's Yeoman's Neurosurgery, there's a
21 three-volume green one, the name of which is
22 escaping me right now.
23 Q. Who are the authors?
24 A. If I knew the authors I'd be able to tell you.
25 There's also several operative neurosurgery books

18

1 out there, Spitek and Sweet, but specifically which
2 ones have good sections and relevant sections in
3 psychosurgery, I couldn't tell you offhand.
4 Q. You have no independent memory, correct, of what
5 specific risks and complications you discussed with
6 Mary Lou Zimmerman about this procedure?
7 A. A specific memory, that is correct, I do not.
8 Q. Based on your -- strike that.
9 And there's nothing in the record that shows
10 specifically what was discussed, other than the
11 risks and benefits, correct?
12 A. That's my recollection.
13 Q. What are the risks associated with the procedure
14 Mary Lou Zimmerman underwent?
15 A. Well, one of the principal risks is that it won't
16 work, have no meaningful benefit at all, and that's
17 probably somewhere between one in four and one in
18 three, that about one in three people will be mute
19 and not communicative for the first few days to a
20 week or so after the procedure, which is the
21 bilateral anterior capsulotomies and cingulotomies,
22 but that this usually resolves over a period of days
23 to a few weeks, that about one in four people may
24 have difficulty with bladder control for the first
25 few weeks to few months, but that usually, but not

19

1 always, resolves, that about two percent of people
2 will have wound healing problems, including
3 infection, blood clots, fluid leaks that may require
4 re-operation, prolonged management with antibiotics,
5 and in some cases a serious risk of a catastrophic
6 outcome is probably about two percent. About two
7 percent of people have a catastrophic outcome,
8 catastrophe being big stroke, blindness, coma,
9 death.
10 Q. What was that again?
11 A. Catastrophe being on the order of big stroke.
12 Q. Big stroke?
13 A. Blindness, coma, death. And that it's very common
14 for people to have a personality change, probably
15 better than 50 percent, and 10 is that a change will
16 be an improvement, but that's not always the case.
17 Q. Why is there a problem with speech in some patients
18 following this procedure?
19 A. I don't know that there is a precise mechanism, as
20 described. It's an empiric observation that
21 happens.
22 Q. So neurosurgeons like yourself don't know why it
23 happens, just that it does happen occasionally after
24 this procedure?
25 A. I believe there's speculation as to why it might

20

1 happen as opposed to a known cause.
2 Q. What do you tell your patients the success rate is
3 for this type of procedure?
4 A. I tell them that there's meaningful improvement in
5 about 70 to 75 percent of cases. That does not mean
6 that they will be psychiatrically or psychologically
7 normal.
8 Q. What do you mean by meaningful improvement?
9 A. Just that.
10 Q. What do you base that statistic on?
11 A. Literature and also personal experience.
12 Q. What literature?
13 A. The neurosurgical literature.
14 Q. Isn't there some controversy in the literature as to
15 the success rate for these surgeries?
16 A. There is controversy in a lot of areas in
17 neurosurgery.
18 Q. Including this?
19 A. Including this. My interpretation of the
20 literature, I guess I should say.
21 Q. Again, you don't know of any specific literature
22 that addresses the success rate when there's the
23 combined procedures, capsulotomies with
24 cingulotomies, correct?
25 A. I mean, that literature exists. Can I cite it here,

21

- 1 no.
- 2 Q. Okay. You're addressing the success rate in the
- 3 combined procedures?
- 4 A. I believe that literature is it, yes.
- 5 Q. You said your own experience, again, there's nothing
- 6 that you have published, there's no documents **you**
- 7 can go to where you've actually put together
- 8 statistics on that, correct?
- 9 A. Correct.
- 10 Q. How many psychosurgical procedures did you do before
- 11 you became a practicing neurosurgeon here at the
- 12 Cleveland Clinic?
- 13 A. I would say probably -- I would say I don't know. I
- 14 don't recall.
- 15 Q. Were **you** able --
- 16 A. I think some, but I don't remember how many.
- 17 Q. Do you remember if it was more than ten?
- 18 A. I really couldn't say.
- 19 Q. More than **50**?
- 20 A. I think that's unlikely.
- 21 Q. More than **25**?
- 22 A. Don't know.
- 23 Q. What percentage of your neurosurgical training would
- 24 have been dedicated to performing psychosurgery or
- 25 assisting in psychosurgery?

22

- 1 A. It's small.
- 2 Q. **Less** than five percent?
- 3 A. Probably.
- 4 Q. **Who** trained you to do psychosurgery?
- 5 A. I was trained in stereotactic techniques and this
- 6 was at the Cleveland Clinic as well as subsequent
- 7 courses.
- 8 Q. **Who** trained you in stereotactic techniques at the
- 9 Clinic?
- 10 A. I believe that would have been Russell Hardy.
- 11 Q. **Is** he still here at the Clinic?
- 12 A. **No**.
- 13 Q. **Do** you know how many psychosurgeries he's
- 14 performed?
- 15 A. I don't know. I don't know that he's actually done
- 16 psychosurgeries, but I know he trained -- did
- 17 training in stereotactic techniques.
- 18 Q. So he didn't specifically train **you** on
- 19 psychosurgery, just the general stereotactic
- 20 techniques used in brain surgery?
- 21 A. I know that he trained me in some stereotactic
- 22 techniques, I don't recall about psychosurgery.
- 23 Q. Is anybody more qualified here at the Clinic than
- 24 you to do psychosurgery?
- 25 A. Back in **1998**, no.

23

- 1 Q. **How** about presently?
- 2 A. There may be someone who is -- I actually don't know
- 3 what his qualifications are in psychosurgery.
- 4 Q. **Who** are you thinking of that may be --
- 5 A. Dr. Rezai.
- 6 Q. Spelled?
- 7 A. R-E-Z-A-I.
- 8 Q. What outside courses or seminars did **you** attend to
- 9 receive training in psychosurgery after **you** joined
- 10 the Clinic?
- 11 A. There was a workshop in stereotactic techniques that
- 12 was in either Snowbird or Snowmass, Colorado, that I
- 13 attended. Also these procedures were being done
- 14 during my fellowship at Mass. General and I had the
- 15 opportunity to observe a few.
- 16 Q. The Colorado workshop, first of all, I take it that
- 17 was during the wintertime?
- 18 A. No, it was in the summer, actually.
- 19 Q. **Is** that right, okay. Did that specifically address
- 20 stereotactic procedures in psychosurgery?
- 21 A. It specifically addressed stereotactic procedures.
- 22 I believe it also included psychosurgery.
- 23 Q. **But** you're not sure?
- 24 A. I don't recall. I'm not **sure**.
- 25 Q. And when was that?

24

- 1 A. Probably **1986** or seven.
- 2 Q. Do **you** still have reference materials from that
- 3 seminar?
- 4 A. Not that I recall.
- 5 Q. Did you have them in **1998**?
- 6 A. Not that I recall.
- 7 Q. **Who** sponsored that workshop?
- 8 A. Radionics.
- 9 Q. Who is Radionics?
- 10 A. Radionics is the manufacturer of stereotactic
- 11 neurosurgery hardware and software.
- 12 Q. Did they also pay for the seminar?
- 13 A. No.
- 14 Q. Did you have to pay for the seminar?
- 15 A. No.
- 16 Q. The Clinic --
- 17 A. The Clinic paid for the seminar.
- 18 Q. **Do** you recall what neurosurgeons spoke at that
- 19 seminar?
- 20 A. There were dozens of neurosurgeons. I can't
- 21 remember who they all were.
- 22 Q. Can you remember any of them?
- 23 A. Yeah, Michael **Apu**zzo, A-U-P-U-Z-Z-O, Peter
- 24 Hilebrun, H-I-L-E-B-R-U-N.
- 25 Q. Did Dr. Hardy provide to you any written materials

25

- 1 when he provided training to you in stereotactic
 2 techniques?
 3 A I don't recall.
 4 Q. You said you also had a chance to observe a few
 5 during your fellowship at Harvard, correct?
 6 A. Uh-huh.
 7 Q. First of all, when you say observed a few, did you
 8 actually assist during the procedure?
 9 A No.
 10 Q. Did you assist in any psychosurgery procedures
 11 before coming to the Cleveland Clinic?
 12 A. Do you mean before coming to the Cleveland Clinic as
 13 staff or before coming to the Cleveland Clinic as a
 14 resident?
 15 Q. Well -
 16 A. I did my residency at the Cleveland Clinic.
 17 Q. All right. Let me back up. As a resident at the
 18 Cleveland Clinic, did you assist in performing any
 19 psychosurgeries?
 20 A. I may have.
 21 Q. You're not sure?
 22 A. I'm not sure.
 23 Q. Do you know if psychosurgery was being performed
 24 here at the Clinic during your residency?
 25 A. I think there were some selected cases, but I don't

26

- 1 recall for sure.
 2 Q. Do you know who was performing it, if it was being
 3 performed?
 4 A. It probably would have been done by Dr. Hardy, but I
 5 don't know that for sure.
 6 Q. How about during your fellowship at Harvard, did
 7 you -- you did not actually assist any
 8 psychosurgeries, correct?
 9 A. That is correct.
 10 Q. You just observed it?
 11 A. I observed a few cases.
 12 Q. And who was performing the surgery that you
 13 observed?
 14 A. I think it was Dr. Ojemann.
 15 Q. How do you spell that?
 16 A. I think it's O-J-E-M-A-N-N. I could be wrong.
 17 Q. Any other training that you would have received in
 18 psychosurgery besides what we've just covered?
 19 A. Not that I recall.
 20 Q. Is there anything else that you can look to that
 21 would refresh your memory?
 22 A. Not off the top of my head.
 23 Q. The psychosurgery cases that you observed during
 24 your fellowship, did any of those include combined
 25 capsulotomies and cinguotomies?

27

- 1 A. Don't recall.
 2 Q. Tell me how it was that psychosurgery came to be
 3 performed here at the Cleveland Clinic, to your
 4 knowledge.
 5 A. After I came?
 6 Q. Yes.
 7 A. There was a set of patients who had medically
 8 untreatable cancer pain who were suffering and had
 9 exhausted all reasonable medical drug anesthesia
 10 procedures for their pain. Bilateral cingulotomy
 11 was a procedure that was known to be effective in
 12 many but not all of these patients, which led to an
 13 altered perception of pain, lack of a need for
 14 narcotic use, and improved function for their
 15 remaining days, and so we started performing that
 16 procedure on a very rare basis for those patients.
 17 Q. When was that?
 18 A. Again, my belief is it was probably in the very late
 19 '80s, like '88, '89.
 20 Q. Was there a formal committee set up to establish
 21 that as a form of treatment here at the Cleveland
 22 Clinic?
 23 A. No.
 24 Q. Were you part of the -- what was your role in
 25 instituting that treatment?

28

- 1 A. Essentially the technician.
 2 Q. Who else was involved in the decision to start that
 3 procedure?
 4 A. There was -- I would point out there was another
 5 neurosurgeon here around that time, Dr. Hassenbusch,
 6 who also performed that procedure, and I really
 7 can't remember who started doing them first.
 8 Q. Whether it was you or him?
 9 A. Right.
 10 Q. You talked about this was very rare for a select
 11 group of patients. First of all, were the patients
 12 that this was performed on initially terminal cancer
 13 patients?
 14 A. Yes.
 15 Q. Was there any research or publications that were
 16 produced dealing with this patient population?
 17 A. I think the only one was the one I had previously
 18 cited using MR guidance instead of CAT scan instead
 19 of ventriculotomy guidance.
 20 Q. Do you know how many patients were selected for this
 21 procedure initially?
 22 A. I think selected is probably the wrong word. I
 23 mean, again, this was a treatment option they were
 24 offered when all else had failed, so this was not
 25 selection in the sense of some research project.

29

- 1 Q. That's fine, volunteered. I mean, what size patient
2 population are we talking about?
3 A. Probably, again, somewhere on the order of **two** or
4 three a year.
5 Q. When was the procedure broadened to include
6 psychiatric conditions like OCD?
7 A. I believe this is when we were approached by the
8 psychiatrists who learned that we were performing
9 these procedures and whether we had the technical
10 expertise to perform something like this in patients
11 they deemed candidates.
12 Q. And when would that have been?
13 A. Again, I believe it probably was the very late
14 **1980s**.
15 Q. Who in psychiatry would have been behind this
16 movement to see if psychosurgery could be performed
17 here at the Clinic using those techniques?
18 A. **You** know, I really don't recall who was there at the
19 time in psychiatry.
20 Q. So by the late '80s then psychosurgery was being
21 performed on psychiatric patients here at the
22 Clinic, to your knowledge?
23 A. **Yes**, in selected patients.
24 Q. All right. Are there any written protocols or
25 procedures for selecting patients for this procedure

30

- 1 here at the Cleveland Clinic?
2 A. Not to my knowledge.
3 Q. Has there ever been?
4 A. Not to my knowledge.
5 Q. Has there been any change in the way patients are
6 selected or any change in the way the procedure is
7 performed since Mary Lou Zimmerman's procedure in
8 **1998**?
9 A. No.
10 Q. I assume there was a protocol of some sort, even if
11 it's unwritten, as to how patients are selected for
12 this procedure?
13 MR. MALONE: Again, he doesn't like the
14 word selection. **You** keep using it.
15 MR. LINTON: I'm sorry.
16 MR. MALONE: **He's** also testified
17 earlier that she has to be seen by a Clinic
18 psychiatrist, and that wasn't done when she
19 first came here.
20 A. I do not profess to be a psychologist or
21 psychiatrist, and the expertise they have, it is not
22 within my realm of expertise to determine whether
23 someone is or is not a candidate for psychosurgery.
24 Q. So you have no role in making that evaluation; is
25 that correct?

31

- 1 A. I have only the role to ensure a reasonable -- my
2 only role is to ensure that our guidelines have been
3 met in terms of who is a candidate and who is not
4 and specifically the guideline is that at least one
5 external psychiatrist or psychologist who has been
6 treating the patient and one Cleveland Clinic
7 psychiatrist agree that all reasonable nonsurgical
8 treatment has been given to this patient and that
9 surgery should be performed --
10 Q. **So** --
11 A. -- as the next step.
12 Q. So you do have a role in deciding if surgery should
13 be the next step for the patient, correct?
14 A. No, my role is to ensure that the guidelines have
15 been met, not --
16 Q. And I want to be clear about this. The guideline is
17 that there's an external psychiatric evaluation and
18 an internal psychiatric evaluation, and once **those**
19 **two** criteria are met that's all you have to do, you
20 as a neurosurgeon evaluating whether a patient is
21 appropriate for this surgery?
22 A. I need to make sure that they're medically fit for
23 the procedure and then I do make recommendations as
24 to what **type**.
25 Q. So you do make an independent evaluation as **to** the

32

- 1 type of surgery to be performed, correct?
2 A. That wasn't **your** previous question, but, yes.
3 Q. And if for some reason you felt that surgery was
4 inappropriate, even if it was recommended by an
5 external psychiatrist or even two external
6 psychiatrists and an internal psychiatrist, you
7 would not perform the surgery, correct?
8 A. Not on a psychiatric basis because I'm not qualified
9 to make that. On a medical basis I would be able to
10 make those decisions, but not in terms of a
11 psychiatric or psychologic basis.
12 Q. These guidelines you're talking about, again, that's
13 nothing in writing, that's just the unwritten
14 guideline here at the Clinic?
15 A. Well, we have put it in writing in various letters
16 and documents to people, like in the letter -- I
17 believe it was in writing to the Zimmermans that
18 that's the guideline.
19 Q. But there's no internal document that you're aware
20 of?
21 A. Not that I'm aware of.
22 Q. What are the medical contraindications for the
23 surgery?
24 A. Well, if someone was dependent on anticoagulation,
25 then we likely wouldn't perform an open procedure.

33

- 1 If someone was an exceedingly high medical risk in
 2 terms of cardiac, pulmonary or other organ systems,
 3 that would be a relative contraindication to
 4 performing the surgery. Someone who had a known
 5 degenerative brain disease would not be a candidate
 6 for the surgery, to name a few.
- 7 Q. How about a preexisting brain infection?
- 8 A. If somebody had a known preexisting brain infection
 9 we would not perform the surgery.
- 10 Q. There were no -- strike that.
- 11 What tests or evaluations were performed either
 12 by you or by other people here at the Cleveland
 13 Clinic before Mary Lou Zimmerman had her surgery on
 14 September 22nd, 1998?
- 15 A. She had a CAT scan of her brain, and I would think
 16 that she would have had the routine preoperative
 17 testing.
- 18 Q. Which consists of what?
- 19 MR. MALONE: Are you including the
 20 question with the psychiatric evaluation that
 21 was done in-house as well pre-op? I mean, he
 22 didn't do that, but that was done.
- 23 A. Typically that includes a complete blood count and
 24 some basic blood chemistries. Depending upon the
 25 age and the hospital guidelines at that time, it may

34

- 1 or may not include a chest x-ray, cardiogram.
- 2 Q. Would that be on your pre-op workup, excuse me, your
 3 pre-op assessment?
- 4 A. I'm not sure where that exactly would be.
- 5 Q. Document number 19, which is entitled the
 6 preoperative admission plan that has your signature
 7 at the bottom, does that show what preoperative
 8 testing Mary Lou Zimmerman underwent?
- 9 A. Well, it shows what was ordered, it shows the
 10 anesthesia clearance panel and a type and screen and
 11 a CAT scan of the head without contrast.
- 12 Q. Let me summarize then. The preoperative testing --
- 13 A. Also it showed an electrocardiogram and anesthesia
 14 clearance.
- 15 Q. So her preoperative testing and evaluation would
 16 have included, number one, a psychiatric evaluation,
 17 number two, a CAT scan, number three, preoperative
 18 bloodwork, and number four, an EKG; is that right?
- 19 A. It would have included that, that's correct.
- 20 Q. Anything else?
- 21 A. I actually don't know what fully constituted an
 22 anesthesia clearance panel at that time. It
 23 changes.
- 24 Q. Were there any independent tests or evaluations that
 25 you performed or ordered?

35

- 1 A. I'm not sure what you're driving at, but not that I
 2 recall.
- 3 Q. I'm not driving at anything, I'm just trying to find
 4 out what you -- what your role was preoperatively
 5 for this patient.
- 6 A. I mean, the patient and the family -- I met with the
 7 patient and the family.
- 8 Q. I understand you met them. I'm talking in terms of
 9 actual tests that were ordered, tests performed by
 10 you. There weren't any, correct?
- 11 A. Other than the ones that we've discussed, not that I
 12 recall, not that I see at the moment.
- 13 Q. Did you do a neurological examination of the
 14 patient?
- 15 A. There's a neurological examination in the chart with
 16 which I said I concurred.
- 17 Q. And was that performed by a resident?
- 18 A. It was either performed by a resident or a fellow.
- 19 Q. Can you go to your chart and see who performed it?
- 20 A. It's not signed, that I recall.
- 21 Q. And tell us what were the findings during the
 22 neurological examination.
- 23 A. It said normal neurologic examination.
- 24 Q. And what did that include?
- 25 A. It would have included -- it included sensory

36

- 1 cranial nerves, motor exam, sensory exam, reflex
 2 exam.
- 3 Q. And all those were normal?
- 4 A. Not a psychiatric exam.
- 5 Q. I understand, but the ones we just outlined were
 6 normal?
- 7 A. That's what the chart says.
- 8 Q. Do you know what outside tests or studies were done
 9 to evaluate Mary Lou Zimmerman as a candidate for
 10 this surgery?
- 11 A. No.
- 12 Q. How long is a patient like Mary Lou Zimmerman
 13 typically in the hospital for when she undergoes
 14 this type of procedure?
- 15 A. Usually around probably five to seven days, unless
 16 they are one of those one in three who are mute, and
 17 that can extend into a couple weeks, two or three
 18 weeks.
- 19 Q. Did you tell the family that during your
 20 preoperative meeting?
- 21 A. I believe I would have.
- 22 Q. The CT scan that you performed, is that for purposes
 23 of -- well, why do you perform the CT scan
 24 preoperatively?
- 25 A. The principal reason is for guidance for the

37

- 1 procedure, and certainly if we see anything
 2 unexpected then we proceed, deal with that.
 3 Q. And there was no evidence of any brain mass or brain
 4 abscess or abnormalities in the brain as a result of
 5 that CAT scan, correct?
 6 A. Not that I can recall.
 7 Q. Do you want to look at **your** record to make sure?
 8 A. Sure. Do you know what date that was done?
 9 Q. The **21st**.
 10 MR. MALONE: If you have the report,
 11 Bob, why don't you show it to him. It might
 12 move us along. I've got it here.
 13 MR. LINTON: He's got the original
 14 chart.
 15 A. The CAT scan from September **21st**, 1998 did not show
 16 any abnormality in the brain.
 17 Q. Do you have the results of the preoperative blood
 18 testing?
 19 MR. MALONE: Here, Gene.
 20 A. There is a basic metabolic panel and a complete
 21 blood count, as well as a type and screen.
 22 Q. And what date are you looking at for the report?
 23 A. It was collected September **21st**.
 24 Q. There's no sign of any organism or infection in the
 25 blood based on those results?

38

- 1 A. The results were normal.
 2 Q. So there would be no evidence based on that report
 3 of any organism in the blood?
 4 A. That test isn't designed to specifically look at
 5 whether there's organisms in the blood, it's to look
 6 for — as close as it gets is to look for evidence
 7 of **infection** for which there's been an immunologic
 8 response.
 9 Q. And there was no sign of such an infection, was
 10 there?
 11 A. Correct.
 12 Q. So based on everything that you know **of** in terms of
 13 testing and in terms of evaluation, Mary Lou
 14 Zimmerman did not have any infection that you were
 15 aware of when she came to the Cleveland Clinic for
 16 her surgery on September **22nd**, 1998, correct?
 17 A. That is correct.
 18 Q. Are you aware of the organism that was ultimately
 19 cultured?
 20 A. I believe it was a type of klebsiella.
 21 Q. And what type of klebsiella was it?
 22 A. From where?
 23 Q. Well, from blood, first.
 24 A. **Is** the first one from October **9th**?
 25 Q. Yes.

39

- 1 A. Then it would be klebsiella oxytoca.
 2 Q. Could you just spell that for the Court Reporter.
 3 A. **O-X-Y-T-O-C-A**.
 4 Q. I'm going to refer to that as KO just for
 5 shorthand. Where is that organism found in the
 6 body?
 7 A. I actually don't know for sure.
 8 Q. You don't know, based on **your** medical training, that
 9 that's something typically found below the
 10 diaphragm?
 11 A. I wouldn't be surprised, but I don't know that for a
 12 fact.
 13 Q. It's not an organism typically found in the brain,
 14 is it?
 15 A. That is correct, but then again, no organism is
 16 typically found in the brain.
 17 Q. Because the brain is sterile, correct?
 18 A. The brain is a sterile organ.
 19 Q. What does the term nosocomial mean?
 20 A. Nosocomial, as I understand it, means hospital
 21 acquired.
 22 Q. Are you aware of any other brain surgeries that
 23 you've performed in which this organism was found?
 24 A. I'm not aware of any, no.
 25 Q. Can we agree this is an unusual organism to find in

40

- 1 the brain following brain surgery?
 2 A. I would say that it is unusual to find klebsiella
 3 oxytoca in the brain after brain surgery.
 4 Q. Did it surprise you to find this following Mary Lou
 5 Zimmerman's surgery?
 6 A. I would have been surprised to find **any type**, but
 7 perhaps more so with this than others, that's
 8 correct.
 9 Q. And why would **you** — why?
 10 A. It's a rare organism for an infection after brain
 11 surgery.
 12 Q. And it's not one that should typically be in the
 13 brain following a brain surgery, correct?
 14 A. No organism should typically be in the brain.
 15 Q. This is not an organism that is typically found in
 16 the skin, is it?
 17 A. I don't believe so, but I'm not an infection disease
 18 doctor and I wouldn't — couldn't say that **for**
 19 sure.
 20 Q. But based on your training and experience it's not
 1 one that you've encountered on the skin before, is
 2 it?
 3 A. **Well**, I normally don't look for it on the skin, so I
 4 don't know.
 5 Q. Tell me, based on your experience as a neurosurgeon,

41

- 1 the possible ways in which this organism could
2 result in a brain abscess.
- 3 A. One possibility would be direct inoculation during
4 surgery, a second would be postoperative bacteremia
5 or -- bacteremia in the perioperative period, which
6 would then seed the wound, and a third would be
7 direct wound contamination with tracking into the
8 brain.
- 9 Q. Based on everything **you** know about this **case**, and
10 you've reviewed the records, do you know which of
11 those are most likely in Mary **Lou** Zimmerman's case?
- 12 A. Not really.
- 13 Q. **Do** you have an opinion as to which **is** most likely?
- 14 A. **No**.
- 15 Q. **You** would just be speculating?
- 16 A. That's correct.
- 17 Q. **You** said direct inoculation. By what means could
18 that organism directly get into the brain?
- 19 A. Well, direct inoculation of the wound, **is** what I
20 said, with tracking into the brain.
- 21 Q. Well, that was your third scenario. Wasn't the
22 first scenario direct inoculation in the brain?
- 23 A. Okay.
- 24 Q. I'm sorry, I'm going backwards in order.
- 25 A. Okay. I misunderstood the question. **Would** you

42

- 1 repeat the question again then?
- 2 Q. Sure. Let me lay a foundation **so** I can be clear in
3 that. When you perform this surgery, your fingers
4 do not actually go into the brain; **is** that correct?
- 5 A. That's correct.
- 6 Q. They remain outside the patient's skull?
- 7 A. Yes.
- 8 Q. And **is** the only thing inserted the probe?
- 9 A. The only thing inserted in the brain **is** the probe,
10 that **is** correct.
- 11 Q. **Is** that what you meant when you said direct
12 inoculation, that it could be a probe that
13 contaminated the brain?
- 14 A. **Yes**.
- 15 Q. And I understand you're not responsible for
16 sterilizing the probes used during the procedure,
17 correct?
- 18 A. Correct.
- 19 Q. **You** have to rely on the other -- on others to
20 properly sterilize the instruments?
- 21 A. That **is** correct.
- 22 Q. **When** you get the instrument, you're getting it from
23 a technician during the surgery itself?
- 24 A. Usually I get it from a scrub nurse.
- 25 Q. But it's either the scrub nurse or a technician

43

- 1 that's assisting you during surgery that actually
2 hands **you** the probe that you then insert into the
3 brain; **is** that correct?
- 4 A. Correct.
- 5 Q. When you actually get the probe it's already out of
6 its packaging?
- 7 A. Correct.
- 8 Q. And there's nothing that you can do to independently
9 determine whether **It's** sterile or not?
- 10 A. That **is** correct.
- 11 Q. **You** just assume that it's been properly sterilized?
- 12 A. Correct.
- 13 Q. Now, the third scenario that you talked about, the
14 direct wound contamination, there you're talking
15 about the actual wound on the outside of **the** head
16 that would become infected, and then that infection
17 would then track internally into the brain; **is** that
18 correct?
- 19 A. Correct.
- 20 Q. And **do** you have any evidence that that occurred
21 here?
- 22 A. **No**.
- 23 Q. The other you mentioned **is** postoperative bacteremia
24 in the perioperative period, that being that there's
25 infection that develops in the blood and because the

44

- 1 brain has tissue that's healing it's susceptible to
2 having the organism grow with that part of the body,
3 correct?
- 4 A. Correct.
- 5 Q. **Do you** have any evidence that that's what occurred
6 here?
- 7 A. Well, my understanding **is** that she did have a
8 klebsiella bladder infection, although the subtype
9 of klebsiella **is** said to be different.
- 10 Q. Would that indicate that most likely that would not
11 be the source?
- 12 A. I don't know whether the difference in speciation
13 that **is** reported **is** reliable.
- 14 Q. Okay. **So you** think the test might be unreliable?
- 15 A. I said I don't know whether one can reliably
16 differentiate between the **two** species. **It is**
17 somewhat coincidental that a patient has **two**
18 different klebsiella infections at the same time.
- 19 Q. **It's** more likely they would have the same organism?
- 20 A. I would think, since klebsiella infections are rare
21 to begin with.
- 22 Q. Assuming that the **test is** reliable and in fact they
23 are two separate organisms, would that indicate that
24 it **is less** likely to come from the blood and
25 bacteremia?

45

- 1 A. Yes.
- 2 Q. Do you recall explaining to the family that one
- 3 explanation for what happened could be a
- 4 contaminated instrument during the surgery?
- 5 A. I know we had a discussion on contaminated
- 6 instruments. The specifics of that, I don't
- 7 recall.
- 8 Q. So if the family said that they recall very
- 9 specifically you telling them that this infection
- 10 was most likely due to a contaminated instrument, is
- 11 that something that you would deny?
- 12 A. Repeat the question again.
- 13 MR. LINTON: Sure. Let me have Laura
- 14 read it back, if I can, please.
- 15 - - - -
- 16 (Thereupon, the requested portion of
- 17 the record was read by the Notary.)
- 18 - - - -
- 19 A. I have a different recollection of the discussion on
- 20 that, and so I would have to say yes.
- 21 Q. Okay. Tell me what your recollection of the
- 22 discussion is.
- 23 A. My recollection was that the notion that this was
- 24 due to a contaminated instrument was advanced by
- 25 another service as being the most probable cause and

46

- 1 that they asked my opinion on this, and that my
- 2 opinion was that certainly it was a possibility but
- 3 I didn't know for a fact that it was.
- 4 Q. What other service believed it was the most probable
- 5 cause?
- 6 A. My recollection is that that came from somewhere on
- 7 the infectious disease service.
- 8 Q. And that again would be the infectious disease
- 9 service here at the Cleveland Clinic?
- 10 A. Correct.
- 11 Q. And do you know who in infectious disease had that
- 12 opinion?
- 13 A. I don't know whether this came from the staff level,
- 14 resident, fellow level, but just that my
- 15 recollection was that again that notion was advanced
- 16 by that service.
- 17 Q. And was that opinion expressed to you, in other
- 18 words was that the position that this person in
- 19 infectious disease told you directly or was that
- 20 reported to you from the patient's family?
- 21 A. I recall it being reported to me by the family. I
- 22 don't recall a direct discussion on this, although I
- 23 can't tell you it didn't happen.
- 24 Q. I'm sorry, just to be clear you can't tell us it
- 25 didn't happen, that being -

47

- 1 A. I'm not saying that I did not have any direct
- 2 communication with the infectious disease service at
- 3 some point and probably would have had direct
- 4 discussions with the infection service during the
- 5 course of this illness. Whether or not it actually
- 6 ever came up in those discussion, I don't know, but
- 7 my recollection was that they advanced the notion to
- 8 me that infectious disease had suggested this as a
- 9 probable cause.
- 10 Q. And so that I can understand what you're saying,
- 11 your response would have been that that was a
- 12 possible cause, but you were not going to say that
- 13 it was a probable cause?
- 14 A. That I didn't know.
- 15 Q. You didn't know. So you couldn't rule it in or rule
- 16 it out, the possibility?
- 17 A. But I could confirm that it was a possibility.
- 18 Q. I understand. Certainly based on everything that
- 19 you know about the infection that developed and the
- 20 brain abscess is entirely consistent with there
- 21 being a contaminated probe?
- 22 A. I would say it is consistent with that or another
- 23 instrument.
- 24 Q. Well, is there any other instrument that would have
- 25 been inserted into the brain during this procedure?

48

- 1 A. No, but the probe could have been contaminated --
- 2 Q. It could have --
- 3 A. -- by one of the producing tubes it goes through on
- 4 the way in, but your point is that, yes, the probe
- 5 itself would have had to be contaminated.
- 6 Q. But it may have been contaminated by another source?
- 7 A. Yes.
- 8 Q. In other words, it could have started off -- tell me
- 9 everything that the probe would have come in contact
- 10 with before it is removed from the brain.
- 11 A. Realistically the only direct contact it has is with
- 12 the inside of what's called a reducing tube.
- 13 Q. And where does the reducing tube come from?
- 14 A. The reducing tube again comes as part of a sterile
- 15 package.
- 16 Q. Is the probe in the reducing tube or is that
- 17 separate?
- 18 A. That's separate. They're sterilized usually by
- 19 different techniques.
- 20 Q. Is it sterilized here at the Cleveland Clinic
- 21 department, to your knowledge?
- 22 A. Yes.
- 23 Q. In the SPD department?
- 24 A. I presume that's where it was done, but I can't tell
- 25 you with certainty that's where it was done.

49

- 1 Q. I want to be clear on a question I asked earlier.
 2 Based on the assumption that the blood tests are
 3 reliable and show, in fact, there were **two** separate
 4 klebsiella organisms, more likely than not
 5 bacteremia would be excluded as the cause for the
 6 brain infection. In your opinion, correct?
 7 MR. MALONE: Well, I think he said he's
 8 not an **infectious** disease expert.
 9 MR. LINTON: I'm asking him based on
 10 his experience and knowledge.
 11 MR. MALONE: He didn't have an opinion
 12 before. You keep going back.
 13 MR. LINTON: His experience as a brain
 14 surgeon.
 15 A. It's one of these things that -- let me state it's
 16 my understanding it doesn't exclude it.
 17 Q. It makes it much **less** likely?
 18 A. It just doesn't prove it. It doesn't support it.
 19 Q. It doesn't --
 20 A. There's a difference.
 21 Q. Okay. How are those different?
 22 A. The absence of culturing an organism in the blood
 23 doesn't mean that the organism is not there.
 24 Q. Okay.
 25 A. Culturing an organism in the blood confirms that the

50

- 1 organism is there, so --
 2 Q. **Do** we have --
 3 A. -- the point that we did not, as I understand it,
 4 culture the exact organism in the blood that grew
 5 from the wounds does not disprove bacteremia as a
 6 cause, it just doesn't support it as a cause.
 7 Q. To support it as a cause, we would have to show the
 8 same type of klebsiella, correct?
 9 A. Yes, or an indistinguishable type of klebsiella.
 10 Q. As opposed to a different type **of** klebsiella, which
 11 is what's shown on this report?
 12 A. Taken at face value, that's what these reports
 13 show.
 14 Q. And you have no evidence to show that those are
 15 unreliable?
 16 A. I don't have enough knowledge to know whether this
 17 is a meaningful difference.
 18 Q. **We** can agree that the organism that caused the brain
 19 abscess included klebsiella oxytoca?
 20 MR. MALONE: Gene, what are you looking
 21 for?
 22 THE WITNESS: I'm looking for a culture
 23 report --
 24 Q. **10-4-98.**
 25 THE WITNESS: -- to help me answer his

51

- 1 question.
 2 Q. I think you're probably looking **for** the 10-4-98
 3 one. Is that what you're looking for?
 4 A. Yes.
 5 Q. Tell me, do you have authority to recommend that a
 6 patient's bill be written off by the Cleveland
 7 Clinic?
 8 A. Recommend?
 9 Q. I'm not trying to cut semantics here. For whatever
 10 reason you decide that a patient should not be
 11 billed for services or should not have to pay a
 12 co-pay amount, can you do something about that here
 13 at the Cleveland Clinic?
 14 A. I can ask.
 15 Q. Did you ask in this case; do you recall?
 16 A. I actually don't recall.
 17 MR. MALONE: Objection.
 18 Q. Do you recall any conversations with the family in
 19 which you said, in essence, that they won't have to
 20 pay anything for the services that were provided
 21 here at the Cleveland Clinic, they won't have to
 22 personally pay **for** it?
 23 A. I don't specifically recall that.
 24 Q. **Would --**
 25 A. It may have happened.

52

- 1 Q. So you wouldn't deny that if the family testified to
 2 that point?
 3 A. I would not deny that.
 4 Q. What would you have to do if you wanted to see that
 5 a bill was not charged to a family?
 6 A. There's a person that I would call.
 7 Q. Who would you call?
 8 A. I think it would be Claire Young.
 9 Q. And what's Claire Young's position?
 10 A. I don't actually know what her position is.
 11 Q. **Is** she in billing?
 12 A. No, I don't believe so.
 13 Q. Has there ever been --
 14 A. I think she's in administration.
 15 Q. Has there ever been a situation which you've asked
 16 Claire Young not to charge a patient and you've been
 17 overruled?
 18 A. I think so.
 19 Q. You would never tell that to a family unless you had
 20 the authority to see that the bill was not charged?
 21 A. I don't think I would ever tell it to a family
 22 without knowing that was going to happen.
 23 Q. I want to just be clear about this KO organism. **Do**
 24 you not know based on your medical education and
 25 experience this is an organism typically found in

53

- 1 the bowel or biliary tracts?
- 2 A. It may well be. Whether it's normal flora in those
- 3 tracts, I couldn't tell you.
- 4 Q. Would **you** agree that if, in fact, Mary Lou
- 5 Zimmerman's brain abscess resulted from a
- 6 contaminated instrument that that would be
- 7 unacceptable surgical practice?
- 8 A. No.
- 9 Q. Under what circumstances could that be acceptable
- 10 surgical practice?
- 11 A. That I believe the standard of care is to do one's
- 12 best to maintain the sterility of instruments within
- 13 all reasonable—with all reasonable measures, and
- 14 that's not to say that even if there's no breach in
- 15 sterile technique that a contamination cannot
- 16 occur.
- 17 Q. Well, can you tell me a situation how this
- 18 instrument could become contaminated with this
- 19 organism, assuming proper sterile techniques were
- 20 followed?
- 21 A. There is no -- all proper sterile technique does not
- 22 remove or preclude bacterial contamination at some
- 23 level. The purpose of sterile technique is to
- 24 minimize the risk of infection. Sterile technique
- 25 does not mean no bacteria, and it's aimed at

54

- 1 minimizing the load. So every sterile procedure has
- 2 some bacteria on all instruments in a case, and it
- 3 is generally intended to be such that the load is so
- 4 small as to not cause infection for the vast
- 5 majority of patients.
- 6 So the point is that even with normal handling,
- 7 all techniques being done, everything being
- 8 sterilized, that there are still going to be
- 9 bacteria. They float around in the air.
- 10 Sterilization probably, and I'm not a sterilization
- 11 expert, but sterilization probably does not kill
- 12 every single organism, that there are going to be
- 13 bacteria that are viable in any given surgical
- 14 case.
- 15 Q. Are you saying that KO is a type of organism that
- 16 could simply come out of the air and contaminate
- 17 this instrument; is that what you're saying?
- 18 A. In a hospital any organism could theoretically be
- 19 floating around.
- 20 Q. Including KO?
- 21 A. I suspect it could be. I don't know specifically
- 22 about KO.
- 23 Q. You would be speculating on that; isn't that right?
- 24 A. Specifically about KO, that's correct.
- 25 Q. You're talking about general staph infections or

55

- 1 strep infections?
- 2 A. I'm talking about infections in general.
- 3 Q. You would agree if there was a breach of sterile
- 4 technique, and that's what caused the probe to be
- 5 contaminated with KO, that that would be
- 6 unacceptable surgical practice, correct?
- 7 MR MALONE: Let me just show an
- 8 objection because you're assuming a fact not in
- 9 evidence, a fact that's disputed. As long as
- 10 you're going to tell him these are hypothetical
- 11 questions, that's fine, but he's never conceded
- 12 there was a contaminated probe.
- 13 Q. Can you answer the question as I asked it, Doctor?
- 14 A. Would you repeat the question?
- 15 MR. LINTON: I'll have Laura read it
- 16 back.
- 17 - - - -
- 18 (Thereupon, the requested portion of
- 19 the record was read by the Notary.)
- 20 - - - -
- 21 A. I'm not sure that I would agree with that.
- 22 Q. So if there is a breach in sterile technique and
- 23 that causes a probe to be contaminated and that's
- 24 what causes the KO to be inoculated into the brain
- 25 and develop the abscess, that can still be

56

- 1 acceptable surgical practice, in your opinion?
- 2 A. I think it depends on the circumstances of the
- 3 breach.
- 4 Q. Well, give me any circumstances under which, in your
- 5 opinion, as a neurosurgeon at the Cleveland Clinic
- 6 it could be acceptable surgical practice.
- 7 A. I would think that if an instrument came in contact
- 8 with a nonsterile surface that was not performed
- 9 deliberately and not witnessed that that would be a
- 10 potential source of contamination that still would
- 11 fall within the onus to do one's best effort to
- 12 maintain sterility.
- 13 Q. But, Doctor, isn't it the job of the scrub nurse or
- 14 the technician to make sure that she is at all times
- 15 watching the instruments to make sure they maintain
- 16 a sterile field?
- 17 A. One of the jobs is to -- one of the jobs of the
- 18 scrub nurse or technician is to try to preserve
- 19 sterility of the sterile field.
- 20 Q. And they do that by making sure that the instruments
- 21 are sterile when they are brought into the sterile
- 22 field and that they stay in the sterile field until
- 23 the surgery has been completed, correct?
- 24 A. They do the best they can, but they only have two
- 25 eyes in their head and those eyes are looking

57

- 1 different places at different times.
- 2 Q. Well, I don't understand how if they're following
- 3 proper sterile technique how an instrument could be
- 4 contaminated with a KO organism. How would that
- 5 happen; how does that happen during surgery?
- 6 A. When a package is opened it -- an instrument touches
- 7 an area that is not sterile --
- 8 Q. Wait. Let me stop you there. It's not to be opened
- 9 until it gets into a sterile field, correct?
- 10 A. Over a sterile field.
- 11 Q. Right. So by definition --
- 12 A. But the outside of the package is not sterile.
- 13 Q. I understand that, but by definition once it's in
- 14 the sterile field -- strike that.
- 15 By definition, to maintain a sterile field you
- 16 have to bring the -- strike that.
- 17 The proper sterile technique is designed to
- 18 prevent an instrument from coming into contact with
- 19 a nonsterile field, correct?
- 20 A. It is intended to minimize the risk of an instrument
- 21 coming into contact with a nonsterile area.
- 22 Q. And proper sterile technique requires that a sterile
- 23 instrument not come in contact with a nonsterile
- 24 field and then be used during a surgery?
- 25 A. Repeat that again, please.

58

- 1 Q. Sure. Proper sterile technique requires that a
- 2 sterile instrument not come into contact with a
- 3 nonsterile field or surface?
- 4 A. Proper sterile technique is intended to prevent an
- 5 instrument from coming -- a sterile instrument from
- 6 coming into contact with a nonsterile instrument or
- 7 field.
- 8 Q. And it's the scrub nurse or the technician's job to
- 9 make sure that it does not come into contact with a
- 10 nonsterile surface or field?
- 11 A. It's the scrub nurse's or technician's job to take
- 12 all reasonable steps to see that that doesn't
- 13 happen, but there is no such thing as a completely
- 14 sterile procedure and there's no such -- there's no
- 15 case -- there's virtually no case where some
- 16 contamination does not occur if the case is long
- 17 enough.
- 18 Q. If an instrument does -- strike that.
- 19 If a sterile instrument does come in contact
- 20 with a nonsterile field, the standard of care
- 21 requires that you don't use it?
- 22 A. If you know that, that is correct.
- 23 Q. And it's the scrub nurse's or technician's job to
- 24 know that, isn't it?
- 25 A. The technician or scrub nurse's job is to do the

59

- 1 best they can to keep that from happening or to be
- 2 aware of it when it happens.
- 3 Q. Do you know of any other surgical cases here at the
- 4 Cleveland Clinic where KO has infected a patient?
- 5 A. Off the top of my head, no.
- 6 MR. LINTON Why don't we take about a
- 7 five-minute break, if we can.
- 8 - - - -
- 9 (Thereupon, a recess was had.)
- 10 - - - -
- 11 (Thereupon, Ms. DiSilvio left the
- 12 deposition room.)
- 13 - - - -
- 14 Q. Does the field of psychosurgery remain
- 15 controversial?
- 16 A. Yes.
- 17 Q. Is surgery like the kind performed on Mary Lou
- 18 Zimmerman experimental?
- 19 A. I would say no.
- 20 Q. Why not?
- 21 A. Because there's a wealth of literature supporting
- 22 its benefit in a select group of patients.
- 23 Q. Is there any federal funding or outside funding to
- 24 you or the Clinic to perform these type of
- 25 surgeries, to your knowledge?

60

- 1 A. No.
- 2 MR. MALONE: Just so I understand, are
- 3 you asking whether Medicare pays for it?
- 4 MR. LINTON No.
- 5 MR. MALONE: Because that's federal
- 6 funding.
- 7 MR. LINTON I understand that.
- 8 A. You're asking --
- 9 Q. Research funding, right.
- 10 A. And the answer is no.
- 11 Q. What other institutions are you aware of that
- 12 presently or as of 1998 were performing
- 13 psychosurgery?
- 14 A. Probably that which does the most is Mass. General,
- 15 Massachusetts General Hospital in Boston.
- 16 Q. Any others?
- 17 A. There probably are others but --
- 18 Q. Any others that you know of?
- 19 A. That I don't know of offhand.
- 20 Q. What neurosurgeons do you know that perform
- 21 psychosurgery or were performing it as of 1998?
- 22 A. Reese Cosgrove.
- 23 Q. At Mass. General?
- 24 A. Uh-huh.
- 25 Q. Anybody else?

61

- 1 A. I think Hassenbusch. Sam Hassenbusch is still
 2 performing it at M.D. Anderson.
 3 Q. I'm sorry?
 4 A. M.D. Anderson.
 5 Q. Where is that?
 6 A. It's in Texas.
 7 Q. Is that affiliated with the university?
 8 A. I'm not sure what it's affiliated with.
 9 Q. Any other neurosurgeons that you know of that
 10 perform psychosurgery or were performing it as of
 11 1998?
 12 A. I can think of some people who were probably -- who
 13 might be doing it, but I'm not sure that they were.
 14 Q. You've told us about all the people that you know
 15 were doing it. Who else might have been doing it?
 16 A. I think that a guy named Young who was in Seattle at
 17 the time may have been doing it, a guy named
 18 Giidenberg who's also in Texas at a different place,
 19 he's in Galveston, may have been doing it, and a guy
 20 named Kihlestrom, K-I-H-L-E-S-T-R-O-M, I think, in
 21 Sweden was doing it.
 22 Q. Any other surgeons that you know of who were doing
 23 it or may have been doing it in 1998 to the
 24 present?
 25 A. Not off the top of my head.

62

- 1 Q. Did you receive any training from Dr. Cosgrove in
 2 the performance of psychosurgery while you were at
 3 Harvard?
 4 A. No.
 5 Q. Have you received any training from any of these
 6 other -- I assume they're neurosurgeons?
 7 A. Yes, they're all neurosurgeons.
 8 Q. in psychosurgery?
 9 A. Hassenbusch and I worked together, but I'm not sure
 10 I would use the word training, but we did work
 11 together on these procedures back in the late '80s,
 12 early '90s.
 13 Q. Here at the Clinic?
 14 A. Yes.
 15 Q. Have you discussed this case with him?
 16 A. No.
 17 Q. Have you discussed this case with any other
 18 physicians? I'm talking now since the lawsuit has
 19 been filed.
 20 A. Not that I recall.
 21 Q. Why is psychosurgery controversial?
 22 A. Probably because it was performed in an
 23 irresponsible fashion in the 1950s and early '60s.
 24 It was used as a primary modality of treatment as
 25 opposed to a last resort.

63

- 1 Q. Is there still some controversy today for using it
 2 as a last resort in psychiatric patients?
 3 A. Yes.
 4 Q. Is there controversy here at the Cleveland Clinic,
 5 that you're aware of?
 6 A. Not that I'm aware of.
 7 Q. I want to go back to when this technique was first
 8 developed here at the Cleveland Clinic. You said it
 9 was being used with some cancer patients, correct?
 10 A. That's my recollection.
 11 Q. And was it cingulotomy that was being performed on
 12 the cancer patients?
 13 A. That was my recollection.
 14 Q. What does the cingulotomy do to help relieve the
 15 pain in these terminal cancer patients?
 16 A. Probably the most -- the simplest way of expressing
 17 it is that it keeps the pain from hurting.
 18 Q. And how is that?
 19 A. It removes the emotional aspect of the painful
 20 stimulus.
 21 Q. What part of the brain is removed to eliminate the
 22 emotional response to pain?
 23 A. The cingula gyrus on both sides.
 24 Q. Is the entire gyrus removed or just a portion?
 25 A. Just a portion is interrupted, actually.

64

- 1 Q. And what portion is interrupted?
 2 A. As I recall, it would be the part of the front of
 3 the cingula gyrus.
 4 Q. Is a different portion of the gyrus removed
 5 depending upon the purpose for the cingulotomy?
 6 A. I think there's been a tendency over time to move
 7 the lesion forward irrespective of the purpose.
 8 Q. Could you explain to me the nature of the cingulum
 9 and the anterior capsule, describe it for me?
 10 A. I'm not sure I understand what you mean by the
 11 nature.
 12 Q. Can you just describe it for me anatomically?
 13 A. The cingulum contains white matter and gray matter
 14 and it is anatomically part of the limbic system,
 15 which is considered part of the emotion and smell
 16 system in the brain.
 17 The anterior capsule is a conduit of many nerve
 18 fibers both up and down and front and back in the
 19 brain and of specific interest is interrupting
 20 fibers that go between the base of the frontal lobes
 21 and the thalamus.
 22 Q. Now, when this surgery is properly performed, it
 23 should not lead to a permanent speech impairment,
 24 should it?
 25 A. An uncomplicated case, that's correct.

65

- 1 Q. And likewise, should not lead to a permanent problem
 2 with balance or motor coordination, should it?
 3 A. I think that would be very unlikely in an otherwise
 4 uncomplicated case.
 5 Q. And in fact, you did not tell the Zimmermans that
 6 there could be the possibility of a permanent
 7 impairment to speech as a result of this procedure,
 8 did you?
 9 A. I think that would fall in the category of big
 10 stroke.
 11 Q. But did you specifically --
 12 A. But specifically --
 13 Q. Did you specifically talk about permanent impairment
 14 to speech?
 15 A. Generally I describe those things as being anything
 16 you can possibly think of that could go wrong with
 17 the brain.
 18 Q. What do you mean?
 19 A. In terms of the ramifications of big stroke.
 20 Q. Let me ask you this. What do you typically tell
 21 your patients when you give informed -- give and
 22 obtain informed consent for this procedure?
 23 A. Well, I think we already went through that, largely,
 24 once.
 25 Q. Well, we talked earlier about the risks of the

66

- 1 procedure. What I want to cover now is what you
 2 typically tell the patients.
 3 MR. MALONE: I think that was the way
 4 he answered the question before, Bob. It was a
 5 long answer.
 6 Q. Well, let me clarify the question. Tell me what
 7 your custom is when obtaining informed consent from
 8 a patient for this procedure.
 9 A. My custom is to discuss the alternatives, the risks
 10 and the benefits.
 11 Q. What do you tell them?
 12 MR. MALONE: He's already answered the
 13 question. I'm going to show an objection. If
 14 you want to go through it again, go ahead.
 15 A. In terms of alternatives, there's cinguotomy,
 16 there's anterior capsulotomy, there's anterior
 17 capsulotomy and cingulotomy, there's gamma knife
 18 cingulotomy, and there's nothing, continue on the
 19 way one is.
 20 Now, generally when people come to the office
 21 they've already exhausted all other reasonable
 22 practices so that they aren't very interested in
 23 staying the way they are, although I have had some
 24 patients who after hearing all the risks they have
 25 elected not to proceed with them. And we discuss

67

- 1 then the various pros and cons, that a cingulotomy
 2 is a procedure which, you know, is of some benefit,
 3 a little over half, the patients who get anterior
 4 capsulotomy probably slightly higher benefit but
 5 also higher risk in terms of personality change.
 6 And then a combination of the two is probably the
 7 most effective but also still carries the highest
 8 risk of personality change.
 9 And by personality change, the most common ones
 10 are being flat and apathetic as a side effect, kind
 11 of the opposite of being obsessive and compulsive.
 12 That the gamma knife procedure holds the benefit of
 13 not being invasive, and that it's done as an
 14 outpatient, but that again it's no more effective
 15 than an anterior capsulotomy, the effects are much
 16 more delayed, that there's still the risk of
 17 catastrophic outcome from this type of radiation
 18 injury, plus the risks of radiation sequelae down
 19 the road, but, you know, it is an option for some
 20 people.
 21 So that in terms of recommendations as to which
 22 procedure, largely it's a matter of how severe it is
 23 which procedure is recommended, and then we go
 24 through the detailed risks of that procedure.
 25 First, again, is the risk that it's not going

68

- 1 to work and that there will be significant
 2 personality changes associated with it, that also
 3 the fact may be delayed, take weeks to months to
 4 actually kick in for its full benefit, that about --
 5 people who get the bilateral anterior cingulotomies
 6 and capsulotomies, about one in three will be mute
 7 and not particularly interactive for the first few
 8 days to weeks after surgery but that almost
 9 invariably clears, that about one in four, one in
 10 three people will have bladder incontinence for
 11 their first few weeks to few months afterwards but
 12 it almost invariably clears, two or three percent
 13 chance of seizure, and about a two percent chance of
 14 wound healing problems, such as infection,
 15 meningitis, blood clot, fluid leaks, about two
 16 percent chance of a catastrophic outcome, big
 17 stroke, blindness, coma, death, that things that
 18 lead to major disabilities, major sustained
 19 disabilities, risk of temporary problems are
 20 probably higher than that, probably five to ten
 21 percent, but again, permanent sustained things
 22 probably on the order of about two percent or so.
 23 There's also the risk of nonneurologic issues,
 24 things like heart attacks, pneumonias, blood clots
 25 in the legs and so on. Typically for people who are

69

1 of reasonable health, heart attack and pneumonia
 2 issues are a small risk, but they're not zero, and
 3 can occasionally be serious, and that sometimes even
 4 if you get a good result It's not permanent and that
 5 results may typically -- may last only for a few
 6 years, at which time we would have to revisit what
 7 options are available.
 8 Q. Are you through with your answer?
 9 A. And as I said before, that the type of catastrophic
 10 things include, under the category of big stroke,
 11 things include essentially any type of neurologic
 12 problem that you could possibly think of.
 13 Q. Can I ask the next question now?
 14 A. Sure.
 15 Q. The big stroke, coma, death, what causes that when
 16 the complication occurs; is that from the: stroke
 17 itself?
 18 A. Really it can be anything. One would be hemorrhage,
 19 but it also takes into account any other mechanism.
 20 I don't necessarily specify the mechanism, I discuss
 21 what the problem can be. So it would include things
 22 like infections and heart attacks and things that
 23 might lead to cerebral brain damage.
 24 Q. Well, what problems did Mary Lou Zimmerman develop
 25 after the surgery that were not part of the, quote,

70

1 normal outcome you would have expected?
 2 A. Well, **she** developed a wound infection, a brain
 3 abscess.
 4 Q. And what did that lead to?
 5 A. I believe it led to brain damage.
 6 Q. And what did that lead to?
 7 MR. MALONE: Well, I'm going to show an
 8 objection because we requested the records of
 9 her current status and haven't seen them yet.
 10 MR. LINTON: And I understand.
 11 Q. I'm talking about based on what you knew **of your**
 12 patient when she was discharged from the Clinic in
 13 November of '98.
 14 MR. MALONE: Same objection.
 15 A. At the time she was discharged --
 16 MR. MALONE: While he's looking, when
 17 are we going to get these records, Bob? **Do** you
 18 have that stuff?
 19 MR. LINTON: We've requested them.
 20 You've got everything we've got, and I'll
 21 provide those to you. And obviously if his
 22 opinions change **or** are supplemented, you'll let
 23 me know that?
 24 MR. MALONE: Sure.
 25 MR. LINTON: And we can **depose** him

71

1 again, if necessary.
 2 MR. MALONE: That's fine.
 3 - - - -
 4 (Thereupon, a discussion was had off
 5 the record.)
 6 - - - -
 7 A. She was beginning to walk with help and apparently
 8 was meeting the occupational therapy goals, she had
 9 variable verbalization at that time, she was
 10 partially oriented, she was somewhat weak in the
 11 left upper limb.
 12 Q. So the brain damage was causing problems with her
 13 upper left extremity, her ability to walk, her
 14 speech and her orientation?
 15 A. That's probably a reasonable assessment.
 16 Q. She did not suffer a stroke, did she?
 17 A. Well, the bleeding noted on the October 20th scan in
 18 the area of what ultimately evolved into an abscess
 19 would, by the strictest definition, be considered a
 20 stroke, a hemorrhagic stroke, although probably not
 21 in the lay sense.
 22 Q. What do you mean by that?
 23 A. Well, there are **two** types of strokes, one is an
 24 ischemic and the other is a hemorrhagic stroke, so
 25 in theory any bleeding in the brain or any blood in

72

1 the brain constitutes a stroke.
 2 Q. But that's not what a typical layperson thinks of as
 3 a stroke?
 4 MR. MALONE: That's what he just told
 5 you, medically.
 6 MR. LINTON: That's why I'm getting
 7 clarification.
 8 Q. Correct?
 9 A. Correct.
 10 Q. The common layperson's definition **of** a stroke is
 11 when a vessel bleeds in the brain?
 12 MR. MALONE: Well, I'm going to
 13 object. I'm not sure what the common
 14 layperson's understanding of a stroke is.
 15 MR. LINTON: That's what I'm trying to
 16 understand, his distinction.
 17 MR. MALONE: Flight.
 18 A. Well, I think a common layperson really doesn't
 19 understand the mechanism and just knows that
 20 somebody has a rather sudden severe **loss of**
 21 function.
 22 Q. Let me just ask it this way.
 23 A. And that's the way it's typically expressed when we
 24 discuss these things.
 25 Q. Was a diagnosis of stroke ever made by you for Mary

73

- 1 Lou Zimmerman; did you ever diagnose her as --
- 2 A. Specifically, not that I recall.
- 3 Q. Did any other physician here at the Clinic diagnose
- 4 her as having a stroke?
- 5 A. Well, the radiologist said there was post-op
- 6 hemorrhage, quote, unquote, which they use even if
- 7 there's a small amount of blood, but that in and of
- 8 itself constitutes the diagnosis of stroke.
- 9 Q. In this case what's the most likely cause of that
- 10 hemorrhage or bleeding?
- 11 A. Cerebritis from the infection that ultimately led to
- 12 an abscess.
- 13 Q. Okay. So the infection causes the bleeding which
- 14 leads to the abscess?
- 15 A. Right.
- 16 Q. What is an abscess?
- 17 A. An abscess is a collection of -- it is an infected
- 18 collection of fluid typically with a wall that is
- 19 generated as a defense by the body's immune system.
- 20 Q. A collection of pus?
- 21 A. Usually.
- 22 Q. In this case, a CT scan was taken showing the
- 23 location of the abscess?
- 24 A. Yes.
- 25 Q. And was that the -- was the abscess -- strike that.

74

- 1 Did the abscess develop in the same area in
- 2 which the probe was inserted in Mary Lou Zimmerman's
- 3 brain?
- 4 A. It occurred in one of the areas where the probe was
- 5 inserted, that is correct.
- 6 Q. And which specific area?
- 7 A. Right frontal.
- 8 Q. And would that have been during the cingulotomy or
- 9 the capsulotomy?
- 10 A. I believe this is in the area of the right
- 11 capsulotomy. I'm sorry, right cinguiotomy.
- 12 Q. And why do you say that?
- 13 A. Based on the description in the CT reports.
- 14 Q. Are you able to estimate the number of fiber tracts
- 15 in the cingulum?
- 16 A. No.
- 17 Q. Are you able to estimate the number or percentage of
- 18 fiber tracts that you cooked during the procedures?
- 19 A. The majority.
- 20 Q. Do neurosurgeons really know what part of the brain
- 21 to burn in order to produce a change in a
- 22 psychiatric condition?
- 23 A. Well, we don't burn the brain, as we discussed
- 24 before.
- 25 Q. Okay.

75

- 1 A. So we know not to do that.
- 2 Q. All right, cook the brain.
- 3 A. Repeat the question, please.
- 4 Q. Sure. Do neurosurgeons, like yourself, really know
- 5 what part of the brain to cook to treat a
- 6 psychiatric condition?
- 7 A. We know what areas can be treated that may lead to
- 8 benefit in patients with certain psychiatric
- 9 conditions.
- 10 Q. But you really don't know for sure, do you?
- 11 A. Well, yeah, I know for sure what lesion -- what
- 12 areas to do that may work.
- 13 Q. But --
- 14 A. I don't know in any given patient whether it's going
- 15 to work, but that's true of many treatments that we
- 16 apply to anything.
- 17 Q. Let me ask it this way. You don't really know why
- 18 it works, may be the better question?
- 19 A. Well, again, know versus believe is another matter.
- 20 Q. Okay. So you don't know why it works, but you have
- 21 a belief why it works; is that what you're saying?
- 22 A. There are theories why it works, and I would
- 23 probably present it that way.
- 24 Q. Okay. What is the theoretical basis for your
- 25 belief?

76

- 1 A. The theoretical basis is that these are overactive
- 2 circuits that lead to a compulsive --
- 3 obsessive-compulsive state, and so that by
- 4 deactivating them one turns off the driving
- 5 mechanisms that make someone obsessive-compulsive
- 6 and empiric evidence over decades that the procedure
- 7 works in some patients.
- 8 Q. Did you tell the Zimmermans that there was a one to
- 9 two percent complication rate for this procedure?
- 10 A. I probably told them that there was a one to two
- 11 percent risk of catastrophic outcome.
- 12 Q. If they testified that you told them there was a one
- 13 to two percent complication rate would you deny
- 14 that?
- 15 A. In terms of any complication, yeah, I'd deny that.
- 16 Q. And instead what do you believe you told them when
- 17 you discussed the percentage of complications?
- 18 A. How many times do you want me to tell you this?
- 19 MR. MALONE: He's already answered it
- 20 twice, Bob. He just said, again he told you
- 21 two percent catastrophic risk, catastrophic
- 22 complication risk.
- 23 Q. And I'm asking what you would have told them for any
- 24 complication, what percentages?
- 25 MR. MALONE: We've been through it

77

- 1 twice. Go ahead, Gene.
- 2 Q. Let me ask you this way, would you have given them a
- 3 single figure for complications or would you have
- 4 broken it down by complications?
- 5 A. Broken it down by complications. It's not my
- 6 practice to give an overall risk. **You** can add those
- 7 up in your own head.
- 8 Q. Was anybody present with you when you discussed the
- 9 risks and complications to the **Zimmermans**?
- 10 A. I don't recall.
- 11 Q. Anything in your records to reflect that?
- 12 A. No.
- 13 Q. What does the term retrograde degeneration refer to?
- 14 A. It means -- you're talking about neurology or
- 15 neurons, I assume?
- 16 Q. **Yes.**
- 17 A. It's dying back of neurons from a point where their
- 18 axon is interrupted.
- 19 Q. And are you aware of any studies that address the
- 20 long-term effects of cingulotomy and the effect of
- 21 retrograde degeneration on a patient?
- 22 A. Not off the top of my head.
- 23 Q. You listed before the neurosurgeons and institutions
- 24 that you know of doing psychosurgery today. Do you
- 25 know of any of the institutions or neurosurgeons who

78

- 1 perform a combined cingulotomy and capsulotomy?
- 2 A. Not offhand.
- 3 Q. **You** use the frameless technique here?
- 4 A. **Yes**, we've been using the frameless technique here
- 5 for some time.
- 6 Q. Can you explain the difference?
- 7 A. One uses a frame, one doesn't.
- 8 Q. And why do you use a frameless as opposed to a
- 9 frame?
- 10 A. Generally it's better tolerated by the patient
- 11 because the frame is a very uncomfortable device
- 12 that clamps onto the patient's skull that we achieve
- 13 comparable accuracy for these procedures and that it
- 14 also provides us with improved logistics in terms of
- 15 when the scan is obtained.
- 16 Q. Is it any more difficult to perform a frameless
- 17 procedure than a frame procedure?
- 18 A. I would say that they both require a moderate amount
- 19 of expertise and once you've achieved that, then
- 20 they're probably comparable. The frameless
- 21 procedure may be slightly easier.
- 22 Q. Do you know how many other psychosurgeries are
- 23 performed here at the Cleveland Clinic besides the
- 24 ones that you do?
- 25 A. **To** my knowledge, none.

79

- 1 Q. How many -- strike that.
- 2 **Is** Dr. Malone always the psychiatrist that is
- 3 used for evaluating patients for psychosurgery?
- 4 A. No.
- 5 Q. **Is he** the most frequently used?
- 6 A. At the present time, yeah. In the past there was
- 7 another psychiatrist --
- 8 Q. **Who** was that?
- 9 A. -- **who's** not here any longer. I'm trying to
- 10 remember her name. It began with an S, but I can't
- 11 tell you right now. And over the years, I mean,
- 12 there may have been others in the past, but for the
- 13 last several years Dr. Malone has been one of the
- 14 two.
- 15 Q. **Who** is the other one, or is it the one you can't
- 16 remember?
- 17 A. The one I can't remember, right.
- 18 Q. Are you the **sole** person to decide the type of
- 19 procedure to be performed?
- 20 A. No, it's me and the family.
- 21 Q. Okay. But in terms of the --
- 22 A. And the patient.
- 23 Q. Dr. Malone doesn't suggest to you using
- 24 cingulotomies versus capsulotomies or a
- 25 combination?

80

- 1 A. The correspondence may or may not refer to one or
- 2 the other procedure but --
- 3 Q. It's a surgical decision?
- 4 A. Basically my discussion with him is that he's
- 5 recommending surgery, not a specific procedure.
- 6 Q. You're the one that makes that recommendation, and
- 7 obviously the family has to agree to have that
- 8 performed?
- 9 A. I make a recommendation. In order for the procedure
- 10 to be performed, the family has to agree, but I can
- 11 tell **you** that there's a number of times when the
- 12 patient **and/or** family decide to go with something
- 13 other than what I may have recommended as the first
- 14 line procedure because of their own individual
- 15 wishes.
- 16 Q. **Do** you have any -- what is your own relationship
- 17 with Dr. Malone? First of all, do you have a
- 18 personal relationship with him outside of a
- 19 professional relationship?
- 20 A. No.
- 21 Q. Do you consult on any other matters with him besides
- 22 psychosurgery cases?
- 23 A. Almost never.
- 24 Q. Do you know if Dr. Malone tells any patients about
- 25 the **risks and benefits of surgery**?

81

- 1 A. I don't know what he tells them.
 2 Q. Do you know anything -- strike that.
 3 Did you have any discussions with Dr. Malone
 4 about this patient before the surgery?
 5 A. I may have. I don't recall.
 6 Q. ~~Is~~ it customary to discuss it with him or is it
 7 simply a matter of exchanging medical records and
 8 reports, typically?
 9 A. I often discuss the patient with him because it may
 10 be that the written report has yet to be typed
 11 before I actually see the patient, **so** I want to make
 12 sure that indeed he's in full agreement or has the
 13 full recommendation, and sometimes it's the case
 14 that he thinks something else should be done, and **so**
 15 we just stop right there and wait and **see** what
 16 happens.
 17 Q. In this case, knowing that Dr. Malone provided and
 18 sent to you a report confirming his recommendation
 19 for surgery, **is** there any -- strike that.
 20 **Do** you have any record of actually discussing
 21 the case with Dr. Malone?
 22 A. **No**, not that I have found in reviewing the chart for
 23 this.
 24 Q. Did you have any discussions with Mary Lou
 25 Zimmerman's treating psychiatrists?

82

- 1 A. I don't remember.
 2 Q. Do you have anything in your record that would
 3 document that?
 4 A. **Not** that I've come across.
 5 Q. **Do you** know anything about their professional
 6 reputation?
 7 A. **No**.
 8 Q. Do you know anything about their own experience or
 9 knowledge of psychosurgery?
 10 A. **No**, which **is** one of the reasons why we require an
 11 internal psychiatrist to review each case.
 12 Q. Do you know what therapeutic alternatives were
 13 exhausted by Mary Lou Zimmerman before she came to
 14 you for psychosurgery?
 15 A. **No**.
 16 Q. **Do you** know what specific medications she had been
 17 on and for how long and what her --
 18 A. **No**.
 19 Q. -- success, if any, was with those medications?
 20 A. At present, no, and probably back then, no.
 21 Q. **Do you** know if she had ever been through a trial
 22 where she was **off** medication and if **so** for how
 23 long?
 24 A. **No**.
 25 Q. Was there ever any -- strike that.

83

- 1 I assume that the brain abscess was never
 2 treated surgically by **you** or anyone else at the
 3 Clinic; **is** that right?
 4 A. Not that I recall.
 5 Q. Was there ever any thought to treating it
 6 surgically?
 7 A. Surgical drainage of an abscess **is** always one
 8 consideration in the management plan.
 9 Q. Do you know why **it** was not performed here?
 10 A. Because it responded to medical treatment.
 11 Q. Responded in what way, became smaller?
 12 A. Stopped growing and became smaller, correct.
 13 Q. But she still had an abscess when she was discharged
 14 from the Cleveland Clinic?
 15 A. She had the shell of an abscess. I don't believe
 16 she had -- it was **unlikely** that **she** had viable
 17 organisms at that time. She was on ongoing
 18 antibiotics.
 19 Q. And on what do you base your conclusion that she did
 20 not have an ongoing organism?
 21 A. That she had been put on prolonged antibiotics and
 22 the abscess was getting smaller. It's not to say
 23 that she didn't have any viable organisms, but
 24 again, the point was the treatment was working
 25 without subjecting her to yet another risk of a

84

- 1 procedure that would be done essentially exactly the
 2 same as her last procedure.
 3 Q. How long does it typically take between the time --
 4 strike that.
 5 Assuming that an infection occurs during the
 6 surgery itself, how long does that typically take to
 7 show up in the brain?
 8 A. It can vary. Often it's very quick, a matter of
 9 hours to days.
 10 Q. And sometimes **is** it more prolonged?
 11 A. I've seen that.
 12 Q. And what is the outside limit at which **you** see --
 13 A. A couple weeks.
 14 Q. So within hours --
 15 A. Two, three weeks.
 16 Q. **So** within hours to **two** to three weeks?
 17 A. Uh-huh.
 18 Q. ~~Is~~ there anything about Mary Lou Zimmerman's case
 19 that would suggest if it was contamination at the
 20 time of surgery that it should occur more quickly
 21 than it did show up in this case?
 22 A. Flora contaminations usually occur right away.
 23 Q. But they can be delayed as much as **two** to three
 24 weeks?
 25 A. But **one** can **develop** an infection or declare an

85

- 1 infection a few weeks later.
 2 Q. The culture here was positive for both a staph and a
 3 klebsiella; did you see that?
 4 A. And these were wound cultures, yes.
 5 Q. Is it not more likely that they both occurred at the
 6 same time or from the same source, isn't that the
 7 most likely explanation? I'm looking at the October
 8 4th, '98 report.
 9 A. It's difficult to draw conclusions about the staph.
 10 Q. I'm sorry?
 11 A. I said I think it's difficult to draw conclusions
 12 about the staph because the staph is such an
 13 ubiquitous organism that can superinfect anything
 14 once any superficial wound is infected.
 15 Q. So you'd just be speculating on that?
 16 A. I think I'd be speculating.
 17 Q. Was Mary Lou Zimmerman ever evaluated by a
 18 neurologist here at the Cleveland Clinic?
 19 A. Yes.
 20 Q. Was she evaluated before the surgery by a
 21 neurologist?
 22 A. Not that I recall.
 23 Q. Is that part of the treatment protocol here for
 24 psychosurgery candidates?
 25 A. No. And again, we don't have that treatment

86

- 1 protocol here at the Cleveland Clinic, psychosurgery
 2 candidates.
 3 Q. You don't?
 4 A. We have, again, the guidelines which I discussed
 5 earlier.
 6 Q. You keep referring to the guidelines. Again,
 7 there's nothing in writing, they're unwritten, and
 8 you're relying on an outside psychiatrist and an
 9 internal psychiatrist?
 10 A. Any outside psychiatrist who refers a patient is
 11 informed of the guidelines.
 12 Q. All right. My question, we talked about that
 13 earlier, but the guidelines require an outside
 14 psychiatrist's recommendation and an internal
 15 psychiatrist's recommendation?
 16 A. Right.
 17 Q. And then a recommendation by yourself?
 18 A. In terms of compatibility with surgery, yes.
 19 Q. Anything else required by the guidelines at the
 20 Cleveland Clinic for psychosurgery?
 21 A. Aside from a suitable medical evaluation, no, and
 22 head scan, brain scan.
 23 Q. The CT scan. What records would you have reviewed
 24 before performing the surgery on Mary Lou
 25 Zimmerman? Let me rephrase that.

87

- 1 What records would you have reviewed before you
 2 made the recommendation to proceed with surgery?
 3 A. I presume I would have reviewed correspondence from
 4 her referring psychiatrist or psychologist, as well
 5 as either, again, a verbal or written report from
 6 Dr. Malone.
 7 Q. Anything else that you would have reviewed in Mary
 8 Lou Zimmerman's case before recommending surgery?
 9 A. Beyond the history and physical that we did, no.
 10 MR. LINTON: Give me a minute, if you
 11 will.
 12
 13 (Thereupon, a discussion was had off
 14 the record.)
 15
 16 Q. Where was the brain infection in Mary Lou
 17 Zimmerman?
 18 A. My understanding, it was the right cingula gyrus.
 19 Q. What openings are actually made in her head for the
 20 surgery?
 21 A. There were four small punctures of the scalp.
 22 Q. And what size are they?
 23 A. Roughly about a quarter to three-eighths of an
 24 inch.
 25 Q. And are those made with a drill bit?

88

- 1 A. They may be or with a knife.
 2 Q. The knife or the drill bit does not actually
 3 penetrate into the brain, does it?
 4 A. No, it does not.
 5 Q. What techniques were used to enclose the incision to
 6 prevent exposure to contaminants?
 7 A. At the surgery, sterile eye drapes.
 8 Q. How about when you're actually closing the wound,
 9 how is that closed to prevent--
 10 A. Suture.
 11 Q. How long does it typically take the skin on each
 12 side of the incision to heal together?
 13 A. A point where it's got integrity where the suture
 14 can be removed, generally within seven days.
 15 Q. If you would pour fluid onto the outside portion of
 16 the sutured incision, would it be able to penetrate
 17 the skin and get into the skull?
 18 A. Only if it was in prolonged contact.
 19 Q. What do you mean by prolonged contact?
 20 A. I mean that if the wound was exposed to moisture for
 21 hours on end, that that moisture may and/or any
 22 organisms in it may work its way into the wound
 23 prior to full healing.
 24 Q. Assuming that an infection develops from the scalp
 25 and then works its way into the brain, what would be

89

1 the normal expected progression of that process,
 2 what would you expect to see and find?
 3 A. It could vary.
 4 Q. From what to what?
 5 A. It could vary from there being pus forming with --
 6 rather redness of the incision with pus forming at
 7 the incision line with only a delayed appearance of
 8 problems in the brain, or it could actually present
 9 with evidence of brain inflammation and only later
 10 show abnormalities at the surface because there's
 11 actually **less** resistance -- there may be **less**
 12 resistance into the brain than out to the surface.
 13 Q. I asked you earlier about any other operations that
 14 you've been involved in where a patient has
 15 developed an infection for klebsiella oxytoca and
 16 you said you couldn't recall any. Can you give me
 17 some idea of how many surgeries you've participated
 18 in, either as a resident and as a neurosurgeon?
 19 A. I would put it around 6,000, give or take.
 20 Q. Are you aware of the discussion of this organism,
 21 the **KO** organism, in any neurosurgical text?
 22 A. I don't have any specific recollection of it.
 23 Q. Can we agree that that's not a normal recognized
 24 complication, to have that organism in the brain
 25 following a brain surgery?

90

1 A. No, we can't agree to that.
 2 Q. Did you examine her scalp, Mary Lou Zimmerman's
 3 scalp, before the surgery, at least the area where
 4 you were going to perform the surgery?
 5 A. Well, I examined it in the operating room.
 6 Q. Was there any condition of her scalp or her hair
 7 that made her any more susceptible to developing
 8 infection?
 9 A. Not that I recall.
 10 Q. Anything about her condition that put her at
 11 increased risk to develop an infection with a **KO**
 12 organism?
 13 A. Not that I recall.
 14 Q. Any abnormal bladder or bowel habits upon
 15 admission?
 16 A. Not that I was aware of or am aware of.
 17 Q. You wouldn't tell a patient when she came in for her
 18 consultation about whether to have this surgery that
 19 one of the risks of proceeding is that she could **be**
 20 contaminated by an instrument used during the
 21 surgery?
 22 A. Specifically, no, I would not say that.
 23 Q. What was Mary Lou Zimmerman's functional level
 24 before surgery?
 25 A. My understanding was that it was fairly poor and she

91

1 was near suicide.
 2 Q. And in what way was she functioning poorly?
 3 A. I don't recall the specifics.
 4 Q. Do you know for how long she had been suicidal?
 5 A. I don't recall.
 6 Q. Do you know if she had ever attempted suicide?
 7 A. I don't recall.
 8 Q. Do you know if she had any physical disabilities?
 9 A. My understanding was that she did not have any
 10 physical disabilities, but she also, as I recall,
 11 she just sat around and really did nothing other
 12 than her compulsive behaviors.
 13 Q. Was she independent in the activities of daily
 14 living before her surgery?
 15 A. No, I actually don't know.
 16 Q. What is bradykinesia?
 17 A. Slow movement.
 18 Q. And did Mary Lou Zimmerman have bradykinesia upon
 19 discharge from the Cleveland Clinic?
 20 A. I don't see a specific note, although she may have.
 21 I don't deny that she did.
 22 Q. Do you receive the Journal of Image Guided Surgery?
 23 A. Yes.
 24 Q. Is that something that you refer your residents and
 25 medical students to if they want to do research in

92

1 neurosurgery?
 2 A. I can't recall that I ever have.
 3 Q. Did anybody touch Mary Lou's anus or vagina during
 4 her preparation for surgery, to your knowledge?
 5 A. I believe she had a Foley catheter placed.
 6 Q. Would that be placed before she was sterilized and
 7 put in a sterile field?
 8 A. I would think so.
 9 Q. You would hope so?
 10 A. I would think so.
 11 Q. Would you expect so?
 12 A. Not necessarily.
 13 Q. Would it be proper sterile technique to have her
 14 catheterized once she was actually in the sterile
 15 field?
 16 A. Well, the sterile field is her, and the **two** are
 17 different parts of the body.
 18 Q. Certainly it would be a breach in sterile technique
 19 if anybody catheterized her and then entered the
 20 sterile field without scrubbing or taking
 21 appropriate precautions?
 22 A. Without changing their gloves or so on, yes, I would
 23 agree with that.
 24 Q. I assume there have been times where the sterile
 25 field has been broken during surgery and you or your

93

- 1 assistants have become aware of it and brought it to
 2 your attention?
 3 A. When anyone is aware of a break in the sterile field
 4 it is immediately brought to the team's attention.
 5 Q. And why is that so?
 6 A. Because our aim is to minimize the risk of
 7 infection.
 8 Q. When there is a break in the sterile field, is that
 9 something that you customarily chart in the
 10 patient's record?
 11 A. Not to my knowledge, although I don't know whether
 12 there's any record of that in the nursing notes.
 13 Q. But it's not something that you typically chart?
 14 A. No.
 15 Q. And not something that you have typically found in
 16 the records that you've reviewed?
 17 A. No. The only time it would probably be made mention
 18 of is that if it was a noncorrectable breach.
 19 Q. Meaning?
 20 A. Well, an example would be someone's arm brushes
 21 against me and it's not sterile. You stop, you
 22 change your glove and/or gown and put a sleeve on
 23 and then you move on. That's correctable, in which
 24 case that wouldn't merit mention, but it's
 25 identified, we fixed the problem and go on.

94

- 1 Q. And under what circumstances -- well, strike that.
 2 Have there been any circumstances in which
 3 you've noted in a patient's chart a breach in
 4 sterile technique?
 5 A. Yes.
 6 Q. Under what circumstances?
 7 A. When a contaminated pulse generator was placed in a
 8 patient.
 9 Q. How did you know that it was contaminated?
 10 A. Because the container -- the layer of the container
 11 that was said to be sterile was not sterile.
 12 Q. How did you find that out?
 13 A. From the company.
 14 Q. So it was something that you dictated after the
 15 fact, obviously you didn't find that out during the
 16 surgery itself?
 17 A. We found that out afterwards, correct.
 18 Q. Were the instruments used in Mary Lou Zimmerman's
 19 case ever tested or evaluated to see if they
 20 remained sterile?
 21 A. Do you mean -- I'm not sure I understand the
 22 question. Can you repeat it?
 23 Q. In your other situation you talked about you
 24 confirmed with the outside manufacturer that the
 25 equipment was, in fact, not sterile. In Mary Lou

95

- 1 Zimmerman's case was there any testing done to
 2 determine whether the instruments were sterile when
 3 used during the procedure?
 4 A. Well, all instruments are tagged with some type of
 5 compound or tape that indicates whether they've been
 6 successfully sterilized that is apparent on the
 7 surface, and the assumption is that the contents
 8 then are sterile.
 9 Q. My question is was anything done after the surgery
 10 to test and confirm whether, in fact, they were
 11 sterile?
 12 A. As I understand it, there would be no way to do
 13 that.
 14 MR. LINTON: Give me just a minute, if
 15 you could.
 16 -- -- --
 17 (Thereupon, a discussion was had off
 18 the record.)
 19 - - - -
 20 Q. There was nothing that occurred during the surgery
 21 itself, to your knowledge, that suggests that there
 22 was an infection going on during the surgery itself?
 23 A. Correct.
 24 Q. And there was nothing that occurred to indicate
 25 there was a contamination that was occurring during

96

- 1 the surgery itself?
 2 A. That is correct.
 3 Q. Doctor, I want to make sure that you've had a full
 4 explanation to explain your account of what happened
 5 with Mary Lou Zimmerman. Is there anything that you
 6 can now remember that we haven't covered based on
 7 the questions that I've asked you that have now
 8 given you an independent memory of either
 9 conversations or events that occurred with Mary Lou
 10 Zimmerman or her family?
 11 A. Not at this time, no.
 12 MR. LINTON: Thank you very much.
 13 MR. MALONE: She's going to do a
 14 transcript. Do you want it sent here to your
 15 office or home; where do you want her to mail
 16 it?
 17 THE WITNESS: Here.
 18
 19 GENE H. BARNETT, M.D.
 20
 21
 22
 23
 24
 25

97

CERTIFICATE

The State of Ohio) SS:
County of Cuyahoga)

I, Laura L. Ware, a Notary Public within and for the State of Ohio, do hereby certify that the within named witness, GENE H. BARNETT, M.D., was by me first duly sworn to testify the truth, the whole truth and nothing but the truth in the deposition by me to stenotype in the presence of said witness, subsequently transcribed into type, written under my direction and that the foregoing is true and correct and that the testimony so given as aforesaid.

I do further certify that this deposition was taken at the time and place as specified in the foregoing caption, and that I am not a relative, counsel or attorney of either party or otherwise interested in the outcome of this action.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my seal of office at Cleveland, Ohio, this 25th day of August, 2000.


Laura L. Ware, Ware Reporting Service
21860 Crossbeam Lane, Rocky River, Ohio 44116
My commission expires May 17, 2003.

9 '60s 62:23 '80s 13:17; 27:19; 29:20; 62:11 '88 27:19 '89 27:19 '90s 12:9; 13:18; 62:12 '98 11:11; 70:13; 85:8 1 1 12:12 10 19:15 10-4-98 50:24; 51:2 10th 8:11; 9:1,2 113 2:0 17 97:0 18 1:16 19 34:5 1950s 62:23 1980s 15:6; 29:14 1986 24:i 1998 4:19; 7:22; 9:2; 13:7; 22:25; 24:5; 30:8; 33:14; 37:15; 38:16; 60:12,21; 61:11,23 2 2000 1:16; 13:7; 97:16 2003 97:0 20th 71:17 216 1:23; 2:2,0 21860 1:22; 97:19 21st 4:19; 37:9,15,23 22nd 8:3; 33:14; 38:16 23rd 7:22 25 21:21 25th 7:23; 97:16 26 12:13 28th 724; 8:3 2:45 9:2 3 300 2:3,0 333-0745 1:23 350 9:15 399411 1:6 4 440 1:23 44113 2:4,2 44116 1:97 4th 85:8 5 50 19:15; 21:19 533-7606 1:23 6 6,000 89:19 687-1311 2:0 687-1999 2:9 7	70 20:5 700 2:2 75 20:5 781-2811 2:0 8 8:10 1:15 8th 8:17 9 9500 1:14 9th 8:16; 38:24 A A-U-P-U-Z-Z-0 24:23 a.m 1:15; 8:25 ability 71:13 able 717; 12:12; 1724; 21:15; 32:9; 74:14,17; 88:16 abnormal 90:14 abnormalities 37:4; 89:10 abnormality 37:16 abscess 37:4; 41:2; 4720; 50:19; 53:5; 55:25; 70:3; 71:18; 73:12,14,16,17,23,25; 74:1; 83:1,7,13,15,22 absence 49:22 acceptable 53:9; 56:1,6 account 5:5; 69:19; 96:4 accuracy 78:13 achieve 78:12 achieved 78:19 acquired 39:21 across 82:4 action 97:14 activities 91:13 actual 35:9; 43:15 actually 9:22; 10:23; 15:23; 21:7; 22:15; 23:2,18; 25:8; 26:7; 34:21; 39:7; 42:4; 43:1,5; 47:5; 51:16; 52:10; 63:25; 68:4; 81:11,20; 87:13; 88:2,8; 89:8,11; 91:15; 92:14 add 77:6 address 16:22; 23:19; 77:19 addressed 23:21 addresses 20:22 addressing 21:2 adjacent 9:20 administration 6:6; 52:14 admission 34:6; 90:15 advanced 45:24; 46:15; 477 affiliated 61:7,8 affixed 97:0 aforesaid 97:97 afterwards 74; 68:11; 94:17 again 4:21; 7:5,16; 8:7; 19 10; 20:21; 21:5; 27:18; 28:23; 29:3,13; 30:13; 32:12; 39:15; 42:1; 45:12; 46:8,15; 48:14; 57:25; 66:14; 67:14,25; 68:21; 71:1; 75:19; 76:20; 83:24; 85:25; 86:4,6; 87:5	against 3:10; 93:21 age 3:1; 33:25 agree 31:7; 39:25; 50:18; 53:4; 55:3,21; 80:7,10; 89:23; 90:1; 92:23 agreement 81:12 ahead 66:14; 77:1 aim 93:6 aimed 9:18; 53:25 air 54:9,16 al. l:0 almost 68:8,12; 80:23 alone 16:14 along 37:12 already 43:5; 65:23; 66:12,21; 76:19 alter 11:19 altered 27:13 altering 9:18 alternatives 66:9,15; 82:12 although 7:6; 10:25; 44:8; 46:22; 66:23; 71:20; 91:20; 93:11 always 19:1,16; 79:2; 83:7 amount 51:12; 73:7; 78:18 anatomically 64:12,14 and/or 1:16; 80:12; 88:21; 93:22 Anderson 61:2,4 anesthesia 27:9; 34:10,13,22 answer 50:25; 55:13; 60:10; 66:5; 69:8 answered 66:4,12; 76:19 Anterior 11:25; 14:5,8,10; 18:21; 64:9,17; 66:16,16; 67:3,15; 68:5 antibiotics 8:23; 19:4; 83:18,21 anticipated 6:20 anticoagulation 32:24 anus 92:3 anybody 22:23; 60:25; 77:8; 92:3,19 anyone 83:2; 93:3 Anything 4:12,21; 6:23; 12:24; 26:20; 34:20; 35:3; 37:1; 51:20; 65:15; 69:18; 75:16; 77:11; 81:2; 82:2,5,8; 84:18; 85:13; 86:19; 87:7; 90:10; 95:9; 96:5 apathetic 67:10 apology 5:8 apparent 8:18; 95:6 apparently 71:7 appearance 89:7 APPEARANCES 2:1 apply 75:16 appointment 5:4 approached 29:7 appropriate 16:10; 31:21; 92:21 approximately 9:13 area 5:17; 12:7; 57:7,21; 71:18; 74:1,6,10; 90:3 areas 20:16; 74:4; 75:7,12 aren't 66:22 argue 10:25 arm 93:20	around 9:14; 28:5; 36:15; 54:9,19; 89:19; 91:11 article 12:9 Aside 86:21 ask 3:15,16,17; 51:14,15; 65:20; 69:13; 72:22; 75:17; 77:2 asked 46:1; 49:1; 52:15; 55:13; 89:13; 96:7 asking 49:9; 60:3,8; 76:23 aspect 63:19 aspects 6:4; 7:12 assessment 34:3; 71:15 assist 25:8,10,18; 26:7 assistants 93:1 assisting 21:25; 43:1 associate 8:13 associated 18:13; 68:2 assume 3:11; 16:2; 30:10; 43:11; 62:6; 77:15; 83:1; 92:24 Assuming 44:22; 53:19; 55:8; 84:5; 88:24 assumption 49:2; 95:7 attack 69:1 attacks 68:24; 69:22 attempted 91:6 attend 23:8 attended 23:13 attention 93:2,4 attorney 97:0 August 1:16; 4:19; 97:16 Aupuzzo 24:23 authoritative 17:11 authority 51:5; 52:20 authors 17:23,24 available 69:7 Avenue 1:14; 2:2,0 aware 32:19,21; 38:15,18; 39:22,24; 59:2; 60:11; 63:5,6; 77:19; 89:20; 90:16,16; 93:1,3 away 8:12; 84:22 axon 77:18 B back 8:18; 12:9; 22:25; 25:17; 45:14; 49:12; 55:16; 62:11; 63:7; 64:18; 77:17; 82:20 backwards 41:24 bacteremia 41:4,5; 43:23; 44:25; 49:5; 50:5 bacteria 53:25; 54:2,9,13 bacterial 53:22 balance 65:2 BARNETT 1:11; 3:1,6,8; 9:12; 96:97 base 2010; 64:20; 83:19 based 4:1,13,22; 18:8; 37:25; 38:2,12; 398; 40:20,25; 41:9; 47:18 49:2,9; 52:24; 70:11; 74:13; 96:6 basic 17:18,19; 33:24; 37:20 basically 6:11; 80:4 basis 15:20; 16:9; 27:16; 32:8,9,11; 75:24; 76:1 became 8:18; 21:11; 33:11,12
--	--	---	--

become 43:16; 53:18; 93:1
beforehand 7:11
begin 79:10
begin 44:21
beginning 71:7
behalf 1:17; 2:10,3; 5:8
behavior 11:19
behaviors 91:12
behind 29:15
belief 15:20; 16:9; 27:18; 75:21,25
believe 5:22; 8:16; 15:5; 19:25; 21:4; 22:10; 23:22; 29:7,13; 32:17; 36:21; 38:20; 40:17; 52:12; 53:11; 70:5; 74:10; 75:19; 76:16; 83:15; 92:5
believed 46:4
below 39:9
benefit 18:16; 59:22; 67:2,4,12; 68:4; 75:8
benefits 18:11; 66:10; 80:25
besides 26:18; 78:23; 80:21
best 3:20; 12:18; 53:12; 56:11,24; 59:1
better 19:15; 75:18; 78:10
Beyond 87:9
big 19:8,11,12; 65:9,19; 68:16; 69:10,15
bilateral 14:5,5,8,8,10; 16:3,6; 18:21; 27:10; 68:5
biliary 53:1
bill 51:6; 52:5,20
billed 51:11
billing 52:11
bit 87:25; 88:2
bladder 18:24; 44:8; 68:10; 90:14
bleeding 71:17,25; 73:10,13
bleeds 72:11
blindness 19:8,13; 68:17
Block 2:3,0
blood 19:3; 33:23,24; 34:18; 37:17,21,25; 38:3,5,23; 43:25; 44:24; 49:2,22,25; 50:4; 68:15,24; 71:25; 73:7
Bob 3:9; 37:11; 66:4; 70:17; 76:20
body 14:22; 39:6; 44:2; 92:17
body's 73:19
book 3:25; 17:6,8
books 17:12,25
Boston 60:15
bottom 34:7
bowel 53:1; 90:14
bradykinesia 91:16,18
brain 9:20,20,22; 10:9; 11:20; 22:20; 33:5,7,8,15; 37:3,3,4,16; 39:13,16,17,18,22; 40:1,1,3,3,10,13,13,14; 41:2,8,18,20,22; 42:4,9,13; 43:3,17; 44:1; 47:20,25; 48:10; 49:6,13; 50:18; 53:5; 55:24; 63:21; 64:16,19; 65:17; 69:23; 70:2,5; 71:12,25; 72:1,11;

74:3,20,23; 75:2,5; 83:1; 84:7; 86:22; 87:16; 88:3,25; 89:8,9,12,24,25
breach 53:14; 55:3,22; 56:3; 92:18; 93:18; 94:3
break 59:7; 93:3,8
bring 57:16
broadened 29:5
broken 77:4,5; 92:25
brought 56:21; 93:1,4
brushes 93:20
Building 2:3,0
burn 74:21,23
burned 10:17
burning 10:24
burns 10:13,16
BURNSIDE 1:0
burnt 10:23

C

call 5:23; 52:6,7
called 3:1; 48:12
can't 5:24; 6:2; 7:24; 24:20; 28:7; 46:23,24; 48:24; 79:10,15,17; 90:1; 92:2
cancer 278; 28:12; 63:9,12,15
candidate 30:23; 31:3; 33:5; 36:9
candidates 29:11; 85:24; 86:2
capacity 6:5
capsule 64:9,17
capsulotomies 16:1,3,7; 18:21; 20:23; 26:25; 68:6; 79:24
Capsulotomy 11:24,25; 14:6,9,10; 15:2,6,7,13,18,22; 66:16,17; 67:4,15; 74:9,11; 78:1
caption 97:13
cardiac 33:2
cardiogram 34:1
care 53:11; 58:20
carries 67:7
(W E 1:6; 3:10,17; 10:7; 19:16; 41:9,11; 51:15; 54:2,14; 58:15,15,16; 62:15,17; 64:25; 65:4; 73:9,22; 81:13,17,21; 82:11; 84:18,21; 87:8; 93:24; 94:19; 95:1
cases 9:12,15; 14:4,9,24; 15:5,8; 16:8; 19:5; 20:5; 25:25; 26:11,23; 59:3; 80:22
CAT 28:18; 33:15; 34:11,17; 37:5,15
catastrophe 19:8,11
catastrophic 19:5,7; 57:17; 68:16; 69:9; 76:11,21,21
category 65:9; 69:10
catheter 92:5
catheterized 92:14,19
cause 1:18; 20:1; 45:25; 46:5; 47:9,12,13; 49:5; 50:6,6,7; 54:4; 73:9; 97:8
caused 50:18; 55:4
causes 55:23,24; 69:15; 73:13

causing 71:12
cells 10:22; 11:2
cerebral 69:23
Cerebritis 73:11
certain 75:8
Certainly 13:18; 37:1; 46:2; 47:18; 92:18
certainty 48:25
certified 3:5
certify 97:97
chance 25:4; 68:13,13,16
change 19:14,15; 30:5,6; 67:5,8,9; 70:22; 74:21; 93:22
changes 6:20; 34:23; 68:2
changing 92:22
charge 52:16
charged 52:5,20
chart 3:21,22; 4:23; 7:21; 8:7 35:15,19; 36:7; 37:14; 81:22; 93:9,13; 94:3
chemistries 33:24
chest 34:1
choice 13:20
cingula 63:23; 64:3; 87:18
cingulotomies 14:5; 15:25; 16:3,6; 18:21; 20:24; 26:25; 68:5; 79:24
cingulotomy 11:22; 12:10; 14:8; 15:2,7,13,17,22; 27:10; 63:11,14; 64:5; 66:15,17,18; 67:1; 74:8,11; 77:20; 78:1
cingulum 64:8,13; 74:15
circuits 76:2
circumstances 53:9; 56:2,4; 94:1,2,6
cite 16:15; 20:25
cited 28:18
cites 15:11
Civil 3:3
Clair 2:2,0
Claire 52:8,9,16
clamps 78:12
clarification 3:18; 72:7
clarify 66:6
clear 31:16; 42:2; 46:24; 49:1; 52:23
clearance 34:10,14,22
dears 68:9,12
CLEVELAND 1:1,15; 2:4,2; 3:11,22; 5:6; 21:12; 22:6; 25:11,12,13,16,18; 27:3,21; 30:1; 31:6; 33:12; 38:15; 46:9; 48:20; 51:6,13,21; 56:5; 59:4; 63:4,8; 78:23; 83:14; 85:18; 86:1,20; 91:19; 97:0
CLINIC 1:1; 3:11,22; 5:6,25; 6:6; 13:1,12,15; 14:25; 21:12; 22:6,9,11,23; 23:10; 24:16,17; 25:11,12,13,16,18,24; 27:3,22; 29:17,22; 30:1,17; 31:6; 32:14; 33:13; 38:15; 46:9; 48:20; 51:7,13,21; 56:5; 59:4,24; 62:13; 63:4,8; 70:12; 73:3; 78:23; 83:3,14; 85:18; 86:1,20; 91:19
clinically 82:3
close 38:6
closed 88:9

closing 88:8
clot 68:15
clots 19:3; 68:24
co-pay 51:12
coincidental 44:17
collected 37:23
collection 73:17,18,20
Colorado 23:12,16
coma 19:8,13; 68:17; 69:15
combination 67:6; 79:25
combined 15:2,7,13,21; 16:13; 20:23; 21:3; 26:24; 78:1
comes 48:14
coming 25:11,12,13; 57:18,21; 58:5,6
commission 97:0
committee 27:20
COMMON 1:1; 19:13; 67:9; 72:10,13,18
communication 47:2
communicative 18:19
company 94:13
comparable 78:13,20
compared 13:7
compatibility 86:18
complete 33:23; 37:20
completed 56:23
completely 58:13
complication 15:12; 69:16; 76:9,13,15,22,24; 89:24
complications 18:5; 76:17; 77:3,4,5,9
composite 8:1
compound 95:5
compulsive 67:11; 76:2; 91:12
conceded 55:11
concern 7:8
concerned 7:19
concerning 4:12,22
conclusion 83:19
conclusions 85:9,11
concurred 35:16
condition 74:22; 75:6; 90:6,10
conditions 29:6; 75:9
conduit 64:17
conference 5:23
confirm 47:17; 95:10
confirmed 94:24
confirming 81:18
confirms 49:25
cons 67:1
consent 65:22; 66:7
consideration 83:8
considered 11:22,25; 12:2,5; 64:15; 71:19
consistent 47:20,22
consists 33:18
constant 13:11,13
constituted 34:21
constitutes 72:1; 73:8
consult 80:21
consultation 4:18,22; 90:18
contact 48:9,11; 56:7; 58:18,29,23; 58:2,6,9,19;
container 94:10,10

Index 64:13

Contaminate 54:16
contaminated 42:13;
 45:4,5,10,24; 47:21;
 48:1,5,6; 53:6,18;
 55:5,12,23; 57:4; 90:20;
 94:7,9
contaminates 88:6
contamination 41:7;
 43:14; 53:15,22; 56:10;
 58:16; 84:19; 95:25
contaminations 84:22
contents 95:7
context 91:9
continue 8:23; 66:18
contraindication 33:3
contraindications 32:22
contrast 34:11
control 18:24
controversial 59:15;
 62:21
controversy 20:14,16;
 63:1,4
conversation 8:4,9; 9:7
conversations 51:18; 96:9
cook 75:2,5
cooked 10:18; 11:1,2;
 74:18
Cooks 10:14,15,16
coordination 65:2
correct 3:23,24;
 4:15,16,25; 10:15; 11:3,21;
 15:24; 16:2,7; 18:4,7,11;
 20:24; 21:8,9; 25:5; 26:8,9;
 30:25; 31:13; 32:1,7; 34:19;
 35:10; 37:5; 38:11,16,17;
 39:15,17; 40:8,13; 41:16;
 42:4,5,10,17,18,21;
 43:3,4,7,10,12,18,19; 44:3,4;
 46:10; 49:6; 50:8; 54:24;
 55:6; 56:23; 57:9,19; 58:22;
 63:9; 64:25; 72:8,9; 74:5;
 83:12; 94:17; 95:23; 96:2;
 97:0
correctable 93:23
correspondence 80:1;
 87:3
Cosgrove 60:22; 62:1
couldn't 18:3; 21:18;
 40:18; 47:15; 53:3; 89:16
counsel 1:17; 97:0
count 33:23; 37:21
COUNTY 1:2; 97:4
couple 36:17; 84:13
course 47:5
Courses 12:23; 22:7; 23:8
COURT 1:1; 39:2
courtyard 5:18
cover 66:1
covered 8:15; 26:18; 96:6
cranial 36:1
criteria 31:19
cross-examination 1:12;
 3:3,6
CROSSBEAM 1:22; 97:19
CT 8:25; 36:22,23; 73:22;
 74:13; 86:23
culture 50:4,22; 85:2
cultured 38:19
cultures 85:4
culturing 49:22,25
current 70:9

currently 12:19
custom 4:14,23; 66:7,9
customarily 93:9
customary 81:6
cut 51:9
CUYAHOGA 1:2; 97:4

D

daily 91:13
damage 69:23; 70:5;
 71:12
date 71:7; 37:8,22
dates 6:21
David 8:13
day 4:20; 97:16
days 18:19,22; 27:15;
 36:15; 68:8; 84:9; 88:14
deactivating 76:4
deal 37:2
dealing 28:16
death 19:9,13; 68:17;
 69:15
decades 76:6
decide 51:10; 79:18;
 80:12
deciding 31:12
decision 28:2; 80:3
decisions 32:10
declare 84:25
dedicated 21:24
deemed 29:11
Defendant 1:2
defense 73:19
define 9:16
definition 11:7;
 57:11,13,15; 71:19; 72:10
degeneration 77:13,21
degenerative 33:5
delayed 67:16; 68:3;
 84:23; 89:7
deliberately 56:9
deny 45:11; 52:1,3;
 76:13,15; 91:21
department 5:9; 48:21,23
dependent 32:24
Depending 33:24; 64:5
depends 13:22; 56:2
depose 70:25
deposed 3:5,12
Deposition 1:11; 14:2;
 59:12; 97:12
describe 64:9,12; 65:15
described 19:20
description 74:13
designed 38:4; 57:17
destroying 9:18
destroys 9:22
detailed 67:24
determine 30:22; 43:9;
 95:2
develop 64:1; 84:55,25; 69:24;
 74:1; 8:25; 90:11
developed 8:7; 47:19;
 63:8; 70:2; 89:15
developing 90:7
develops 43:25; 88:24
device 78:11
devitalize 10:10
devitalizes 10:9
diagnose 73:1,3
diagnosis 72:25; 73:8

diaphragm 39:10
dictated 94:14
didn't 22:18; 33:22;
 46:3,23,25; 47:14,15; 49:11;
 83:23; 94:15
difference 10:3,6,17;
 44:12; 49:20; 50:17; 78:6
different 44:9,18; 45:19;
 48:19; 49:21; 50:10; 57:1,1;
 61:18; 64:4; 92:17
differentiate 44:16
difficult 78:16; 85:9,11
difficulty 18:24
direct 41:3,7,17,19,22;
 42:11; 43:14; 46:22; 47:1,3;
 48:11
direction 97:10
directly 41:18; 46:19
disabilities 68:18,19;
 91:8,10
discharge 5:20; 6:13,21;
 91:19
discharged 70:12,15;
 83:13
discuss 66:9,25; 69:20;
 72:24; 81:6,9
discussed 6:9,12; 8:20,22;
 18:5,10; 35:11; 62:15,17;
 74:23; 76:17; 77:8; 86:4
discussing 5:19; 7:12;
 81:20
discussion 6:14; 7:22;
 8:6,10; 45:5,19,22; 46:22;
 47:6; 71:4; 80:4; 87:13;
 89:20; 95:17
discussions 71:4; 47:4;
 81:3,24
disease 33:5; 40:17;
 46:7,8,11,19; 47:2,8; 49:8
DiSilvio 2:59
disorder 13:23
disprove 50:5
disputed 55:9
distinction 10:16,20;
 72:16
doctor 40:18; 55:13;
 56:13; 96:3
document 32:19; 34:5;
 82:3
documents 21:6; 32:16
does 10:11; 11:17;
 14:22,23; 19:23; 20:5; 34:7;
 39:19; 48:13; 50:5;
 53:21,25; 54:11; 57:5;
 58:9,16,18,19; 59:14; 60:14;
 63:14; 77:13; 84:3,6;
 88:2,3,4,11
doesn't 8:19; 30:13;
 49:16,18,18,19,23; 50:6;
 58:12; 72:18; 78:7; 79:23
doing 4:15; 13:15;
 15:1,12; 28:7;
 61:13,15,15,17,19,21,22,23;
 77:24
done 12:25; 16:14; 22:15;
 23:13; 26:4; 30:18;
 33:21,22; 36:8; 37:8;
 48:24,25; 54:7; 67:13;
 81:14; 84:1; 95:1,9
down 71:3; 64:18; 67:18;
 77:4,5
dozens 24:20
Dr 3:8; 8:13; 9:11; 23:5;

24:25; 26:4,14; 28:5; 62:1;
 79:2,13,23; 80:17,24;
 81:3,17,21; 87:6
drainage 83:7
drapes 88:7
draw 85:9,11
drill 87:25; 88:2
driving 35:1,3; 76:4
drug 27:9
due 45:10,24
duly 3:4; 97:0
during 8:2; 23:14,17;
 25:5,8,24; 26:6,23; 35:21;
 36:19; 41:3; 42:16,23; 43:1;
 45:4; 47:4,25; 57:5,24;
 74:8,18; 84:5; 90:20;
 92:3,25; 94:15;
 95:3,20,22,25
dying 77:17

E

earlier 30:17; 49:1; 65:25;
 86:5,13; 89:13
early 7:4; 12:9; 13:18;
 62:12,23
easier 78:21
edema 8:25
education 52:24
effect 72:3; 67:10; 77:20
effective 27:11; 67:7,14
effects 10:24,25; 67:15;
 77:20
effort 56:11
eggs 10:17,18
either 10:21; 14:10,13;
 16:14; 23:12; 33:11; 35:18;
 42:25; 87:5; 89:18; 96:8;
 97:0
EKG 34:18
elected 66:25
electrocardiogram 34:13
electrode 10:8; 11:3
elements 6:13
eliminate 63:21
else 5:25; 6:23; 26:20;
 28:2,24; 34:20; 60:25;
 61:15; 81:14; 83:2; 86:19;
 87:7
emotion 64:15
emotional 63:19,22
empiric 19:20; 76:6
enclose 88:5
encountered 40:21
end 5:9; 88:21
engage 14:21
enough 3:19; 50:16;
 58:17
ensure 31:1,2,14
entered 14:1; 92:19
entire 63:24
entirely 47:20
entitled 34:5
equipment 94:25
escaping 17:22
Esq 2:2,2,0
essence 51:19
Essentially 28:1; 69:11;
 84:1
establish 27:20
estimate 74:14,17
Euclid 1:14

evaluate 36:9
 evaluated 85:17,20; 94:19
 evaluating 31:20; 79:3
 evaluation 30:24;
 31:17,18,25; 33:20;
 34:15,16; 38:13; 86:21
 evaluations 33:11; 34:24
 Events 8:22; 96:9
everything 38:12; 41:9;
 47:18; **48:9**; 54:7; 70:20
 evidence 37:3; 38:2,6;
 43:20; 44:5; **50:14**; 55:9;
 76:6; 89:9
 evolved 71:18
 exact 50:4
exactly 5:24; 6:18; 76;
 8:13; 34:4; 84:1
exam 36:1,1,2,4
 examination 3:25;
 35:13,15,22,23
 examine 90:2
 examined 8:23; 90:5
 example 93:20
 exceedingly 33:1
exchanging 81:7
 exclude 49:16
 excluded 49:5
 excuse 34:2
 exhausted 273; 66:21;
 82:13
 Exhibit 12:11
 exists 202s
 expect 89:2; 92:11
 expected 70:1; 89:1
experience 2011; 21:5;
 40:20,25; 49:10,13; 52:25;
 82:8
 experimental 59:18
 expert 49:8; 54:11
 expertise 2910; 30:21,22;
 78:19
 expires 970
 explain 64:8; 78:6; 96:4
 explaining 45:2
 explanation 45:3; 85:7;
 96:4
 exposed 88:20
 exposure 88:6
 expressed 46:17; 72:23
 expressing 63:16
 extend 36:17
 external 31:5,17; 32:5,5
 extremity 71:13
 eye 88:7
 eyes 56:25,25

F

face 50:12
 fact 39:12; 44:22; 46:3;
 49:3; 53:4; 55:8,9; 65:5;
 68:3; 94:15,25; 95:10
 failed 28:24
 Fair 3:19
 fairly 90:25
 fall 56:11; **65:9**
familiar 11:15; 15:16
family 5:8,14,16; 6:2,9,24;
 7:5,18,22; 8:11,20,22; 9:8;
 35:6,7; 36:19; 45:2,8;
 46:20,21; 51:18;
 52:1,5,19,21; 79:20;

80:7,10,12; 96:10
fashion 62:23
 FAX 1:23
 federal 59:23; **60:5**
 feel 4:2
 fellow 1712; 35:18; 46:14
fellows 12:25; 17:4
 fellowship 23:14; 25:5;
 26:6,24
 felt 32:3
few 18:19,23,25,25; 23:15;
25:4,7; 26:11; 33:6;
 68:7,11,11; 69:5; 85:1
 Bber 74:14,18
fibers 64:18,20
 field 12:16;
 56:16,19,22,22;
 57:9,10,14,15,19,24;
 58:3,7,10,20; **59:14**;
 92:7,15,16,20,25; 93:3,8
 figure 77:3
 filed 3:10; 62:19
find 3:25; 35:3; 3925;
 40:2,4,6; **89:2**; 94:12,15
 findings 35:21
 fine 291; 55:11; 71:2
fingers 42:3
 first 3:4; 717; 8:10;
 18:19,24; 23:16; 25:7;
 28:7,11; 30:19; 38:23,24;
 41:22; **63:7**; 67:25; 68:7,11;
 80:13,17; 970
 fit 31:22
 five 22:2; 36:15; 68:20
 five-minute 597
fixed 93:25
flat 6710
float 54:9
 floating 54:19
 flora 53:2; 84:22
 fluid 19:3; 68:15; 73:18;
 88:15
 Foley 92:5
 followed 53:20
following 19:18;
 40:1,4,13; 57:2; 89:25
 follows 3:5
 food 10:24
 foregoing 97:10,13
 forewarn 711
form 2721
 formal 27:20
 forming 89:5,6
 forward 64:7
 found 39:5,9,13,16,23;
 40:15; 52:25; 81:22; 93:15;
 94:17
 FOUNDATION 1:1; 3:11;
 42:2
four 13:10; 15:4,9;
 18:17,23; 34:18; 68:9;
 8721
fraction 9:17
frame 8:8; 14:20;
 78:7,9,11,17
 frameless 78:3,4,8,16,20
 free 4:2
 frequency 10:3,7; 14:11
 frequently 79:5
Friday 1:15
 front 3:21; 64:2,18
 frontal 64:20; 74:7

full 68:4; 81:12,13; 88:23;
 96:3
fully 34:21
 function 9:19; 2714;
 72:21
 functional 11:14; 90:23
functioning 91:2
 funding 59:23,23; 60:6,9
 further 97:12

G

Galveston 61:19
gamma 14:14,15; 66:17;
 67:12
 GENE 1:11; 3:1,6; 37:19;
 50:20; 771; 96:97
 general 22:19; 23:14;
 54:25; **55:2**; 60:14,15,23
generally 9:10; 11:9;
54:3; 65:15; 66:20; 78:10;
 88:14
generated 73:19
 generator 94:7
 gets 38:6; 579
 getting 42:22; 72:6; 83:22
 Gildenberg 61:18
 glove 93:22
gloves 92:22
 goals 71:8
going 39:4; 41:24; 4712;
 49:12; 52:22; 54:8,12;
 55:10; 66:13; 67:25;
 70:7,17; 72:12; 75:14; 90:4;
 95:22; 96:13
 gone 9:4; 11:6,7
 good 3:8; 18:2; 69:4
 gown 93:22
gray 64:13
 green 17:21
 grew 50:4
group 28:11; 59:22
grow 44:2
 growing 83:12
 guess 8:17; 13:16; 20:20
guidance 12:10; 28:18,19;
 36:25
 Guided 91:22
guideline 31:4,16;
 32:14,18
guidelines 31:2,14; 32:12;
 33:25; 86:4,6,11,13,19
guy 61:16,17,19
gyrus 63:23,24; 64:3,4;
 87:18

H

H-I-L-E-B-R-U-N 24:24
 H61 5:17
 habits 9014
hair 90:6
 half 15:10; 67:3
hand 97:0
 Handling 12:11
handling 54:6
hands 43:2
happen 19:23; 20:1;
 46:23,25; 52:22; 57:5,5;
 58:13
 happened 45:3; 51:25;
 96:4

happening 591
happens 19:21,23; 59:2;
 81:16
hardware 24:11
 Hardy 22:10; 24:25; 26:4
 Harvard 25:5; 26:6; 62:3
 Hassenbusch 28:5;
 61:1,1; 62:9
 haven't 709; 96:6
 head 15:15; 26:22; 34:11;
 43:15; 56:25; 59:5; 61:25;
 77:7,22; 86:22; 87:19
 heal 88:12
healing 19:2; 44:1; 68:14;
 88:23
 health 69:1
 hearing 66:24
 heart 68:24; 69:1,22
 heated 10:8
 help 50:25; 63:14; 71:7
 hemorrhage 69:18;
 73:6,10
hemorrhagic 71:20,24
 hereby 970
 hereinafter 3:5
 hereunto 9715
high 33:1
higher 16:13; 67:4,5;
 68:20
 highest 67:7
 Hilebrun 24:24
Hirshman 2:0
 history 879
 holds 6712
 home 96:15
hope 92:9
hospital 33:25; 36:13;
 39:20; 54:18; 60:15
 hospitalization 6:15,16
hours 84:9,14,16; 88:21
 Hoyt 2:3,0
 hurting 63:17
 husband 5:22; 7:7
 hypothetical 55:10

I

I'll 3:18,20; 55:15; 70:20
 I've 3712; 82:4; 84:11;
 96:7
 idea 9:11; 89:17
identified 93:25
 illness 47:5
 Image 91:22
 immediately 93:4
 immune 73:19
 immunologic 38:7
impairment 64:23;
 65:7,13
 important 3:14
 improve 17:14
 improved 27:14; 78:14
improvement 19:16;
 20:4,8
 in-house 33:21
 inappropriate 32:4
inch 8724
 incision 88:5,12,16;
 696,7
 include 9:14; 26:24; 29:5;
 34:1; 35:24; 69:10,11,21
 included 23:22; 34:16,19;

35:25,25; 50:19
includes 33:23
including 13:4; 15:17;
 19:2; 20:18,19; 33:19;
 54:20
incontinence 68:10
increased 8:24; 90:11
indeed 81:12
independent 4:1,6,9,17;
 5:2; 7:3; 18:4; 31:25;
 34:24; 91:13; 96:8
independently 43:8
indicate 44:10,23; 95:24
indicates 95:5
indistinguishable 50:9
individual 80:14
infected 43:16; 59:4;
 73:17; 85:14
infection 7:14,15,15;
 8:7,10,18; 9:8; 19:3; 33:7,8;
 3724; 38:7,9,14; 40:10,17;
 43:16,25; 44:8; 45:9;
 47:4,19; 49:6; 53:24; 54:4;
 68:14; 70:2; 73:11,13;
 84:5,25; 85:1; 87:16; 88:24;
 89:15; 90:8,11; 93:7; 95:22
infections 44:18,20;
 54:25; 55:1,2; 69:22
infectious 46:7,8,11,19;
 47:2,8; 49:8
inflammation 89:9
informed 65:21,22; 66:7;
 86:11
initial 4:17,22; 8:3; 17:18
initially 28:12,21
injury 67:18
inoculated 55:24
inoculation 41:3,17,19,22;
 42:12
insert 43:2
inserted 42:8,9; 47:25;
 74:2,5
inside 48:12
instead 28:18,18; 76:16
instituting 27:25
institutions 60:11;
 77:23,25
instrument 42:22;
 45:4,10,24; 47:23,24;
 53:6,18; 54:17; 56:7;
 57:3,6,18,20,23;
 58:2,5,5,6,18,19; 90:20
instruments 42:20; 45:6;
 53:12; 54:2; 56:15,20;
 94:18; 95:2,4
integrity 88:13
intended 54:3; 57:20;
 58:4
interactive 7:9; 68:7
interest 64:19
interested 66:22; 97:14
internal 31:18; 32:6,19;
 82:11; 86:9,14
internally 43:17
interpretation 16:12;
 20:19
interrupted 63:25; 64:1;
 77:18
interrupting 64:19
invade 14:22,23
invariably 68:9,12
invasive 14:17,18,19;
 67:13

involve 15:1
involved 28:2; 89:14
irrespective 64:7
irresponsible 62:23
irreversibly 11:6
ischemic 71:24
Isn't 20:14; 38:4; 54:23;
 56:13; 58:24; 85:6
issues 5:7; 68:23; 69:2
its 43:6; 59:22; 68:4;
 88:22,25
itself 4:10,13; 42:23; 48:5;
 69:17; 73:8; 84:6; 94:16;
 95:21,22; 96:1

J

James 2:11
job 56:13; 58:8,11,23,25
jobs 56:17,17
jogging 6:25
joined 23:9
journal 12:15; 16:18,24;
 91:22
journals 16:22
Jr. 2:2
JUDGE 1:0

K

K-I-H-L-E-S-T-R-O-M
 61:20
keep 13:3; 30:14; 49:12;
 59:1; 86:6
keeps 63:17
kick 68:4
Kihlestrom 61:20
Kill 10:12; 54:11
killed 10:21; 11:3,5,7
kills 10:13
kind 59:17; 67:10
kitchen 10:19
klebsiella 38:20,21; 39:1;
 40:2; 44:8,9,18,20; 49:4;
 50:8,9,10,19; 85:3; 89:15
knife 14:14,15; 66:17;
 67:12; 88:1,2
knowing 52:22; 81:17
knowledge 17:14; 27:4;
 29:22; 30:2,4; 48:21; 49:10;
 50:16; 59:25; 78:25; 82:9;
 92:4; 93:11; 95:21
known 20:1; 27:11; 33:4,8
knows 72:19
KO 394; 52:23;
 54:15,20,22,24; 55:5,24;
 57:4; 59:4; 89:21; 90:11

L

lack 27:13
LANE 1:22; 97:19
largely 65:23; 6722
last 62:25; 63:2; 69:5;
 79:13; 84:2
Lae 6:15; 13:16; 15:6;
 27:18; 29:13,20; 62:11
later 6:16; 85:1; 899
Laura 1:12; 45:13; 55:15;
 97:6,0
Law 2:7
lawful 3:1

lawsuit 62:18
lay 42:2; 71:21
layer 94:10
layperson 72:2,18
layperson's 72:10,14
lead 10:23; 64:23; 65:1;
 68:18; 69:23; 70:4,6; 75:7;
 76:2
leads 10:24; 73:14
leaks 19:3; 68:15
learn 17:4,13
learned 29:8
least 5:24; 8:15; 31:4;
 903
lectured 12:23
led 27:12; 70:5; 73:11
left 59:11; 71:11,13
legs 68:25
lesion 64:7; 75:11
less 13:7; 14:9; 22:2;
 44:24; 49:17; 89:11,11
letter 5:s; 3216
letters 32:15
Leukotomy 12:1,2
level 46:13,14; 53:23;
 9023
likely 8:2; 32:25;
 41:11,13; 44:10,19,24;
 45:10; 49:4,17; 73:9; 85:5,7
likewise 65:1
Limb 71:11
Limbic 64:14
limit 84:12
line 80:14; 89:7
Linton 2:2,3; 3:9; 30:15;
 37:13; 45:13; 49:9,13;
 55:15; 59:6; 60:4,7;
 70:10,19,25; 72:6,15; 87:10;
 95:14; 96:12
list 17:10,15
listed 7723
literature 15:11,16;
 16:12,15;
 20:11,12,13,14,20,21,25;
 21:4; 59:21
little 67:3
living 91:14
load 54:1,3
lobes 64:20
Lobotomy 12:4,5
locate 12:12
location 73:23
logistical 5:7
logistics 78:14
long 9:4; 36:12; 55:9;
 58:16; 66:5; 82:17,23;
 84:3,6; 88:11; 91:4
long-term 7720
longer 79:9
look 4:3; 17:10; 26:20;
 37:7; 38:4,5,6; 40:23
looking 8:7; 37:22;
 50:20,22; 51:2,3; 56:25;
 70:16; 85:7
loss 72:20
lot 2016
LOU 1:3; 3:9,22;
 4:6,10,18,24; 5:2; 6:21;
 9:25; 18:6,14; 30:7; 33:13;
 34:8; 36:9,12; 38:13; 40:4;
 41:11; 53:4; 59:17; 69:24;
 73:1; 74:2; 81:24; 82:13;

84:18; 85:17; 86:24;
 87:8,16; 90:2,23; 91:18;
 94:18,25; 96:5,9
Lou's 92:3
lounge 5:18
LP 8:25

M

M.D 3:6; 61:2,4; 96:0
M.D. 1:11; 3:1; 977
mail 96:15
main 5:18
maintain 53:12; 56:12,15;
 5715
major 68:18,18
majority 54:5; 74:19
make 3:16; 31:22,23,25;
 32:9,10; 377; 56:14,15;
 58:9; 76:5; 80:9; 81:11;
 96:3
makes 49:17; 806
making 30:24; 56:20
Malone 2:11; 10:19;
 15:23; 30:13,16; 33:19;
 37:10,19; 49:7,11; 50:20;
 51:17; 55:7; 60:2,5;
 66:3,12; 70:7,14,16,24;
 71:2; 72:4,12,17; 76:19,25;
 79:2,13,23; 80:17,24;
 81:3,17,21; 876; 96:13
management 19:4; 83:8
manufacturer 24:10;
 94:24
Marilena 2:0
Mark 2:2
marked 12:11
MARY 1:3; 3:9,22;
 4:6,10,18,24; 5:2; 6:21;
 9:25; 18:6,14; 30:7; 33:13;
 34:8; 36:9,12; 38:13; 40:4;
 41:11; 53:4; 59:17; 69:24;
 72:25; 74:2; 81:24; 82:13;
 84:18; 85:17; 86:24;
 87:7,16; 90:2,23; 91:18;
 92:3; 94:18,25; 96:5,9
Mass 23:14; 373; 60:14,23
Massachusetts 60:15
materials 24:2,25
matter 64:13,13; 6722;
 75:19; 81:7; 84:8
matters 80:21
may 3:16; 6:1; 12:24;
 17:1; 18:23; 19:3; 23:2,4;
 25:20; 33:25; 34:1; 48:6;
 51:25; 53:2; 61:17,19,23;
 68:3; 69:5,5; 75:7,12,18;
 78:21; 79:12; 80:1,1,13;
 81:5,9; 88:1,21,22; 89:11;
 91:20; 970
mean 11:17; 14:19; 17:20;
 20:5,8,25; 25:12; 28:23;
 291; 33:21; 35:6; 39:19;
 49:23; 53:25; 64:10; 65:18;
 71:22; 79:11; 88:19,20;
 94:2i
Meaning 93:19
meaningful 18:16; 20:4,8;
 50:17
means 39:20; 41:17;
 7714
meant 42:11
measures 53:13

mechanism 19:19;
69:19,20; 72:19
mechanisms 76:5
medical 15:20; 17:3,3;
279; 32:9,22; 33:1; 39:8;
52:24; 81:7; 83:10; 86:21;
91:25
medically 27:7; 31:22;
72:5
Medicare 60:3
medication 82:22
medications 82:16,19
meeting 4:24; 5:13,16;
6:4,10,24; 7:13; 36:20; 71:8
meetings 5:13
members 6:2; 7:5
memory 4:2,4,6,9,17;
5:2,10,11; 7:1,3; 18:4,7;
26:21; 96:8
meningitis 68:15
mention 93:17,24
mentioned 43:23
merit 93:24
met 3:8; 5:3; 31:3,15,19;
35:6,8
metabolic 37:20
method 10:8
Michael 24:23
Miller 8:14
mind 17:1
minimally 14:18,19
minimize 53:24; 57:20;
93:6
minimizing 54:1
minute 87:10; 95:14
misunderstood 41:25
modality 62:24
moderate 78:18
moisture 88:20,21
moment 3:8; 35:12
months 18:25; 68:3,11
morning 3:8
motor 36:1; 65:2
move 37:12; 64:6; 93:23
movement 29:16; 91:17
MRI 12:10
mute 18:18; 36:16; 68:6

N

name 3:9; 17:21; 33:6;
79:10
named 61:16,17,20; 97:7
narcotic 27:14
nature 11:9; 64:8,11
near 91:1
necessarily 69:20; 92:12
necessary 3:18; 4:3; 71:1
need 5:5; 27:13; 31:22
nerve 64:17
nerves 36:1
neuralgia 11:13
neuro-oncology- 11:12
neurologic 35:23; 69:11
neurological 35:13,15,22
neurologist 85:18,21
Neurology 16:25,25;
77:14
neurons 77:15,17
neurosurgeon 3:15; 9:11;
21:11; 28:5; 31:20; 40:25;
56:5; 89:18

neurosurgeons 19:22;
24:18,20; 60:20; 61:9;
62:6,7; 74:20; 75:4; .
77:23,25
neurosurgery 6:7;
16:24,24; 17:18,20,25;
20:17; 24:11; 92:1
neurosurgical 11:10;
17:14,16; 20:13; 21:23;
89:21
next 31:11,13; 69:13
noncorrectable 93:18
none 78:25
nonneurologic 68:23
nonsterile 56:8;
57:19,21,23; 58:3,6,10,20
nonsurgical 31:7
normal 7:20; 20:7; 35:23;
36:3,6; 38:1; 53:2; 54:6;
70:1; 89:1,23
normally 40:23
nosocomial 39:19,20
Notary 1:13; 45:17; 55:19;
97:6
note 7:21,23;
8:12,17,19,21; 91:20
noted 71:17; 94:3
notes 93:12
nothing 18:9; 21:5; 32:13;
43:8; 66:18; 86:7; 91:11;
95:20,24; 97:8
notice 1:16
notion 45:23; 46:15; 47:7
November 70:13
number 13:3,11;
34:5,16,17,17,18; 74:14,17;
80:11
nurse 42:24,25; 56:13,18;
58:8
nurse's 58:11,23,25
nursing 93:12

O

O-J-E-M-A-N-N 26:16
O-X-Y-T-O-C-A 39:3
object 72:13
Objection 51:17; 55:8;
56:13; 70:8,14
observation 19:20
observe 23:15; 25:4
observed 25:7;
26:10,11,13,23
obsessive 67:11
obsessive-compulsive
76:3,5
obtain 65:22
obtained 78:15
obtaining 66:7
obviously 11:5; 70:21;
80:7; 94:15
occasionally 19:23; 69:3
occupational 71:8
occur 53:16; 58:16;
14:20,22
occurred 5:17; 6:19; 7:14;
13:20; 44:5; 74:4; 85:5;
15:20,24; 96:9
occurring 95:25
occurs 69:16; 84:5
OD 13:21; 15:1,6,14,21;
6:5,6,11; 29:6
October 8:11; 9:1; 38:24;
71:17; 85:7
off 5:18; 15:15; 26:22;
48:8; 51:6; 59:5; 61:25;
71:4; 76:4; 77:22; 82:22;
87:13; 95:17
offer 14:9
offered 28:24
offhand 18:3; 60:19; 78:2
Office 2:7; 4:23; 5:9;
66:20; 96:15; 97:0
often 81:9; 84:8
OH 1:0
OHIO 1:2,13,15; 2:4,2;
97:9,16,19
Ojemann 26:14
Okay 4:4,5; 10:6,15; 16:2;
21:2; 23:19; 41:23,25;
44:14; 45:21; 49:21,24;
73:13; 74:25; 75:20,24;
79:21
once 31:18; 57:13; 65:24;
78:19; 85:14; 92:14
Oncology 16:25
one 5:13; 6:1; 77; 10:25;
15:9; 16:1; 17:11,21;
18:15,17,17,18,23; 28:17,17;
31:4,6; 34:16; 36:16,16;
38:24; 40:12,21; 41:3;
44:15; 45:2; 48:3; 49:15;
51:3; 56:17,17; 66:19;
68:6,9,9; 69:18; 71:23;
74:4; 76:4,8,10,12; 78:7,7;
79:13,15,15,17; 80:1,6;
82:10; 83:7; 84:25; 90:19
one's 53:11; 56:11
ones 11:5; 17:1; 18:2;
35:11; 36:5; 67:9; 78:24
ongoing 83:17,20
onto 78:12; 88:15
onus 56:11
open 3:25; 32:25
opened 57:6,8
openings 87:19
operating 90:5
operations 89:13
operative 17:25
opinion 13:22; 41:13;
46:1,2,12,17; 49:6,11;
56:1,5
opinions 70:22
opportunity 23:15
opposed 20:1; 50:10;
52:25; 78:8
opposite 67:11
option 28:23; 67:19
options 69:7
order 19:11; 29:3; 41:24;
8:22; 74:21; 80:9
ordered 34:9,25; 35:9
organ 33:2; 39:18
organism 37:24; 38:3,18;
9:5,13,15,23,25;
0:10,14,15; 41:1,18;
4:2,19; 49:22,23,25;
0:1,4,18; 52:23,25; 53:19;
4:12,15,18; 57:4; 83:20;
5:13; 89:20,21,24; 90:12
organisms 38:5; 44:23;
9:4; 83:17,23; 88:22
orientation 7:14
oriented 71:10
original 37:13

others 12:14; 40:7; 42:19;
60:16,17,18; 79:12
otherwise 65:3; 97:0
outcome 5:19; 7:19;
19:6,7; 67:17; 68:16; 70:1;
76:11; 97:14
outlined 36:5
outpatient 67:14
outside 23:8; 36:8; 42:6;
43:15; 57:12; 59:23; 80:18;
84:12; 86:8,10,13; 88:15;
94:24
overactive 76:1
overall 77:6
overruled 52:17
own 21:5; 77:7; 80:14,16;
82:8
oxytocin 39:1; 40:3; 50:19;
89:15

P

p.m. 9:2
package 48:15; 57:6,12
packaging 43:6
paid 24:17
pain 27:8,10,13;
63:15,17,22
painful 63:19
panel 34:10,22; 37:20
part 12:25; 27:24; 44:2;
48:14; 63:21; 64:2,14,15;
69:25; 74:20; 75:5; 85:23
partially 71:10
participated 89:17
particularly 5:13; 7:9;
17:11; 68:7
parts 92:17
party 97:0
past 79:6,12
patient 8:23; 28:16; 29:1;
31:6,8,13,20; 35:5,6,7,14;
36:12; 44:17; 51:10; 52:16;
59:4; 66:8; 70:12; 75:14;
77:21; 78:10; 79:22; 80:12;
81:4,9,11; 86:10; 89:14;
90:17; 94:8
patient's 8:20,22; 14:21;
12:6; 46:20; 51:6; 78:12;
93:10; 94:3
patients 4:24; 15:14,21;
16:5,6,10; 19:17; 20:2;
17:12,16; 28:11,11,13,20;
19:10,21,23,25; 30:5,11;
14:5; 59:22; 63:2,9,12,15;
15:21; 66:2,24; 67:3; 75:8;
76:7; 79:3; 80:24
pay 24:12,14; 51:11,20,22
pays 60:3
penetrate 88:3,16
people 7:11; 18:18,23;
19:1,7,14; 32:16; 33:12;
1:12,14; 66:20; 67:20;
8:5,10,25
percent 19:1,6,7,15; 20:5;
22:2; 68:12,13,16,21,22;
76:9,11,13,21
percentage 14:25; 15:8;
21:23; 74:17; 76:17
percentages 76:24
perception 27:13
perfectly 15:24
perform 13:4; 14:4,13;

15:14; 29:10; 32:7,25; 33:9;
36:23; 42:3; 59:24; 60:20;
61:10; 78:1,16; 90:4
performance 62:2
performed 9:25; 13:6;
22:14; 25:23; 26:3; 273;
28:6,12; 29:16,21; 30:7;
31:9; 32:1; 33:11; 34:25;
35:9,17,18,19; 36:22; 39:23;
56:8; 59:17; 62:22; 63:11;
64:22; 78:23; 79:19;
80:8,10; 83:9
performing 13:6; 21:24;
25:18; 26:2,12; 27:15; 29:8;
33:4; 60:12,21; 61:2,10;
86:24
perhaps 40:7
period 5:12,15; 8:3; 18:22;
41:5; 43:24
perioperative 41:5; 43:24
permanent 11:5; 64:23;
65:1,6,13; 68:21; 69:4
person 6:1,5,8; 46:18;
52:6; 79:18
personal 20:11; 80:18
personality 19:14;
67:5,8,9; 68:2
personally 51:22
pertains 10:7
Peter 24:23
physical 879; 91:8,10
physically 14:23
physician 73:3
physicians 62:18
pins 14:20
place 8:9; 61:18; 97:0
placed 92:5,6; 94:7
places 571
Plaintiffs 1:1; 2:10; 3:2
plan 34:6; 83:8
planning 6:13
plans 5:20
PLEAS 1:1
please 3:17; 14:7; 15:3;
45:14; 57:25; 75:3
plural 15:25
plus 67:18
pneumonia 69:1
pneumonias 68:24
point 6:25; 8:12; 28:4;
47:3; 48:4; 50:3; 52:2;
54:6; 77:17; 83:24; 88:13
poor 90:25
poorly 91:2
population 28:16; 29:2
portion 45:16; 55:18;
63:24,25; 64:1,4; 88:15
portions 5:12
position 46:18; 52:9,10
positive 85:2
possibility 41:3; 46:2;
47:16,17; 65:6
possible 6:12; 41:1; 47:12
possibly 65:16; 69:12
post-op 7:2,2,17; 8:2; 73:5
postoperative 5:12,14;
41:4; 43:23
potential 56:10
pour 88:15
practice 4:14,24; 9:10;
11:10,11; 53:7,10; 55:6;
56:1,6; 77:6

practices 66:22
practicing 21:11
pre-op 33:21; 34:2,3
precautions 92:21
precise 19:19
preclude 53:22
preexisting 33:7,8
Prefrontal 12:2,5
preoperative 33:16;
34:6,7,12,15,17; 36:20;
37:17
preoperatively 35:4;
36:24
preparation 92:4
presence 97:9
present 61:24; 75:23;
77:8; 79:6; 82:20; 89:8
presently 23:1; 60:12
preserve 56:18
presume 48:24; 87:3
prevent 57:18; 58:4;
88:6,9
previous 32:2
previously 28:17
primary 62:24
principal 18:15; 36:25
prior 88:23
probable 45:25; 46:4;
47:9,13
probably 11:11; 15:10;
17:10; 18:17; 19:6,14;
21:13; 22:3; 24:1; 26:4;
27:18; 28:22; 29:3,13;
36:15; 47:3; 51:2; 54:10,11;
60:14,17; 61:12; 62:22;
63:16; 67:4,6; 68:20,20,22;
71:15,20; 75:23; 76:10;
78:20 82:20; 93:17
probe 42:8,9,12; 43:2,5;
47:21; 48:1,4,9,16;
55:4,12,23; 74:2,4
probes 42:16
problem 5:4; 19:17; 65:1;
69:12,21; 93:25
problems 19:2; 68:14,19;
69:24; 71:12; 89:8
Procedure 3:4; 4:15;
14:14,16,17; 15:22;
18:6,13,20; 19:18,24; 20:3;
25:8; 27:11,16; 28:3,6,21;
29:5,25; 30:6,7,12; 31:23;
32:25; 36:14; 37:1; 42:16;
47:25; 54:1; 58:14; 65:7,22;
66:1,8; 67:2,12,22,23,24;
76:6,9; 78:17,17,21; 79:19;
80:2,5,9,14; 84:1,2; 95:3
procedures 11:14; 14:13;
6:23; 20:23; 21:3,10;
23:13,20,21; 25:10; 27:10;
29:9,25; 62:11; 74:18;
78:13
proceed 372; 66:25; 87:2
proceeding 90:19
process 89:1
produce 74:21
produced 28:16
producing 48:3
profess 30:20
professional 80:19; 82:5
prognosis 5:19; 6:12
progression 89:1
project 28:25
projects 12:20

prolonged 19:4; 83:21;
84:10; 88:18,19
proper 53:19,21;
57:3,17,22; 58:1,4; 92:13
properly 42:20; 43:11;
64:22
pros 67:1
protocol 30:10; 85:23;
86:11
protocols 29:24
prove 49:18
provide 24:25; 70:21
provided 3:3; 25:1; 51:20;
81:17
provides 78:14
psychiatric 29:6,21;
31:17,18; 32:8,11; 33:20;
34:16; 36:4; 63:2; 74:22;
75:6,8
psychiatrically 20:6
psychiatrist 5:6; 30:18,21;
31:5,7; 32:5,6; 79:2,7;
82:11; 86:8,9,10; 87:4
psychiatrist's 86:14,15
psychiatrists 29:8; 32:6;
81:25
psychiatry 29:15,19
psychologic 32:11
psychologically 20:6
psychologist 30:20; 31:5;
87:4
psychosurgeries 13:4,7,9;
22:13,16; 25:19; 26:8;
78:22
psychosurgery
11:15,17,18,22,25;
12:3,6,8,17,21,24; 14:24;
15:5,17; 16:5; 17:5,7,13;
18:3; 21:24,25;
22:4,19,22,24; 23:3,9,20,22;
25:10,23; 26:18,23; 27:2;
29:16,20; 30:23; 59:14;
60:13,21; 61:10; 62:2,8,21;
77:24; 79:3; 80:22; 82:9,14;
85:24; 86:1,20
psychosurgical 21:10
Public 1:13; 97:6
publication 12:16,19
publications 12:15; 28:15
published 12:7; 21:6
pulmonary 33:2
pulse 94:7
puncture 14:21
punctures 87:21
purpose 3:2; 53:23;
64:5,7
purposes 36:22
pursuant 1:16
pus 73:20; 89:5,6
put 21:7; 32:15; 83:21;
89:19; 90:10; 92:7; 93:22

Q

qualifications 23:3
qualified 22:23; 32:8
quarter 87:23
question 3:19; 15:3; 32:2;
33:20; 41:25; 42:1; 45:12;
49:1; 51:1; 55:13,14;
66:4,6,13; 69:13; 75:3,18;
86:12; 94:22; 95:9
questions 3:15,16; 55:11;

96:7
quick 84:8
quickly 84:20
quote 69:25; 73:6

R

R-E-Z-A-I 23:7
radiation 9:17; 67:17,18
radio 10:3,7; 14:10
radiologist 73:5
Radionics 24:8,9,10
radiosurgery
9:14,16,17,25; 10:4; 11:13;
14:11,15
raised 5:7
ramifications 65:19
rare 27:16; 28:10; 40:10;
44:20
rate 15:12,12; 16:13;
20:2,15,22; 21:2; 76:9,13
Rather 16:25; 72:20; 89:6
re-operation 19:4
read 8:21; 17:9; 45:14,17;
55:15,19
Realistically 48:11
really 4:11; 6:11,14; 7:24;
13:8; 21:18; 28:6; 29:18;
41:12; 69:18; 72:18; 74:20;
75:4,10,17; 91:11
realm 30:22
reason 32:3; 36:25; 51:10
reasonable 27:9; 31:1,7;
53:13,13; 58:12; 66:21;
69:1; 71:15
reasonably 13:13
reasons 82:10
recall 5:24; 6:2,14,22;
7:13,18; 8:4; 9:3,7; 21:14;
22:22; 23:24; 24:4,6,18;
25:3; 26:1,19; 27:1; 29:18;
35:2,12,20; 37:6; 45:2,7,8;
46:21,22; 51:15,16,18,23;
62:20; 64:2; 73:2; 77:10;
81:5; 83:4; 85:22; 89:16;
90:9,13; 91:3,5,7,10; 92:2
receive 23:9; 62:1; 91:22
received 26:17; 62:5
recess 59:9
recognized 89:23
recollection 6:8; 12:18;
18:12; 45:19,21,23; 46:6,15;
47:7; 63:10,13; 89:22
recommend 51:5,8
recommendation 80:6,9;
81:13,18; 86:14,15,17; 87:2
recommendations 31:23;
67:21
recommended 32:4;
67:23; 80:13
recommending 80:5;
87:8
record 4:2; 18:9; 37:7;
45:17; 55:19; 71:5; 81:20;
82:2; 87:14; 93:10,12;
95:18
records 4:3,14; 41:10;
70:8,17; 77:11; 81:7; 86:23;
87:1; 93:16
recover 11:4
redness 89:6
reduced 97:0
reducing 48:12,13,14,16

Reese 60:22
refer 17:3,7,8,15,17; 394;
77:13; 80:1; 91:24
reference 8:15; 14:20;
24:2
referring 725; 16:16;
86:6; 87:4
refers 86:10
reflect 77:11
reflex 36:1
refresh 4:4; 26:21
regarding 7:15; 177
relating 12:20
relationship 80:16,18,19
relative 33:3; 97:13
relatively 13:11
relevant 18:2
reliable 44:13,22; 49:3
reliably 44:15
relieve 63:14
rely 42:19
relying 86:8
remain 42:6; 59:14
remained 94:20
remaining 27:15
remember 5:3,16,17;
6:3,4,5,9; 7:4,6; 21:16,17;
24:21,22; 28:7; 79:10,16,17;
82:1; 96:6
remembered 6:11
Reminger 2:12,12
remove 53:22
removed 48:10; 63:21,24;
64:4; 88:14
removes 63:19
repeat 14:7; 15:3; 42:1;
45:12; 55:14; 57:25; 75:3;
94:22
rephrase 86:25
report 37:10,22; 38:2;
50:11,23; 81:10,18; 85:8;
87:5
reported 44:13; 46:20,21
Reporter 39:2
REPORTING 1:97
reports 50:12; 74:13; 81:8
reputation 82:6
requested 45:16; 55:18;
70:8,19
require 19:3; 78:18;
82:10; 86:13
required 86:19
requires 57:22; 58:1,21
research 12:20; 28:15,25;
60:9; 91:25
residency 25:16,24
resident 17:12; 25:14,17;
35:17,18; 46:14; 89:18
residents 12:25; 91:24
resistance 89:11,12
resolves 18:22; 19:1
resort 62:25; 63:2
responded 83:10,11
response 38:8; 47:11;
63:22
responsible 42:15
result 10:21; 37:4; 41:2;
65:7; 69:4
resulted 53:5
results 37:17,25; 38:1;
69:5
resume 12:11,12

retrograde 77:13,21
review 82:11
reviewed 8:22; 41:10;
86:23; 87:1,3,7; 93:16
reviewing 81:22
revisit 69:6
Rezai 23:5
right 9:23; 17:22; 23:19;
25:17; 28:9; 29:24; 34:18;
54:23; 57:11; 60:9; 72:17;
73:15; 74:7,10,11; 75:2;
79:11,17; 81:15; 83:3;
84:22; 86:12,16; 87:18
risk 195; 33:1; 53:24;
57:20; 67:5,8,16,25;
68:19,23; 69:2; 76:11,21,22;
77:6; 83:25; 90:11; 93:6
risks 18:5,11,13,15; 65:25;
66:9,24; 67:18,24; 77:9;
80:25; 90:19
RIVER 1:97
road 7:13; 67:19
Robert 2:2
ROCKY 1:97
role 27:24; 30:24;
31:1,2,12,14; 35:4
Room 1:15; 14:2; 59:12;
90:5
Roughly 87:23
routine 33:16
Ruf 2:2; 14:1
rule 47:15,15
Rules 3:3
Russell 22:10

S

85:1 1:15
Sam 61:1
sat 91:11
saw 5:6
saying 47:1,10; 54:15,17;
75:21
sPays 36:7
scalp 14:21; 87:21; 88:24;
90:2,3,6
scan 28:18; 33:15;
34:11,17; 36:22,23; 37:5,15;
71:17; 73:22; 78:15;
86:22,22,23
scenario 41:21,22; 43:13
scheduling 5:4
screen 34:10; 37:21
scrub 42:24,25; 56:13,18;
58:8,11,23,25
scrubbing 92:20
seal 97:0
Seattle 61:16
second 41:4
sections 18:2,2
seed 41:6
seemed 10:15
seems 8:24
seen 30:17; 70:9; 84:11
seizure 68:13
select 28:10; 59:22
selected 25:25; 28:20,22;
29:23; 30:6,11
selecting 29:25
selection 28:25; 30:14
semantics 51:9
seminar 24:3,12,14,17,19

seminars 23:8
sense 3:16; 14:22; 28:25;
71:21
sensory 35:25; 36:1
sent 81:18; 96:14
separate 12:24; 44:23;
48:17,18; 49:3
September 7:21; 33:14;
37:15,23; 38:16
sequelae 67:18
serious 19:5; 69:3
SERVICE 1:45; 46:4,7,9,16;
47:2,4; 97:0
services 51:11,20
set 27:7,20; 97:15
seven 24:1; 36:15; 88:14
several 7:5; 17:25; 79:13
severe 13:23; 14:4,9;
15:1,6,8,14,21; 16:6,8,11;
67:22; 72:20
severity 13:22
she's 52:14; 96:13
shell 83:15
shorthand 39:5
show 34:7; 37:11,15; 49:3;
50:7,13,14; 55:7; 66:13;
70:7; 84:7,21; 89:10
showed 34:13
showing 73:22
shown 50:11
shows 18:9; 34:9,9
side 67:10; 88:12
sides 63:23
sign 37:24; 38:9
signature 34:6
signed 35:20
significant 68:1
simple 10:10
simplest 63:16
simply 54:16; 81:7
single 9:17; 54:12; 77:3
situation 52:15; 53:17;
94:23
size 29:1; 87:22
skin 40:16,21,23; 88:11,17
skull 14:22,23; 42:6;
78:12; 88:17
sleeve 93:22
slightly 67:4; 78:21
Slow 91:17
small 22:1; 54:4; 69:2;
73:7; 87:21
smaller 83:11,12,22
smell 64:15
Snowbird 23:12
Snowmass 23:12
software 24:11
sole 12:16; 79:18
somebody 5:23; 33:8;
72:20
someone 5:25; 6:6,7;
23:2; 30:23; 32:24; 33:1,4;
76:5
someone's 93:20
something 29:10; 39:9;
45:11; 51:12; 80:12; 81:14;
91:24; 93:9,13,15; 94:14
Sometime 6:17; 13:16
sometimes 69:3; 81:13;
84:10
somewhat 44:17; 71:10
somewhere 18:17; 29:3;

46:6
sorry 14:7; 30:15; 41:24;
46:24; 61:3; 74:11; 85:10
sort 30:10
source 44:11; 48:6; 56:10;
85:6
SPD 48:23
speciation 44:12
species 44:16
specific 4:20; 5:10,11;
17:6; 18:5,7; 20:21; 64:19;
74:6; 80:5; 82:16; 89:22;
91:20
specifically 13:5; 18:1,10;
22:18; 23:19,21; 31:4; 38:4;
45:9; 51:23; 54:21,24;
65:11,12,13; 73:2; 90:22
specifics 6:14; 7:16; 9:7;
45:6; 91:3
specified 97:0
specify 69:20
speculating 41:15; 54:23;
85:15,16
speculation 19:25
speech 19:17; 64:23;
65:7,14; 71:14
spell 26:15; 39:2
spelled 23:6
Spitek 18:1
spoke 24:18
sponsored 24:7
SS 97:0
St 2:2,0
stabilized 8:24
staff 25:13; 46:13
stage 7:8
standard 53:11; 58:20
staph 54:25; 85:2,9,12,12
Start 13:15; 28:2
started 13:13; 27:15; 28:7;
48:8
State 1:13; 49:15; 76:3;
97:97
states 8:20
statistic 20:10
statistics 13:3; 21:8
status 70:9
stay 56:22
staying 66:23
stenotypy 97:9
step 31:11,13
steps 58:12
stereotactic
22:5,8,17,19,21;
23:11,20,21; 24:10; 25:1
sterile 39:17,18; 43:9;
48:14; 53:15,19,21,23,24;
54:1; 55:3,22;
56:16,19,21,21,22;
57:3,7,9,10,12,14,15,17,22,2
58:1,2,4,5,14,19; 88:7;
92:7,13,14,16,18,20,24;
93:3,8,21; 94:4,11,11,20,25;
95:2,8,11
sterility 53:12; 56:12,19
Sterilization 54:10,10,11
sterilize 42:20
sterilized 43:11; 48:18,20;
54:8; 92:6; 95:6
sterilizing 42:16
steroids 8:24
stimulus 63:20

stipulations 1:17
stop 3:17; 57:8; 81:15; 93:21
Stopped 83:12
strep 55:1
strictest 71:19
strike 9:6; 11:8; 18:8; 33:10; 57:14,16; 58:18; 73:25; 79:1; 81:2,19; 82:25; 84:4; 94:1
stroke 19:8,11,12; 65:10,19; 68:17; 69:10,15,16; 71:16,20,20,24; 72:1,3,10,14,25; 73:4,8
strokes 71:23
students 174; 91:25
studies 36:8; 77:19
stuff 70:18
sub 44:8
subjecting 83:25
subjects 171:7
subscribe 16:22
subsequent 22:6
subsequently 97:0
success 15:12; 16:13; 20:2,15,22; 21:2; 82:19
successfully 95:6
sudden 72:20
suffer 71:16
suffering 278
suggest 8:19; 79:23; 84:19
suggested 47:8
suggests 8:19; 95:21
suicidal 91:4
suicide 91:1,6
suitable 86:21
Suite 2:3,0
summarize 34:12
summer 23:18
superficial 85:14
superinfect 85:13
supplemented 70:22
support 49:18; 50:6,7
supporting 59:21
surface 56:8; 58:3,10; 89:10,12; 95:7
surgeon 49:14
surgeons 61:22
surgeries 13:3; 20:15; 39:22; 59:25; 89:17
surgery 4:9,13; 720; 11:18,20; 13:20; 22:20; 26:12; 31:9,12,21; 32:1,3,7,23; 33:4,6,9,13; 36:10; 38:16; 40:1,3,5,11,13; 41:4; 42:3,23; 43:1; 45:4; 56:23; 57:5,24; 59:17; 64:22; 68:8; 69:25; 80:5,25; 81:4,19; 84:6,20; 85:20; 86:18,24; 87:2,8,20; 88:7; 89:25; 90:3,4,18,21,24; 91:14,22; 92:4,25; 94:16; 95:9,20,22; 96:1
surgical 9:12; 14:24; 16:23,24,25; 53:7,10; 54:13; 55:6; 56:1,6; 59:3; 80:3; 83:7
surgically 16:10; 83:2,6
surmise 7:6
surprise 40:4
surprised 39:11; 40:6

susceptible 44:1; 90:7
suspect 54:21
sustained 68:18,21
Suture 88:10,13
sutured 88:16
Sweden 61:21
Sweet 18:1
sworn 3:4; 97:0
system 64:14,16; 73:19
systems 33:2

T

tagged 95:4
taken 1:11; 50:12; 73:22; 970
takes 69:19
taking 92:20
talk 9:10; 65:13
talked 7:2,18; 56; 28:10; 43:13; 65:25; 86:12; 94:23
talking 7:10; 29:2; 32:12; 35:8; 43:14; 54:25; 55:2; 62:18; 70:11; 77:14
tape 95:5
taught 12:23
team's 93:4
technical 29:9
technically 15:24
technician 28:1; 42:23,25; 56:14,18; 58:25
technician's 58:8,11,23
technique 11:18; 14:15; 53:15,21,23,24; 55:4,22; 57:3,17,22; 58:1,4; 63:7; 78:3,4; 92:13,18; 94:4
techniques 14:11,12; 22:5,8,17,20,22; 23:11; 25:2; 29:17; 48:19; 53:19; 54:7; 88:5
tell 6:23; 724; 1724; 18:3; 20:2,4; 27:2; 35:21; 36:19; 40:25; 45:21; 46:23,24; 48:8,24; 51:5; 52:19,21; 53:3,17; 55:10; 65:5,20; 66:2,6,11; 76:8,18; 79:11; 80:11; 90:17
telling 45:9
tells 80:24; 81:1
temporary 68:19
ten 21:17; 68:20
tendency 64:6
term 11:15; 39:19; 77:13
terminal 28:12; 63:15
terms 6:20; 10:10; 15:25; 31:3; 32:10; 33:2; 35:8; 38:12,13; 65:19; 66:15; 67:5,21; 76:15; 78:14; 79:21; 86:18
test 38:4; 44:14,22; 95:10
tested 94:19
testified 30:16; 52:1; 76:12
testify 4:12,21; 970
testimony 979:7
testing 33:17; 34:8,12,15; 37:18; 38:13; 95:1
tests 33:11; 34:24; 35:9,9; 36:8; 49:2
Texas 61:6,18
text 1714; 892:1
textbook 16:20

textbooks 17:3
texts 17:16,18,19
thalamus 64:21
Thank 96:12
that's 3:10,17; 10:20; 14:17; 16:2; 18:12,16; 19:16; 21:20; 29:1; 31:19; 32:12,13,18; 34:19; 36:7; 39:9; 40:7; 41:16; 42:5; 43:1; 44:1,5; 48:18,24,25; 50:12; 53:14; 54:24; 55:4,9,11,23; 60:5; 63:10; 64:25; 71:2,15; 72:2,4,6,15,23; 75:15; 89:23; 93:23
theoretical 75:24; 76:1
theoretically 54:18
theories 75:22
theory 71:25
therapeutic 82:12
therapy 71:8
there's 721; 16:12; 17:6,16,20,20,25; 18:9; 19:25; 20:4,22; 21:5,6; 31:17; 32:19; 35:15; 37:24; 38:5,7; 43:8,24; 49:20; 52:6; 53:14; 58:14,14,15; 59:21; 64:6; 66:15,16,16,17,18; 67:16; 68:23; 73:7; 80:11; 86:7; 89:10; 93:12
Thereupon 14:1; 45:16; 55:18; 59:9,11; 71:4; 87:13; 95:17
they're 11:7,7; 15:25; 31:22; 48:18; 572; 62:6,7; 69:2; 78:20; 86:7
they've 66:21; 95:5
thing 42:8,9; 58:13
things 6:25; 49:15; 65:15; 68:17,21,24; 69:10,11,21,22; 72:24
think 6:11,16; 74; 12:9; 15:24; 21:16,20; 25:25; 26:14,16; 28:17,22; 33:15; 44:14,20; 49:7; 51:2; 52:8,14,18,21; 56:2,7; 61:1,12,16,20; 64:6; 65:3,9,16,23; 66:3; 69:12; 72:18; 85:11,16; 92:8,10
thinking 23:4
thinks 72:2; 81:14
third 11:12,12,13; 41:6,21; 43:13
thought 83:5
three 11:8; 13:10; 15:4,8; 18:18,18; 29:4; 34:17; 36:16,17; 68:6,10,12; 34:15,16,23
three-eighths 872:3
three-volume 17:21
time 4:3; 8:8; 11:11; 28:5; 29:19; 33:25; 34:22; 44:18; 51:17; 64:6; 69:6; 70:15; 71:9; 78:5; 79:6; 83:17; 34:3,20; 85:6; 93:17; 96:11; 97:0
imes 56:14; 57:1; 76:18; 30:11; 92:24
issue 9:19,21,22; 10:9; 14:1
oday 63:1; 77:24
ogether 21:7; 62:9,11;

88:12
told 46:19; 61:14; 72:4; 76:10,12,16,20,23
tolerated 78:10
took 8:9
top 15:15; 26:22; 59:5; 61:25; 772:2
touch 171:7; 92:3
touches 576
town 9:4
track 43:17
tracking 41:7,20
tracts 53:1,3; 74:14,18
train 22:18
trained 22:4,5,8,16,21
training 12:25; 21:23; 22:17; 23:9; 25:1; 26:17; 39:8; 40:20; 62:1,5,10
transcribed 97:0
transcript 96:14; 97:0
treat 16:10; 75:5
treated 75:7; 83:2
treating 13:21; 31:6; 81:25; 83:5
treatment 7:15; 9:18; 27:21,25; 28:23; 31:8; 62:24; 83:10,24; 85:23,25
treatments 75:15
trial 82:21
trigeminal 11:13
true 75:15; 97:10
truth 97:9,7,8
try 56:18
trying 35:3; 51:9; 72:15; 79:9
tube 48:12,13,14,16
tubes 48:3
tumor 9:20,20
turns 76:4
twice 76:20; 77:1
two 16:13; 19:1,6,6; 29:3; 31:19; 32:5; 34:17; 36:17; 44:16,17,23; 49:3; 56:24; 67:6; 68:12,13,15,22; 71:23; 76:9,10,13,21; 79:14; 84:15,16,23; 92:16
type 4:15; 7:20; 13:20; 16:23; 20:3; 31:24; 32:1; 34:10; 36:14; 37:21; 38:20,21; 40:6; 44:8; 50:8,9,10; 54:15; 59:24; 67:17; 69:9,11; 79:18; 95:4
typed 81:10
types 71:23
typewriting 97:0
typical 72:2
typically 9:19; 13:10; 14:4; 33:23; 36:13; 39:9,13,16; 40:12,14,15; 52:25; 65:20; 66:2; 68:25; 59:5; 72:23; 73:18; 81:8; 34:3,6; 88:11; 93:13,15

U

ubiquitous 85:13
Uh-huh 25:6; 60:24; 34:17
ultimately 11:2; 38:18; 71:18; 73:11
unacceptable 53:7; 55:6
uncomfortable 78:11

uncommon 7:10
uncomplicated 64:25; 65:4
undergo 15:21
undergoes 36:13
understand 3:14,19; 35:8; 36:5; 39:20; 42:15; 47:10,18; 50:3; 57:2,13; 60:2,7; 64:10; 70:10; 72:16,19; 94:21; 95:12
understanding 44:7; 49:16; 72:14; 87:18; 90:25; 91:9
underwent 18:14; 34:8
undesirable 10:23,25
unexpected 37:2
university 61:7
unless 36:15; 52:19
unlikely 21:20; 65:3; 83:16
unquote 73:6
unreliable 44:14; 50:15
untreatable 27:8
unusual 39:25; 40:2
unwritten 30:11; 32:13; 86:7
upon 1:12; 33:24; 64:5; 90:14; 91:18
upper 71:11,13
use 27:14; 58:21; 62:10; 73:6; 78:3,8
used 10:10; 11:18; 22:20; 42:16; 57:24; 62:24; 63:9; 79:3,5; 88:5; 90:20; 94:18; 95:3
uses 78:7
using 14:10,11; 28:18; 29:17; 30:14; 63:1; 78:4; 79:23
usual 7:8
usually 18:22,25; 36:15; 42:24; 48:18; 73:21; 84:22

V

vagina 92:3
value 50:12
variable 71:9
varied 11:11
varies 9:14
various 17:16; 32:15; 67:1
vary 84:8; 89:3,5
vast 54:4
ventriculotomy 28:19
verbal 87:5
verbalization 71:9
versus 10:16; 15:9; 75:19; 79:24
vessel 72:11
viable 54:13; 83:16,23
virtually 58:15
visit 7:4,17
visits 5:11,12; 7:2,3
volunteered 29:1

W

Wait 57:8; 81:15
walk 71:7,13
wall 73:18
want 3:25; 17:13; 31:16; 37:7; 49:1; 52:23; 63:7;

66:1,14; 76:18; 81:11; 91:25; 96:3,14,15
wanted 17:4,9; 52:4
Ware 1:12,97; 97:97
wasn't 30:18; 32:2; 41:21
watching 56:15
ways 41:1
we've 26:18; 35:11; 70:19,20; 76:25; 78:4
weak 71:10
wealth 59:21
week 18:20
weeks 18:23,25; 36:17,18; 68:3,8,11; 84:13,15,16,24; 85:1
went 9:3; 65:23
weren't 35:10
West 2:2
whatever 3:18; 51:9
WHEREOF 97:15
whether 6:6; 7:25; 28:8; 29:9; 30:22; 31:20; 38:5; 43:9; 44:12,15; 46:13; 47:5; 50:16; 53:2; 60:3; 75:14; 90:18; 93:11; 95:2,5,10
white 64:13
Who's 10:19; 61:18; 79:9
whole 17:10; 97:0
whom 5:24
Why 19:17,22,25; 36:23; 37:11; 40:9,9; 59:6,20; 62:21; 72:6; 74:12; 75:17,20,21,22; 78:8; 82:10; 83:9; 93:5
will 18:18; 19:2,15; 20:6; 68:1,6,10; 87:11
wintertime 23:17
wishes 80:15
within 1:13; 30:22; 53:12; 56:11; 84:14,16; 88:14; 976.7
without 6:25; 34:11; 52:22; 83:25; 92:20,22
WITNESS 50:22,25; 96:17; 97:7,9,15
witnessed 56:9
won't 18:15; 51:19,21
word 10:10; 28:22; 30:14; 62:10
words 46:18; 48:8
work 18:16; 34:18; 62:10; 68:1; 75:12,15; 88:22
worked 62:9
working 83:24
works 12:19,20; 75:18,20,21,22; 76:7; 88:25
workshop 23:11,16; 24:7
workup 34:2
wouldn't 17:8; 32:25; 39:11; 40:18; 52:1; 90:17; 93:24
wound 19:2; 41:6,7,19; 43:14,15; 68:14; 70:2; 85:4,14; 88:8,20,22
wounds 50:5
writing 5:8; 32:13,15,17; 86:7
written 24:25; 29:24; 51:6; 81:10; 87:5
wrong 26:16; 28:22; 65:16
wrote 8:17

X

x-ray 34:1

Y

Yeah 8:5; 13:14; 24:23; 75:11; 76:15; 79:6
year 9:12,15; 13:9; 15:9; 29:4
years 69:6; 79:11,13
Yeoman's 1720
yet 6:1; 7:24; 70:9; 81:10; 83:25
you'd 85:15
you'll 70:22
you're 15:1; 16:15; 21:2; 23:23; 25:21; 32:12,19; 35:1; 42:15,22; 43:14; 47:10; 51:2,3; 54:17,25; 55:8,10; 60:8; 63:5; 75:21; 77:14; 80:6; 86:8; 88:8
you've 3:11; 10:21; 21:7; 39:23; 40:21; 41:10; 52:15,16; 61:14; 70:20; 78:19; 89:14,17; 93:16; 94:3; 96:3
Young 52:8,16; 61:16
Young's 52:9
yourself 19:22; 75:4; 86:17

Z

zero 69:2
ZIMMERMAN 1:3; 3:10,22; 4:7,10,18,25; 5:14; 6:21; 10:1; 18:6,14; 33:13; 34:8; 36:9,12; 38:14; 59:18; 69:24; 73:1; 82:13; 85:17; 86:25; 87:17; 91:18; 96:5,10
Zimmerman's 30:7; 40:5; 41:11; 53:5; 74:2; 81:25; 84:18; 87:8; 90:2,23; 94:18; 95:1

Curriculum Vitae

GENE HENRY BARNETT, M.D.



DATE AND PLACE OF BIRTH

February 2, 1955
Philadelphia, Pennsylvania

HOME ADDRESS

7170 Settlers Ridge Road
Gates Mills, Ohio 44040
Phone: (440) 423-0848
Fax: (440) 423-0849

BUSINESS ADDRESS

Department of Neurological Surgery
The Cleveland Clinic Foundation
9500 Euclid Avenue/S80
Cleveland, Ohio 44195
Phone: (216) 444-5381
Fax: (216) 444-9170
E-mail: barnetg@ccf.org

MARITAL STATUS

Cathy Ann Sila, M.D.
Children: Alexander, Austin, Addison

EDUCATION

MEDICAL

Case Western Reserve University School of Medicine,
Cleveland, Ohio; 1976-1980
Degree: M.D.

UNDERGRADUATE

Case Western Reserve University, Cleveland, Ohio;
1973-1976; Majors- Biology and Chemistry
Degree: B.A., Summa Cum Laude

HIGH SCHOOL

Shaker Heights High School, Shaker Heights, Ohio;
1970-1973

CERTIFICATION

National Board of Medical Examiners
I.D. #40827, Issued 1981

NEUROSURGICAL CERTIFICATION

American Board of Neurological Surgeons
Primary Written Examination: March 26, 1983
Diplomate: November 8, 1990

MEDICAL LICENSE

State of Ohio #053463
State of Florida #ME 0058878

POST GRADUATE MEDICAL TRAINING

- Karolinska Gamma Knife Center -- September 16-27, 1996
- Cleveland Clinic Foundation Practice Management at the Weatherhead School of Management, 1991– 1992
- Clinical and Research Fellow, Harvard Medical School, Massachusetts General Hospital, Department of Neurosurgery; 1986 - 1987
- Resident in Neurological Surgery, The Cleveland Clinic Foundation; July 1981 - June 1986
- Honorary Registrar, University of Edinburgh, Royal Infirmary Neuro-Trauma Unit; January 1985-June 1985
- Fellow in Neurology, The Cleveland Clinic Foundation; July 1981 - June 1982
- Internship in General Surgery, The Cleveland Clinic Foundation; July 1980 - June 1981

PROFESSIONAL APPOINTMENTS

- The Rose Ella Burkhardt Chair in Neurosurgical Oncology, 1999 – Present
- Professor of Surgery, Ohio State University School of Medicine, 1999 -- Present
- Vice Chairman, Department of Neurological Surgery, The Cleveland Clinic Foundation; 1993- Present
- e Director, Brain Tumor and Neuro-Oncology Center, The Cleveland Clinic Foundation; 1995 - Present
- Staff Neurosurgeon, Departments of Neurosurgery and Anesthesia, The Cleveland Clinic Foundation; 1987 - Present
- Director, The Cleveland Clinic Health System Gamma Knife Center, 1997- Present
- Program Director, Neurosurgery Resident Program, The Cleveland Clinic Foundation; 1995 - Present
- Director, Medical Student Education – Department of Neurological Surgery; 1992- Present
- Co-Program Director, Neurosurgery Resident Program, The Cleveland Clinic Foundation; 1992 - 1995
- Head, Section of Neurosurgical Oncology and Stereotaxis, The Cleveland Clinic Foundation; 1992 - Present
- e Head, Neurosurgical Technology, The Cleveland Clinic Foundation; 1992 - Present
- e Director, Neurosurgical Intensive Care Unit (NICU), The Cleveland Clinic Foundation; 1988 – 1992

CONSULTING POSITIONS

- Consultant, DePuy/Acromed, Inc., Image-Guided Surgery, 1999-- Present
- Consultant, Picker International, Image-Guided Surgery, 1996 -- Present

MEMBERSHIP - SCIENTIFIC, HONORARY AND PROFESSIONAL SOCIETIES

- American Association of Neurological Surgeons
- American Board of Neurological Surgery
 - Extra-Board Subspecialty Item Writing Committee – 2000 -- Present
- American Society for Stereotactic and Functional Neurosurgery
Scientific Program Committee, 1999

- Brain Tumor Co-operative Group,
Chairman, Stereotactic Radiosurgery Committee; 1992-1994
- Congress of Neurological Surgeons
Education Committee
- Council of State Neurosurgical Societies
Chairman, Northwest Quadrant, 1998 - Present
Executive Committee, 1998 - Present
Nominating Committee, 1998 - Present
Representative, 1992 -- Present
- Joint Section of Stereotactic and Functional Neurosurgery AANS/CNS
Board of Directors 1991 -- 1995
- Joint Section on Tumors AANS/CNS
Executive Committee, 1999 - Present
Section Program Chairman, 2000 Congress of Neurological Surgeons
- Northeastern Ohio Neurosurgical Society
President, 1994-1996
Editor, Newsletter; 1992-1994
- Ohio State Neurosurgical Society
President, 1995-1996
Secretary, 1995-1996
Editor, Newsletter; 1991-1996,
- Phi Beta Kappa
- Phi Delta Epsilon Medical Fraternity
- Radiation Therapy Oncology Group
Neurosurgery Committee
- Society of Neurological Surgeons
- Stroke Council of the American Heart Association, Fellow
- World Society for Stereotactic and Functional Neurosurgery

HOSPITAL ELECTED POSITIONS

- Surgical Division Committee, 1997 - Present
- Board of Trustees, Cleveland Clinic Foundation; 1994- 1997
- e President of the Staff, Cleveland Clinic Foundation; 1996
- e Secretary of the Staff, Cleveland Clinic Foundation; 1994-1995

APPOINTED HOSPITAL COMMITTEES

- Chairman, Surgical Division Technology Assessment Committee; 1998
- e Cancer Committee 1995 - Present
- Surgical Education Subcommittee 1993 - Present
- Committee to Review Chairman, Division of Medicine 1998
- Search Committee for Director of Center for Clinical Research 1999
- Search Committee for Radiation Oncology 1994

EDITORIAL AND JOURNAL RESPONSIBILITIES

- Neurosurgery On Call (N://OC) --Editorial Board
Education Page Editor, Neurosurgery://OnCall (N://OC)
- Select Reviews in Neuro-Oncology – Editorial Board
- Journal of Image Guided Surgery – Editorial Board
- Neurosurgery – Reviewer
- Journal of Neurology, Neurosurgery, and Psychiatry – Reviewer
- Genome – Reviewer
- Cleveland Clinic Journal of Medicine – Reviewer

SPECIAL INTERESTS IN NEUROLOGICAL SURGERY ADULT NEUROSURGERY

Neuro-Oncology

Benign and Malignant Gliomas
Meningiomas
Metastatic Tumors
Acoustic Neuromas
Minimal Access Surgery
Gamma Knife and LINAC Radiosurgery
Adoptive Immunotherapy of Gliomas
Cellular and Molecular Biology of Gliomas
Magnetic Resonance Spectroscopy of Gliomas

Stereotactic & Functional Neurosurgery

Movement Disorders (e.g., Pallidotomy, Thalamotomy, Deep Brain Stimulation)
Frameless Stereotaxy
Brachytherapy
Cingulotomy
Computers in Neurosurgery

Trigeminal Neuralgia and Hemifacial Spasm

Glycerol Neurolysis
Compression Neurolysis
Microvascular Decompression (TN and HS)
Gamma Knife Rhizotomy

HONORS AND AWARDS

Who's Who in the World 2000
Who's Who in America 2000
who's Who in Medicine & Healthcare 2000-2001
The National Registry of Who's Who – Life Member, 2000

Who's Who in the Midwest, 26th Edition, 1998-1999
The Best Doctors in America – 1998
EDI Innovation Award, Surgical Navigation Device, 1998
Phi Beta Kappa, 1976
Case Western Reserve University, Summa Cum Laude, B.A., 1976

GRANTS

1997 RO1 Grant # CA74919, Adoptive Immunotherapy in the Treatment of Malignant Gliomas, Co-Investigator, 1997-2002
1995 NINDS, Grant # NS33932, Interleukins and Astrocytoma Growth, Co-Investigator, \$750,000, June 1995-1998
1979 Medical Student Research Grant, Epilepsy Foundation of America, \$2000

PATENTS

United States	Issued	Title
05980535	November 9, 1999	Apparatus for anatomical tracking
05904691	May 18, 1999	Tracable guide block
05776064	July 7, 1998	Frameless stereotaxy system for indicating the position and axis of a surgical probe
05732703	March 31, 1998	Stereotaxy wand and tool guide
05517990	May 21, 1996	Stereotaxy wand and tool guide
05309913	May 10, 1994	Frameless stereotaxy system
Other	Issued	Title
EP00600610B1	June 3, 1998	A position determining system and method
EP00832610A2	April 1, 1998	Tracable guide for surgical tool
EP00832609A2	April 1, 1998	Position tracking
EP00676178A1	October 11, 1995	Apparatus for orienting and guiding the application of tools
EP00600610A3	June 7, 1995	A position determining system and method
EP00600610A2	June 8, 1994	A position determining system and method

BIBLIOGRAPHY

JOURNAL PUBLICATIONS

1. Barnett GH, Hardy RW: Gardner tongs and cervical traction. Med Inst 16:291-292, 1982.
2. Barnett GH, Chou S, Bay JW. Post-traumatic intracranial meningioma: A report of a case and review of the literature. Neurosurgery 18:75-78, 1986.
3. Barnett GH, Bose B, Little **JR**, Jones SC, Friel H. Effects of nimodipine on acute focal cerebral ischemia. Stroke 17: 884-890, 1986,
4. Dinner DS, Luders H, Lesser R, Morris HH, Barnett GH, Klem G. Intraoperative spinal somatosensory evoked potential monitoring. J Neurosurg 65:807-814, 1986.
5. Barnett GH, Hardy RW, Little **JR**, Bay JW. Thoracic spinal canal stenosis: Report of 6 cases and review of the literature. J Neurosurg 66:338-344, 1987.
6. Barnett GH, Little **JR**, Ebrahim ZY, Jones SC, Friel HT. Cerebral circulation during arteriovenous malformation operation. Neurosurg 20:836-842, 1987.
7. Bell BA, Smith MA, Kean DM, McGhee CNJ, MacDonald HL, Miller JD, Barnett GH, Tocher JL, Douglas RHB, Best JJK. Brain water measured by magnetic resonance imaging: correlation with direct estimation and changes following mannitol and dexamethasone. Lancet January 10:66-69, 1987.
8. Barnett GH. Critical care management of cerebrovascular disorders: current concepts. Acute Care Therapeutics 2(1): 5-12, 1987.
9. Barnett GH, Hardy RW, Little **JR**, Sybert GW. Thoracic spinal stenosis. Contemporary Neurosurgery 9(9): 1-6, 1987.
10. Barnett GH, Hahn JF, Palmer J. Normal pressure hydrocephalus in children and young adults. Neurosurg 20:904-907, 1987.
11. Barnett GH, Hardy RW Jr, Little **JR**, Bay JW, Sybert GW. Thoracic spinal canal stenosis. J Neurosurg 66(3):338-44, Mar 1987.
12. Barnett GH, Ropper AR, Johnson K. Physiological support and monitoring of critically ill patients during magnetic resonance imaging. J Neurosurg 68(2) 246-250, 1988.
13. Barnett GH, Ropper AR, Romeo J. Intracranial pressure and outcome in adult encephalitis. J Neurosurg 68(4): 585-588, 1988.
14. Burgess RC, Skipper G, Edwards CR, Luders H, Barnett GH, Awad IA. A flexible epidural peg electrode for chronic EEG recording. J Clin Neurophysiol, Vol. 5, No. 4, p. 337, 1988.
15. Orlowski **JP**, Shiesley D, Vidt DG, Barnett GH, Little JR. Labetalol to control blood pressure after cerebrovascular surgery. Crit Care Med, 16(8): 765-768, 1988.
16. Barnett GH, Moon H. Omentum graft for intractable subdural empyema. A case report. The Cleveland Clinic Journal of Medicine, 56:3 11-315, 1989.

17. Barnett GH. Subarachnoid hemorrhage from intraspinal intradural vertebral artery aneurysm: Case report and review of the literature. *Neurosurg*, 24:753-755, 1989.
18. Rosenfeld JV, Barnett GH, Sila CA, Little **JR**, Bravo EL, Beck GJ. The effect of subarachnoid hemorrhage on blood and CSF atrial natriuretic factor. *J. Neurosurg*, 71:32-37, 1989.
19. Whiting D, Barnett GH, Little **JR**: Management of subarachnoid hemorrhage in the critical care unit. *Cleveland Clinic Journal of Medicine*, 56:775-785, Nov/Dec 1989.
20. Estes ML, Rudick R, Barnett GH, Ransohoff R: Thymus-derived T-lymphocyte phenotype in the active multiple sclerosis lesion: Immunocytochemical analysis of a stereotactic biopsy. *Annals of Neurology*, 26(2):304, 1989.
21. Barnett GH, Burgess RC, Awad IA, Skipper GJ, Edwards CR, Luders H: Technical note: Epidural "PEG" electrodes for the presurgical evaluation of intractable epilepsy. *J Neurosurg*, 27:113-115, 1990.
22. Pillay P, Barnett GH, Lanzieri CF, Cruse RP. Dandy-Walker cyst upward herniation: The role of magnetic resonance imaging and double shunts. *Pediatric Neuroscience*, March, 1990.
23. Awad IA and Barnett GH. Neurological deterioration in a patient **with** a spinal arteriovenous malformation following lumbar puncture: Case report. *J. Neurosurg*, 72:650-653, 1990.
24. Chimowitz M, Barnett GH, Palmer J. Treatment of intractable arterial hemorrhage during stereotactic brain biopsy with thrombin. Report of three patients. *J Neurosurg* 74: 301-303, 1991.
25. Estes ML, McMahon JT, Barnett GH, Ransohoff RM, Barna BP, Neoplastic and non-neoplastic human astrocytes in tissue culture: Differences in membrane topography. *J. Neuropathology and Experimental Neurology*, 49:338, 1990.
26. Hassenbusch SJ, Pillay PK, Barnett GH. Radiofrequency cingulotomy for intractable cancer pain using stereotaxis guided by magnetic resonance imaging. *Neurosurgery*, 27(2):220-223, 1990.
27. Estes ML, Rudick RA, Barnett GH, Ransohoff RM. Stereotactic biopsy of an active multiple sclerosis lesion: Immunocytochemical analysis and neuropathology correlation with magnetic resonance imaging. *Archives of Neurology*, 47(12):1299-1303, 1990.
28. Rogers LR, Barnett GH. Percutaneous aspiration of brain tumor cysts via the Ommaya reservoir system. *Neurology*, 41(2): 279-282, 1991.
29. Awad IA, Assirati JA, Burgess R, Barnett GH, Luders H. A new class of electrodes of "intermediate invasiveness": Preliminary experience with epidural PEGS and foramen ovale electrodes in the mapping of seizure foci. *Neurological Research*, 13:177-183, 1991.
30. Bama BP, Rogers LR, Thornassen MJ, Barnett GH, Estes ML. Monocyte tumoricidal activity and tumor necrosis factor production in patients with malignant brain tumors.

- Cancer Immunol Immunother, 33(5):314-8, 1991.
31. Whiting DM, Barnett GH, Estes ML, Sila CA, Rudick RA, Hassenbusch SJ, Lanzieri C. Stereotactic biopsy of non-neoplastic lesions in adults. Cleveland Clinic Journal of Medicine, 1992;59:48-55.
 32. Gomez H, Barnett GH, Estes ML, Palmer J, Magdinec M. Stereotactic and computer-assisted neurosurgery at the Cleveland Clinic. Review of 501 consecutive cases. Cleveland Clin J. Medicine 1993;60:399-410.
 33. Rosenfeld JV, Barnett GH, Palmer J. CT stereotactic thalamotomy using the Brown-Roberts-Wells system for non-Parkinsonian movement disorders: Technical note. J. of Stereotactic and Functional Neurosurgery, 56: 184-192, 1991.
 34. Barnett GH. Stereotactic Techniques in the Management of Brain Tumors. Contemporary Neurosurgery, 1992;14(5): 1-6.
 35. Ramos L, Barnett GH, Steiner CP, Kormos DW. Modifications of the COMPASS stereotactic magnetic resonance localizer: Technical note. J. Stereotactic and Functional Neurosurgery, 1993;60:205-209.
 36. Barnett GH, Kormos DW, Steiner CP, Weisenberger J. Intraoperative localization using an armless, frameless stereotactic wand. Technical Note. J. Neurosurgery, 78:5 10-514, 1993.
 37. Barnett GH, McKenzie RL, Ramos L, Palmer J. Nonvolumetric stereotaxy-assisted craniotomy. Results in 50 consecutive cases. J. Stereotactic and Functional Neurosurgery, 61:80-95, 1993.
 38. Bloomfield EL, Barnett GH. Non-atherosclerotic myocardial infarction: A rare thromboembolic complication of craniotomy. Critical Care Medicine, 22:367-370, 1994.
 39. Mastrodimos B, Barnett GH, Awad IA. Intensive Care Management of Acute Hemorrhagic Leukoencephalitis with Favorable Neurologic Outcome, Cleveland Clinic J. Medicine, 59:549-552, 1992.
 40. Barnett GH, Kormos DW, Steiner CP, Morris H. Registration of EEG Electrodes with 3-D Neuroimaging Using A Frameless, Armless Stereotactic Wand. Stereotactic and Functional Neurosurgery, 61:32-38, 1993.
 41. Barnett GH, Kormos DW, Steiner CP, Weisenberger J. Use of a frameless, armless stereotactic wand for brain tumor localization with two dimensional and three-dimensional neuroimaging. Neurosurgery, 33:674-678, 1993.
 42. Morris HH, Estes ML, Gilmore R, VanNess PC, Barnett GH, Turnbull J. Chronic intractable epilepsy as the only symptom of primary brain tumor. Epilepsia, 34(6):1038-1043, 1993.
 43. Barna BP, Barnett GH, Jacobs BS, Estes ML. Divergent responses of human astrocytoma and non-neoplastic astrocytes to tumor necrosis factor alpha (TNF) involve the 55 kDa tumor necrosis factor receptor. J. Neuroimmunol, 43(1993) 185-190.
 44. Barnett GH, Kormos DW, Steiner CP. Stereotactic Magnetic Resonance Angiography.

- Stereotact Funct Neurosurg 1992;58:118-120.
45. Pillay PK, Barnett G, Awad I. MRI-guided stereotactic placement of depth electrodes in temporal lobe epilepsy. *Brit J Neurosurg* (1992) 6:47-54.
 46. Korn S, Schubert A, Barnett G. Endotracheal Tube Obstruction During Stereotactic Craniotomy. Case Report. *J. Neurosurgical Anesthesiology*, 5(4):272-275, 1993.
 47. Iwasaki K, Rogers LR, Barnett GH, Estes ML, Barna BP. Effect of Recombinant Tumor Necrosis Factor-Alpha on Three-Dimensional Growth, Morphology, and Invasiveness of Human Glioblastoma Cells in vitro. *J. Neurosurgery*, 78: 952-958, 1993.
 48. Miller DW, Barnett GH, Kormos DW, Steiner CP. Stereotactically Guided Thrombolysis of Deep Cerebral Hemorrhage: Preliminary Results. *Cleveland Clinic Journal of Medicine*, 60: 321-324, 1993.
 49. Murphy MA, Barnett GH, Kormos DW, Weisenberger J. Astrocytoma resection using an interactive frameless stereotactic wand. An early experience. *J. Clinical Neuroscience*, 1:33-7, 1994.
 50. Barna BP, Pettay J, Barnett GH, Zhou P, Iwasaki K, Estes ML. Regulation of Monocyte Chemoattractant Protein-1 Expression in Adult Human Non-neoplastic Astrocytes is Sensitive to Tumor Necrosis Factor (TNF) or Antibody to the 55-kDa TNF Receptor. *J Immunology* 50 (1994) 101-107.
 51. Meeker DP, Barnett GH. Right Pleural Effusion Due to a Migrating Ventriculoperitoneal Shunt. *Cleveland Clinic Journal of Medicine*, 61: 144-146, 1995.
 52. Barna BP, Estes ML, Pettay J, Iwasaki K, Zhou P, Barnett GH. Human Astrocyte Growth Regulation. Interleukin-4 Sensitivity and Receptor Expression. *J. Neuroimmunology*, 60(1995) 75-81,
 53. Iwasaki K, Toms SA, Barnett GH, Estes ML, Gupta **MK**, Barna BP. Inhibitory effects of tamoxifen and tumor necrosis factor alpha on human glioblastoma cells. *Cancer Immunol Immunother* 40(4): 228-34, Apr. 1995.
 54. Iwasaki K, Barnett GH, Estes ML, Toms S, Gupta MK, Barna BP. Evidence for Involvement of Apoptosis in the Inhibitory Effects of Tamoxifen and Tumor Necrosis Factor Alpha on Human Glioblastoma Cells. *Cancer Immunology and Immunotherapy* 40:228-234, 1995.
 55. Barnett GH, Steiner CP, Kormos DW, Weisenberger J. Intracranial Meningioma Resection Using Interactive Frameless Stereotaxy-Assistance. *J. Image-Guided Surgery*, 1:46-52, 1995.
 56. Barnett GH, Steiner CP, Weisenberger J. Adaptation of Personal Projection Television to a Helmet-Mounted Display for Intraoperative Viewing of Neuroimaging. Technical Note. *J. Laage-Chided Surgery* 1:109-112 (1995).
 57. Kondo S, Barnett GH, Morimura T, Talteuchi J. MDM2 Protein Confers the Resistance of a Human Glioblastoma Cell Line to Cisplatin-induced Apoptosis. *Oncogene*, (1995) 10,2001-2006.

58. Yuan S, Miller DW, Barnett GH, Hahn JF, Williams BRG. Identification and Characterization of Human Beta-2-Chimaerin: Association with Malignant Transformation in Astrocytoma. *Cancer Research* 55,3456-3461, 1995.
59. Benbadis SR, So NK, Antar MA, Barnett GH, Morris HH. The Value of PET Scan (and MRI and WADA Test) in Patients with Bitemporal Epileptiform Abnormalities. *The Archives of Neurology*, 52:1062-1068, 1995.
60. Yin D, Kondo S, Barnett GH, Morimura T, Takeuchi J. Tumor Necrosis Factor- α Induces p53-dependent Apoptosis in Rat Glioma Cells. *Neurosurgery* 37:758-763, 1995.
61. Yuan S, Miller DW, Barnett GH, Hahn JF, Williams BR. Identification and characterization of human beta 2-chimaerin: association with malignant transformation in astrocytoma. *Cancer Res*, 55(15):3456-61, Aug 1, 1995.
62. Icondo S, Barna BP, Morimura T, Talceuchi J, Yuan J, Akbasak A, Barnett GH. Interleukin-1 beta-converting enzyme mediates cisplatin-induced apoptosis in malignant glioma cells. *Cancer Res* 55(24):6166-71, Dec 15, 1995.
63. Kalfas IH, Kormos DW, Murphy MA, McKenzie RL, Barnett GH, Bell GR, Steiner CP, Trimble MB, Weisenberger **JP**. Application of frameless stereotaxy to pedicle screw fixation of the spine. *J Neurosurg* 83(4):641-7, Oct 1995.
64. Kondo S, Kondo Y, Yin D, Barnett GH, Kaalcaji R, Peterson JW, Morimura T., Kubo H. Talceuchi J, and Barna BP. Involvement of interleukin-113-converting enzyme in apoptosis of bFGF-deprived murine aortic endothelial cells. *Federation of American Societies for Experimental Biology*, Vol. 10 (10): 1192-1197, August 1996.
65. Kondo S, Kondo Y, Hara H, Kaalcaji R, Peterson JW, Morimura T, Takeuchi J, Barnett GH. MDM2 gene mediates the expression of MDR1 gene and P-glycoprotein in a human glioblastoma cell line. *Br J Cancer* 1996 Oct;74(8): 1263-1268.
66. Kondo S, Barna BP, Kondo **Y**, Tanalca Y, Casey G, , Liu J, Morimura T, Kaalcaji R, Peterson **JW**, Werbel B, Barnett GH. WAF1/CIP1 increases the susceptibility of p53 non-functional malignant glioma cells to cisplatin-induced apoptosis. *Oncogene* (1996) 13, 1279-1285.
67. Barnett GH, Steiner CP, and Weisenberger J. Target and trajectory guidance for interactive surgical navigation systems. *Stereotactic and Functional Neurosurgery*, 66, 91-95, 1996.
68. Kondo S, Morimura T, Barnett GH, Kondo Y, Peterson **JW**, Kaalcaji R, Takeuchi J, Toms SA, Liu J, Werbel B and Barna BP. The transforming activities of MDM2 in cultured neonatal rat astrocytes. *Oncogene* 13:1773-1779, 1996.
69. Lanzino G, Kassell NF, Germanson TP, Kongable GL, Truskowski LL, Torner JC, Jane JA, Spetzler RF, Zabramski J, Culicchia F, Carter LP, Feinberg W, Urbina C, Lopez L, Brown D, Tallman D, Selman WR, Harrington F, Warf B, Barnett GH, Little J, Palmer J, Campbell RL, Shapiro S. Age and outcome after aneurysmal subarachnoid hemorrhage: Why do older patients fare worse? *J Neurosurg* 1996 Sep; 85(3):410-418.
70. Kondo S, Kondo Y, Hara H, Kaalcaji R, Peterson **JW**, Morimura T, Talceuchi J, Barnett

- GH. MDM2 gene mediates the expression of MDR1 gene and P-glycoprotein in a human glioblastoma cell line. *Br J Cancer* 74(8): 1263-8, Oct 1996.
71. Barnett GH. Evolution and organization of a regional Gamma Knife Center. *Stereotact Funct Neurosurg* 66 Suppl 1:365-9, 1996.
72. Brainard JA, Prayson RA, Barnett GH. Frozen section evaluation of stereotactic brain biopsies: diagnostic yield at the stereotactic target position in 188 cases. *Archives of Pathology and Laboratory Medicine*, 121(5): 481-4, May 1997.
73. Liu J, Flanagan WM, Drazba JA, Estes ML, Barnett GH, Haqqi T, Kondo S, Barna BP. The CDK inhibitor, p27^{Kip1}, is required for IL-4 regulation of astrocyte proliferation. *Journal of Immunology*, 1997, 159:812-819.
74. Prayson RA, McMahon JT, Barnett GH. Solitary fibrous tumor of the meninges. Case report and review of the literature. *J Neurosurg* 86(6): 1049-52, June 1997.
75. Nalcatsu S, Kondo S, Kondo Y, Yin D, Peterson JW, Kaalcaji R, Morimura T, Kikuchi H, Takeuchi J, Barnett GH. Induction of apoptosis in multi-drug resistant (MDR) human glioblastoma cells by SN-38, a metabolite of the camptothecin derivative CPT011. *Cancer Chemother Pharmacol* 39 (5): 417-23, 1997.
76. Rhoten RL, Luciano MG, Barnett GH. Computer-assisted endoscopy for neurosurgical procedures: technical note. *Neurosurgery* 40 (3): 632-7, March 1997; discussion 638.
77. Barnett GH. Stereotactic techniques in the management of brain tumors. *Contemporary Neurosurgery*, Vol 19, No. 10, pg. 1-9, May 1997.
78. Barna B, Liu J, Haqqi T, Drazba J, Barnett G, Estes M. Membrane ganglioside expression is altered in human astroglia growth-arrested by interleukin 4 (IL-4). *Molecular Biology of the Cell*, suppl. 8:252a, 1997.
79. Kondo Y, Kondo S, Liu J, Haqqi T, Barnett GH, Barna BP. Involvement of p53 and WAF1/CIP1 in γ -irradiation-induced apoptosis of retinoblastoma cells. *Exp. Cell Research* 236:51-56, 1997.
80. Fernandez-Vicioso E, Suh JH, Kupelian PA, Sohn JW, Barnett GH. Analysis of prognostic factors for patients with single brain metastasis treated with stereotactic radiosurgery, *Radiation Oncology Investigations* 5:31-37 (1997).
81. Suh J, Barnett G, Miller D, Sohn JW, Fernandez-Vicioso E, Kupelian P. Results of patients with newly diagnosed single brain metastasis treated with stereotactic radiosurgery with or without whole brain radiation therapy. *Radiosurgery*, Vol 2, pp 51-63, 1998.
82. Toms SA, Hercsberg A, Liu J, Kondo S, Barnett GH, Casey G, Barna BP. Thyroid hormone depletion inhibits astrocytoma proliferation via a p53-independent induction of p21 (WAF1/CIP1). *Anticancer Research*, 18(1A):289-93, 1998.
83. Bloomfield EL, Schubert A, Secic M, Barnett G, Shutway F, Ebrahim ZY. The influence of scalp infiltration with bupivacaine on hemodynamics and postoperative pain in adult patients undergoing craniotomy. *Anesth Analg*, 87(3):579-82, 1998.

84. Plautz GE, Barnett GH, Miller DW, Cohen BH, Prayson RA, Krauss JC, Luciano M, Shu S. Systemic adoptive immunotherapy of malignant gliomas using activated lymph node T cells. *Neurosurgical Focus* 3: article 5, 1997.
85. Plautz GE, Barnett GH, Miller DW, Cohen BH, Prayson RA, Krauss JC, Luciano M, Kangisser DB, Shu S. Systemic T cell adoptive immunotherapy of malignant gliomas. *J Neurosurg*, 89:42-51, 1998.
86. Toms SA, Hercsberg A, Liu J, Kondo S, Haqqi T, Casey G, Iwasalu K, Barnett GH, Barna BP. Antagonist effect of insulin-like growth factor I on protein kinase inhibitor-mediated apoptosis in human glioblastoma cells in associate with bcl-2 and bcl-xl. *J Neurosurg* 88: 884-889, 1998.
87. Somerville RPT, Shoshan Y, Eng C, Barnett G, Miller D, Cowell JK. Molecular analysis of two putative tumour suppressor genes, PTEN and DMBT, which have been implicated in glioblastoma multiforme disease progression. *Oncogene* (1998) 17, 1755-1757.
88. Vorster SJ, Barnett GH. A proposed preoperative grading scheme to assess risk for surgical resection of primary and secondary intraaxial supratentorial brain tumors. *Neurosurg Focus* 4(6): Article 2, 1998.
89. Kondo S, Tanaka Y, Kondo Y, Ishizaka Y, Hitomi M, Haqqi T, Liu JB, Barnett GH, Alnemri ES, Barna BP. Retroviral transfer of CPP32-beta gene into malignant gliomas in vitro and in vivo. *Cancer Res* 1;58(5):962-967, 1998.
90. Barnett GH. Intracranial applications of surgical navigation systems. *Perspectives in Neurological Surgery*, Vol. 9(2), pp. 65-82, 1999.
91. Mohan DS, Suh JH, Phan JL, Kupelian PA, Cohen BH, Barnett GH. Outcome in elderly patients undergoing definitive surgery and radiation therapy for supratentorial glioblastoma multiforme at a tertiary care institution. *Int. J. Radiation Oncology Biol. Phys.*, Vol. 42, No. 3, 1998.
92. Kondo S, Ishizaka Y, Olcada T, Kondo Y, Hitomi M, Tanalca Y, Haqqi T, Barnett GH, Barna BP. FADD gene therapy for malignant gliomas in vitro and in vivo. *Hum Gene Ther* 20;9(11):1599-1608, 1998.
93. Kondo S, Tanalca Y, Kondo Y, Hitomi M, Barnett GH, Ishizaka Y, Liu J, Haqqi T, Nishiyama A, Villeponteau B, Cowell JK, Barna BP. Antisense telomerase treatment: induction of two distinct pathways, apoptosis and differentiation. *FASEB J* 12(10):801-811, 1998.
94. Montgomery EB Jr, Baker KB, Kinkel RP, Barnett G. Chronic thalamic stimulation for the tremor of Multiple Sclerosis. *Neurology* (1999 Aug 11) 53(3):625-8.
95. Barnett GH, Miller DW, Weisenberger J, Brain biopsy using frameless stereotaxy with scalp applied fiducials: Experience in 218 cases. *J Neurosurg*, 91: 569-576, 1999.
96. Barnett GH The role of image-guided technology in the surgical planning and resection of gliomas. *J Neurooncol*, May 1999, 42(3) p247-58
97. Schwartzbaum JA, Lal P, Evanoff W, Mamrak S, Yates A, Barnett GH, Goodman J. Presurgical serum albumin levels predict survival time from glioblastoma multiforme. *J of Neuro-Oncology*, 43:35-41, 1999.
98. Suh JH, Barnett GH. Brachytherapy for brain tumor. *Hematol Oncol Clin North Am* (1999 Jun) 13(3):635-50, viii-ix.

99. Shoshan Y, Nishiyama A, Chang A, Mork S, Barnett GH, Cowell JK, Trapp BD, Staugaitis SM. Expression of oligodendrocyte progenitor cell antigens by gliomas: Implications for the histogenesis of brain tumors. *Proc Natl Acad Sci USA* 1999 (Aug 31)96(18):10361-6.
100. Chidel MA, Suh J, Greskovich **JF**, Kupelian PA, Barnett GH. Treatment outcome for patients with primary nonsmall-cell lung cancer and synchronous brain metastasis. *Radiat Oncol Investig* 7:313-319, 1999. Diehl B, Najm I, Ruggeri P, Foldvary DO, Mohamed A, Tkach J, Morris H, Barnett GH, Fisher E, Duds J, Luders HO. Peri-ictal Diffusion-Weighted Imaging in a Case of Lesional Epilepsy. In Press, *Epilepsia*.
101. Liu J, Estes ML, Drazba JA, Liu H, Prayson R, Kondo S, Jacobs BS, Barnett GH, Barna BP. Anti-sense oligonucleotide of p21(waf1/cip1) prevents Interleukin 4-mediated elevation of p27(kip1) in low grade astrocytoma cells. *Oncogene* 19:661-669, 2000.
102. Chidel MA, Suh JH, Barnett GH. Brain Metastases: Presentation, evaluation, and management. *Cleve Clin J Med* 67:120-127, 2000.
103. Predictive Value of Recursive Partitioning Analysis for Brain Metastases as Applied to Stereotactic Radiosurgery, Chidel, M.A., Suh, J.H., Reddy, C., Chao, S., Lundbeck, M., Barnett, G. H. *Int J Radiat Oncol Biol Phys*, 47: 993-999, 2000
104. Shoshan Y, Chernova O, Jeun S, Somerville RP, Israel Z, Barnett GH, Cowell JK. Radiation-induced meningioma: A distinct molecular genetic pattern? *J Neuropath and Exp Neuro* 59:614-620, 2000.

BOOKS

1. Barnett GH, Roberts DW, Maciunas RJ (eds)., *Image-Guided Neurosurgery, Clinical Applications of Surgical Navigation*, Quality Medical Publishing, Inc., St. Louis, Missouri, 1998.

BOOK CHAPTERS

1. Barnett GH, Chapman P. Insertion and care of ICP monitoring devices. *Neurological and Neurosurgical Intensive Care*, 2nd ed. (Ropper AH, Kennedy SK, eds.) Aston Publishers, Inc. Rockville, Maryland, 1987.
2. Little **JR**, Rosenfeld JV, Barnett GH. Hemodynamic manipulation in the treatment of brain ischemia. *Current Neurosurgical Practice*, Vol. 111: Protection of the Brain from Ischemia. (Weinstein PR, Faden AI, eds.), Williams & Wilkins Publisher, Inc., San Francisco, California, 1988.
3. Dinner DS, Luders H, Lesser RP, Morris HH, Barnett G, Klem G. Invasive somatosensory-evoked potential monitoring. In *Neural Monitoring*, Ed. Salzman SK, Humana Press Inc., p. 179-196, 1990.
4. Barnett GH, Hardy RW. Thoracic Stenosis and Spondylosis. *Neurosurgical treatment of disorders of the thoracic spine*. (Tarlov EC, ed) AANS Publications, Park Ridge, Illinois, 1991.
5. Barnett GH. Intensive care management of nonischemic brain injuries. In, *The high risk*

- patient: Management of the critically ill. (Sivak ED, Higgins T, Seiver A, eds), Lea & Febiger, Malvern Pennsylvania, Chapter 5, p76-93, 1995.
6. Barnett GH. Intensive care management of intracranial hypertension. In, The high risk patient: management of the critically ill. (Sivak ED, Higgins T, Seiver A, eds), Lea & Febiger, Malvern, Pennsylvania, Chapter 4, p65-75, 1995.
7. Barnett GH. Intracranial pressure monitoring devices: Principles, insertion and care. In, Neurological and Neurosurgical Intensive Care, 3rd edition (Allan H. Ropper, ed), Raven Press, Ltd., New York, New York, 1993.
8. Barnett GH, Whiting DM. Perioperative Management of Ruptured Aneurysms. In: Awad IA (ed) Current Management of Cerebral Aneurysms, AANS Publications, Neurosurgical Topics Series, Park Ridge, Illinois, 1993, 71-80.
9. Barnett GH, Kormos DW, Steiner CP, Piraino D, Weisenberger J, Hajjar F, Wood C, McNally J. Frameless stereotaxy using a sonic digitizing wand: Development and adaptation to the Picker ViStar Medical Imaging System. In Interactive Image Guided Neurosurgery, Neurosurgical Topics Series, AANS Publications, Park Ridge, Illinois, 17(10): 113-119, 1993.
10. Barnett GH and Kalfas I. Intervertebral disc disease and selected spinal disorders: Thoracic canal stenosis and spondylosis. In Neurosurgery, 2nd edition, Wilkins RH, Rengachary SS (eds), McGraw-Hill, New York, part XXII, Chapter 386, 1996.
11. Miller DW, Barnett GH. Brain tumor markers. In The Practice of Neurosurgery, Tindall GT, Cooper PR, Barrow DL (eds), Williams and Wilkins, Chapter 39, 545-552, 1996.
12. Barnett GH. Surgical management of convexity and falxine meningiomas using interactive image-guided surgery systems. Neurosurgery Clinics of North America, Clinical Frontiers of Interactive Image-Guided Neurosurgery, Vol. 7, Number 2, p279-284, 1996.
13. Barnett GH. Stereotactic Techniques in the Management of Brain tumors. Contemporary Neurosurgery, Vol 19, Number 10, May 1997.
14. Hardy PA, Barnett GH. Magnetic resonance imaging in stereotactic neurosurgery. In Textbook of Stereotactic and Functional Neurosurgery, Gildenberg PL and Tasker RR (eds), McGraw-Hill, Chapter 33, pp 271-280, 1998.
15. Barnett GH, Steiner CP. Image-guided Neurosurgery Using Sonic Digitizers. In Textbook of Stereotactic and Functional Neurosurgery, Gildenberg PL and Tasker RR (eds), McGraw-Hill, Chapter 26, 209-214, 1998.
16. Barnett GH. Interactive Surgical Navigation Using Pre-operative Magnetic Resonance Imaging. In Interventional **MR**, Young I and Jolesz F (eds), Martin Dunitz Ltd., Chapter 25, in press 1997.
17. Barnett GH. Stereotactic craniotomy for excision of intracranial lesions. Atlas and Fascicles, Rengachary and Wilkins (ed.), in press 1997.
18. Barnett GH, Steiner CP, Roberts DW. Surgical navigation system technologies. Image-Guided Neurosurgery. Clinical Applications of Surgical Navigation, Barnett GH, Roberts DW, Maciunas RJ, (eds.), Quality Medical Publishing, Inc., St. Louis, Missouri, 1998.
19. Barnett GH. Minimal access Craniotomy. Image-Guided Neurosurgery. Clinical Applications of Surgical Navigation, Barnett GH, Roberts DW, Maciunas RJ, (eds.), Quality Medical Publishing, Inc., St. Louis, Missouri, 1998.
20. Barnett GH, Kaakaji W. Intracranial meningiomas. Image-Guided Neurosurgery. Clinical Applications of Surgical Navigation, Barnett GH, Roberts DW, Maciunas RJ, (eds.), Quality

- Medical Publishing, Inc., St. Louis, Missouri, 1998.
21. Barnett GH. Transsphenoidal hypophysectomy. Image-Guided Neurosurgery. Clinical Applications of Surgical Navigation, Barnett GH, Roberts DW, Maciunas RJ, (eds.), Quality Medical Publishing, Inc., St. Louis, Missouri, 1998.
22. Luciano MG, Rhoten RLP, Barnett GH. Hydrocephalus. Image-Guided Neurosurgery. Clinical Applications of Surgical Navigation, Barnett GH, Roberts DW, Maciunas RJ, (eds.), Quality Medical Publishing, Inc., St. Louis, Missouri, 1998.
23. Barnett GH, Miller DW. Brain biopsy and related procedures. Image-Guided Neurosurgery. Clinical Applications of Surgical Navigation, Barnett GH, Roberts DW, Maciunas RJ, (eds.), Quality Medical Publishing, Inc., St. Louis, Missouri, 1998.
24. Barnett GH. Definition of functional anatomy. Image-Guided Neurosurgery. Clinical Applications of Surgical Navigation, Barnett GH, Roberts DW, Maciunas RJ, (eds.), Quality Medical Publishing, Inc., St. Louis, Missouri, 1998.
25. Bingaman WE, Barnett GH. Social and economic impact of surgical navigation systems. Image Guided Neurosurgery. Clinical Applications of Surgical Navigation, Barnett GH, Roberts DW, Maciunas RJ (eds.), Quality Medical Publishing, Inc., St. Louis, Missouri, 1998.
26. Barnett GH, Walsh JG, Steiner CP, Weisenberger **JP**. One-year outcome data after resection of malignant glioma. Image-Guided Neurosurgery. Clinical Applications of Surgical Navigation, Barnett GH, Roberts DW, Maciunas RJ, (eds.), Quality Medical Publishing, Inc., St. Louis, Missouri, 1998.
27. Suh JS, Barnett GH. Management of Central Nervous System Metastases in Renal Cell Carcinoma Patients. In, Current Clinical Oncology: Renal Cell Carcinoma: Molecular Biology, Immunology and Clinical Management. Bukowski RM, Novick AC, (eds), Humana Press Inc., Totowa, NJ.

PRESENTATIONS

1. Barnett GH, Hahn JF, Palmer J. Normal pressure hydrocephalus in children and young adults. XIIIth Annual Meeting of the International Society for Pediatric Neurosurgery. Mexico City, Mexico. July 16, 1985.
2. Bell BA, MacDonald HL, Kean DM, Smith MA, Barnett GH, Miller JD, Best JJK. Effect of mannitol on brain water. Scottish Society for Experimental Medicine. Aberdeen, Scotland. October 25, 1985.
3. Barnett GH, Hardy RW, Little **JR**, Bay **JW**, Sybert G. Thoracic canal stenosis: Report of 6 cases and review of the literature. 2nd Annual Meeting AANS-CNS Combined Section on the Spine. San Diego, California. February 19, 1986.
4. Little JR, Barnett GH, Jones SC, Friel HT. Cortical circulation and cerebral AVMs. Nikko Cerebrovascular Conference, Nikko, Japan. March 31, 1986.
5. Barnett GH, Hardy RW, Little JR, Bay **JW**, Sybert G. Thoracic canal stenosis: Report of 6 cases and review of the literature. Neurosurgical Society of America. Mobile, Alabama, April 4, 1986.
6. Little JR, Barnett GH, Jones SC, Friel HT. Cortical circulation and cerebral AVMs. Japanese

- Stroke Meeting, Fukuoka, Japan. April 7, 1986.
7. Little **JR**, Barnett GH, Jones S. Cerebral circulation in AVM surgery. Society of University Neurosurgeons Annual Meeting. Louisville, Kentucky. May 9, 1986.
8. Barnett GH, Little JR. Arteriovenous malformations and cerebral hemodynamics. Neurosurgery/Neurology Grand Rounds, Lahey Clinic Medical Center, Burlington, Massachusetts. December 3, 1986.
9. Barnett GH, Hardy RW. Sacro-coccygeal chordoma: Review of 12 cases and report of a cure. AANS/CNS Spine Meeting. Boca Raton, Florida. January 17, 1987.
10. Little JR, Barnett GH, Ebrahim ZY, Jones SC. Cerebral circulation in AVM surgery. 12th International Conference on Stroke and the Cerebral Circulation. Tampa, Florida. February 27, 1987.
11. Barnett GH, Ropper **AR**. Intracranial pressure and outcome in adult encephalitis. American Academy of Neurology, New York, New York, April 1987.
12. Hardy, RW, Barnett GH. Thoracic spinal stenosis. 8th European Congress of Neurosurgery. Barcelona, Spain. September 7, 1987.
13. Barnett GH, Ropper AR, Johnson K. Physiological monitoring and support of critical neurosurgical patients during magnetic resonance imaging. Congress of Neurological Surgeons, Baltimore, Maryland, October, 1987.
14. Barnett GH. Emergency management of head injuries. American Academy of Neurology, Cincinnati, Ohio, April 18, 1988.
15. Whiting D, Barnett GH, Little JR. Critical care management in head injury. American Academy of Neurology Annual Meeting, April 18, 1988.
16. Burgess RC, Skipper G, Edwards CR, Luders H, Barnett GH, Awad IA. A flexible epidural PEG electrode for chronic EEG recording. Cleveland Clinic Research Day, Cleveland, Ohio, September 23, 1988.
17. Barnett GH. Stereotactic craniotomy for removal of intracranial neoplasms using the BRW system and available equipment. Congress of Neurological Surgeons post-convention meeting, Victoria British Columbia, Canada. October 1, 1988.
18. Estes ML, Rudick RA, Barnett GH, Ransohoff RM. Thymus-derived (T) lymphocyte phenotype in the active multiple sclerosis (MS) lesion: Immunocytochemical analysis of a stereotactic biopsy. Society for Experimental Neuropathology, September 1989.
19. Bona SJ, Estes ML, Ransohoff R, Barnett GH, Valenzuela R, Jacobs B, Barna B. Tumor necrosis factor alpha (TNF α): Regulation of specific growth parameters in cultured human glioblastoma. Society for Experimental Neuropathology, September 1989.
20. Barnett GH. Spinal epidural granulomas associated with Wegener's granulomatosis. Poster presentation. Annual Meeting of Joint Section on Disorders of the Spine and Peripheral Nerves of the AANS and Congress of Neurological Surgeons, Cancun, Mexico, February 1989.
21. Barnett GH, Sila CA, Rosenfeld JV, Little **JR**, Bravo EL. Plasma atrial natriuretic factor - An index of brain injury. American Academy of Neurology, 41st Annual Meeting, Chicago, Illinois, April, 1989.
22. Barnett GH, Rosenfeld JV, Little JR, Sila CA, Bravo EL. The effect of subarachnoid hemorrhage on blood and cerebrospinal fluid atrial natriuretic factor. American Association of Neurological Surgeons Annual Meeting, Washington, D.C., April, 1989.

23. Barnett GH, Sila CA, Rosenfeld JV, Anderson JS, Bravo EL, Little **JR**. Atrial natriuretic factor after aneurysmal subarachnoid hemorrhage: Hemodynamic and hormonal relationships. Poster presentation. 18th Annual Educational and Scientific Symposium of Society of Critical Care Medicine, New Orleans, Louisiana, June 1989.
24. Awad IA, Luders H, Burgess, Barnett G, Ahl J. A new class of electrodes of "intermediate invasiveness": The role of epidural PEGS and foramen ovale electrodes in the mapping of seizure foci. Poster presentation at the Congress of Neurological Surgeons, Atlanta, Georgia, October/November, 1989.
25. Estes ML, Rudick RA, Barnett GH, Ransohoff RM. Thymus-derived (T) lymphocyte phenotype in the active multiple sclerosis (MS) lesion: Immunocytochemical analysis of a stereotactic biopsy. Poster presentation at the Cleveland Clinic Research Day, Cleveland, Ohio, September 7, 1989.
26. Barnett GH, Sila CA. Laser doppler flowmetry - preliminary experience in the operating room and neurosurgical intensive care unit. 4th International Symposium on Intracranial Hemodynamics: Transcranial Doppler and Cerebral Blood Flow, Orlando, Florida, February 14, 1989.
27. Komos DW, Tkach JA, Barnett GH, Modic MT. Magnetic susceptibility effects in MRI stereotactic frame localization. Poster presentation at American Association of Neurological Surgeons Annual Meeting, Nashville, Tennessee, April/May, 1990.
28. Barnett GH, Hassenbusch SJ, Palmer J. Stereotaxy-assisted craniotomy using the Brown-Roberts-Wells system and conventional CT computer software. Poster presentation at American Association of Neurological Surgeons Annual Meeting, Nashville, Tennessee, April/May, 1990.
29. Barnett GH, Palmer J, Chimowitz M. Treatment of intractable arterial hemorrhage during stereotactic brain biopsy with thrombin. Poster presentation at American Association of Neurological Surgeons Annual Meeting, Nashville, Tennessee, April/May, 1990.
30. Whiting DM, Barnett GH, Sila CA, Estes M, Hassenbusch SJ. Stereotactic brain biopsy for the diagnosis of non-neoplastic brain lesions. Poster presentation at American Association of Neurological Surgeons Annual Meeting, Nashville, Tennessee, April/May, 1990.
31. Barnett GH, Luders H, Awad IA. Comparison of the BRW and CRW stereotactic arcs for MRI guided placement of depth electrodes in temporal lobe epilepsy. Poster presentation at American Association of Neurological Surgeons Annual Meeting, Nashville, Tennessee, April/May, 1990.
32. Barnett GH, Sila CA. Laser doppler flowmetry - preliminary experience in the operating room and neurosurgical intensive care unit. Poster presentation at American Association of Neurological Surgeons Annual Meeting, Nashville, Tennessee, April/May, 1990.
33. Pillay P, Hassenbusch SJ, Barnett GH. MRI-guided stereotaxis used as a new method to create cingulate gyrus lesions for control of intractable pain in terminally-ill cancer patients. Poster presentation at American Association of Neurological Surgeons Annual Meeting, Nashville, Tennessee, April/May, 1990.
34. Barnett GH, Palmer J. Stereotaxy-assisted craniotomy using conventional CT computer software. Poster presentation at 42nd Annual Meeting of American Academy of Neurology, Miami Beach, Florida, April 1990.
35. Rogers LR, Barnett GH. Decompression of brain tumor cysts by percutaneous ommaya

- reservoir system aspiration. Presented at the 4th Canadian Neuro-Oncology Meeting, Winnipeg, Manitoba, June, 1990.
36. Estes ML, McMahon JT, Barnett GH, Ransohoff RM, Bama BP. Neoplastic and nonneoplastic human astrocytes in tissue culture: Differences in membrane topography. Poster presentation at 10th Annual Cleveland Clinic Foundation Research Day, Cleveland, Ohio, September 1990.
 37. Estes ML, Jacobs B, Barnett GH, Hassenbusch SJ, Barna BP. Density dependent reversal of the effects of tumor necrosis factor alpha (TNF) on glioblastoma cell growth in vitro. Poster presentation at International Conference: 12th International RES Congress, 27th Annual Meeting of the Society for Leukocyte Biology, 20th Leukocyte Culture Conference, Heraldon, Crete, Greece, October 1990.
 38. Estes ML, Ratliff NB, Chimowitz MI, Furlan AJ, McMahon J, Barnett GH, Sila, CA, Conomy JP, Awad IA. Sclerosing vasculopathy in young demented patients with periventricular lesions on MRI. Cleveland Clinic Research Day, Cleveland, Ohio, September 7, 1989.
 39. Pillay P, Barnett GH, Luders H, Awad I. MRI-guided placement of depth electrodes in temporal lobe epilepsy: A comparison of the BRW and CRW arcs. Platform presentation at the Annual Meeting of the American Epilepsy Society, San Diego, California, November 1990.
 40. Barnett GH. Innovative Uses of a Graphics Supercomputer in Neurosurgical Planning. Presented at Richard Lende Winter Neurosurgery Conference, Snowbird, Utah, February, 1991.
 41. Barnett GH. Practical Development and Design of a Stereotactic Operating Room. Presented at AANS Breakfast Seminar #51 - Advanced Topics in Stereotaxy: Endoscopy, Graphics, Automation and systems Design, New Orleans, Louisiana, 1991.
 42. Steiner CP, Kormos DW, Barnett GH. Magnetic resonance angiography for stereotactic planning. Platform presentation at Society for Magnetic Resonance Imaging, Chicago, Illinois, April, 1991.
 43. Barnett GH. ICP Monitoring. Adult Head Injury. Future Trends in the ICU. Presented at Neurosurgical and Neurological Intensive Care: Update and Review, Cleveland, Ohio, May, 1991.
 44. Barnett GH, Kormos DW, Steiner CP. Stereotactic Magnetic Resonance Angiography. Presented at American Society for Stereotactic and Functional Neurosurgery, Pittsburgh, Pennsylvania, June, 1991.
 45. Barnett GH, Kormos DW. Evaluation of OR Sonic Digitizer. Presented at Computer Solutions for Stereotactic Surgery "in progress" Summer Workshop, Cliff Lodge, Snowbird, Utah, July 28, 1991.
 46. Komos DW, Barnett GH. Analysis of MRI Distortion with Picket Fence Stereotactic Localizers. Presented at Computer Solutions for Stereotactic Surgery "in progress" Summer Workshop, Cliff Lodge, Snowbird, Utah, July 29, 1991.
 47. Kormos DW, Barnett GH. Standard Interfaces and Networking for Image Acquisition. Presented at Computer Solutions for Stereotactic Surgery "in progress" Summer Workshop, Cliff Lodge, Snowbird, Utah, July 29, 1991.
 48. Alker JL, Barnett GH, Mageluzzi M. Effects of Head Elevation on Intracranial Hemodynamics. A Transcranial Doppler Study. Poster presentation at Congress of Neurological Surgeons Annual Meeting, Orlando, Florida, and Cleveland Clinic Foundation

- 11th Annual Research Day, Cleveland, Ohio, October 1991.
49. Barnett GH, Miller D, Kormos D, Steiner C. Stereotaxy-Assisted Thrombolytic Therapy of Hypertensive Intracerebral Hemorrhage - Preliminary Experience. Poster presentation at Congress of Neurological Surgeons Annual Meeting, Orlando, Florida, October, 1991.
 50. Barnett GH, Steiner C, Kormos D. Stereotactic Magnetic Resonance Angiography. Oral presentation at Congress of Neurological Surgeons Annual Meeting, Orlando, Florida, October, 1991.
 51. Barnett GH, Steiner C, Komos D. "Ringless" Stereotactic Localization - Preliminary Experience. Oral presentation at Congress of Neurological Surgeons Annual Meeting, Orlando, Florida, and Cleveland Clinic Foundation 11th Annual Research Day, Cleveland, Ohio, October, 1991.
 52. Barnett GH, Alker JL, Anderson J, Sila CA. Source of atrial natriuretic peptide after subarachnoid hemorrhage - preliminary findings. Poster presentation American Association of Neurological Surgeons Annual Meeting, New Orleans, Louisiana, April 1991.
 53. Barnett GH, Schell MC, Higgins PD, Sibata CH, Tefft ME, Taylor ME. Adaptation of Scandiplan 3-D treatment planning code for use with stereotactic radiosurgery. Poster presentation at American Association of Neurological Surgeons Annual Meeting, New Orleans, Louisiana, April, 1991.
 54. Barnett GH, Steiner CP, Komos DW. Stereotactic magnetic resonance angiography. Poster presentation at American Association of Neurological Surgeons Annual Meeting, New Orleans, Louisiana, April, 1991.
 55. Steiner CP, Kormos DW, Barnett GH. Magnetic resonance angiography for stereotactic planning. Poster presentation at American Society for Stereotactic and Functional Neurosurgery, Pittsburgh, Pennsylvania, June, 1991.
 56. Kormos DW, Steiner CP, Barnett GH, Masarylc TJ, Modic MT. MRI, MRA and supergraphics computers: A new surgical visualization tool. Poster presentation at ENC (Experimental Nuclear Magnetic Resonance Conference), St. Louis, Missouri, 1991.
 57. Barnett GH. Advanced Topics in Stereotaxy: Endoscopy, Graphics, Automation and Systems Design. Presented to Annual Meeting of the American Association of Neurological Surgeons, New Orleans, Louisiana, April 24, 1991.
 58. Imamura G, Tefft M, Schell M, Barnett G, Higgins P, Woodworth J, Cheng S. Update on Linear Accelerator-Based Stereotactic and Radiosurgery Experience in the Treatment of CNS Neoplasms at the Cleveland Clinic Foundation. Presented to 51st Annual Meeting of The Ohio State Radiological Society, Columbus, Ohio, May 4, 1991.
 59. Schell M, Higgins P, Tefft M, Barnett G, Cheng S. The Use of the Dose-Volume Histograms in the 3-Dimensional Treatment Planning of Stereotactic Radiosurgery in the CNS. Presented to 51st Annual Meeting of The Ohio State Radiological Society, Columbus, Ohio, May 4, 1991.
 60. Estes ML, Jacobs B, Rogers L, Barnett GH, Barna BP. Density Dependent Regulation of Glioblastoma Growth In Vitro by Tumor Necrosis Factor (TNF). Poster presentation Cleveland Clinic Foundation Research Day, October, 1991.
 61. Schell MC, Barnett GH, Higgins PD, Sibata CH, Tefft ME, Taylor ME. Adaptation of Scandiplan 3-D Treatment Planning Code for Use with Stereotactic Radiosurgery. Poster presentation Cleveland Clinic Foundation 11th Annual Research Day, October, 1991.

62. Barnett GH, Steiner CP, Kormos DW, Masaryk T. Stereotactic Magnetic Resonance Angiography. Poster presentation Cleveland Clinic Foundation 11th Annual Research Day, October, 1991.
63. Kormos DW, Barnett GH, Steiner CP, Antar MA. Stereotactic PET imaging for image correlation. Presented at Radiological Society of North America, Chicago, Illinois, December, 1991.
64. Steiner CP, Kormos DW, Barnett GH. 3-D Digitizer for image reformatting. Presented at Radiological Society of North America, Chicago, Illinois, December, 1991.
65. Barnett GH. Critical Care Management of Vascular Malformations. Presented at Vascular Malformations of the Brain, The International Cleveland-Montreal Cerebrovascular Symposium, Ritz Carlton, Cleveland, Ohio, February, 1992.
66. Barnett GH, Kormos DW, Steiner CP, Weisenberger J. Use of a Frameless, Armless Stereotactic Wand for Brain Tumor Localization with 2-D and 3-D Neuroimaging. Presented at Richard Lende Winter Neurosurgery Conference, Snowbird, Utah, February 1992.
67. Barnett GH, Miller DA, Kormos DW, Steiner CP. Stereotactically Guided Thrombolytic Dissolution of Deep Cerebral Hemorrhage: Preliminary Results. Presented at Richard Lende Winter Neurosurgery Conference, Snowbird, Utah, February 1992.
68. Kormos DW, Steiner CP, Barnett GH. From the Imager to the Operating Table: NMR for Surgical Planning and Treatment. Presented at 33rd Experimental Nuclear Magnetic Resonance Conference, Pacific Grove, California, March 1992.
69. Barnett GH, Kormos DW, Steiner CP, Weisenberger J. Armless Wand for Accurate Frameless Stereotactic Surgical Localization. Poster presentation at American Association of Neurological Surgeons, San Francisco, California, April 1992.
70. Barnett GH, Kormos DW, Steiner CP, Luders H, Awad IA, Morris H. Use of a Frameless, Armless Stereotactic Wand for Registration of EEG Electrodes with 3-D Neuroimaging. Poster presentation at American Association of Neurological Surgeons, San Francisco, California, April 1992.
71. Barnett GH, Kormos DW, Steiner CP, Weisenberger J. Use of a Frameless, Armless Stereotactic Wand for Brain Tumor Localization with 2-D and 3-D Neuroimaging. Poster presentation at American Association of Neurological Surgeons, San Francisco, California, April 1992.
72. Steiner C, Kormos D, Barnett G, Sufka B, Antar M, MacIntyre W. Modifications of the COMPASS Stereotactic Magnetic Resonance Localizer for Stereotactic Positron Emission Tomography. Poster presentation at American Association of Neurological Surgeons, San Francisco, California, April 1992.
73. Kormos DW, Steiner CP, Barnett GH. Ultrasonic Real-Time MRI Localizer for Neurosurgical Planning and Treatment. Presented at Society for Magnetic Resonance Imaging, New York, New York, April 1992.
74. Barnett GH, Kinkel RP. Stereotactic Thalamotomy for Intractable Tremor in Multiple Sclerosis. Poster presentation at the 44th Annual Meeting of the American Academy of Neurology, San Diego, California, May 1992
75. Barnett GH, Steiner CP, Kormos DW. Real Time Neurosurgical Localization Using a Frameless Stereotactic Pointing Device: Technical Considerations. Oral presentation, Research Society of Neurological Surgeons, Hartford, Connecticut, May, 1992.

76. Barnett GH, Kormos DW, Steiner BS. Volumetric Brain Tumor Resection Using Frameless Stereotactic Localizer. Oral presentation, 5th Canadian Neuro-Oncology Meeting, Huntsville, Ontario, Canada, June, 1992.
77. Barnett GH, Kormos DW, Steiner CP, Weisenberger J. Use of a real-time frameless, armless stereotactic localizer in the resection of brain tumors. Poster discussed, European Society for Stereotactic and Functional Neurosurgery, Stockholm, Sweden, September, 1992.
78. Barnett GH, Kormos DW, Steiner CP. En Bloc Brain Tumor Resection Using Frameless Stereotactic Localizer. Poster presentation, The American Neurological Association, 117th Annual Meeting, Toronto, Ontario, Canada, October, 1992.
79. Barnett GH. Three-dimensional digitizers for intracranial localization in neurosurgery. Practical course, Congress of Neurological Surgeons, Annual Meeting, Washington, D.C., October/November, 1992.
80. Barnett GH. Computer assisted neurosurgery. Luncheon seminar, Congress of Neurological Surgeons, Annual Meeting, Washington, D.C., October/November, 1992.
81. Komos DW, Steiner CP, Barnett GH, Piraino DW, Weisenberger J. Real-time ultrasonic 3-D digitizer for frameless image stereotaxy. Presented at 78th Scientific Assembly of the Radiological Society of North America, McCormick Place, Chicago, Illinois, November 29-December 4, 1992.
82. Steiner CP, Kormos DW, Barnett GH. Registration of EEG electrode positions in MR imaging using an ultrasonic 3-D digitizer. Presented at 78th Scientific Assembly of the Radiological Society of North America, McCormick Place, Chicago, Illinois, November 29-December 4, 1992.
83. Morris HH, Estes ML, So NK, Chee M, Barnett GH, Fried A. Adult patients with focal lesions and multifocal/generalized epileptiform activity may have good surgical results following focal resection. Poster presentation, American Epilepsy Society, Seattle, Washington, December 6-9, 1992.
84. Komos DW, Steiner CP, Barnett GH. Intraoperative, real-time 3-D digitizer for neurosurgical treatment and planning. Presented to IEEE 1992 Medical Imaging Conference, Orlando, Florida, October, 1992.
85. Murphy MA, Barnett GH, Komos DW, Weisenberger J. Astrocytoma resection using a frameless stereotactic wand. An early experience. Poster presentation, American Association of Neurological Surgeons, Annual Meeting, Boston, Massachusetts, April, 1993.
86. Barnett GH. Sonic Digitizer Systems, AANS Practical Workshops, Three-Dimensional Digitizers in Neurosurgery, American Association of Neurological Surgeons, Boston, Massachusetts, April 24, 1993.
87. Barnett GH. Non-Linkage (Frameless) Stereotaxis of the Brain", Breakfast Seminar No. 037, American Association of Neurological Surgeons, Boston, Massachusetts, April 27, 1993.
88. Barnett GH. BRW/CRW Frames, Stereotactic Frame Systems, Stereotactic and Computer-Assisted Neurosurgery, Cleveland, Ohio, May 13, 1993,
89. Barnett GH. Biopsy, Techniques Frame Stereotactic Procedures, Stereotactic and Computer-Assisted Neurosurgery, Cleveland, Ohio, May 13, 1993.
90. Barnett GH. Depth Electrodes, Frame Stereotaxy-Assisted Craniotomy, Stereotactic and Computer Assisted Neurosurgery, Cleveland, Ohio, May 13, 1993.
91. Barnett GH. Sonic Systems, Methodologies for Interactive Frameless Stereotaxy, Stereotactic

- and Computer-Assisted Neurosurgery, Cleveland, Ohio, May 14, 1993.
92. Barnett GH. Brain Tumor Resection Using IFS, Clinical Applications of Interactive Frameless Stereotaxy, Stereotactic and Computer-Assisted Neurosurgery, Cleveland, Ohio, May 14, 1993.
 93. Gewirtz R, Barnett G, Estes M, Cohen B, Hercsberg A. Initial Review of a Phase II Trial of Tamoxifen in Malignant Glioma. Oral presentation at Cleveland Clinic Neuroscience Residents Day, May 20, 1993.
 94. Kormos DW, Steiner CP, Barnett GH, Hajjar F, Wood C, McNally J. Intraoperative, Real-Time 3-D Digitizer for Neurosurgical Treatment and Planning Using 3-D **MR** Imaging, oral/video presentation, 10th Annual Congress of the European Society for Magnetic Resonance in Medicine and Biology, ESMRMB, Rome, Italy, June, 1993.
 95. Antar MA, Barnett GH, Quigley MR, Go RT, Saha GB, MacIntyre WJ, Khandekar SP. Comparison of thallium 201 SPECT and F-18-FDG PET in evaluation of radiation necrosis vs. recurrent brain tumor. Presented to The Society of Nuclear Medicine 40th Annual Meeting, Toronto, Ontario, Canada, June 1993.
 96. Kormos DW, Steiner CP, Barnett GH, Piraino DW, Weisenberger J, Hajjar F, Wood C, McNally J. Ultrasonic Neurowand for Stereotactic Localization and Real-Time Intraoperative Display of 3-D MRI Data, oral/video presentation Society of Magnetic Resonance in Medicine, Twelfth Annual Scientific Meeting, New York, August, 1993.
 97. Barnett GH, Kormos DW, Steiner CP, Weisenberger J. Interactive frameless stereotaxy-assisted craniotomy using the sonic wand: Experience in 100 consecutive cases. Poster presentation at Congress of Neurological Surgeons Annual Meeting, Vancouver, British Columbia, October, 1993.
 98. Barnett GH, Kormos DW, Steiner CP. Volumetric brain tumor resection using frameless stereotactic localizer. Platform presentation to International Congress of Neurological Surgery, Acapulco, Mexico, October, 1993,
 99. Iwasalu K, Estes M, Barnett G, Gupta M, Barna B. Combined antitumor effects of tumor necrosis factor- α (TNF α) and tamoxifen (TAM) a protein kinase C inhibitor, on human glioblastoma in vitro. American Association for Cancer Research Annual Meeting, 1993.
 100. Korn S, Schubert A, Barnett G. Endotracheal tube obstruction during stereotactic craniotomy. Platform presentation at Columbia MARC '93 Meeting.
 101. Kormos DW, Steiner CP, Barnett GH, Kalfas IH, Piraino DW, Hajjar F, Wood C, McNally J. Frameless stereotactic system for surgery and biopsy. Presented to IEEE 1993 Medical Imaging Conference, San Francisco, California, November 4-6, 1993.
 102. Piraino DW, Kormos DW, Weisenberger J, McNally JM, Richmond BJ, Hajjar F, Barnett GH. Use of an ultrasonic wand as a CT biopsy localization system. Presented to Radiological Society of North America, McCormick Place, Chicago, Illinois, November 28-December 3, 1993.
 103. Benbadis SR, So NK, Morris HH, Antar M, Barnett GH. PET Scan and bitemporal epilepsy. Presented at American Epilepsy Society, Annual Meeting, Miami, Florida, December 4-9, 1993.
 104. Kormos DW, Barnett GH, Kalfas IH, Piraino DW, Steiner CP, Hajjar F, Wood C, and McNally J. Wandering Through the Body: Modern Computer-Assisted Surgery. Platform presentation at Medicine Meets Virtual Reality II, Interactive Technology and Healthcare: Visionary

- Applications for Simulation, Visualization, Robotics, San Diego, California, January 27-30, 1994.
105. Barnett GH, Weisenberger J, Steiner CP, Kormos DW. Cortical functional anatomy: Correlation between multiplanar MRI and 3-D surface MRI in 20 brain tumor patients. Poster presentation at American Association of Neurological Surgeons Annual Meeting, San Diego, California, April 9-14, 1994.
 106. Barnett GH, Bingaman W, Patel N, Groves L. Economics of interactive frameless stereotactic craniotomy vs. conventional craniotomy. Poster presentation at American Association of Neurological Surgeons Annual Meeting, San Diego, California, April 9-14, 1994.
 107. Steiner CP, Kelly DC, Barnett GH. Comparison of digital active optical and sonic 3-D digitizers in the operating room. Platform presentation at American Association of Neurological Surgeons Annual Meeting, San Diego, California, April 9-14, 1994.
 108. Barnett GH, Weisenberger J, Kormos DW, Steiner CP. Intracranial meningioma resection using interactive frameless stereotaxy-assistance. Poster presentation at American Association of Neurological Surgeons Annual Meeting, San Diego, California, April 9-14, 1994.
 109. Barnett GH, Murphy M, Miller D, Mikalacki K. A relationship between prolonged petrochemical exposure and adult human glial neoplasms. Poster presentation at American Association of Neurological Surgeons Annual Meeting, San Diego, California, April 9-14, 1994.
 110. Kormos DW, Steiner CP, Barnett GH, Kalfas IH. 3-Dimensional digitizers for frameless stereotaxy: Past, present and future technologies. Poster presentation at American Association of Neurological Surgeons Annual Meeting, San Diego, California, April 9-14, 1994.
 111. Toms SA, Hercsberg A, Iwasaki K, Barnett GH, Majors A, Ng T, Estes ML, Barna BP. A model for the correlation of in vitro assay of astrocytoma proliferation with 31-P magnetic resonance spectroscopy. Poster presentation at American Association of Neurological Surgeons Annual Meeting, San Diego, California, April 9-14, 1994.
 112. Miller DW, Yuan S, Barnett GH, Hahn JF, Williams BRG. The role of WT-1 in astrocytoma development. Poster presentation at American Association of Neurological Surgeons Annual Meeting, San Diego, California, April 9-14, 1994.
 113. Barnett GH, Kormos DW, Steiner CP, Weisenberger J. Assessment of interactive surgical navigation (frameless stereotaxy) in craniotomy for brain tumor: Results in 100 consecutive patients. Platform presentation at American Association of Neurological Surgeons Annual Meeting, San Diego, California, April 9-14, 1994.
 114. Zins J, Hahn J, Barnett G, Comair Y. Autogenous split-skull cranioplasty in the high risk patient. Platform presentation at the Ohio Valley Society for Plastic and Reconstructive Surgery, Indianapolis, Indiana, May 11-14, 1994.
 115. Barnett GH. Minimally Invasive Craniotomy for Brain Tumors. Presented to International College of Surgeons, United States Section, 56th Annual Meeting, Cleveland, Ohio, June 8-12, 1994.
 116. Ng TC, Xue M, Barnett G, Modic M. Grading of brain tumors using lactate and NAA/Cr acquired by high resolution proton chemical shift imaging. Presented to Society of Magnetic Resonance, Second Meeting, San Francisco, California, August, 1994.
 117. Barnett GH, Steiner CP, Weisenberger J. Interactive Surgical Navigation Using a Sonic Digitizer. Presented at Stereotactic Workshop, Congress of Neurological Surgeons, Chicago,

Illinois, October 2, 1994.

118. Barnett GH, Steiner CP, Weisenberger J. Adaptation of personal projection television to a helmet-mounted display for intraoperative viewing of neuroimaging. Technical note. Poster presentation at Congress of Neurological Surgeons, Chicago, Illinois, October 2, 1994.
119. Barnett GH, Walsh J, Steiner CP, Weisenberger J. Resection of malignant glioma using frameless stereotaxy: Outcome at one year. Platform presentation, Satellite Symposium on Brain Tumor Biology, McCormick Place, Chicago, Illinois, October 6-7, 1994.
120. Miller DW, Yuan S, Zao XL, Barnett GH, Hahn JF, Williams BRG. Cloning of a novel rac-GAP related gene from a gliosarcoma using differential RNA display. Platform presentation, Satellite Symposium on Brain Tumor Biology, McCormick Place, Chicago, Illinois, October 6-7, 1994 and The American Academy of Neurological Surgery, November 2-6, 1994.
121. Barnett GH, Steiner CP, Weisenberger J. Interactive Frameless Stereotaxy-Assisted Craniotomy Using the Sonic Wand: Experience in 200 Consecutive Cases. Platform presentation at 80th Scientific Assembly and Annual Meeting of the Radiological Society of North America, McCormick Place, Chicago, Illinois, November 27 - December 2, 1994.
122. Rhoten RLP, Luciano M, Barnett GH. Adaptation of an Armless, Frameless Stereotactic Wand to the Ventriculoscope for Multicompartmental Hydrocephalus Procedures. Platform presentation at Richard Lende Neurosurgical Meeting, Park City, Utah, February 4-11, 1995.
123. Barnett GH. Helmet-mounted Display for Intraoperative Viewing of Neuroimaging. Presented at MPB Technologies Inc./McGill University School of Computer Science/Biomedical Engineering Department, Montreal, Quebec, February 17, 1995.
124. Barnett GH, Kormos DW, Steiner CP, Weisenberger J, Piraino D, Kalfas I. Advanced in Interactive Computer-Assisted Surgery (Frameless Stereotaxy). Presented at Selected Aspects of Clinical Neurology, Cleveland, Ohio, February 25, 1995.
125. Barnett GH, Steiner CP, Weisenberger J. A Target Guidance System for Frameless Stereotaxy. Platform presentation at American Society for Stereotactic and Functional Neurosurgery, Marina del Rey, California, March 11, 1995.
126. Barnett GH, Steiner CP, Weisenberger J. Real-time Intraoperative Definition of Cortical Functional Anatomy Using Real-time Multiplanar MRI. Platform presentation at American Association of Neurological Surgeons, Orlando, Florida, April 25, 1995.
127. Barnett GH. Clinical Utility, Benefits, and Risks of Frameless Stereotaxis. Presented at Intracranial Stereotaxis Breakfast Seminar #109, American Association of Neurological Surgeons, Orlando, Florida, April 24, 1995.
128. Barnett GH, Steiner CP, Weisenberger J. Picker Sonic Digitizer. Didactic presentation at Interactive Image Guided Neurosurgery Practical Clinic #006, American Association of Neurological Surgeons, Orlando, Florida, April 22, 1995.
129. Barnett GH. Presenter in Stereotactic Surgery Practical Clinic #018, American Association of Neurological Surgeons, Orlando, Florida, April 23, 1995.
130. Barna B, Estes M, Pettay J, Iwasalu K, Zhou P, Deshpande K, and Barnett G, Human astrocyte growth regulation: Interleukin 4 (IL-4) sensitivity and receptor expression. American Association of Immunologists, Annual Meeting, 1995.
131. Bloomfield EL, Schubert A, Secic M, Barnett G, Shutway F, Ebrahim ZY. The Influence of Scalp Infiltration with Bupivacaine on Hemodynamics and Postoperative Pain in Adult Patients Undergoing Craniotomy. 57th Congress of the International Anesthesia Research

- Society, Honolulu, Hawaii, March 12-14, 1995.
132. Brainard JA, Prayson RA, Barnett GH. Frozen section evaluation of the diagnostic yield of 138 image-guided stereotactic brain biopsies at the stereotactic target position. American Society of Clinical Pathologists ASCP/CAP 1995 Spring Meeting, Orlando, Florida, April 22-27, 1995.
 133. Suh JH, Barnett GH, Sohn J, Tefft M. Stereotactic radiosurgery: An effective treatment for primary meningioma. 2nd Congress of the International Stereotactic Radiosurgery Society, June, 1995.
 134. Abshire BB, Barnett GH, Mascha EJ. Surveillance Scanning of Adult Patients with Glioblastoma. Poster presentation, Congress of Neurological Surgeons, San Francisco, California, October 14-19, 1995.
 135. Toms SA, Casey G, Hercsberg A, Barnett GH, Zhou P, Barna BP. IGF-1 inhibits tamoxifen-induced apoptosis in WITG3, a human glioblastoma cell line. Poster presentation, Congress of Neurological Surgeons, San Francisco, California, October 14-19, 1995.
 136. Miller DW, Yuan S, Barnett GH, Toms SA, Hahn JF, Williams BRG. Identification and characterization of human β 2-chimaerin: association with malignant transformation in astrocytoma. Poster presentation, Congress of Neurological Surgeons, San Francisco, California, October 14-19, 1995.
 137. Barnett GH. Evolution and development of a regional Gamma Knife center. Annual International Gamma Knife Meeting, Lanai, Hawaii, November, 1995.
 138. Suh JH, Barnett GH, Sohn JW, Cohen BH, Flowers A, Peereboom DM, Macklis RM. Results of LINAC-Based Stereotactic Radiosurgery for Newly Diagnosed Glioblastoma Multiforme. LINAC Radiosurgery - 1995, Lake Buena Vista, Florida, December 9, 1995.
 139. Suh JH, Barnett GH, Sohn JW, Macklis RM. The impact of stereotactic radiosurgery on local control for solitary brain metastasis: The CCF experience. LINAC Radiosurgery - 1995, Lake Buena Vista, Florida, December, 1995.
 140. Suh J, Barnett GH, Sohn JW, Cohen BH, Flowers A, Peereboom D, Macklis RM. Linac-based stereotactic radiosurgery for newly diagnosed malignant gliomas. Poster presentation, 48th American Academy of Neurology Annual Meeting, San Francisco, California, March 23-30, 1996.
 141. Barnett GH, Shu S, Plautz G, Kraus J. Phase I trial of adoptive immunotherapy for glioblastoma multiforme. Poster presentation, American Association of Neurological Surgeons Annual Meeting, Minneapolis, Minnesota, April 27-May 5, 1996.
 142. Barnett GH, Steiner C, Weisenberger J. Brain biopsy using frameless stereotaxy: Experience in 45 consecutive cases. Poster presentation, American Association of Neurological Surgeons Annual Meeting, Minneapolis, Minnesota, April 27-May 5, 1996.
 143. Barnett GH, Weisenberger J, Steiner C, Burns RS, Siemionow W. Posteroventral pallidotomy using direct MRI anatomic localization of the globus pallidus interna. Poster presentation, American Association of Neurological Surgeons Annual Meeting, Minneapolis, Minnesota, April 27-May 5, 1996.
 144. Toms SA, Kondo S, Casey G, Barnett GH, Barna BP. P53 status predicts sensitivity of glioma cell lines to DNA damaging agents. Poster presentation, American Association of Neurological Surgeons Annual Meeting, Minneapolis, Minnesota, April 27-May 5, 1996.
 145. Kondo S, Barnett GH, Barna BP, Akbasak A, Morimura T, Takeuchi J. WAF1/CIP1 increases

- the susceptibility of malignant glioma cells to cisplatin-induced p53-independent apoptosis. Poster presentation, American Association of Neurological Surgeons Annual Meeting, Minneapolis, Minnesota, April 27-May 5, 1996.
146. Kondo S, Barnett GH, Barna BP, Akbasak A, Morimura T, Takeuchi J. Interleukin-1 β -converting enzyme (ICE) mediates cisplatin-induced apoptosis in malignant glioma cells. Poster presentation, American Association of Neurological Surgeons Annual Meeting, Minneapolis, Minnesota, April 27-May 5, 1996.
 147. Kondo S, Barnett GH, Kondo Y, Peterson JW, Toms SA, Barna BP. Transforming activities of mdm2 in cultured neonatal rat astrocytes. Poster presentation American Association for Cancer Research (AACR) Annual Meeting, Washington, D.C., April 1996.
 148. Barna B, Liu J, Estes M, Haqqi T, Kondo S, and Barnett G. Regulation of human low grade astrocytoma proliferation by interleukin 4: inhibition of cyclin B expression. Poster presentation at American Association for Cancer Research Annual Meeting, Washington, D.C., April 1996.
 149. Abshire BB, Barnett GH. Clinical and radiographic surveillance of glioblastoma patients, Poster presentation 64th Annual Meeting of The American Association of Neurological Surgeons, Minneapolis, Minnesota, April 1996.
 150. Plautz GE, Inoue M, Barnett GH, Shu S. Adoptive immunotherapy of intracranial tumors with activated tumor-draining lymph node cells: preclinical studies. Poster presentation 64th Annual Meeting of The American Association of Neurological Surgeons, Minneapolis, Minnesota, April 1996.
 151. McDaniel MD, Suh J, Barnett GH. Perioperative Complications Associated with Interstitial Brachytherapy. Presented to 64th Annual Meeting of The American Association of Neurological Surgeons, Minneapolis, Minnesota, May 1, 1996.
 152. Barnett GH, Shu S, Plautz G, Krauss J, Flowers A, Cohen B, Miller D. Phase 1/11 trial of adoptive immunotherapy for glioblastoma: preliminary results. Presented to Canadian Neuro-oncology Society Meeting, Montreal, Canada, May 1996.
 153. Toms SA, Liu J, Haqqi T, Herschberg A, Barnett GH, Barna BP. Insulin-like growth factor 1 inhibits tamoxifen-induced apoptosis in a human glioma cell line via induction of bcl-2 and bcl-x_L. Poster presentation 46th Annual Meeting of the Congress of Neurological Surgeons, Montreal, Canada, September 28-October 3, 1996.
 154. Suh J, Barnett GH, Sohn J, Fernandez-Vicioso E, Kupelian P. Analysis of prognostic factors influencing survival for patients with intracranial metastases undergoing stereotactic radiosurgery. Poster presentation 46th Annual Meeting of the Congress of Neurological Surgeons, Montreal, Canada, September 28-October 3, 1996.
 155. Barnett GH, Shu S, Plautz G. Phase I trial of adoptive immunotherapy in humans. Poster presentation 46th Annual Meeting of the Congress of Neurological Surgeons, Montreal, Canada, September 28-October 3, 1996.
 156. Suh J, Barnett GH, Cohen B. Factors influencing local control and survival for patients undergoing stereotactic radiosurgery for intracranial metastases. Presented at 1996 ASTRO meeting, October 28, 1996.
 157. Suh J, Barnett GH, Cohen B. Results of linac-based stereotactic radiosurgery for acoustic neuromas. Presented to LINAC Radiosurgery, Orlando, Florida, December, 1996.
 158. Barnett GH, Suh JW, Fernandez-Vicioso E, Kupelian PA. Linac radiosurgery of brain

- metastases: Factors influencing local control and survival. Presented to LINAC Radiosurgery - 1996, Orlando, Florida, December 14, 1996.
159. Hercsberg A, Toms S, Barnett GH, Barna BP. High tumor response rate to radiation therapy in biochemically hypothyroid patients. Poster presentation at AACR, San Diego, April 1997.
 160. Suh JH, Barnett GH, Miller DW, Kupelian PA, Cohen BH. Is whole brain radiation therapy needed for all patients with newly diagnosed brain metastases undergoing stereotactic radiosurgery? Poster presentation at ASTRO, Orlando, Florida, October 21, 1997.
 161. Crownover RL, Glosser GD, Weinhaus MS, Deibel FC, Macklis RM, Murdock L, Barnett GH, Miller DW. LINAC Radiosurgery-1997, Orlando, Florida, December 12, 1997.
 162. Barnett GH, Plautz G, Shu S. Lymphocytic infiltration of glioblastoma after adoptive immunotherapy. Poster presentation, American Association of Neurological Surgeons, Denver, Colorado, April, 1997.
 163. Kaakaji W, Barnett GH. Cost reduction for stereotactic brain biopsy. Poster presentation, American Association of Neurological Surgeons, Denver, Colorado, April, 1997.
 164. Barnett GH, Plautz G, Shu S, Krauss J. Adoptive immunotherapy for malignant meningioma: preliminary results. Poster presentation, American Association of Neurological Surgeons, Denver, Colorado, April, 1997.
 165. Kondo S, Barna BP, Toms SA, Barnett GH, Morimura T, Takeuchi J. The transforming activities of MDM2 in cultured neonatal rat astrocytes. Poster presentation, American Association of Neurological Surgeons, Denver, Colorado, April, 1997.
 166. Kondo S, Toms SA, Haqqi T, Barna BP, Barnett GH, Ishizalca Y, Tanaka Y. FADD gene transfer for malignant gliomas. Poster presentation, American Association of Neurological Surgeons, Denver, Colorado, April, 1997.
 167. Suh J, Barnett G, Miller D, Sohn J, Fernandez-Vicioso E, Kupelian P. Results of stereotactic radiosurgery with or without whole brain radiation therapy for patients with newly diagnosed single brain metastasis. 3rd Congress of the International Stereotactic Radiosurgery Society, Madrid, Spain, July 1997.
 168. Barnett GH, Miller DW. Brain biopsy using frameless stereotaxy. Results in 141 cases. Poster presentation at The XIIth Meeting of the World Society for Stereotactic and Functional Neurosurgery, Lyon, France, July, 1997.
 169. Greskovich Jr. JF, Suh JH, Kupelian PA, Barnett GH. The role of craniotomy and stereotactic radiosurgery for patients with brain metastases: a retrospective study from the Cleveland Clinic Foundation. Poster presentation, Congress of Neurological Surgeons, New Orleans, 1997.
 170. Liu J, Estes, ML, Kondo S, Haqqi T, Barnett GH, Barna BP. Anti-sense p27 (KIP1) reverses the inhibitory effects of interleukin 4 on human astroglial proliferation. Presented at joint AACR/AANS/CNS conference: "Cancer of the central nervous system"; San Diego, California, June 7-11, 1997.
 171. Vorster SJ, Barnett GH. A proposed preoperative grading scheme to assess risk for surgical resection of primary and secondary intraaxial supratentorial brain tumors. Presented at Richard Lende Winter Neurosurgery Conference, Snowbird, Utah, Jan 31-Feb.7, 1998.
 172. Barnett GH. Advances in Frameless Stereotaxy. Presented at Neurosurgical Clinical Conference, University Hospitals, Cleveland, Ohio, March 4, 1998.
 173. Plautz GE, Barnett GH, Miller DW, Cohen BH, Prayson RA, Krauss JC, Luciano M, and Shu

- S. Systemic adoptive immunotherapy of malignant gliomas using activated vaccine-draining lymph node T cells. Presented AACR Annual Meeting, March 28-April 1, 1998, New Orleans, LA.
174. Barnett GH. Update on Gamma Knife Stereotactic Radiosurgery, Cleveland Clinic Foundation, Department of Neurology, Epilepsy Grand Rounds, Cleveland, Ohio, April 9, 1998.
 175. Mohan DS, Suh JH, Phan J, Kupelian PA, Cohen BH, Barnett GH. Results of definitive surgery and radiation therapy for elderly patients (≥ 70 years) with supratentorial glioblastoma multiforme: The Cleveland Clinic experience. Paper presentation, 50th American Academy of Neurology Annual Meeting, Minneapolis, Minnesota, April 30, 1998.
 176. Andrefsky JC, Frank JJ, Barnett GH, Mirabelli JL, Miller DW. Stereotactic thrombolytic intracerebral hemorrhage evacuation in the neurointensive care unit. Paper presentation, 50th American Academy of Neurology Annual Meeting, Minneapolis, Minnesota, April 30, 1998.
 177. Barnett GH. Magnetic resonance guided surgery. Presented, Computer Assisted Minimally Invasive Symposium (CAMIS), Cleveland, Ohio, April 6, 1998.
 178. Barnett GH. Basic Review of the Gamma Knife, Epilepsy Grand Rounds, Department of Neurology, Cleveland Clinic Foundation, Cleveland, Ohio, April 9, 1998.
 179. Barnett GH. Didactic presentation at Interactive Image Guided Neurosurgery, Practical Clinic #007, American Association of Neurological Surgeons, Philadelphia, Pennsylvania, April 25, 1998.
 180. Barnett GH. Cost/Benefit considerations, Getting Started. Presented at Intracranial Frameless Stereotaxis: Principles and Techniques, Breakfast Seminar #405, American Association of Neurological Surgeons, Philadelphia, Pennsylvania, April 30, 1998.
 181. Cowell J, Chernova O, Miller D, Barnett G. Gene rearrangements in malignant gliomas. Platform presentation, American Association of Neurological Surgeons, Philadelphia, Pennsylvania, April 29, 1998.
 182. Goyal LK, Suh JH, Mohan DS, Prayson RA, Barnett GH. Survival and recurrence in meningioma with aggressive features after resection, radiotherapy or both: a retrospective study. Presented at the 58th Annual Meeting of the Ohio State Radiological Society in Cleveland, Ohio, May, 1998.
 183. Barnett GH. Innovations in medical treatment of brain tumors. Breakthrough Treatments for Neurological Disorders, Cleveland Clinic Health Talks, Cleveland, Ohio, June 4, 1998.
 184. Barnett GH. Intracranial applications of surgical navigation systems. Cleveland Clinic Foundation, Department of Neurology, Grand Rounds, Cleveland, Ohio, August 26, 1998.
 185. Barnett GH. Didactic presentation at Neurosurgical Navigation - Cranial, Practical Clinic #025, Congress of Neurological Surgeons Annual Meeting, Seattle, Washington, October 4, 1998.
 186. Barnett GH. Neurosurgical Robotics, Moderator, Luncheon Seminar 339/340, Congress of Neurological Surgeons Annual Meeting, Seattle, Washington, October 7, 1998.
 187. Lee TT, Dickman CA, Awad IA, Barnett GH. Report on clinical fellowship from the Congress of Neurological Surgeons Committee on Education. Oral poster presentation at Congress of Neurological Surgeons Annual Meeting, Seattle, Washington, October 1998.
 188. Barnett GH, Montgomery E, Kinkel RP. Chronic thalamic stimulation for tremor in multiple sclerosis. Oral poster presentation at Congress of Neurological Surgeons Annual Meeting,

- Seattle, Washington, October 1998.
189. Barnett GH, Zimmerman G, Prayson R, Hammel J, Ng T. Prognostic significance of histologic grade, labeling index and magnetic resonance spectroscopy in cerebral astrocytomas. Poster presentation at Congress of Neurological Surgeons Annual Meeting, Seattle, Washington, October 1998.
 190. Suh JH, Barnett GH, Miller DW, Crownover R, Willoughby TR, Weinhaus MS, Barrett PW, Walsh J, Macldis RH. Successful conversion from a linear accelerator-based radiosurgery to a gamma knife radiosurgery program: The Cleveland Clinic experience. Presented at 9th International Meeting of the Lelcsell G a m a Knife Society, Hong Kong, **SAR**, November 8-11, 1998.
 191. Barnett GH, Suh J, Walsh J, Zimmerman G. Bilateral gamma knife anterior capsulotomy for medically intractable obsessive compulsive disorder. Presented at 9th International Meeting of the Lelcsell G a m a Knife Society, Hong Kong, SAR, November 10, 1998
 192. Barnett GH, Crownover R, Weinhaus M, Willoughby T, Walsh J. Use of bolus material to correct for skull deformity associated with superficial recurrent meningioma treated with gamma knife radiosurgery. Technical note. Presented at 9th International Meeting of the Lelcsell Gamma Knife Society, Hong Kong, SAR, November 10, 1998.
 193. Barnett GH. Advanced Dose Planning, Breakfast Seminar, 9th International Meeting of the Lelcsell Gamma Knife Society, Hong Kong, SAR, November 11, 1998.
 194. Barnett GH. Other Radiosurgical Techniques Session, Co-moderator, 9th International Meeting of the Lelcsell Gamma Knife Society, Hong Kong, **SAR**, November 11, 1998.
 195. Suh JH, Barnett GH, Miller DW, Crownover RL, Macklis RL. Results of gamma knife radiosurgery for trigeminal neuralgia. Presented at RSNA Annual Meeting, Chicago, Illinois, December 3, 1998.
 196. Barnett GH, Surgical Navigation Systems, Neuro-oncology Symposium: Current Concepts 1999. Naples, Fla. February 15, 1999
 197. Barnett GH, Magnetic resonance spectroscopy. . Neuro-oncology symposium: Current Concepts 1999. Naples, Fla. February 15, 1999
 198. Barnett GH, Role of surgery in management of gliomas. Neuro-oncology Symposium: Current Concepts 1999. Naples, Fla. February 16, 1999
 199. Kaakaji W, Barnett GH, Bonswang. Rate and Timing of Perioperative Complications of Image-Guided Stereotactic Brain Biopsy (IGSBB): Implications on Postoperative Management. Congress of Neurological Surgeons. Boston, MA. November 1, 1999.
 200. Kondo S, Barnett GH, Kondo Y, Barna BP, Tanalca Y, Ishizaka Y, Alnemri ES. Retroviral Transfer of CPP32beta Gene into Malignant Gliomas in Vitro and in Vivo (Poster). American Association of Neurological Surgeons. New Orleans, LA. April 24 - 29, 1999.
 201. Shoshan Y, Golubic M, Tchernova O, Barnett GH, Harwalker J, Cowell J. Molecular Analysis of Radiation-Induced Meningiomas (Poster). American Association of Neurological Surgeons. New Orleans, LA. April 24 - 29, 1999.
 202. Barnett GH. Advances in the Diagnosis of Human Brain Tumors. Current Management of Neurologic Disorders. Cleveland, OH. August 13-14, 1999.
 203. Barnett GH. Advances in Stereotactic Neurosurgery. Current Management of Neurologic Disorders. Cleveland, OH. August 13-14, 1999.
 204. Balcer K, Montgomery ER Jr, Barnett GH. Microstimulation in thalamus: What elements are

- stimulated? Neuroprosthesis Workshop (Poster). Washington, D.C. October 11-14, 1999.
205. Barnett GH. Stereotactic Surgery for Intracerebral Hemorrhage: Spectrum of Techniques and Results. Congress of Neurological Surgeons. Boston, MA. November 2, 1999.
 206. Barnett GH, Kaakaji W, Boonswang A, Warbel A, Bernhard D, Valaitis K, Stamp S. Clinical and Economic Consequences of Early Discharge after Stereotactic Brain Biopsy. American Academy of Neurological Surgery. Amelia Island, Fla. November 13, 1999.

ABSTRACTS AND MISCELLANEOUS

1. Ferguson JH, Barnett GH, Williams HJ, Cornblath DR. Long term effects of transverse cortical cuts on after discharge threshold. *Electroenceph Clin Neurophysiol* 42:733, 1977.
2. Ferguson JH, Barnett GH, Williams HJ, Cornblath DR. Unilateral transverse cortical lesions raise after discharge threshold bilaterally. *Soc Neurosci Abstr* 2:245, 1976.
3. Ferguson JH, Williams JH, Barnett GH. Effect of transverse cortical lesions on after discharge spread and duration. XXVIIth International Congress on Physiological Sciences 27:244, 1977.
4. Williams JH, Ferguson JH, Barnett GH. Effect of transverse cortical lesions on after discharge threshold, duration and spread. *Soc Neurosci Abstr* 3:148, 1977.
5. Barnett GH, Lorig RJ, Jones SC, Friel HT, Modic MT, Little JR. Serial magnetic resonance imaging of evolving focal cerebral ischemia in the cat. *J. Nuc. Med.* 26(5):107-108, 1985.
6. Dinner DS, Luders H, Lesser R, Morris HH, Barnett GH. Intraoperative somatosensory evoked potential (SEP) monitoring: Combined invasive and noninvasive techniques. *Electroenceph Clin Neurophysiol* 61:S26, 1985.
7. Bell BA, MacDonald HL, Kean DM, Smith MA, Barnett GH, Miller JD, Best JJK. Effect of mannitol on brain water. *Scott Med J.* 31:56-57, 1986.
8. Barnett GH, Hahn JF, Palmer J. Normal Pressure Hydrocephalus in Children and Young Adults, in *Annual Review of Hydrocephalus*, (eds) Matsumoto S, Sato K, Tamaki N, Oi S, Vol. 6, 1988.
9. Wyllie, E. Burgess R, Awad I, Barnett G, Luders H. Flexible epidural PEG electrodes for chronic EEG recording. *Annals of Neurology*, Vol 26(3), p. 424, 1989.
10. Barna B, Rogers L, Estes M, Thomassen M, Barnett G, Hassenbusch S, Magdinec M, Ahl J, Palmer J, Boland M. Tumor necrosis factor in monocytes of brain tumor patients: Secretion and gene expression. *American Association for Cancer Research*, Vol 31, 243, 1990.
11. Barnett GH and Sila CA. Serum antidiuretic hormone and hyponatremia [letter; comment], *Neurosurgery* 26(6): 1091, Jun 1990.
12. Estes ML, Barnett GH, Barna BP, McMahon JT, Ransohoff RM. Neoplastic and Nonneoplastic human astrocytes in tissue culture: Differences in membrane topography. *J. Neuropathology and Experimental Neurology*, Vol. 49, 338, 1990.
13. Barnett GH and Gewirtz R. Transnasal Stereotactic Biopsy [letter; comment], *Journal of Neurosurgery*, 78 (1993) 524.
14. Toms SA, Barnett GH, Estes ML, Barna BP, Iwasaki K, Hercsberg A. Hypothyroidism impedes the proliferation and invasiveness of WITG2, a human astrocytoma cell line. *Proc Annu Meet Am Assoc Cancer Res* 35:A1590, 1994.
15. Toms SA, Casey G, Hercsberg A, Zhou P, Barnett GH, Barna BP. Tamoxifen induced p53

- independent apoptosis in a human glioblastoma cell line. Proceedings of the 86th Meeting of the American Association for Cancer Research, p. 8, 1995.
16. Toms SA, Barna BP, Majors A, Iwasaki K, Barnett GH, Estes ML, Ng T, Hercsberg A. Correlation between 31-P magnetic resonance spectroscopy and *in vitro* measures of proliferation and invasiveness in WITG3, a human glioblastoma cell line. Proceedings of the 63rd meeting of the American Association of Neurological Surgeons, p. 288, 1995.
 17. Bucholz RD, Barnett GH, Maciunas RJ, Roberts DW. Intracranial frameless stereotaxis: principles and applications. Perspectives in Neurological Surgery, Vol. 7 (1), 1996.
 18. Barna B, Liu J, Estes M, Haqqi T, Kondo S, and Barnett G. Regulation of human low grade astrocytoma proliferation by Interleukin 4: inhibition of cyclin B expression. Proc. Amer. Assn. Cancer Res. 37:1, 1996,
 19. Barna BP, Liu J, Estes ML, Kupczak T, Haqqi T, Barnett G. Expression of Bcl-XL protein in human astrocytic cells is modified by epidermal growth factor. Amer Soc. Cell Biol. 1996.
 20. Suh J, Barnett G, Sohn J, Cohen B, Flowers A, Peereboom D, Macklis R. Linac-based stereotactic radiosurgery as primary adjuvant treatment for newly diagnosed malignant gliomas. Proc Annu Meet Am Soc Clin. Oncol. 15:A299, 1996.
 21. Suh JH, Barnett GH, Sohn JW, Fernandez-Vicioso E, Kupelian PA. Factors influencing local control and survival for patients undergoing stereotactic radiosurgery for intracranial metastases. I. J. Radiation Oncology, Biology Physics. Vol 36(1) Supplement, p1014, 1996.
 22. Toms SA, Hercsberg A, Barnett GH, Barna BP. Thyroid hormone depletion inhibits astrocytoma proliferation via induction of p21 (WAF1/CIP1). Proc Amer. Assn. Cancer Res: 37:225, 1996.
 23. Barnett GH. The interactive use of magnetoencephalography in stereotactic image-guided neurosurgery. Comment in Neurosurgery, July 39(1):102, 1996.
 24. Barnett GH. In vivo accuracy testing and clinical experience with the ISG viewing wand. Comment in Neurosurgery, July 39(1):202-103, 1996.
 25. Barnett GH. Use of cortical surface vessel registration for image-guided neurosurgery . Comment. Neurosurgery 1997, June; 40(6):1208.
 26. Barnett GH. Development of a frameless and armless stereotactic neuronavigation system with ultrasonographic registration - Comment. Neurosurgery 1997, Sept; 41(3):614.
 27. Barna B, Liu J, Haqqi T, Drazba J, Barnett G, Estes M. Membrane ganglioside expression is altered in human astroglia growth-arrested by interleukin 4 (E-4). Molecular Biology of the Cell, suppl. 8:252a, 1997.
 28. Liu J, Estes ML, Barnett GH, Haqqi T, Kondo S, Barna BP. Elevated P27/KIP1 is associated with interleukin 4 inhibition of human astrocytoma proliferation. Proc. American Association of Cancer Research 38:496, 1997.
 29. Kondo S, Tanaka Y, Kondo Y, Hitomi M, Stacey DW, Barnett GH, Ishizaka Y, Liu J, Haqqi T, Nishiyama A, Cowell JK, Barna BP. Antisense telomerase treatment: induction of two distinct pathways, apoptosis and differentiation. Proc. American Association of Cancer Research 38:5050, 1997.