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IN THE COURT OF COMMON PLEAS

CUYAHOGA COUNTY, OHIO

MURRAY K. LILLEY,
et al.,

Plaintiffs,

-vs-

JUDGE MAHON
CASE NO. 227813

UNIVERSITY ORTHOPEDIC
ASSOCAIATES, INC., et al.,

Defendants.

- - - -

Deposition of HENREY BOHLMAN, M.D., taken as if upon cross-examination before M. Sheila Hanlon, a Notary Public within and for the State of Ohio, at the offices of Jacobson, Maynard, Tuschman & Kalur, 1001 Lakeside Avenue, Suite 1600, Cleveland, Ohio, at 3:30 p.m. on Wednesday, January 6, 1993, pursuant to notice and/or stipulations of counsel, on behalf of the Plaintiff in this cause,

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On behalf of the Defendants.

ALSO PRESENT:

Ms. Diane Kaluszyk

HENREY BOHLMAN, M.D., of lawful age, called by the Plaintiff 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 HENREY BOHLMAN, M.D.

BY MR. TOPPER:

Q. Dr. Bohlman, has your deposition ever been taken before?

A. Yes.

Q. You have given quite a few depositions, I would imagine, for attorneys here in Cleveland?

A, Oh, a few,

Q. How many do you think?

A. I probably do two or three a year, and I've been here 20 years.

Q. Do you do depositions for patients who have been involved in personal injury lawsuits?

A. Rarely.

Q. What type of depositions have you given in the past?

A. Mostly for patients on whom I've operated and they have been involved in accidents of some type.

Q. How many different firms have you worked with, for instance, here in Cleveland? For instance, have you worked for the Spangenberg firm before?

MS. REINKER: Objection to questions regarding him working for firms.

Q. Let me rephrase, do you recall doing a deposition in which the Spangenberg firm had been involved?

MS. REINKER: If you know.

A. I don't recall doing one with them, to be honest.

Q. Okay. The Weissman firm?

A. I don't recall doing one with them either.

Q. The Nurenberg firm?

A, I saw Nurenberg's wife as a patient.

MS. REINKER: I don't know if you're allowed to say that.

A. But other than working with them or for them, I don't recall a specific case.

Q. Would you tell me what percentage of your work is in the cervical spine?

A, I do exclusively spine surgery, which I've done since 1980, and about 40 percent of my, approximately 40 percent of my surgery is cervical spine surgery.

Q What levels of the cervical spine do you deal with?

A All levels.

Q Do you get referrals fr local hospitals as well as from centers maybe from around the country?

A Thirty percent of my patients are from out of state I just operated on a prince from Kuala Lumpur, and I have patients from other countries, Argentina, Brazil, Europe and Ohio, too.

Q. Does Case -- it's Case Western that you work with, right?

A The University Hospital at Case Western. yes

Q Is there a particular name for the spine center there?

A. Well, we call it the Reconstructive and Traumatic Spine Surgery Center.

Q Before 1980. what type of work were you doing?

A I was doing predominantly spine surgery but still doing general orthopedics

Q How many people are involved in the spine service there at Case Western?

A We have ten orthopedics that do spine surgery three do deformity surgery in children

predominantly and some adults, and seven of us do other reconstructive spine surgery for arthritis, trauma and other things,

Q. Are there any neurosurgeons involved in your staff?

A. I was going to say in our spine center, Dr. Russell Hardy is the neurosurgeon that does most of the spine surgery there, He's in our spine center and right down the hallway. And the other neurosurgeons do some spine surgery.

Q. Do you have a residency and a fellowship program in spine surgery?

A. We have a fellowship in spine surgery. I have three domestic fellows each year, all of whom go into academic positions. This year I have three domestic fellows and two foreign fellows, one from Thailand and one from Korea.

Q. Back in 1988 there was a fellow working with you, it's Dr. Lewel, is it?

A. He wasn't a fellow.

Q. Okay, what was his position?

A. He was a resident.

Q. How do you pronounce his name, if I got that wrong?

A, You are making me blank. Are you referring

to -- Lamel.

Q. Was he a fourth-year resident?

A. I don't remember, the private service, there is a second-year type resident, a senior resident, Actually I think he was probably a second year.

Q. How many spine centers like yours are there in the country?

A. I don't think there is any other exactly like ours. There are other spine centers that do predominantly deformity surgery, may do predominantly back surgery, I think there are very few that have some spine surgeons that as we do, coordinate the effort that we do.

Q. On the average, let's take cervical spine surgeries, do you do a week or a month?

A. Well, I did one yesterday very similar to Mr. Lilley's. I'll do approximately 200 cases a year, of which 40 percent of those will be cervical, so I operate two days a week, but I'm in full-time academic orthopedics, so I don't practice full-time privately,

Q. How much of your time is dedicated to surgery and patient care as opposed to that which is involved in the academic aspect?

A. Well, there is a mixture where we train

residents and fellows in their assisting on procedures and working patients up. So that's part of the teaching program, and I also run a huge spinal cord injury program at the Veteran's Administration Medical Center, and that takes part of my time. So we are considered full-time academic, but within that, the private practices, as I said, I operate two days a week Tuesday and Thursday and see patients two half days a week.

Q. The spine, cervical spine surgeries that you do in the year, which I calculate to be about 80, how many of those involve fusions?

A. Almost all of them.

Q. How many involve fusions with grafts?

A. Almost all of them.

Q. Do you do any wiring, fusions with wiring?

A, Yes.

Q. How many of the fusions that you do involve wiring?

A. Usually that's just the posterior, back side fusions, you don't use wire in the front.

Q. Was Mr. Lilley's an anterior or posterior spinal fusion?

A. An anterior fusion.

Q. Do you have a curriculum vitae with you?
A. Yes, I do.
Q. Do you have spinal monitoring capabilities at Case Western?
A. Yes, we have spinal cord monitoring capabilities at all three related hospitals.
Q. What are the three related hospitals?
A. University Hospital, Veterans Administration Medical Center and the Metro Health Medical Center.
Q. Do you practice out of all three of those hospitals?
A No, just at the VA and University. I'm on the consulting staff of the Metro Hospital, but I rarely go over there.
Q How many spinal cord monitoring units do you have at the University facility?
A Orthopedics currently has two, an old one and a newer one, other departments have some, have one.
Q What other departments have them?
A Neurology, neurosurgery,
Q Do you know how many they have?
A I think they have one each.
MS. REINKER: Are you talking about

currently?

A. Yes, neurology usually has monitoring machines, but I don't know how long neurosurgery has had theirs.

Q. Let's go back to 1988. How many were available at the University facility?

A. I don't remember. I think there was, I am almost positive there was one. I am positive there was one.

Q. And that was with the orthopedics, neurosurgery and neurology involved?

A. No, that was with orthopedics alone, with a technician,

Q. Did the neurosurgery and neurology also have one at that time?

A. I don't know.

Q. How many O.R.s would the orthopedic service have going on any one day?

A. Anywhere from four to six.

Q. Out of those four to six O.R.s, how many would be involved in spine surgery?

A. Most frequently two at one time, sometimes as many as three or four.

Q. Back in 1988, what kind of spine monitoring equipment did you have?

A. We had the Path Finder Monitorin System which is made by Nicolet.
Q. How long did you have that?
A. Well, we have been doing monitoring since the mid '70s, we were one *of* the early centers to do it, but I don't remember the year we bought the Nicolet machine. We had a machine that was constructed by the engineers, it was hand made by the engineers from Case in the early days, and I don't recall the year we bought our first new one.
Q. How many spine centers in the country back in 1988 had spine monitoring systems, do you know?
A. I have no idea.
Q. Was it a fairly common apparatus to have back in 1988?
A. I think reasonably common,
MS. REINKER: Are you referring to spine centers or all hospitals?
MR. TOPPER: We'll talk about all hospitals now.
Q. How about in all hospitals, was the spine monitoring system for a hospital that did spine, cervical spine surgery, was it a common unit?
A, I don't think it's that common, I don't think

every hospital had it,

Q. How about spine centers in particular?

A. I don't know in 1988, I don't have that information.

Q. What's the purpose of the spine monitor?

A. Well, there are many purposes. The original purpose -- originally it was developed at our institution in the early days to monitor deformity surgery where rods and instrumentation were put in the back side of the spine to correct deformities, and in a small percentage of patients with these deformity corrections, they developed a paralysis, I think that was the early purpose of spinal cord monitoring was to try to see if we could electrically with this machine determine if something was going wrong in the spinal cord during the operation.

Q. Early on, what type of success was there with the spine monitoring system?

MS. REINKER: Objection.

A. I'm not sure what you mean by that.

Q. In other words, what type of success was there at detecting a problem during the deformity surgery, and what type of success was there in correcting that problem once it was noticed by

the spine monitoring system, and I'm talking early on now.

A. That's a broad question, but the monitoring did pick up some abnormalities and conduction of the spinal cord in the deformity surgery, As far as correcting problems, I can't answer that because there are a lot of different circumstances, which alterations occur in spinal cord monitoring. Our institution, or the spine surgeons in it, have written an article on that particular topic, but I don't recall the details of all that.

Q. Did you have any input on that article?

A. No.

Q. Do you know any of the authors of that article?

A. Yes, they are my partners.

Q. Who in particular, just a couple names?

A. Thompson; Wilbur.

Q. Do you view that article as authoritative on spine monitoring?

A. Well, it's one of many, many articles on spinal cord monitoring. It's published in the Journal of Bone and Joint Surgery, which is an accepted journal. I don't know what you mean by authoritative.

I mean, do you rely on that text or that article as being something that you would say is a good reference piece in spine monitoring?

A. Yes, I think it's a good reference.

Q. Have you participated in the, let's say the inventing or the adaptive process of any of the spine monitoring equipment? In other words, have you, through your years in doing spine surgery, ever had any input with the manufacturers or any of the people that developed the spine monitoring equipment?

A. No,

Q. Have you written any articles on spine monitoring equipment?

A, Not on equipment, per se. I use it in my experimental work.

Q. Have you written any articles in which the spine monitoring has been involved in the experimental work? In other words, do any of your articles deal with that topic?

A, Yes.

Q. Have you done any articles on spine monitoring in patients?

MS. REINKER: Do you mean where that was the subject of the article?

MR. TOPPER: Yes.

A. No.

Q. How about where that was an offshoot of the article? In other words, where spine monitoring might have been mentioned?

A. I don't recall whether it's mentioned in any of the articles I've written. I haven't written a specific article on spinal cord monitoring on clinical patient care.

Q. Through the years, which when it was developed in the early '70s through the mid '80s, please tell us the progress of how spinal cord monitoring equipment developed, in other words, in its efficacy or its ability to monitor and do that which it was invented to do?

MS. REINKER: Objection. Can you make that a more specific question, that's an awfully broad question,

MR. TOPPER: It is and I meant it to be that way.

MS. REINKER: I don't think this witness is capable of regurgitating the history of spinal cord monitoring.

Q. Are you capable of doing that?

A. I don't think so. I mentioned how it was

started in our center and the purpose of how it was started. That's historically what happened in our center.

Q. You use spinal cord monitoring, I take it?

A, In some situations, yes, not all.

Q. In what situations do you use spinal cord monitoring?

A. I use it in patients where I have an academic interest to see if the monitoring is abnormal and may improve with surgery. I use it in some patients where there may be a known risk for developing neurologic problems, but it's not used universally in all of our spine surgeries.

Q. In an average year, let's say now, how many patients do you use the spine monitoring?

A. I would have to guess.

Q. That's okay.

A, We don't generally use it in any lumbar surgery, and as a general rule, we use it in some of the thoracic and some of the cervical, so I would have to guess at numbers, probably about 40 or 50 patients a year.

Q. And out of those 40 or 50 patients a year, aside from the academic interests that you may have, is there any other reason that you might use it,

other than there might be a known risk for the development of paralysis?

A. Well, I think not really, I think it's in

Q.

A.

I think monitoring might be helpful. On the other hand, we haven't seen any tracings yet, it may not work or conduct before we even get started and I don't know that yet.

Q. How about, are there any patients that don't -- do you use it on patients who don't have

preexisting paralysis, where there may be a known risk to develop paralysis?

A. Sometimes in thoracic disc patients, in the chest area, we do because that's a minimal but known risk area, Sometimes in the cervical patients who have severe deformities, and we're going to do a correction of a spinal deformity, we may use it in that situation.

Q. What type of cervical disc patients, what type of deformities are you talking about where you would use spinal monitoring?

A. Kyphosis or angular deformities,

Q. Mr. Lilley had a kyphosis and an angular deformity, agreed?

A, Yes. And other examples would be spinal cord deformity such as arthritis and other things.

Q. What is it about kyphosis and angular deformity which compares with a paralysis where you might want to use spinal cord monitoring?

A. I don't think it compares with paralysis, but the deformity can cause paralysis of its own account without any surgery at all, and in some individuals in whom we have written about, they have had significant paralysis from the deformity. In that situation, I think it's

worth looking at monitoring from a standpoint of the recovering of the monitoring as well as potential risk during surgery.

Q. I will reask my question. I don't know, you may have answered it, and I may just not have picked up on the answer, but the question was, what is it about people with kyphosis and angular deformity which would cause you to use the spinal cord monitoring?

A. Certainly if they had preexisting paralysis or spinal cord disfunction or abnormal function, manifested on examination, I would be a little more cautious about possibly using monitoring, because the cord can be in jeopardy from just being in traction during surgery or any manipulation surrounding the surgery, so on occasion that's when we use monitoring.

Q. Are there situations where you don't have that, the abnormal situation where you just talked about where you have a kyphotic or angular deformity where you would want to use monitoring?

A. There are other situations possibly, as I mentioned, if we have severe arthritis and big bone spurs compressing the spinal cord,

especially in the case of preexisting paralysis we might want to use it.

Q. When you speak of preexisting paralysis, you're talking about paralysis that is ongoing right before the surgery, is that right?

A. Yes,

Q. Are there situations though where you don't have preexisting paralysis where you have a kyphotic and angular deformity where you want to use spinal cord monitoring?

A, Sometimes, I guess.

Q. What type of situations?

A. But I think it boils down to patients that have some, mostly some visible or documentable signs of spinal cord compression. I mean that's a usual situation. We don't use it in all kyphotic deformities,

Q. What type of visible or documentable, would you say stenosis -- I'm sorry, I didn't pick up.

A. No loss of sensation or signs of spinal cord compression.

Q. So you look for loss of sensation as one of the areas in which you would tend to want to use spinal cord monitoring?

A. Well, if it indicates spinal cord impairment,

that's a possibility, yes.

Q. Tell us what the advantages, then, are in that type of situation of using spinal cord monitoring?

A. Well, I think there are advantages and disadvantages, but one of the advantages, as I mentioned earlier, is my academic interest to see if people who have preexisting abnormalities, to see in spinal cord monitoring whether this is going to improve once decompressions of the spinal cord are done. That's probably my major interest in utilizing spinal cord monitoring, to have some electrical documentation during surgery that things are improving.

Q. Did you have any academic interest in Mr. Lilley?

A. Well, I have an academic interest in most everybody.

Q. Was your reason you wanted to use spinal cord monitoring in Mr. Lilley's case --

A. I had discussed it with him.

Q. In fact, you had put that in letters to the people in Baltimore, that you were going to be using spinal cord monitoring, is that right?

A. That's true.
Q. And that was in your operating notes, that you had anticipated using spinal cord monitoring, is that right?
MS REINKER: When you say operating notes, what are you referring to?
MR. TOPPER: I'm sure he knows what I'm talking about.
MS. REINKER: Are you saying in the operative note?
A. Possibly in letters I don't think in the operative note it was mentioned, but in the initial office notes, I think is where you read it.
Q. It's my understanding that your wanting to use spinal cord monitoring went beyond that of an academic interest, is that right?
ME REINKER: Objection.
A. Well, it certainly went through my mind that we might use it both from an academic standpoint to see if it was abnormal to begin with and improved during the surgery, and possibly as a precautionary, additional information to let us know if there was some problem with the spinal

cord during the procedure.
Q. Let's talk about the precautionary reasons for using spinal cord monitoring. What effect does spinal cord monitoring have on patients? In other words, what does it allow you to do when you use it, as opposed to when you have a patient without spinal cord monitoring?
A. I think I misunderstood your question.
Q. Okay. We're talking about the precautionary measures, the way you use spinal cord monitoring, what does the use of the spinal cord monitor allow you to do as opposed to patients without a spinal cord monitor?
A. I don't think it changes what you do or what you're going to do. It doesn't allow you to do any more or less.
Q. How about if there is a problem during the surgery, what does that allow you to do in a patient with spinal cord monitoring, than in a patient without spinal cord monitoring?
A. What do you mean by problem?
Q. In other words, if there is compression of the cord?
A. Most patients have compression of the cord to begin with, for which we are doing the surgery.

Q. What if you have a situation arise when you may have a cord lesion or something like that during surgery brought about as a complication in the surgery, what does using the spinal cord monitoring allow you to do that you wouldn't be able to do without it?

A. Well, if there is an alteration of the spinal cord monitoring, we may check with anesthesia to see, because anesthetics affect the monitoring too. We may check with them to see if there is some sort of an anesthetic agent that is affecting it. Sometimes temperature changes affect it.

By and large, I think it's probably more universal in surgery in the back of the spine, because basically the messages of the spinal cord monitoring go up the back side of the spinal cord, and it's probably most useful in the deformity surgeon's hands where they might remove instrumentation if they corrected a deformity and the monitoring goes out.

Q. How soon after an alteration occurs in the cord will there be evidence on the spinal cord monitor, would that be almost instantaneous?

A. Not necessarily.

Q. Generally how long is it, or do you know?
A. I'm not sure I can answer that specifically. I've seen patients that have had basically normal spinal cord monitoring throughout a procedure and have paralysis postoperatively, and it's been reported in the literature, I don't think timingwise you can tell or you can absolutely predict, and I think it depends on what the spinal cord lesion is. There are many different things that affect spinal cord function.
Q. Why use a spinal cord monitor except for academic reasons, then, if that's the case?
A. Well, I think basically it's an additional monitor during the procedure of spinal cord function, and it may be some benefit in determining whether there are some alterations of spinal cord function. Some surgeons don't use it. In fact, they don't like to use it, because if it's altered, it makes them worry, and they probably aren't going to change their procedure anyhow.
Q. It doesn't make you worry, I take it, because you use it?
A, Oh, it makes me worry.

Q. On how many occasions when you do the spinal cord monitoring do you have problems arising from anesthesia as opposed to some other problem?

A. That's not infrequent, but in our center, anesthesia is pretty tuned into using a specific agent when the monitoring is being performed, but usually, that's not a major problem, but lots of things can affect the monitoring, like electrical noise in the room and temperature and whatnot.

Q. Have you had a situation arise since you have been using the monitor where there has been some type of compromise to the cord which has caused a change in the monitor?

A. Yes.

Q. Tell me about those.

MS. REINKER: Objection.

A, I don't know that I can remember all of them, but I had a Taiwanese lady about a year-and-a-half ago with a very unusual problem of a calcification, or bone formation, in the spinal canal that was compressing the spinal cord and actually had eroded through the covering of the spinal cord, and when we removed

that, at the same time her blood pressure dropped, which can affect the spinal cord monitoring, But once that was removed and she woke up with a one sided weakness, the monitoring did show some alterations, and then the patient recovered and the monitoring was recovered.

Q. Did the monitor or the alteration of the monitor allow you to do something with that patient that you wouldn't have done otherwise?

A. No, it didn't alter the procedure at all, other than make me stop and think about it for a while, but I had to do that, decompress the spinal cord anyhow, so we proceeded with the procedure and finished it.

Q. Have you had a situation arise where the spinal cord monitor has allowed you to save paralysis in a patient?

A. I can't answer that because I don't know whether the patient was paralyzed while the patient was asleep to begin with and then not paralyzed when they woke up. I maybe had one, I can remember one situation with severe arthritis of the spine, with the cervical spine with a patient in traction, where it appeared to be altered and

decreased the weight on the traction.

Whether that patient didn't wake up with any paralysis, which is extraordinarily rare anyhow to have a paralysis after surgery, but that patient was fine.

Q. Does the spine monitor, monitor vascular compromise as well as other types of compromise?

A, It can, but in my experience it may not show that right away, but I have had rare, rare experience in that.

Q. Mr. Lilley did not have a vascular compromise, is that right?

A. No, I don't know that that wasn't part of the compound in what occurred.

Q. What, in your opinion, is the most probable cause *of* his compromise?

A. Well, I think he was compromised to begin with with his kyphotic deformity, with his old spinal cord injury, which was quite severe. He was quadriplegic in 1963, and he had residuals, I think, from that, although I can't be certain. So he had both deformity as well as severe spinal cord compression, which does affect the blood supply of the spinal cord,

The occurrence after the surgery that I

did, I believe was related to, in part, to displacement of the bone graft, but on the other hand, I think he had a compromised spinal cord to begin with,

Q. On the MRI that was done in 1989, it shows an infarct at C-5. Are you telling me that was preexisting, or was that as a result of the bone graft?

A. I can't be certain of that because his first MRI was done a number of years, was it, I can't recall, a number of years before that, and he didn't have a preoperative and an immediate preoperative MRI just before the surgery. He had a myelogram, and in addition what appears to be an infarct is not exactly at the level where the bone graft protruded, so I'm not totally certain when that occurred.

Q. Did you see an infarct preoperatively at C-5 as indicated on the MRI in 1989?

A. No, but that was a one view. No, wait a minute, He wasn't preoperative, I mean the surgery was in 1988.

Q. Right.

A. But preoperatively the MRI he had done was only in one view because he couldn't tolerate being

in the scanner to get the cross-sectioned images on that, whenever that was, and two years before that, I think it was '86, it did not show an infarct.

Q. Are you in agreement with the radiologist, or have you seen the image studies that showed the infarct at C-5 postoperatively?

A. I think that's what it is.

Q. You are in agreement with that?

A. Yes.

Q. Who assisted you in the operation?

A. I have to look it up,

Dr. Smith, it may have been, I'm sure there was a resident, I don't know if it was Dr. Lamel or not, but we always have three people, and I don't have that document in my documentation. Doctor Smith was a spine fellow with me at the time. Actually, and if you really want to know, we can look on an operative note, but I'm sure Lamel or one of the residents was involved too.

Q. What have you reviewed in preparation for this deposition?

A. In general the hospital records and my office records and the X-rays, not every word.

Q. Have you reviewed the actual X-rays, or are you talking about the X-ray studies? In other words, the radiologist reports?
A. I reviewed the X-rays.
Q. Have you compared the X-rays to the radiology reports?
A. Yes.
Q. In regard to the intraoperative X-rays and the postoperative X-rays which were done on July 7th, are you in agreement with the findings by the radiologist?
A. I don't recall. Give me a specific date, on the 7th of July?
Q. Yes, that was the date of surgery.
A. Now, there is an intraoperative chest --
Q. Let's stick to the cervical spine.
A, Cervical, there is one done, here we are, at 12:55 hours. I don't know what they're talking about with an overlying density adjacent to C-5, but I basically agree with that,
Q. How many X-rays did you do intraoperatively?
A, Do we usually do?
Q. No, how many did you do on Mr. Lilley?
A. Two.
Q. Can you see if you can find any? I can only

find one intraoperative report. Can you find another one?

A. There should be one identifying film, I mean I have seen it with my very own eyes. Here's one at 11:45.

Q. And the surgery from my understanding --

A. No, wait a minute, that's the later X-ray. There are two, I can assure you I saw them with my very own eyes this week, and the first one is identifying the level, and the second is after the graft is inserted.

Q. Okay. So the first X-ray was actually done before the placement of the graft?

A. The first X-ray is to identify the level of where we are, in order to identify the exact level of the cervical spine, and that's done with a needle placement.

Q. Now, in relation to the placement of the graft, when was that done?

A. As soon as the graft is inserted.

MS. REINKER: The needle placement film. I think that's what he's asking.

A. What are you asking?

Q. First you were talking about the first two X-rays, the first was a needle placement film?

A. When is that done?
Q. When is that done in relation to the graft insertion?
A. The needle placement is done as soon as the spine is exposed in the very beginning of the procedure, that's like 10 or 15 minutes into the procedure. The other X-ray is taken as soon as the graft is placed, regardless of how long the operation takes.
Q. So from what I understand, then, there were two intraoperative X-rays on the first operation; one was the needle placement, and the second one was after the graft was in place, is that right?
A. Yes.
Q. There weren't any others?
A. Not that I'm aware of.
Q. Who did the graft harvesting? Did you do that or did the residents do that?
A. I believe I was the major surgeon and did all of this.
Q. Would you have left the graft harvesting to a resident?
A. Occasionally in smaller graft procedures I might do that, but usually I do it myself, Certainly in a case like this I would do it myself.

Q. And the records should reflect that?
A. I think they do. I dictated the whole note, although sometimes the residents themselves dictate notes for us.
Q. So I take it, then, when you do the graft harvesting, you not only do the harvesting itself, but you do the incision and everything else that leads up to that?
A. Absolutely. What do you mean, the graft or the cervical --?
Q. No, the graft.
A. Occasionally we'll have the fellow or the residents expose a graft site, because that's pretty uncomplicated, but I think in this situation I did it all.
Q. How difficult was this operation that you did?
A. Well, I think it's a very major procedure that's one of the more difficult and tedious operations that can be done in the cervical spine. On the other hand, we pioneered this type of surgery and have been doing it for 20 years.
Q. Did you talk to Mr. Lilley about the success rate that you would have with the surgery?
A. By success, I'm not sure what you mean.
Q. Did you talk to Mr. Lilley about the success

that you had had with the surgery?
A. I'm sure I talked to him about the potential benefits as well as the complications, potential complications,
Q. Did you tell him something to the effect, this is, we've done this a lot, we know what we're doing, you should have a good result from this?
A. I'm sure I told him we were experienced in doing this kind of surgery and that we had done many, many patients over the years and that the success rate was very high for relief of pain.
Q. Did you tell him you had ever had a complication before resulting from this surgery?
A. I think I told him we had never had a paralysis before. I don't recall whether I talked to him about graft dislodgment in the other direction. I have never had one dislodge backwards before.
Q. Is a posterior dislodging a known complication of this surgery?
A. Well, it's possible and I suppose known. I had never had that occur in this fashion, Sometimes when we see this during the procedure, if there is some displacement towards the spinal canal, we will replace the graft or reinsert it, but I had not had anybody kick one back into the canal

so to speak.

Q. You say on occasion you have had this happen where it goes into the canal and you have been able to visualize it and you make amends?

A. No, no. I didn't say that, I said occasionally the graft is not positioned to our satisfaction, meaning it may be cut back a little bit towards the spinal canal. I have never had one protrude into the spinal canal during the surgery that I'm aware of,

Q. How can you tell the former situation that you have indicated? In other words, how can you tell when that happens?

A. The only way you can tell is by obtaining a lateral or X-ray from the side, in most people.

Q. On those occasions when it's happened, has the piece of graft gone into the spinal canal, or has it not affected the spine or spinal cord?

A. I have never had that happen before or since. I mean protruding into the spinal canal. I have never had that happen.

Q. It's not something that you would expect to happen in a surgery?

A. No. I've had grafts pop out the other way, and that's a problem too, but it doesn't cause

paralysis.

Q. Dr. Dudley sent a letter to you indicating that a posterior placed graft is a known complication. In other words, he says the fact that a graft was placed posteriorly at first was a known complication. Do you remember getting that letter?

P I received a couple letters from Dudley.

MS. REINKER: What's the date on that, Rick?

MR. TOPPER: It's one of his first letters. It's the October 3rd letter, 1990.

A So what is the question?

Q The question is, is what Dr. Dudley says, is what he's saying in that letter a fact? In other words, do you know that to be the case, do you agree with that?

A No.

MS. REINKER: What you're referring to, the statement just about the posterior placement as it being a known complication?

MR. TOPPER: Yes.

A I don't know whether it's a known complication

of Cloward type of graft procedures. I mean I suppose it's possible with this type of procedure, I mean, but again, I had never seen it occur in my experience in many hundred patients.

Q. Do you know of anything in the literature about a complication happening like this?

A, I believe there may be something in the literature with respect to the type of Cloward grafts causing a complication like this. I don't remember a specific article on complications that talk about this type of graft in this situation protruding posteriorly.

Q. Do you know what he's saying when he says the fact that the graft was placed posteriorly at first was a known complication, what he's referring to?

MS. REINKER: Objection.

Dr. Dudley would have to explain that, You can't ask him to say what Dudley means.

MR. TOPPER: He corresponds with him enough.

Q. If you know, if you don't know, that's fine.

A. I'm not sure the graft was placed posteriorly in the first place. At least I was not aware of

that during the operative procedure looking at it.

Q. Did you talk to Dr. Dudley about the surgery?

A. Yes.

Q. How would the graft be placed posteriorly?

A. It would be very difficult to do. I mean technically when we insert the graft, you usually place it in superiorly first into a little hollow in the bone above, and then tap it in with a bone tap below while the patient is in skull traction to sort of distract or pull the vertebrae apart, so to speak, and so the graft is carefully tapped into place under direct visualization, and I think it would be very difficult to protrude it posteriorly.

In addition, there is a ligament that runs along the back of the vertebral body, and that's an additional protection against protruding the bone post back into the canal.

Q. If Dr. Dudley may have misquoted and said that the graft was displaced posteriorly, would that change things? I'm just trying to think of a way he could have come up with this in the letter.

It was displaced but I don't know when that

occurred to be honest. When I was looking at it, it looked fine or I wouldn't have left it that way visibly, and everything technically went fine as far as I was concerned.

Q. You discussed with Mr. Lilley how the graft angulated distally into the canal, is that right?

A. When we discovered this only by getting a CAT scan and after we noted his right side wasn't moving properly, eventually when he was awake an unknown number of times in his room, I even made drawings for him to show him how the graft was displaced and why the spinal cord compression occurred from the technical standpoint.

Q. Was it distally displaced?

A. Yes.

Q. My understanding is the operation took about three hours and 45 minutes, just looking at the anesthesia notes, I'm sure that's from the time the anesthesia started until the time --

A. Anesthesia starts around 8:00, and I think we finished up around noon. I don't know the exact time of the operative procedure, but usually it's at least three-quarters of an hour into the anesthetic before the operation proceeds.

Q. Within that time frame, when would the graft have been placed?
A. Just before the end of the procedure. The major portion of the procedure is doing the decompression, that's the most tedious and long,
Q. How much is involved in actually doing the closing and, in other words, you put the graft in, and I imagine you close, how much is involved in the closing procedure?
A. Not very much, it's very easy to close this type of neck wound, it only takes about 10, 15 minutes.
Q. So if an operation takes three hours and 45 minutes, or at least the anesthesia is administered for three hours 45 minutes, when within that time frame would the graft be placed?
A. Within the last 30 minutes,
Q. I'm going to hand you a physician's order record that I have taken out of the chart, and ask if you could please read it, Is this your handwriting on the top line here, 7/7?
A. No.
Q. Can you read that for me?
A. Hold cimetidine for on call quote, unquote.

Give Versed as ordered on call, quote, unquote. Looks like Dr. Lamel and probably a nurse's signature, and then he signed it later.

Q. What does Dr. Lamel tell us in that note, or what is he telling the nurses in that note?

A, It's a preoperative sedation order.

Q. Could you read Line 10 there?

MS. REINKER: On the same page?

MR. TOPPER: Yes, Line 10 under, I'm sorry it's listed as Item Number 10.

A, Insert spirometry.

MS. REINKER: Is that incentive?

A. Maybe incentive spirometry, q, every hour, I believe, I can't read the last two letters.

Q. What's that?

A. That's just a little machine that people blow into to keep their lungs clear, and they teach the patients before the surgery.

Q. Okay. Once you took Mr. Lilley in the recovery room, did you accompany him into the recovery room?

A. I don't recall. There is always a physician that goes with them, I don't remember whether I went specifically. Frequently I do not, and I wait until they are waking up a little bit to

check them, and usually I don't necessarily go with them. There is always the anesthesiologist or a resident and physician. Sometimes I do.

Q. You did an X-ray, and it looks like at 11:45 and you saw whatever it is that was in the report. Could you tell us what your interpretation of what you saw in the report was after you placed the graft and that X-ray that was done around

A.

Q.

A.

Q. What was the purpose of doing that X-ray?

A. It's a routine to see if the placement of the graft was proper.

Q. Did that X-ray tell you that the graft was placed properly?

A. Not entirely, only the upper portion, and that was very difficult because of Mr. Lilley being

such a large individual, stocky shoulders.
Q. Did you know that going into the operation?
A. Yes.
Q. Did you know -- you knew then that you would have a difficult time visualizing the graft?
A. Sometimes this occurs in people of his size, yes.
Q. It's something you knew going into the surgery?
A. Yes.
Q. And something definitely that you knew after the first X-ray was taken intraoperatively early on in the surgery, is that right?
A, Yes.
Q. So by the time 11:45 came around, there was really no way that you could tell by X-ray whether or not the graft was properly in place, is that right?
A. Well, what we try and do if the initial X-ray does not show the lower portion of the spine, the only thing you can do is increase the penetration of the second X-ray. In other words, increase the voltage and try and penetrate the thick shoulders, but it didn't. So we could not see the distal or distant part of the graft.

Q. Was the distal or distant part of the graft the one that actually went into the spinal canal?
A. Yes.
Q. Now, you went into -- Mr. Lilley went into the recovery room, and do you know how long he was in the recovery room before it was that he woke up and it was discovered that there was a problem?
A. Well, I was called at 12:45. I'm not sure exactly when he got to the recovery room, but it was very soon afterwards. I mean relatively speaking it was fairly soon,
Q. When a spinal cord injury occurs where you have a situation like this, you have a bone graft going into the spinal canal, how long is it before the condition which happens is irreversible?
A. I don't think that is predictable.
Q. Do you have a time frame?
A. No.
Q. Would it be minutes?
A, There is no time frame. The only predictable factor in neurologic deficits like this is completeness of the deficit. If you have a complete spinal cord injury that lasts for more

than 48 hours, then that's permanent.
Q. As time goes on, if there is a spinal cord injury, as time goes on, is it more likely to have an adverse affect on the patient?
A. That's never been proved in the literature.
Q. So that if an injury occurs, if an injury is immediately discovered, let's say 30 seconds after it happens, there would be no difference in treating it then as opposed to treating it two-and-a-half hours after it happens?
A, No, that's never been proved.
Q. Do you have an opinion as to whether or not there would be an increase in the likelihood of injury at 30 seconds plus injury as opposed to two-and-a-half hours plus injury?
A. Based on my own experience for 20 years and dealing with spinal cord injuries, there is no proof of time element and the length of time after the injury occurs and doing a decompression and getting recovery or necessarily the severity of the injury.
Q. Could you read the nursing note that I have here at 11 -- it's indicated 11:25. You don't have to read it out loud.
A. What are you asking me?

Q. Just are you familiar with that note?
A. I've seen this, I don't think I've read it.
Q. Could you just please read it?
MS. REINKER: The entire note, do you want him to read it out loud?
MR. TOPPER: No, he can read it to himself.
A. I'm not sure I can read all of the writing.
Q. Why don't you go ahead and read it out loud as much as you can,
A. Admitted to RR, recovery room, in the -- intubated, That was correct, his tube was still down, with 8.5, ET tube. I think that may have to do with the oxygen flow, maybe the 8.5 is the size of the tube,
MS. REINKER: This is all out of his field, he's not familiar with nursing practices.
A. 40 percent oxygen on something, T-price, which is the breathing tube. RS, I don't know what that is, respirations I suppose, are regular but shallow. Breath sounds are clear bilaterally. Skin is -- I can't read it, something. Lips and nails, something, are pink. Apical is regular, I suppose that means pulse.

Patient's cardiac monitor -- this is cut off here, but probably on cardiac monitor strips as shown. Anterior neck dressing is dry; 2 posterior brace on; left iliac dressing is dry. I think bilateral, it's abbreviated, thigh high hose on, socks. Those are stockings on the patient.

Moves left leg and toes; left arm and hand well. Patient not moving right leg or toes, denies sensation there. More, it says more right arm slightly -- moves right arm slightly, but I don't see the S on there. I think this is cut off on the copy, but not fingers.

Dr. Lamel, I don't know what this word is, Lamel is the resident, I.V. infusing right hand I.D. I don't know what that means. CD right wrist.

Q. That's enough. Now at that point in time, it's apparent that the nurses are saying that he's having a problem with his right side, not moving the hand, not moving?

A, Well, okay.

Q. Is that evident to you in that note?

A. I think it's evident in the note, but I'm not sure about the time. I think there was a

discrepancy when anesthesia stopped, which looks like about 12:00.

Q. And that note is 11:25?

A. This says 11:25, which doesn't make sense. I think there is a nursing note that says he didn't get to recovery until about 12:20 approximately.

Q. Let's say that's 12:25. If that's the case, then at that point in time with those findings, what should have been done? Dr. Lamel sees that going on, what should have been done?

A, They did what should have been done, they called me.

Q. When did you arrive?

A. I think 12:45, immediately after this.

Q. Now, it indicates, well, there it says an hour-and-a-half, maybe 20 minutes, 20 minutes is okay, I take it. In other words, if that was 12:25 when he got those findings and you arrived at 12:45, that is okay?

A. That doesn't bother me, plus he was just waking up. It's very difficult to assess true motor function when somebody is just waking up.

Q. And then when is the CAT scan ordered according to those notes, do you know?

A. Well, as soon as I saw him and went over him and was convinced in my own mind as he woke up that there was something wrong, the first thing I did was called radiology and ordered emergency -- no, the first thing I did was attempt another portable lateral X-ray of the cervical spine, this time manually pulling his arms down myself, or at least somebody did, I know that.

Q. Okay. Is there an X-ray report on that? That's another one that I can't --

A. There is another X-ray that I have seen that is in the recovery room.

Q. I just didn't see a report.

A, Well, I'm not sure I saw it either.

MS. REINKER: Do you want: us to stop and look for that report?

MR. TOPPER: Yes.

Q. I'm sorry. I see one 12:55 hours?

A. That must be in the recovery room, yes, that's about the right time.

Q. Okay. That 12:55 X-ray says there is a resection of the inferior, end plate of C-4 and the superior end plate of C-5 overlying intensity of C-5 identified which is unknown etiology. What did that tell you?

A. Well, I looked at the films right there in the recovery room, and I couldn't see the distal graft on that either, I don't know whether that was too thick or what they mean by that, but the graft was, is not and was not visible distally, and that was the reason we ordered the emergency CAT scan.

Q. Do you recall, then, what time he was taken back into the operating room?

A. Well, at that point I went immediately around to -- I arranged for the emergency CAT scan. I went around to talk to Mrs. Lilley, explained everything to her, what I thought might be the problem with his graft displacement, but I couldn't see the graft and that we were going to do an emergency CAT scan to try and identify it.

I came back to the recovery room, and with the residents and fellow, manually helped take him down to the CT scan myself, stood there while they did the CT scan, and as soon as we identified the bone graft, the distal part of the bone graft protruding into the spinal canal, I told them to take him back up to the operating room immediately. The tube was still down which

we left there,

I talked to Mr. Lilley, though he may not recall that. He was awake enough at that point to hear me and respond. He still had his tube down, and I explained to him what was going on, that we had to take him back and replace the graft. I went around to see his wife while they were getting him ready, and she wasn't in the room, she may have been making a phone call. And then I went back to the operating room, but I don't know the exact timing, but anesthesia here is like the beginning at 1400 hours, so that's like 2:00.

Q. On that 11:45 X-ray, it indicates on the report the patient is status post resection of osteophytes at the --

A. On 11:45?

Q. Yes. Read your copy is better.

A. Here's 11:45, patient is status post resection of osteophytes of the anterior aspects of C-4-5, with placement of fibular bone graft at this level.

Q. 11:45, there wouldn't have been a fibular bone graft in place, would there?

A. If that's the correct time, no.

Q. Fibular bone graft was not until later, correct?
A. Yes.
Q. So that record is incorrect?
A. If the time is correct, your statement is correct.
Q. Is there, then, an X-ray, at least an X-ray report that you have in your chart which is indicative of the intraoperative X-rays from the first operation?

MS. REINKER: Are you assuming that this one is not, this 11:45 on the 7th?

Q. I would assume you would say it's not.
A. No, I would say if that's the correct time, it had to be after the graft was placed during the first operation, but they are just mistaking this for fibula, and it's really the iliac bone graft. That's what I think it is, because that's the right time, that's just before the end of the procedure.

Well, would a radiologist be able to tell difference between a fibula and iliac b graft?

A. Usually, but you can't see most of this graft anyhow, and it's a fairly large graft, and if it's dense enough, it might look like fibula,

they might mistake it as fibula. I think that would be very difficult to call on a bad film like this.

Q. When you originally did this, did you anticipate doing a fibula bone graft or iliac bone graft?

A. No, we planned an iliac bone graft.

Q. When did you first know that the iliac bone graft was not sufficient?

A. Well, we -- it's not that it isn't sufficient, usually they are sufficient. Like the case I did yesterday, we removed two vertebra and used an iliac graft,

When the length of the graft gets longer or you have to make a graft longer, which in this case, when we were going back in, I decided to make a little longer graft so that it may fit a little more tightly or a little bit better or maybe have to remove some of the vertebral body and increase the distance of the decompression, we decided to use the fibula.

Q. Do you generally send a bone graft such as that, for lack of a better word, a failed bone graft, like the iliac sample, would you generally send that to pathology?

A. Usually it is, I don't remember whether we did.

Usually it is sent to pathology.

Q. For what purpose?

A. Because they tell us by law you are supposed to do this, but I don't remember whether it was or not. I mean they have -- anything that's removed, including hardware, they ask us to send to pathology so they can at least identify it, They don't necessarily make microscopic sections of it.

Q. But that's something, at least, that you are required to do, is that right?

A, Normally if something is removed, although, you know, when we are doing bone grafts, there are many times pieces of graft that we may not use aren't necessarily sent to pathology. I don't recall whether this was or not,

Q. She's showing you a note that I'm aware of that indicates that there was apparently an empty jar sent to pathology?

A. I don't know how or why that happened, to be honest.

Q. Would that indicate that it was apparently removed but somehow didn't make its way to pathology?

A. That's possible. I'm sure I was more concerned

about the operation than getting the old bone graft to pathology.

Q. Was Dr. Friedlander involved in this surgery?

A. Friedlander, I'm not sure I know who that is.

Q. I'm looking at an op note of 7/7?

A, I honestly do not know who that is. He may be one of the rotating residents from Sinai or an intern, I don't know, I don't recall, He's not one *of* our residents.

Q. I'm going to hand you a July 7th operative note, 1988, it indicates here -- this is your signature at the bottom of that, is that correct?

A, Yes.

Q. It indicates here 12:30 p.m. Is that the time you would have entered this in the chart?

A, Approximately.

Q. So it's not a -- I'm trying to think of a Latin term, which I can't think of -- a nunc pro tunc entry. In other words, it's not an entry that you made say at 1:00 or 1:30 and then placed in there at a 12:30 time?

A. I don't think so. And this is approximate. I'm sure I looked at the clock when I saw him and then wrote the note on or about that time, but

usually in a situation with paralysis where you want to time it and watch it to see whether it recovers, it's important to put a time in the approximate time

Q. Okay. So that note was put in there before he had been taken back to surgery, is that right? In other words he had been taken back to surgery at 2:00?

A. Yes.

Q In that note you indicate you believe he may have a piece of the osteoporotic graft protruding distally against the cord Did you write that in?

A. Yes, that's correct.

Q What caused you to believe at that point first that it was osteoporotic?

A I don't recall exactly, but if I made that statement, it's probably the fact that the bone graft felt not as hard as a usual iliac graft when it was inserted

Q And how about the fact, then, you indicate at that point that it was, what, I'm sorry, that it was protruding distally against the cord How did you surmise that at that point, because that's apparently before the CAT scan?

A. As I say here, I believe he may have a piece of the osteoporotic graft protruding distally against the cord, That was surmise on my part based on the fact I only saw the proximal graft and that he had the paralysis, and that was the only conceivable thing that I could think of that would produce the paralysis, because nothing occurred during the surgery to injure the spinal cord that I was aware of, and that's why I ordered the CAT scan,

Q. Did the fact that it was necessary to use another piece of bone to snug up the graft during the first surgery cause you to think that this might have happened also?

A, No, not at all.

Q. What is it about a piece of bone that causes you to feel that it may be osteoporotic as opposed to nonosteoporotic?

A, As I just mentioned, it's a feeling when you clamp the bone with a clamp, when you are holding it to manipulate it, or put it in, or when you are removing it with the saw and the little chisel we use to remove it, you can feel, I mean it's a sense, just based on experience, and there are all aggradations of that.

Q. At least this was a grading enough that you were able to feel?
A. It felt softer than normal.
Q. Is there, is it then common, standard, then, to put a bone which was softer than normal, which is osteoporotic into a graft site such as this?
A. We do it all the time, and only if somebody had pure mush for bone, like some of the rheumatoid arthritic patients, would we possibly want to do something else, but that's very unusual. Osteoporotic bone does heal,
Q. How do you measure the bone to be used, in other words, the graft to be used in the site?
A. We use what is called a malleable probe, it's a bendable silver probe that's literally bent to the approximate length and placed in where the bone graft is going to be placed, and we measure that by ruler if necessary, but it gives us a fairly accurate measurement of the length of the bone graft.
Q. Do you recall why, do you know why the bone drifted distally into the cord?
A. Do I know why?
Q. Yes.
A, No.

Q. Was it the size?
A. I don't think so.
Q. Was it the fact that it was osteoporotic?
A. No.
Q, Do you know of any other cause for it to drift, if it wasn't the size, if it wasn't it being osteoporotic, can you think of any other cause why it would drift distally into the cord?
A, I'm not sure when it occurred, but it occurred sometime before he woke up in the recovery room, I mean, we have to move patients and lift them to a certain extent, that is some manipulation, although the brace is put on before the patients are fully awake, but you have to transfer them onto a bed and transport them to the recovery room, and sometimes patients are very restless, and I don't recall this because I wasn't there, restless in the recovery room, and they can kick out a graft, or at least in the front way. I have just never seen one pop out the back like this in this situation.
Q. Is there anything in the records which indicates him being restless to the point where he would do that?

A. I don't recall.
Q. Do you want to take a look at the records here and see if you can see anything in that regard?
A. I don't think so from what I read earlier.
Q. Who is responsible for the handling of the patient from the time the graft is in there to make sure the patient goes in safely into the recovery room so that the graft is not either distally or proximally popped out?
A. One of us or all of us, meaning the physician, surgeons watch the patient. As I mentioned earlier, it is standard care to take, for some physicians, the surgeon team, to go with the patient to the recovery room and to help transport him. Sometimes I help lift the patient, I don't recall whether I did in this situation, and the anesthesiologist also goes with the patient.
Q. Did you talk to doctor, have you ever talked to Dr. Lamel about this?
A. I'm sure I did after this all occurred, but I don't -- he's been gone for a couple of years, so I don't think I've talked to him since then.
Q. Do you recall Dr. Lamel saying anything about any movement or any sudden movement of the

patient which would cause this graft to distally pop into the spinal canal?

A. I don't recall him saying that.

Q. To your knowledge what kind of manipulation would have to occur with this particular bone graft to cause that to happen?

A. It would probably have to be some sort of flexion mode of the head.

Q. Is that flexion mode of the head something you know is to be absolutely prohibited, in other words, to be guarded against at all costs?

A. Well, we try to prevent that, and that's why the brace is put on.

Q. Was there a brace in place during this time, during the transport?

A, Yes. But even with halo or even more rigid immobilization, grafts can, as I have seen, pop out the front, not the back,

Q. What type of situations have you seen where they do pop out of the back?

A. I have never seen that,

Q. I mean pop out the front?

A. Usually with long, longer grafts like this in patients usually not with the kyphosis, but sometimes it can occur.

Q. In the absence of some type of flexion motion, if you have a good sized graft, would this occur?
A, It can.
Q. Under what circumstance, let's take away now the size, let's take away that quality out of the equation, and let's take away the flexion, what other type of circumstance can occur which would cause this?
A, I have had patients have a respiratory arrest,
Q. Did that happen here?
A. It did not happen,
Q. Let's take away the respiratory arrest, anything else?
A. I've seen it occur seemingly spontaneously just without any known cause popping out the front. And we don't know what caused it. I've seen some people fracture the vertebra where it's seated and pop it out the front.
Q. Why is it more difficult to pop it out the back, or excuse me, pop it out the front as opposed to going the back?
A. Why is it more difficult to pop out the back than the front?
Q. Yes.

A. Because there is a ligament, as I mentioned earlier, that runs along the back of the vertebra that we purposely leave intact as a protector of the spinal cord, and although I suppose bone can protrude against that, that makes it more difficult and really almost unheard of for this to occur.

Q. Was that ligament in place when you went back in there?

A. We never took it out, I mean we never took the ligament off.

Q. It was in place?

A. Yes, as I recall, yes.

Q. How did this piece of bone, then, get beyond that ligament and go into the spinal canal?

A. It doesn't go so-called beyond the ligament, it protrudes against the ligament which then stretches, it's like a rubberband.

Q. Did you find that this ligament was stretched?

A. Well, the graft was protruding against it. I think I mentioned this in my note.

Q. Is this evident on the CAT scan?

A. You can't see the ligament on the CAT scan, but you can see the bone graft protruding into the spinal canal.

Q. Would this particular ligament be something that you would be able to see on a CAT scan?
A. No,
Q. Would your operative notes reflect the fact that the bone graft was protruding against the 1igament?
A. I believe so. I don't know whether I mentioned the ligament per se, but yes, I mentioned after the graft was removed at this point it wasn't against the posterior longitude, and the ligament lined up quite nicely, and there appeared to be no compression of the spinal canal nor of the posterior longitude in the ligament. So it was intact,
Q. What type of force, then, would cause that? I mean it would require a degree of force internally or whatever for that graft to stretch the ligament to go into the spinal canal, would you agree?
A. Sure. There has to be some force. I mean I have no idea because I can't document that, but maybe he was straining waking up, maybe the nurses notes don't say that, but maybe he was coughing. I have had people cough their grafts out the other way.

Q. The other way?
A. So when people are waking up in recovery, they can do all kinds of things that might protrude a graft, but I really don't know, But obviously some sort of force had to be applied,
Q. What was the size of the fibular graft as compared with the size of the iliac graft?
A. I probably don't have exact millimeters, it was just slightly longer.
Q. Why did you make it slightly longer?
A. Usually when we replace a graft, we take off a little bit more of the distal or the vertebra below just to see it better.
Q. Is that indicated in the operative note?
A. I usually don't put in the exact millimeter measurements of the graft, and the other reason we used the fibula in his situation, as I mentioned here, is the iliac graph appeared to be somewhat osteoporotic, so I thought this might give more structural support, approximately one and three-quarter inches, measured one and three-quarter inches in length. I don't know what the length of that iliac graft was.
Q. When you took out the iliac graft during the

second operation, did it feel any different to you than it did when you were getting it ready for the first operation?

A No

Q In your operative note, you indicate that during the second operation indeed his iliac graft was somewhat soft and osteoporotic I did not think it would be good structural support?

A. Yes.

Q Were you considering at that point in time placing the iliac graft that had been previously placed in there in a different position and back in again?

A I'm sure that was a possibility, yes, but he prepared his- prepared his left leg, or I think it was the left just in case because we thought we might want to use the fibula graft

Q What was it that caused you in the second operation to think that the iliac graft would not be a good structural support that you didn't think about in the first operation?

A I don't think anything special I think I just prepared to use the fibula in case we needed a little longer graft because sometimes that's necessary if you have to replace a graft And

in view of the fact that it felt slightly osteoporotic in the beginning, I felt maybe we should be prepared to use the fibula graft if necessary. But again, you can use osteoporotic grafts, and they do heal, and it's not like he had an unstable spine like in a fracture dislocation. I mean he had a long standing fusion, so it wasn't unstable from that standpoint that you would worry about some osteoporosis in the grafts.

Q. Why wouldn't it, then, be used in the second operation?

A. I think probably because it required a little longer graft, I mean we wanted a little tighter fit.

Q. Didn't you cure this in the first operation, cure this in the first operation with another piece of bone to snug it up?

A. I thought so.

Q. Would you have done that in the second operation also?

A. I could have, but again, sometimes when people, at least it's been my experience, when I had to go back and replace a graft, sometimes the neck stretches a little bit so to speak, and then you

attempt skull traction twice and you just need a longer graft, that's just based on my own experience.

Q. But in any event, what you felt could be cured by a piece of bone in the first operation to snug it up, you did not think the same thing could happen in the second operation?

A. Well, I didn't know that until I got there that we needed a little longer graft.

Q. What was your experience -- strike that.

What were your goals as far as treatment of the patient for the operation had the complications not ensued?

A. I think the main goal was relief of pain by decompressing the spinal cord. I think also prevention of paralysis, which can occur late after this kind of deformity in the long standing spinal cord compression. I think those were major goals. He also had significant difficulty walking distances and was having trouble functioning, and I thought by decompressing the spinal cord, this would be improved significantly.

Q. Did his symptoms progress from January when you first saw him until the time he was

hospitalized?

A. I don't know whether they progressed in that period of time, but he was progressing in the year, approximately the year prior to the surgery, He was getting worse and having more complaints of intolerable pain and more trouble getting around.

Q. Did you feel a necessity to do the surgery in July of 1988? In other words, could the surgery have been done just as easily in August of 1988, September of 1988?

A, Yes, No, I did not feel, no. In answer to the first question, yes he could, it was purely elective, and I allowed him to make a decision on when to do it.

Q. Why wasn't the spinal cord monitoring equipment available that day?

A. I think probably it was being used on one of the deformity patients, as I recall.

Q. Would there have been a problem with kicking Mr. Lilley's surgery to the next day or the day after that?

A. That would be a major problem.

Q. Just because of the scheduling?

A. The scheduling and the logistics of my schedule,

I can't do that. I just don't have the time in the day, and everything is prescheduled six weeks, eight weeks ahead of time.

Q. Did you discuss the fact 'chat the monitoring equipment was not available with Mr. Lilley?

A. I don't recall whether I discussed it with him the night before the surgery. I don't think I saw him until later in the evening before the surgery.

Q. When did you first know that the monitoring equipment was not available?

A. I probably, I don't recall, but in the evening the technician is not around, so I don't really recall exactly when. It may have been the next morning.

Q. Can you recall discussing this with Mr. Lilley the unavailability of the spinal monitoring equipment?

A. I don't recall whether I did or not.

Q. Did you -- you told him that you would be using spinal monitoring equipment?

A. No, I told him -- well, at least in my note, I thought it might be a good idea to use it. I didn't think it was mandatory.

Q. Why did you tell him it might be a good idea to

use it?

A. For some of the reasons we talked about, and that is, too, I don't know whether I told him of my academic interest. Usually I don't say that to patients. Possibly for monitoring the spinal cord function for doing the decompression, but I remember telling him that we had never had any neurologic problems before in this type of situation, but that we would probably just use it anyway.

Q. Since the first visit, did you talk, did you discuss with him the use of the spinal monitoring equipment again, in other words, as an added precaution?

A, I don't think we had any conversations over the phone. I think it was just -- you mean between the first visit and the April admission?

Q. Between the first visit and the July operation.

A. I don't remember, I'm just looking at my notes to see if I have it in my notes. I just have a discharge summary in April where I have mostly the myelogram results and that sort of thing. I don't recall whether I talked to him on that day, it's like three years plus.

Q. I understand. Did you ever write the Social

Security Administration regarding Mr. Lilley or provide them with any records?

A. I don't remember, maybe my secretary did at some request. For what purpose?

Q. For his disability.

A. I don't recall.

Q. Did you know he was on total disability now?

A. No.

Q. Dr. Bohlman, did Mr. Lilley have any problem with spasticity in his right leg before this surgery?

A. I do not think he had overt or what we would call gross spasticity.

Q. Did he have spasticity in his right arm prior to this surgery?

A. Not to any great extent.

Q. When you say not to any great extent, did he have some?

A, I don't recall that he had any reflexes that would indicate spasticity that you could document.

Q. The main reason for the operation that I saw was pain as opposed to actually neurologic compromise, is that right?

A. No, as I mentioned, pain was one of the major

reasons for doing the decompression, but patients with this kind of long standing cord compression and deformity can develop neurologic deficit later on. We have certainly seen that many times.

Q. But that at least hadn't happened up until the point you did the surgery on Mr. Lilley?

A, Well, the fact that he was having more difficulty walking, indicates more cord impairment,

Q. Do you know whether that was a function of an actual neurologic problem or a function of the pain he was having?

A. I think it was a function of neurologic impairment, This is very common with spinal cord impairment.

Q. Was that as to both the left and the right leg? Was it on the left and right side, or just the right side, or do you know?

A. Well, the fact that he's complaining of walking and fatigue and not going distances, I would think it would be both sides.

Q. Did he have any bladder problems before this date, to your knowledge?

A. No.

Q. He didn't have a neurogenic bladder or anything like that?
A. Not that I'm aware of, but we didn't test the bladder.
Q. How about any sexual impotency, did he have any of that to your knowledge before the surgery?
A. Not to my knowledge.
Q. How about spasticity in the right upper extremity, did he have any of that before this surgery?
A. As mentioned, not that one could see with objective signs on examination,
Q. Was he using a foot orthosis before this surgery?
A. No.
Q. Was he walking with either a walker or a cane to your knowledge before the surgery?
A. Not that I'm aware of,
Q. Do you know whether he had any cold or temperature intolerance before this surgery?
A. Let me go back and look at some early notes.
Q. I'm just referring to like the six months to a year before the surgery, I'm not talking about back in 1963.
A. No, I don't think so.

Q. Okay. Had the surgery gone without complication, would Mr. Lilley have been able to work at his job as a civil engineer without problem?
A. I believe so.
Q. Had it gone without complication, would he have been able to play golf?
A. Yes.
MS. REINKER: Objection.
A. Well, it --
Q. I guess it's a relative term,
A. I don't know.
Q. Would he have been able to go out and walk on the golf course and swing the club, I'm not talking about would he be able to go break par or do well, but would he have been able to go play golf?
MS. REINKER: Objection.
A. I don't know whether he could play golf before, in all seriousness as far as impairing.
Q. Let's put it this way, if he had wanted to, Dr. Bohlman, after the surgery that you would have done, if it would have been done without complication, could he have gone out and played golf?

A. I probably would not have limited that.
Q. Would he have been able to go out and walk for long distances, one to two miles after the surgery, had it gone without complication?
A. I would hope so, but that's not totally predictable.
Q. Had the surgery gone without complication, would he have been able to bowl?
A. I would assume so.
Q. Had it gone without complication, would he have been able to dress, bathe, go about his daily activity without much difficulty?
A, I believe so.
Q. Was the physical therapy that was prescribed at Children's Hospital, would that have been necessary if the surgery had gone without complication?
A. Probably not.
Q. How long would the hospital stay have been at University Hospital had the surgery gone without complication?
A. It averages a week to 10 days, but in this day and age, we are forced to get people out sooner and sooner.
Q. Do you remember telling Mr. Lilley how long he

should plan to be in the hospital if the surgery had gone without complication?

A. I don't recall exactly, but I'm just going on the average, a week to 10 days,

Q. Had the surgery gone without complication -- strike that.

I'm just going to ask you some things as to whether or not you may have an opinion on that, and you may not, because I know you haven't seen Mr. Lilley in a long time. But do you have any opinion one way or the other as to the extent of his disability now?

A, Well, that's very difficult to say, because I really haven't examined him for a long period of time, nor have I seen any neurologic exam notes.

On the last visit he had very significant neurologic recovery, and his spasticity, or his jumpiness of his muscles, I think was impairing his functioning at that time. I think he had some swelling in his hand that was impairing his function at that time, but I don't -- it's difficult for me to say three years later what his disability is.

Q. At that point in time when you last saw him --

do you ever do impairment percentages?

A, No.

Q. Based on your last examination, do you have any opinion as to his degree of disability?

MS. REINKER: At that time?

MR. TOPPER: Yes.

A, This must have been April 15th, 1989. Going back to September 16th, 1988 when I saw him back nine weeks following the surgery, he was really walking quite well, and I have a note that he took a train up to New York last week, got off at 42nd Street at the station and walked all the way to 8th Avenue.

Q. Do you know how long that is?

A. I'm not sure how many blocks, I mean I don't know New York extraordinarily well, but it's certainly a number of blocks. He could negotiate stairs at that time.

Q. It indicates in there at some point in time in one of your notes that he had purchased a one-level house, before he had been in a three-level house. That's in one of your postop notes. Do you recall that?

A. Not really.

Q. Would you have discouraged him from going into a

one-level house as opposed to a three-level house that he had before?

A. I don't know that the single level would be absolutely necessary if he was negotiating stairs.

Q. I saw that in your notes somewhere. If you had told him that that was not necessary, if you felt that that was not necessary, would that be something that you would have put in your notes?

A, I may or may not have.

Q. Do you have an opinion now one way or the other whether or not Mr. Lilley is permanently disabled?

MS. REINKER: Objection.

A. I have no idea because I haven't examined him for years.

Q. Okay. To your knowledge, do *you* recall ever discouraging him from purchasing a one-level home?

A. I don't recall.

Q. Did you talk to him about seeing a urologist at any point in time?

A. I believe I did, and also Dr. Falk, the psychologist did, but I never saw a note from a urologist.

Q. If the urologist suggests that Mr. Lilley has a neurogenic bladder, would you disagree with that, or would you know one way or the other?

MS. REINKER: Objection.

A. I would want to see a cystometrogram and proof of that. He certainly was continent and not having any trouble voiding when he left the hospital, and on follow-up visits, he was continent,

Q. Did you have a urological consult done at University Hospital?

A. I have Dr. Bodner's name in there, but I don't know whether he ever saw him. To be honest, I don't think he ever saw him, because I think he was continent and it was not necessary,

Q. Do you specifically recall in your notes indicating that Mr. Lilley was continent? I don't see anything in your notes one way or the other, I just wonder if it's in your notes?

A. I remember for a fact he was continent both in the office visits and the hospital.

Q. Did he ever indicate to you in any of your office visits that he was incontinent?

A. No.

Q. Did he ever indicate to you that he was having

sexual problems?
A. He told me he could have erection, ejaculations, but that it felt different, Now that's a very subjective complaint.
Q. Did you at that point in time, or do you now have any opinion one way or the other whether that is a spinal cord defect or that's a neurological defect causing that?
A, Yes.
Q. What is that opinion?
A. I don't think it's a neurologic defect causing it. Based on my own experience with spinal cord injuries for the last 20 years, and I say that because when people are continent, and they have as little motor loss or paralysis as Mr. Lilley had, they generally do not have sexual impairment at this level of spinal cord injury.
Q. At what level of spinal cord injury would you say you first begin seeing incontinence?
A. You can see it at this level, but it's usually when patients are more severely injured and don't recover.
Q. How about at what level do you first begin seeing problems with sexual function?
A. You can see it at any level, that's not the

issue. The issue is the severity of the spinal cord injury.

Q. Are you basing the severity of his spinal cord injury on what you saw objectively on the MRI studies, or are you comparing those to what you see that Murray Lilley has as far as the objective, in other words his arm movement, his leg movement and other things like that?

A. I'm only basing the severity on the last examination in 1989 or thereabouts, the fact that he had very significant recovery of function and had bladder control.

Q. Okay. In other words, the significance of the recovery you are basing on what you observed regarding his right side as opposed to what you might have seen on any type of MRI?

A. Yes. And, of course, he was from a motor standpoint, he was normal on the left.

Q. Have you ever discussed Mr. Lilley's case at any professional meetings, in any professional meetings?

A. I discussed it with Dr. Dudley on occasion.

Q. What type of discussions did you have with Dr. Dudley?

A. Just his progress and whether he was still

seeing him. I don't think I have ever used his case as an example in any of my writings or anything, I can't recall. I may have talked about it to somebody, I don't recall specifically anybody. I'm sure I talked about this with Dr. Smith because he was a fellow there, he followed his progress up until I followed it, and Dr. Moses was the neurologist that saw him in Baltimore.

Q. Have you read Dr. Moses' reports?

A. I have two, I believe, there are two in there.

Q. Do you know of, do you know from what you remember if there is anything in those reports with which you disagree?

A. I have to look at it. Mr. Lilley possibly has -- "If Mr. Lilley possibly has a residual of a right anterior spinal artery syndrome at the above level. We should make some attempt to deal with the spasticity right hemiparesis and difficulty with sphincter control and sexual function. I'll be discussing all of the above, I don't know what that is, with you in the future. Meanwhile I will give him a trial on the Oreticyl 10 milligrams for spasm and introduce him to a urologist."

Q. Do you feel that the prescription of the Oreticyl is appropriate in Mr. Lilley's case?
A. Well, I had mentioned it in one of my notes also, but I think he was reluctant to take some medication that might make him tired, but I remember mentioning an antispasmodic in one of my notes. I think it depends on how much Dr. Moses thought he was impaired.
Q. During his stay at University Hospitals, you requested a neurological consult?
A. Did I?
Q. Yes.
A. I don't recall.
Q. I would like to get back to something I asked about during the operation. We talked about the graft. After thinking, after we've gone over everything that we've gone over, Dr. Bohlman, can you think of what caused the graft to force itself against the ligament and then into the spinal canal?
A. I don't know what did it or how it occurred.
Q. Is it your opinion that it would most likely have to be some type of outside force which would cause that to occur, in other words, force outside the body?

A. I don't know, I mean we've gone over many different forces that can cause a graft to extrude.
Q. Can you conceive any internal force that would cause that to move?
A. Only as I mentioned, coughing or restlessness. I've seen people cough grafts out of place, straining.
Q. Given the fact that this was against a ligament, how forceful of a cough would that have had to be to press that back against it?
A. I don't know how you would measure that, but coughing and straining, I have just seen people do that, forceful coughing and straining,
Q. How long does it take for a graft to heal into a situation where a cough or a forceful movement, something to that effect, will not cause the graft to dislodge itself?
A. I would say with an iliac graft, probably three to four weeks.
Q. So, then, does one want to prevent coughing and that type of thing within the first three to four weeks so that doesn't happen?
A. Well, you like to prevent any force or straining of people and restrict their activities. I'm

not sure you can prevent people from sneezing and coughing.

Q. In looking over the operative note, it indicates that the size of the fibular graft was one and three-quarter inches, and the size of the iliac graft was approximately an inch-and-a-half. Would that be --

A. I don't know that I put a length on the iliac graft. I know there was an exact measurement of one and three-quarters on the fibular graft. Yes, you are correct, approximately an inch-and-a-half, I don't think I have the exact measure.

Q. Dealing with inches, how many inches or quarters of inches or eighths of inches would eight millimeters be?

A. Eight millimeters in length would be, that's very small, tiny, tiny, it would be a quarter of an inch in length.

MR. TOPPER: I don't have anything further. Thanks.

MS. REINKER: Okay. At some point your deposition will be written up, and you will have the right to review the deposition before your signature is placed

over the transcript, and I suggest you do that in a medical case,

Again, can we have the same stipulation to extend the seven days and to send the doctor the deposition so he doesn't have to come to the court reporter's office?

MR. TOPPER: That's fine.

_____

HENREY BOHLMAN, M.D.

C E R T I F I C A T E

The State of Ohio,) SS:
County of Cuyahoga.)

I, M. Sheila Hanlon, a Notary Public within and for the State of Ohio, authorized to administer oaths and to take and certify depositions, do hereby certify that the above-named HENREY BOHLMAN, M.D., was by me, before the giving of his deposition, first duly sworn to testify the truth, the whole truth, and nothing but the truth; that the deposition as above-set forth was reduced to writing by me by means of stenotypy, and was later transcribed into typewriting under my direction; that this is a true record of the testimony given by the witness, and was subscribed by said witness in my presence; that said deposition was taken at the aforementioned time, date and place, pursuant to notice or stipulations of counsel; that I am not a relative or employee or attorney of any of the parties, or a relative or employee of such attorney or financially interested in this action.

IN WITNESS WHEREOF, I have hereunto set my hand and seal of office, at Cleveland, Ohio, this ____ day of _____, A.D. 19 __.

_____
M. Sheila Hanlon, Notary Public, State of Ohio
1750 Midland Building, Cleveland, Ohio 44115
My commission expires January 14, 1996

LAWYER'S NOTES

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