THE STATE OF OHIO,)
) SS:
COUNTY OF CUYAHOGA.)

D.O.C. 72

IN THE COURT OF COMMON PLEAS

FRANCES SMITH, Administratrix of the Estate of Alvester Smith, Sr., Deceased,

Plaintiff,

v.

ST. LUKE'S HOSPTAL, et al.,

Defendants.

Case No. 100877

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Deposition of LESTER S. BORDEN, **M.D.,** taken by the Plaintiff as if upon cross-examination before Kerry L. Paul, a Registered Professional Reporter and Notary Public within and for the State of Ohio, at The Cleveland Clinic Foundation, 9500 Euclid Avenue, Cleveland, Ohio, on Thursday, the 5th day of November, 1987, commencing at 2:00 p.m., pursuant to notice.

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APPEARANCES:

Charles Kampinski Co., L.P.A, by:
Charles Kampinski, Esq.,
and
Christopher M. Mellino, Esq.,

On behalf of the Plaintiff.

Reminger & Reminger, by:
Marc W. Groedel, Esq.,

On behalf of the Defendants Timothy L. Stephens, Jr., M.D. and Curtis W. Smith, M.D.

Jacobson, Maynard, Tuschman & Kalur, by:
Michael J. Hudak, Esq.,
and
Stephen J. Charms, Esq.,

On behalf of the Defendant S.J. Lee, M.D.

Arter & Hadden, by:
Michael C. Zellers, Esq.,

On behalf of the Defendant
St. Luke's Hospital.

Kitchen, Messner & Deery, by:
Pamela L. Dugas, Esq.,

On behalf of Agnes Sims, R.N.

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STIPULATIONS

It is stipulated by and between counsel for the respective parties that this deposition may be taken in stenotypy by Kerry L. Paul; that her stenotype notes may be subsequently transcribed in the absence of the witness; and that the reading and signing of the deposition by the witness were expressly waived.

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LESTER S. BORDEN, M.D.,

a witness herein, called by the Plaintiff for the purpose of cross-examination as provided by the Ohio Rules of Civil Procedure, being by me first duly sworn, as hereinafter certified, deposes and says as follows:

CROSS-EXAMINATION

BY MR. KAMPINSKI:

Q. Doctor, my name is Charles Kampinski and I represent the Estate of Alvester Smith. I'm going to ask you a number of questions. If you don't understand any of my questions, please tell me and I'll be happy to rephrase them.

A. Okay.

Q. When you respond, do so verbally. She can't take down a nod of your head, all right? Okay?

A. Yeah.

Q. Will you state your full name, please.

A. Lester Borden.

Q. And you are an orthopedic surgeon?

A. Yes.

Q. If you would, run me through your educational background, sir, starting with college.

A. I went to Virginia Tech, graduated as a

mechanical engineer and a naval architect. I did my premed at the University of Pennsylvania. While I was working, I was a naval design engineer. I went to medical school at New York Medical College in New York City and graduated in 1969.

Q. Okay. Did you have any additional training after that, sir?

A. I did a surgical internship and surgical residency at St. Vincent Medical Center in New York City and did an orthopedic residency at New York University at Bellevue Hospital in New York City and I did a fellowship in adult reconstructive orthopedic surgery, joint replacement surgery at the New England Baptist Hospital in Boston.

Q. When did you do that?

A. 1974 to '75.

Q. And did you have any additional training after that?

A. No.

Q. Where did you go after that to practice?

A. Here, Cleveland Clinic Foundation.

Q. And you have been here since that time?

A. Yes.

Q. Do you have a CV, Doctor?

A. I was going to get one. My secretary is out, but I can get you one.

Q. Before we leave today, if you would just get us one.

A. Okay.

Q. That lists whatever publications you have had?

A. Societies, publications, everything.

Q. All right. Board certified, Doctor?

A. Yes.

Q. And when did you obtain your certification?

A. 1975.

Q. You mentioned a fellowship in joint replacements?

A. Yes.

Q. I assume that includes hip replacements?

A. Yes.

Q. And is that something that you have specialized in since that fellowship?

A. Yes. I'm the head of adult reconstruction at the Cleveland Clinic. I have been that for the last ten years or so.

Q. And how long have you been the head of that department?

A. Ten years.

Q. How many people are in that department?

A. It is a division of the orthopedic department. Our department is sectionalized according to subspecialty and there are four members of that section who are full-time joint replacement surgeons and there is another three people who do joint replacements who come to the section meetings, but are primarily in other sections, so there's really seven of us.

Q. Have you ever been involved in litigation yourself, Doctor?

A. Have I been sued?

Q. Yes.

A. No.

Q. Have you been involved in testifying in lawsuits?

A. Many times.

Q. For which side or has it been both?

A. Both.

Q. All right. And how often have you testified for the plaintiffs versus defendants?

A. Probably more plaintiff, because most of them are -- you know, we see a lot of post traumatic-type things where the patient has a

lawsuit, an injury claim, things like that.

Q. You are talking now in terms of testifying as the treating physician?

A. Yes.

Q. Okay. I'm talking about as an expert. I'm sorry if I didn't make myself clear.

A. I haven't.

Q. Is this the first time that you have ever testified as an expert?

A. Oh, I'm sorry. I take that back. No, it is the first time. Yes.

Q. Have you ever been asked to get involved as an expert by either side?

A. Routinely.

Q. Okay. This is the first time that you ever agreed to do so?

A. Yes.

Q. Do you know how it is that Mr. Groedel came to you to review this matter?

A. The people at Reminger, I have some friends there.

Q. All right.

A. And they caught me at a weak moment.

Q. Okay. What did you review in order to provide an opinion in this case?

A. His chart.

Q. Is that it?

A. Yes.

Q. Did you review any depositions of any doctors?

A. We got some depositions. They were mostly related to the anesthesia, anesthesiologist.

Q. Whose depositions did you get?

A. It is --

MR. GROEDEL: Curtis Smith's and Dr. Dowd's, those two.

Q. (BY MR. KAMPINSKI) Did you get those before --

A. These came to my office about two weeks ago and I kind of breezed through them.

Q. After you wrote your report?

A. Oh, yeah, long after.

Q. So the only thing that you had prior to writing your report was the chart?

A. Yes.

Q. What were you asked to do?

A. I was just asked to see if Dr. Smith did anything inappropriate.

Q. All right. Were you asked in a verbal form or did you receive any correspondence setting

forth any facts that you were to assume?

A. I believe I got a letter.

MR. GROEDEL: I think I did send you a letter.

Q. (BY MR. KAMPINSKI) Do you have it?

A. No.

THE WITNESS: Do you have a copy of it?

MR. GROEDEL: Not with me, but I'm pretty sure I sent him a letter.

A. My secretary may have that.

Q. (BY MR. KAMPINSKI) Do you have a file on this case?

A. I have his chart and she may have the correspondence that I got asking me for a letter.

Q. If we could see that then before we leave today too?

A. Yes, if I have it.

Q. Were there any facts set forth in that letter that you were asked to assume that assisted you for purposes of reviewing this matter?

A. In the letter that I received from Reminger?

Q. Yes.

A. They just wanted me to basically review

the chart and see if Dr. Smith did anything inappropriate.

Q. All right. He was the attending physician, was he not?

A. Yes.

Q. And would you just briefly give me what you believe the responsibilities of an attending are with respect to a patient such as Mr. Smith?

A. Well, if you are the primary physician -- if you have multiple doctors involved, there's a primary physician who is in charge of admitting the patient, evaluating him for a specific problem and then calling in other physicians as needed depending on the problems that exists.

Apparently Dr. Smith felt that this man had hypertension, a couple of medical problems that were of concern and he had an an internist evaluate him preoperatively.

Q. Would Dr. Smith be the attending, primary physician then on this case?

A. He would take care of the orthopedic problems and the internist would take care of the medical problems.

Q. Does that mean that he did not have to follow the patient while he was in the hospital in

terms of any other problems, assuming that this attending only came and visited him occasionally?

A. It depends on the circumstances.

Q. Well, the circumstances that I have just told you.

A. There's a million permeations and combinations that happen to human beings in a hospital. If a patient is admitted for an elective orthopedic procedure, which happens to be the case here, and the patient has medical problems or has a positive medical history or a questionable medical history, frequently we will call a medical consultation.

We will have an internist -- if he is a diabetic and everything else seems to be clear, we may get an endocrinologist to see him. If he has hypertension, maybe two or three problems, generally we will get one of the internal people in the department of internal medicine or an internist to see him. They generally evaluate the person, make sure that all of the medical -- the guy is stable, the patient is stable, make sure that the medications are appropriate and so forth and then clear him for surgery from a medical paint of view,

Q. In other words, if he had somebody with prior problems, that would normally be something that would be done; that is, to get him cleared for surgery?

A. Yes. That's more common than uncommon when you are talking about the arthritic group, because they are older and many of them have problems and then the anesthesiologist also evaluates the patient too.

Q. In your review of the record and your review of the depositions sent to you since you prepared your report, have you come to any conclusion what, if any, knowledge Dr. Smith had about this particular patient in terms of his medical problems, specifically the heart attack that he suffered?

A. When?

Q. After the first surgery.

MR. GROEDEL: Objection.

A. He was aware of it.

Q. (BY MR. KAMPINSKI) He was aware of it?

A. I'm sure he was aware that he had a patient in the hospital with a heart attack.

Q. Can you show me where in the record that he determined that?

MR. GROEDEL: He's talking about a heart attack that he says happened after the first surgery.

Q. (BY MR. KAMPINSKI) That's right.

A. I'm sorry. I thought you were talking after the closed reduction.

Q. No, I'm talking about the first surgery, the hip replacement.

A. Okay. I'm not sure if, you know, what communication he had, but I would be -- I mean, it would be hard to conceive that a guy will be in a hospital being treated for a heart attack and not know about it.

Q. You would think that somehow he would have known about it?

A. Yes, sure.

Q. And would that have been within his responsibility as the attending to have been aware of that?

A. Apparently the patient was being treated by an internist for a heart attack.

Q. I'll ask you to assume that he wasn't being treated by an internist.

A. Yes.

Q. Then that would have been within his

responsibility to be aware of that?

MR. GROEDEL: Objection.

A. If he was the only doctor caring for the patient.

Q. (BY MR. KAMPINSKI) Well, let's start with the first surgery, Doctor. You are correct in assuming that he was cleared by his internist for that surgery, for the hip replacement?

A. Yes.

Q. Is there anything in that first surgery that struck you as odd or uncommon or adnormal?

A. (Indicating.)

Q. You have to answer verbally.

A. I'm sorry. No.

Q. The fact that there was a fracture of the -- what was it, the calcar portion of the femur?

A. Yes.

Q. That's not unusual. That happens, I take it, in this surgery?

A. It can happen.

Q. And it did happen here apparently?

A. Yes.

Q. Does it normally happen because too much pressure is being used?

A. There are many reasons why something like that can happen. These prosthesis don't come in 700 sizes. There's an infinite number of sizes of femurs and occasionally, depending on the quality of the bone, the shape of the bone, the internal topography of the bone, when you implant a ridged metal device into a tubular fibroelastic structure, the bone can crack at the calcar and what that means is that the top of the ring -- you are looking into a hole and the top of the femur can have a little tiny split and most of the time it is innocuous.

Q. Okay.

A. If it does split and it's not innocuous, then you have to make it stable at the time of surgery.

Q. And how do you go about doing that?

A. Well, it depends on what kind of hip you are going to use. If you are going to cement it, the cement will do it.

Q. What if you plan not to use cement originally?

A. If you have a crack, you have to use some kind of external -- you can use what we call a ciclage wire to restore the continuity of the

ring and you implant the prosthesis. Those are decisions that are made intraoperatively.

Q. Are there some hazards associated with the use of cement?

A. In what respect?

Q. Well, in respect to a hypertensive patient.

A. Not necessarily hypertensive, but hypovolemic.

Q. Meaning what?

A. Meaning that the patient is dehydrated and the French had published reports on people that had quote, unquote, cardiovascular collapse during the insertion of the cement, you know, years ago and most of those patients were elderly, dehydrated patients.

They were on the table a long time. During the beginning days of total hip replacements, people were just sort of learning on the job how to do it and they dehydrated. They got behind in fluid; and if they were older, they just did not have the pizzazz to bounce back. When the monomer circulates -- the monomer is part of the -- what happens is the way you mix cement is you have a powder, a monomer and there's

chemicals in there and you mix the liquid, which is a monomer with a powder and that starts -- the cement will polymerize. When it gets doughy, you insert it in the bone. You put the prosthesis in and hold the cement and it is done. The monomer can leak into the circulation, which is very innocuous unless the patient is really dehydrated and debilitated.

Q. Can it cause adverse cardiovascular results?

A. Yes, immediate too. The patient can arrest.

Q. All right.

A. It has happened. It is extremely rare, but it has happened.

Q. That is something that in somebody who has potential cardiac problems you will take into account in terms of whether to use cement or not?

A. No.

Q. You wouldn't take it into account at all?

A. No, you would make sure they were hydrated. The majority -- a large percentage of patients undergoing cemented conventional total hip replacements have a history of heart disease and are actually on medication for it.

Q. How often would you say displacements occur after a total hip replacement?

A. Well, it varies. There are many articles in the literature on that. If you read an article of 100 total hips, it may vary from, you know, 0 to 8 percent, but most of them are around 4 percent.

Q. Can it be because of the original placement being inappropriate?

A. It can be because of that.

Q. Have you reviewed the x-rays in this case?

A. Yes.

Q. All right.

A. It is okay.

Q. It looks okay?

A. It is good,

Q. When did you review the x-ray?

A. I saw them a little while ago.

Q. You did not review them before you prepared your report?

A. I reviewed them when I first got involved with this, yes.

Q. And everything was in alignment originally?

A. In fact, those kind of hips are a little e stable than a conventional total hip because the cup is bigger. It has a big equator. It has to come further out of socket to dislocate.

Q. Why was the cup bigger?

A. It is a bipolar hip versus a conventional -- what a layperson would consider a total hip. When you talk about total hips, as a cemented -- it is a fixed acetabular component, whether it is cement or cementless. It is fixed in the bone and it has a smaller ball that goes inside of it. Bipolar has a small ball and then it has a pressed fit, a larger ball with a smooth metal backing on it that can actually rotate and you stick it into the socket.

Q. Okay.

A. So there is movement between the socket component and the socket bone as opposed to a conventional total hip where there isn't any motion at that interface.

Q. All right. And I assume the use of cement has nothing to do with the fact that it is bipolar. You can still use the femoral canal?

A. You can do it either way. The criteria for using cementless hips -- and I may have the

largest experience in the country with them -- is you have to achieve press fit stability. The bone is elastic. You are putting a ridged thing in and it has to clamp down on the prosthesis.

Q. That is what Dr. Smith was going to do here?

A. Well.

Q. He didn't clamp it because he didn't get bone fit prosthesis? He changed it because of the crack in the calcar, right?

A. Perhaps; but if that's the reason, he did the appropriate thing I think.

Q. All right. Did you look at the crack? Did they take x-rays of it?

A. You can't see it.

Q. Why not?

A. It's probably a longitudinal split. In other words, the bone isn't displaced. It is just split.

Q. All right. I thought you told me earlier depending upon the severity of the split would determine whether you use cement or not?

A. It does.

Q. So you are saying that you couldn't see it?

A. If it is a nondisplaced split, you cannot see it on the x-ray, all right? In other words, the bone, as you put the prosthesis in, begins to split. It is elastic. You take the prosthesis out and it clamps shut. The reason you don't use a cementless prosthesis is that if you put a cementless prosthesis in there and ignore the split, then you will have rotatory instability and it will fail; so in that situation if that is done, you cement it. It's not a big deal.

Q. You reviewed the anesthesiology record in the first operation of November 14th?

A. I did awhile ago. I would have to refer to it.

Q. Well, his blood pressure fluctuated? You don't have any disagreement that he should have gone to intensive care after that?

A. After the first operation?

Q. Yes.

A. No.

Q. And you reviewed the results of the tests done in intensive care?

A. Yes.

Q. And you noticed the fact that there was a 2 percent MB fraction of the CPK?

A. Yes.

Q. What does that mean to you, Doctor?

A. It means that he could have had some heart damage.

Q. And you read Dr. Smith's deposition you say within the last two weeks?

A. I breezed through it. I really didn't read that, because I was asked to testify as to the orthopedic care here and what was appropriate.

Q. He is the orthopedic doctor?

A. I mean, I didn't go into whether or not this guy should have had, you know, something done about his heart at that point by Dr. Smith. Do you follow me?

Q. Sure, I follow you. I thought you told me before that he should have at least been aware of it. Are you aware of the fact that Dr. Smith was not aware of it?

A. No. About the enzyme?

Q. Yes.

A. No.

Q. Should he have been?

A. I don't know.

Q. Are you aware of the fact he never went to see him in intensive care at all?

A. No.

Q. Should he have?

A. I don't know.

Q. When he was --

A. I don't know if he should have. I mean, for a social visit, to check his hip, to check his enzymes, to check his medical --

Q. For any or all of the above.

A. I think it would be inappropriate for Dr. Smith to manage his medical condition at that point.

Q. All right.

A. If that's what you are asking.

Q. Should he have been aware of it to make sure it is managed since he is the attending?

A. Oh, yes.

Q. And he certainly should have been aware of it before proceeding on the second operation, shouldn't he have?

A. Aware that he had a medical problem?

Q. Yes.

A. Sure.

Q. And gotten some kind of medical approval for the second operation?

A. Yes.

Q. Can you tell me why he didn't do that?

MR. GROEDEL: Objection.

A. I thought he did. I thought that Dr. -- what is his name?

Q. (BY MR. KAMPINSKI) Jackson?

A. -- Jackson saw the patient that day and was aware of the second operation.

Q. What if I tell you that he testifies that he wasn't? Would that effect your testimony in this case, Doctor?

MR. GROEDEL: Objection.

A. That he wasn't notified that -- that he didn't see the patient?

Q. (BY MR. KAMPINSKI) That he saw him; but before the decision was made to do surgery, he was never cleared by Dr. Jackson for the second surgery?

MR. GROEDEL: Objection. The testimony has also been that Dr. Smith called Dr. Jackson to advise him of the second surgery, just so that you know that fact.

Q. (BY MR. KAMPINSKI) That's Dr. Smith's testimony, not Dr. Jackson's.

A. That's what I would have done. I mean, if that's what had happened.

Q. You would have called him and told him. Would you have gotten approval from him?

A. If he said go ahead and do him, I saw him today, he's fine, then I would have called the anesthesiologist.

Q. What if I asked you to assume, Doctor, that Dr. Smith has testified that he did not get medical clearance from Dr. Jackson for the second surgery?

MR. GROEDEL: Objection.

A. You mean that Dr. Jackson said he is not clear?

Q. (BY MR. KAMPINSKI) That he never asked him. That was never discussed between them. Even assuming that you believe Dr. Smith's version, that all he did was to call him and tell him that the surgery was going forward, but that he never sought nor received any medical approval from Dr. Jackson?

MR. GROEDEL: Objection. Go ahead.

Q. (BY MR. KAMPINSKI) Would that effect your testimony, sir?

A. I would get medical clearance.

Q. And I take it that would be a deviation from the standard of care for an attending

physician, whether he be orthopedic or whatever, not to get medical clearance under that circumstance?

MR. GROEDEL: Objection.

A. Yes.

Q. (BY MR. KAMPINSKI) All right. Were you aware of the fact that Dr. Smith did not have specific knowledge of the various laboratory values that existed prior to the surgery of November 17th?

A. No, I wasn't aware -- you are talking about the enzymes and things of that nature?

Q. I'm talking about the hemoglobin, hematocrit.

A. I'm not aware of whether he was -- if you are talking about hemoglobin, just hemoglobin, the closed reduction doesn't really result in any blood loss.

Q. What if the person had been losing blood, though?

A. You would have to be sure that he's stable for the anesthesia and the anesthesiologist generally would question that.

Q. Shouldn't the attending be aware of it too, if there was a drop in blood loss for the

three days between the first and the second surgery?

A. Again, if he's the only physician caring for the patient, then it is his responsibility. If the guy is dropping his hemoglobin and he's being followed by an internist --

Q. Sure.

A. Somebody has to take charge of the medical situation; and if you don't have an internist following the patient, then it is your responsibility.

Q. Did you review the note of the internist on the morning of the 17th?

A. I did, but I would have to refresh my memory.

THE WITNESS: Is that this here?

MR. GROEDEL: Yes.

Q. (BY MR. KAMPINSKI) Did he order some additional tests to check on the drop in the hematocrit and the hemoglobin?

A. Yes. The guy had a total hip. He's three days postoperative. We order hematocrits routinely for several days after total hip and there's a couple of reasons for that. One, they continue to bleed, particularly, you know, if they

have raw bone or whatever and particularly in revisions, which this was not.

Secondly, they equilibrate. They are given fluids intravenously and everything has to sort of settle down and get back on a regular diet while you get the final blood count and so the blood count that you get the first or second day might not be totally accurate. The reason you want to follow him BID twice a day is you want to see if there's a trend.

Q. Was there a trend here, Doctor?

A. He probably was loosing a little blood. His hemoglobin that morning was 10.8, 11 grams. You wouldn't transfuse for that. In fact, I just got reprimanded for transfusing a patient with a lower hemoglobin here.

Q. Does it drop from 15. --

A. Say 16.

Q. 15.8?

A. Four grams?

Q. Yes, in a period of three days?

A. No.

Q. That's not unusual?

A. That's usual.

Q. Would it continue to drop each day or

would you expect to see most of the drop the first day?

A. You see it the first couple of days and then you can see a second peak and a drop the third day. It has to do with the cardiovascular status, their fluid load and so forth.

Q. From what you are telling me, certainly in terms of your cases, you are aware of that drop? You watch it and make sure --

A. If I had a patient that dislocated his hip on post day 3 with a hemoglobin of 10.8 and he seemed stable, I wouldn't transfuse him and take him back and do a closed reduction.

Q. You would or would not?

A. I would not.

Q. All right.

A. Particularly in light of, you know, concern with AIDS and everything else and the fact --

Q. Fine. You wouldn't transfuse him?

A. No.

Q. There's another word that you mentioned there too and that is you would want to make sure that he's stable?

A. Stable.

Q. And, once again, you would get a medical

consult for an individual who had hypertension?

A. If he had other medical problems. if he did not have any medical problems, I can determine it.

Q. This man did have medical problems?

A. Yes.

Q. And you also noted in your report that there were coffee ground emesis. You only mentioned one, but there was more than one, wasn't there?

A. I believe there were and I would have to review,

Q. When you say guiac positive --

A. That means there's blood in it,

Q. And is that a significant finding?

A. It can be and it might not be.

Q. You have to investigate to find out, don't you?

A. Yes.

Q. The attending physician, isn't that the person that should insure that it is investigated? I'm not saying he should be the one to do it, but he should make sure that someone is investigating it, shouldn't he?

A. Yes, but I think the internist is

following his hematocrit twice a day.

Q. Doctor, he ordered it twice a day the morning of the 17th. He didn't see him prior to that?

A. Yes, but he also didn't know that he was going to dislocate and that he was going to have to go to OR. This has nothing to do at this point with whether or not he's going to be cleared to go to surgery. This guy is concerned about, you know, something. He's stable and he's decided that he's going to watch this and so he's ordering hematocrit to see if they drop. That is appropriate.

Q. Getting back to my question --

A. He discontinued his aspirin and he's probably thinking he had gastritis or something at that point.

Q. Once again, Doctor, my question is wouldn't it be the responsibility of the attending to insure that the possibility of a bleed is explored further and to insure that is not what is going on?

A. Yes, but sometimes you can observe the patient too.

Q. All right.

A. I mean, everybody --

Q. Did he make a decision to observe him or did Dr. Smith make any decision in this case about the potential of the gastrointestinal bleed?

A. I think it is proper that Dr. Jackson is doing this here.

Q. All right. So that you see no need for Dr. Smith to even get involved in that?

A. Not in that part of it, no. Just so long as it is being followed, which it obviously is.

Q. And would it suprise you if Dr. Smith indicated that he wasn't aware of the fact that Dr. Jackson had been in to see him that day?

MR. GROEDEL: Objection.

Q. (BY MR. KAMPINSKI) So that he didn't know whether he was being followed for that?

A. Yes, it would.

Q. And shouldn't he have insured that somebody was following it? I mean, I appreciate what you are saying, that Dr. Jackson was there, but he didn't know Dr. Jackson was there and my point is shouldn't he have been a little more concerned about his patient and his potential problems?

MR. GROEDEL: Objection. Go ahead.

A. If he didn't know -- and I don't know if he didn't.

Q. (BY MR. KAMPINSKI) I ask you to assume that.

A. If he didn't, I would agree with that. If he didn't.

Q. All right. On the 17th at some point during the day it was determined that Mr. Smith had dislocated his hip and I assume that has to be taken care of at some point?

A. Yes.

Q. But it's not taken care before the patient is stable, would that be fair?

A. It is somewhat urgent, but not an emergency.

Q. All right. You want to make sure that the man is stable before you put him through another procedure?

A. Yes.

Q. You have read the recovery room notes, haven't you, Doctor?

A. Yes, I did, but I haven't read them in awhile,

Q. Why don't you turn to them now?

A. You are talking about after the relocation?

Q. Correct. After the closed reduction. Doctor, this is page 155. I don't know if your copy shows it or not of the record and that's when he was first admitted to the recovery room at 5:25 p.m. on 11-17. What condition was he in, Doctor?

A. Well, I can just read you what it says here. It says skin temperature cool, diaphoretic. I can't read this. Pink, dusky -- dusky nail beds. His blood pressure was stable. His pulse was a little high.

Q. Tachycardia?

A. Irregularly regular. I can't read that. I guess that means --

Q. 105 is tachycardic also?

A. Yes. I can't read what is over. REG is crossed out and then his respirations were 32.

Q. Above REG is IRR. I assume that is irregular?

A. Irregular.

Q. All right.

A. And then it just gives some information about his dressing was dry, which you would expect, because they didn't open it and he had a knee

immobilizer on. He was in Bucks traction. I guess that's Bucks traction. His lungs were clear. His respirations were regular. I can't read this. This is a bad copy. Under respirations?

Q. Apid maybe? I'm not sure.

A. I don't know.

Q. Or apic?

A. Apic. Whatever that is. His chest excursions were equal. That goes on and talks about his fluids and everything; and then in remarks, he was awake, responding something or other.

Q. I think that's respiration?

A. He's complaining of shortness of breath.

Q. You skipped dyspneic?

A. Dyspneic. Well, shortness of breath. Dr. Lee aware. Breaths sounds clear throughout. Dr. Smith visited. Placed on some --

Q. Dinamapp?

A. And cardiac monitor.

Q. A fib?

A. Atrial fibrillation, ventricular something or another.

Q. Uncontrolled ventricular rate and frequent multi focal PVC's noted?

A. So he's having a bit of arrhythmia.

Q. He was in trouble, wasn't he?

A. Yes.

Q. Shouldn't Dr. Smith at that point, sir, had gotten some help for this man or put him into intensive care or done something for him?

A. Obviously somebody saw him, because they put them on lidocaine drip to take care I guess of the arrhythmia. I don't know how their hospital works. In our hospital if a patient starts having a problem in the recovery room, the anesthesiologist in the recovery room, the doctor in charge of the recovery room, takes over his medical condition. I don't think it would be appropriate for an orthopedic surgeon to manage an arrhythmia.

Q. It would be appropriate for an orthopedic surgeon to just leave or to insure that his patient is getting some kind of care?

A. Well, yes, it is appropriate.

Q. To what, to leave?

A. To make sure that he's getting the care.

Q. Are you aware of Dr. Lee's qualifications?

A. No.

Q. Are you aware of the fact that he's failed his board six times?

A. Dr. Lee?

Q. Yes.

A. No.

Q. Are you aware that Dr. Smith has failed his board three times?

A. No.

Q. Are you aware that Dr. Lee didn't even put down the right values on the pre-anesthetic record? Are you aware of that? Page 152. If you would just look at page 152 for a moment. That's Dr. Lee's pre-anesthesia record, correct?

A. That's for the second procedure?

Q. Yes.

A. Yes, it's wrong.

Q. Sure, it is.

A. I think I was aware of that when I read it the first time and I was kind of --

Q. Dr. Smith testified that Mr. Smith was in good condition at 5:25 p.m. on November 17, 1984. That's just not true, is it, Doctor?

MR. GROEDEL: Objection.

A. Well, I don't know.

Q. (BY MR. KAMPINSKI) According to this

chart it's not true?

A. When is he testifying from? When the guy left the operating room or when the guy got in the recovery room? It only takes a minute for the guy to go in the dumper.

Q. The note is 5:25 and the nurse testified that this is what his condition was when he came in the recovery room, just as it is written.

A. When is --

Q. He left the recovery room at 5:25. It takes less than a minute --

A. Well, he doesn't vaporize. You have to get on the table, get on a stretcher.

Q. I'm just telling you what the testimony is, Doctor.

A. What I'm saying is a guy can go bad that quick; and whether or not he recognized it or not, I don't know. The point is that if a patient who has had an anesthetic has a medical problem, perioperative medical problem while he's in the operating room, while he's being transferred to the recovery room, while he's in the recovery room, it is the responsibility of the anesthesiologist to handle his medical problem, not an orthopedic surgeon who is not qualified; so when you tell me

is he aware of it or is he not aware of it, I don't know.

Q. Should he be aware of it?

A. He should be made aware of it. I don't push my patient to the recovery room. My resident does it or the anesthesiologist. There's a doctor that pushes them to a recovery room and the anesthesiologist takes over. If a patient has a problem, yes, they call me immediately.

Q. To the extent that he was there and this was Mr. Smith's condition, all right, he should have been aware of it? It's got Dr. Smith visited?

A. Unless he pushed the patient in and walked out.

Q. All I can tell you --

A. And the patient went in the dumper.

Q. All I can tell you is what is here. It's got Dr. Smith visited. The nurse testified that this is Mr. Smith's condition when he was brought in and Dr. Smith --

A. You are playing word games.

Q. I don't think I am. No. 1, if he was aware of it, if he was aware of this man's condition, he should have insured that he was getting appropriate treatment and care?

A. If he was aware of it, yes.

Q. And if he was there and this was the man's condition, shouldn't he have been aware of it?

A. Sure.

Q. All right.

A. If the guy was in that condition when he was there and Dr. Smith was also there -- or Dr. Lee, I assume, was also there, because the note says that he was, and that's dated -- that's clocked in at 5:25 too. I think what you are getting at is is Dr. Smith responsible to be aware of the guy's condition and he is responsible to be aware of it. If he's informed that the guy -- you know, if they told him in the recovery room your patient has got a problem, he's aware of it. Whether he should do anything about it, other than to make sure that there's a responsibile person who can handle the medical problems there, what can he do?

Q. Call back every half hour to see how his patient is, every hour to have his resident to come down and check on the man, to --

A. For what reason? I mean, I do that, but what is the reason that he should do that?

Q. Because he's unstable and he's in

trouble.

A. But what is an orthopedic --

Q. Because he's a doctor.

A. All right.

Q. Because he's got a patient who is dying.

MR. GROEDEL: Objection.

A. I agree that I would do that, but that isn't -- you don't have to do that. You don't have to be there every half hour. What if you are in an operating room with another patient?

Q. (BY MR. KAMPINSKI) What if you go home or go out to dinner. What if you are not in the hospital anymore, because that's what occurred. He left after the operation.

A. Listen, I have been out of the hospital when patients of mine have died.

Q. Have you left them unstable in the hands of an incompetent anesthesiologist?

MR. GROEDEL: Objection.

A. I hope not.

Q. (BY MR. KAMPINSKI) The orthopedic resident, Dr. Miller, have you analyzed his conduct at all that evening?

A. No.

Q. Is the orthopod responsible at all for

the orthopedic residents in the hospital that are under his service in any particular case?

MR. GROEDEL: Objection. Go ahead.

A. Sure.

Q. (BY MR. KAMPINSKI) He is responsible --

A. Well, let me put it this way. Yes, he is responsible for the residents. If the resident screws up, you know, you are --

Q. All right. Let's assume, just for the sake of argument, Doctor, that the residents were aware of Mr. Smith's condition, aware of the fact that he had had heart problems after the first procedure, had had the potential of the gastrointestinal bleeding. Should they have made Dr. Smith aware of that?

MR. ZELLERS: Objection.

A. If you want my personal opinion, I would say, yes.

Q. (BY MR. KAMPINSKI) All right. I assume that's a professional opinion too, is it not?

A. Yes; but if you are talking about whether Dr. Smith is doing something wrong by the fact that he wasn't informed, I would say, no, as long as he knows that the patient is in the appropriate place being treated by the appropriate

people.

Q. What if he doesn't know?

A. My upbringing tells me that I would have checked in and I think most people do that. Occasionally you can't. You are on an airplane, you are in another operating room or you are taking care of another sick patient, whatever.

Q. All right. Did you read the notes of Dr. Miller in terms of what Mr. Smith's condition was at 10:30 that evening?

A. Where is that at? I probably did.

Q. It is somewhere.

A. I didn't memorize this. I read it.

Q. What page is that, Doctor?

A. Where are you reading these pages at?

Q. Right down in the corner.

A. I see. "Called to see patient. Reference: hypertension. Dr. Lee (anesthesia) to give antihypertension meds." "Cardiac rhythm."

Q. No other apparent problem?

A. Cardiac rhythm. That was at 10:30. "To see patient. Patient obtunded." That is at 11:00.

Q. Let's deal with the 10:30 entry. If you would go back to page 160. Actually let's start with 159.

A. Is that in this chart?

MR. GROEDEL: I'll find it.

MR. KAMPINSKI: Do you have the original chart?

MR. ZELLERS: I have a copy. I would have the same chart.

Q. (BY MR. KAMPINSKI) Just keep the other page back there for a second. Is that page 160? This is a continuation of the 9:15 entry, Doctor, which is on the previous page. This entry is at --

A. I know what you mean.

Q. -- 9:15 and the next page is a continuation of that.

A. He was having unifocal PVC's.

Q. He also had trigeminy? Is that what you are reading, Doctor, on the previous page? Just so we get it correct. Trigeminy noted?

A. Yes. I can hardly read it.

Q. Returned to below mid shin level? Is that unusual for an operation that occurred around 5:00?

A. No. He had a spinal epidural. It is a little slow, but it can happen.

Q. If we continue on, "Dr. Lee notified of infiltration of I.V." at 9:15?

Q. That's before the 9:15. It is a continuation of the 9:15 entry.

A. All right.

Q. And the man did not have an I.V. until 9:55 when Dr. Lee came down?

A. Right.

Q. Would that be in accordance with the standard of care to wait --

A. It depends on why he needs the I.V. obviously.

Q. Why did he need it here?

A. If he was getting medication that was critical, then he might have needed it. I assume that he was still getting lidocaine.

Q. You mean through the I.V.?

A. Yes.

Q. It was probably something that he could have used? At 10:30 Dr. Miller was paged by beeper to inform him of patient's status. Do you see that?

A. Yes.

Q. There's no indication there that Dr. Miller came down, is there, at that time?

MR. ZELLERS: Objection.

Q. (BY MR. KAMPINSKI) At 10:37 again he's

notified of the patient's condition by Dr. Lee?

A. Yes.

Q. All right. So there's no indication there that Dr. Miller came down around 10:30, is there?

A. No.

Q. So if we go back to his note from 10:30, would you view that as something that he personally observed or was told by either Dr. Lee or the nurse?

MR. ZELLERS: Objection.

A. Where are we on now?

Q. (BY MR. KAMPINSKI) Back on 123, the note that we just read.

MR. GROEDEL: The progress notes.

A. Let me keep this. What does this last line say? I can't read it.

Q. "No apparent problem with cardiac rhythm."

A. What is your question?

Q. Can you determine from that entry or those two entries whether or not Dr. Miller went down to see the patient at 10:30?

MR. ZELLERS: Objection.

A. It looks like he did on this note. "Called

to see patient. Reference: hypertension."

Q. (BY MR. KAMPINSKI) Okay.

A. He was notified, so I guess he went down there.

Q. You think from this note that he went down there?

A. I mean, it looks like it. I don't know. I wasn't there.

Q. If his testimony was that he knew Mr. Smith was in stable condition at 10:30 that night, would that testimony be accurate, Doctor? Is that what Mr. Smith was in, stable condition, at 10:30 that night?

MR. ZELLERS: Objection.

A. I wouldn't call it stable. I mean, the guy has got an arrhythmia. His restless. He's diaphoretic.

Q. (BY MR. KAMPINSKI) He's in trouble, isn't he?

A. Yes.

Q. What does sodium pentothal do to the heart, Doctor?

A. It can effect the heart. I'm not a pharmacologist, so I'm not go to testify as to the pharmacology of sodium pentothal.

Q. All right. Are you going to render any opinions, Doctor, with respect to whether or not Mr. Smith would have survived had he received appropriate medical care?

A. I can't.

Q. Okay.

A. Because I don't even know why he died. There was no post mortem, so I really can't. I would if I could, but I can't.

Q. Are you going to testify with respect to whether or not the actions or inactions of any doctors contributed to cause his death?

MR. GROEDEL: Besides Dr. Smith?

MR. KAMPINSKI: Yes.

Q. (BY MR. KAMPINSKI) Including Dr. Smith. No, besides, but including. Leaving aside the issue of responsibility, but I'm talking about legally what we call proximate cause and that is whether the actions or inactions of any of the doctors, including Dr. Smith, contributed to cause Mr. Smith's death.

A. I don't think Dr. Smith had any contribution to the cause of Mr. Smith's death to get him out of the way. You are asking me about Dr. Lee and Dr. Miller?

Q. Okay.

A. Dr. Smith is an orthopedic surgeon. You are making value statements or you are asking value judgment-type things by asking would it be appropriate if he called the hospital every half hour to find out how his patient, who wasn't doing well, is doing?

Q. Yes.

A. Even though he's not either trained or competent in taking care of this type of a medical problem?

Q. Okay.

A. My personal feeling is that I would want to know.

Q. Okay.

A. Generally what we do is if I'm home, you know, a medical resident will -- an orthopedic resident or my fellows. I have fellows too, who are here would call me during a patient's illness and let me know what his status is. It's not necessary. It's not going to effect the care of the patient.

Q. It will if you find out he's deteriorating and not getting proper care, because you would do something about it, wouldn't you?

A. Yes, but I would assume that if he had an internist or an anesthesiologist in the intensive care unit or whatever looking after this patient continuously that they were giving much better medical care than I could give as an orthopedic surgeon.

Q. Should he have gone to intensive care after the surgery based on the condition that he's in?

A. I don't know. Sometimes if we have a patient that has medical problems, we just as soon keep them in the post anesthetic recovery unit, because they have the same equipment there and they have experts there.

Q. What if they had different equipment and different kinds of monitoring in the intensive care unit?

A. A monitor is a monitor. As long as there's someone there watching and taking care of the patient. I think it is irrelevent whether he's in the intensive care unit. The fact is that you can't keep a patient chronically in the recovery room in a busy hospital. You need the recovery room. You move them into an intensive care unit.

I think if this guy stayed in that condition and had not died, they probably would have moved him into an intensive care unit eventually. As far as the orthopedic guys are concerned, I just don't see anything that they did to contribute to his death. I think he did the appropriate things. He got clearance from the anesthesiologist to go ahead and reduce -- reducing the hip is not a big deal in terms --

Q. It is in somebody that is unstable?

A. Yes, but it is not a big deal of opening somebody. The trauma of doing that is isn't anything compared to -- I have reduced them in bed sometimes if the patient did not have a lot of pain and it is dislocated. You can just put traction on it.

Q. Well, they did a lot more than that. Have you read the operative note?

A. Yes. Sometimes you have to put them to sleep and relax their muscles, paralyze them.

Q. When it says in the operative note of the 17th that a large amount of force was necessary to reduce this hip, that means a little more was required in this particular procedure, wasn't it?

A. Yes. Well, they are different. I think, you know, sometimes you can reduce them easily without giving them anesthetic and other times you could never reduce them without anesthetic.

Q. You read a lot more into my question than I intended, the one you answered about Dr. Smith contributing to the cause of death and once again I want to make a distinction.

A. I have been asked to comment on his care of this patient. I can't comment on whether --

Q. All I want to know is whether or not -- you are going to be deposed next week for purposes of video for trial and I want to know what it is that you are going to offer an opinion on; and if you are not going to discuss that, that's fine. That's all I'm asking.

A. I'm not going to discuss the actions of the internist. I think an internist should do that.

Q. Once again, we are not making a connection. I'm asking if you are going to render any opinions and maybe you are not and maybe that's what I'm asking with respect to whether anybody's actions contributed to the cause of Mr. Smith's death, whether those actions were

appropriate or inappropriate. In other words, the proximate cause issue, whether anything anybody did contributed to cause his death or whether he would have died anyhow or wouldn't have died anyhow? Do you follow what I'm saying?

A. I follow what you are saying. I follow what you are saying.

Q. What is the answer?

A. You want to know what I'm going to say in the deposition next week?

Q. Yes.

THE WITNESS: Can I tell him?

MR. GROEDEL: Yes.

A. I'm just going to tell what I told you today. Nothing else. Geez, another one. I'm going to tell you what I told you today. I'm not going to make any judgment on an internists or --

Q. (BY MR. KAMPINSKI) No.

A. All I'm going to make is a judgment on this orthopedic surgeon.

Q. Doctor, I understand what you are saying. You are not understanding what I'm asking.

MR. GROEDEL: I can give you the answer.

MR. KAMPINSKI: What is that?

MR. GROEDEL: He's not going to give a proximate cause opinion.

THE WITNESS: Tell me what I'm not going to give?

MR. GROEDEL: You are not going to give any opinions as to the cause of death.

Q. (BY MR. KAMPINSKI) As to whether or not he would or wouldn't have survived?

A. No, because I have no way of knowing that.

Q. What is your relationship to Dr. Wild? Is he in the same department? Is he the head?

A. He's the chairman of the department of orthopedic surgery.

Q. All right. Is it my understanding that currently at the Clinic you osteotomize the greater trochanter --

A. Osteotomized.

Q. I'm sorry.

MR. GROEDEL: Objection.

A. I'll answer that. You can do it either way and there's probably nobody in the United States that has lectured on surgical approaches to the hip more than me, nationally and internationally, and you can do it anyway that you

want. It depends on your training.

We generally do not osteotomize, because for most cases, like this guy's case, you don't need to, but there are some cases where you need to.

MR. KAMPINSKI: That's all I have, Doctor. Some of these attorneys might have some questions.

CROSS-EXAMINATION

BY MR. ZELLERS:

Q. Doctor, I just have a couple of questions. Was it your testimony that the attending orthopedic surgeon is responsible for the conduct of the orthopedic resident?

MR. GROEDEL: Objection. Go ahead.

A. Yes.

Q. (BY MR. ZELLERS) And can residents communicate with the attending either orally or through the chart?

A. Yes.

Q. And are both methods appropriate?

A. Yes.

Q. Doctor, do you have any opinion as to whether the conduct of the orthopedic residents in any way contributed to Mr. Smith's death?

A. I don't think they did.

MR. ZELLERS: Nothing further.

CROSS-EXAMINATION

BY MR. CHARMS:

Q. Dr. Borden, on behalf of Dr. Lee, the anesthesiologist in this case, I have a few questions. I'm a late comer, so you have to bear with me. What was your understanding of the urgency or emergency or the electiveness of this particular procedure, the second procedure?

A. When a hip dislocates, you know, a hip -- if a normal hip is dislocated, for instance, in a car accident, there is some urgency of putting that back, because it has been demonstrated the longer it is out, the higher instance of losing the blood supply to the femoral head or the ball.

A total hip, a prosthetic femoral head has no blood supply obviously, so there's no emergency about putting it back in. If you wait a long time, say you wait two days or a day and a half, it is harder to put it in than if you do it. immediately, because the muscles tighten up and everything.

If you wait five or six days, you will start getting maturation of the scar tissue around

the hip and everything from the original surgical procedure and in those situations many times you have to open the hip to get it back in. The point is that it is painful. It has to be done sooner or later; and so if we have that happen, we try and do it as soon as we can.

Q. As I understand it the second surgery in this case was on a Saturday afternoon; is that correct?

A. Yes. I didn't realize that until just before this.

Q. Is it your understanding that Dr. Lee, the anesthesiologist, was consulted just before the procedure was begun; is that correct?

MR. GROEDEL: Objection.

MR. ZELLERS: Objection.

MR. KAMPINSKI: What do you mean just before?

MR. CHARMS: Let me ask the question this way.

Q. (BY MR. CHARMS) What was your understanding of when Dr. Lee, the anesthesiologist, was consulted with regard to the surgery?

A. Before it was done.

Q. Was it that afternoon?

A. I assume.

Q. Do you know if it was shortly before the procedure or --

A. No, I don't think it makes any difference. You know, as long as he's aware of it. He still has to evaluate the patient.

Q. Now, obviously Dr. Smith had been involved in this patient's care for some period of time prior to Dr. Lee's involvement in the case, right?

A. Yes.

Q. Wouldn't you agree with me that Dr. Smith was in a better position to appreciate Mr. Smith's physical condition as of Saturday afternoon when the surgery was contemplated?

MR. GROEDEL: Objection.

A. I wouldn't agree with that. I would think an anesthesiologist would still have to evaluate his medical condition before administering anesthesia.

Q. (BY MR. CHARMS) I don't have any question about that. I'm only asking you about the orthopedic surgeon's state of knowledge with regard to the patient's physical condition.

A. Yes.

Q. Doesn't he have an independent obligation to appreciate that patient's physical status before surgery?

A. Sure.

Q. Do you believe that the surgeon has an obligation to communicate his understanding of the physical condition of the patient to the anesthesiologist under circumstances such as existing in this case?

A. Did Dr. Lee give the original anesthesia?

Q. Do you know?

A. I don't recall. Did he?

Q. My recollection is that he did not, that he was not the anesthesiologist --

A. I was just asking. I don't remember that.

Q. Assume that he was not the anesthesiologist that gave the first anesthetic and that his first involvement with this patient was that afternoon.

A. He goes down and sees the patient and he evaluates him and he reads the chart and looks at what is going on and he makes a determination whether or not this guy -- what his risk is for

anesthesia and what type of anesthesia to use.

Q. I understand that. Maybe we are not connecting. My connection --

A. We are connecting. You are asking me if Dr. Smith told Dr. Lee that this guy is a sick cookie and all of that kind of stuff.

Q. My question to you is don't you believe that Dr. Smith, having treated this patient for some period of time, had some obligation to communicate his understanding of this man's physical condition to Dr. Lee independent of Dr. Lee's responsibility, if you will, to review the chart himself? Do you understand my question?

A. Yes, I understand your question and what I would do if it was me is I would call the anesthesiologist and I would say, Joe Blow just dislocated his hip. I would like to possibly reduce this now or today or tomorrow morning or whatever. He's got some medical problems. Take a look at him, which the anesthesiologist has to do anyway, but that's just being courteous I think.

If he's real sick, like in the intensive care unit or just out of one, maybe I would, you know -- I would probably call him just to be sure and I would also probably tell him, look, you let

me know what you think and I would wait. I wouldn't push him to do it, but it is still the responsibility of the anesthesiologist to determine what the risk is for anesthesia. Surgeons are not anesthesiologists.

MR. CHARMS: Thank you. I have nothing further.

MR. KAMPINSKI: Nothing further. You have got a right to read your testimony. You have a right to waive your signature.

THE WITNESS: I waive it.

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THE STATE OF OHIO,)
) SS: CERTIFICATE
COUNTY OF CUYAHOGA.)

I, Kerry L. Paul, a Notary Public within and for the State of Ohio, duly commissioned and qualified, do hereby certify that LESTER S. BORDEN, 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 subsequently transcribed into typewriting by means of computer-aided transcription under my direction; that said deposition was taken at the time and place aforesaid pursuant to notice; that the reading and signing of the deposition by the witness were expressly waived; and that I am not a relative or attorney of either party or otherwise interested in the event of this action.

IN WITNESS WHEREOF, I hereunto set my hand and seal of office at Cleveland, Ohio, this 9th day of November, 1987.

Kerry L. Paul

Kerry L. Paul, RPR, Notary Public
within and for the State of Ohio
543 Terminal Tower
Cleveland, Ohio 44113

My Commission Expires: October 12, 1988.

CURRICULUM **VITAE**

NAME: Lester S. Borden, M.D.

FOHN: December 2, 1939
Paterson, New Jersey, U.S.A.

MARITAL **HISTORY:** Married to former Jean M. Bartelheim
February 19, 1972

Lester S. Borden, Jr., born January, 1974
Kristine A. Borden, born November, 1976
Katherine E. Borden, born January, 1979

EDUCATION: Virginia Polytechnical Institute, 1961
BS (Mechanical Engineering)

University of Pennsylvania, Pre-med., 1963-64

New York Medical College, 1969, M.D.

PROFESSIONAL **TRAINING:** Internship (Surgical) - St. Vincent's Hospital,
New York City, 1969-70

Residency (Surgical) - St. Vincent's Hospital,
New York City, 1970-71

Residency (Orthopaedics) - New York University
Medical Center, New York City, 1971-74

Otto E. Aufranc Fellowship in Adult Reconstructive
Orthopaedic Surgery - New England Baptist Hospital
Boston, Massachusetts, 1974-75

LICENSES: National Board of Medical Examiners, 1970
State of New York, 1970
State of Ohio, 1975

Diplomate American Board of Orthopaedic Surgery,
1975

Fellow, American Academy of Orthopaedic Surgeons,
1977

Fellow, American College of Surgeons, 1979

PRIOR PROFESSIONAL CAREER: 1962-65; Naval Architect and Marine Engineer, U.S. Naval Base, Philadelphia, Pennsylvania

PROFESSIONAL BACKGROUND: 1975-present; Cleveland Clinic Foundation, Department of Orthopaedic Surgery

1977-present; Cleveland Clinic Foundation, Head, Section of Joint Replacement and Arthritis Surgery

SOCIETY MEMBERSHIPS:

American Academy of Orthopaedic Surgeons
American College of Surgeons
American Medical Association
American Rheumatology Association
Orthopaedic Research Society
Mid-American Orthopaedic Society
Ohio State Medical Association
Ohio Rheumatology Society
Ohio Orthopaedic Society
Cleveland Orthopaedic Club
Cleveland Rheumatology Society
Academy of Medicine, Cleveland
Great Lakes Orthopaedic Travel Club
Mid-American Orthopaedic Association
The Knee Society
Russell Hibbs Society

COMMITTEE/ ORGANIZATION ACTIVITIES:

AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS

Member, Committee on the Hip (1982-Present)
Secretary (1982-Present)

Course Chairman, "New Concepts in Adult Hip Reconstruction", Hilton, Head, S.C. September 23-25, 1985

Course Chairman, "Acetabular Reconstruction in Adult Hip Arthroplasty" (One-Day Workshop)
Chicago, November, 1985
Los Angeles, January, 1986
Miami, November, 1986

Faculty, Summer Institute (1982-1986)

THE KNEE SOCIETY, FOUNDING MEMBER

Executive Committee, 1983 - Present
Program Committee, 1985 - Present

CLEVELAND CLINIC FOUNDATION

Member, Board of Governors, 1982 - 1986
Vice-Chairman, Board of Governors, 1986
Member, Board of Trustees, 1983 - 1984
Chairman, Search Committee for Chairman
Department of Pulmonary Medicine, 1982
Chairman, Search Committee for Chairman
Department of Plastic Surgery, 1984
Chairman, Committee to Review Division
Medicine, 1986
Chairman, Search Committee Member,
Department of Neurosurgery, 1981
Nominating Committee for Board of Governors,
1981
Medical Audit Committee, 1979 - 1980
Review Committee, Department of Physical
Medicine and Rehabilitation, 1979
Audiovisual Committee, 1975 - 1978
Biomedical Engineering Advisory Committee, 1977
Patient Awareness Committee, 1975 - 1976
Surgical Education Subcommittee, 1975

FACULTY
PRESENTATIONS:

1. "Reconstructive Surgery of the Knee"
The Cleveland Clinic Postgraduate
Symposium. October 1975.
- The Current Status of Tibial Osteotomy

2. "Workshops and Special Topics in Rheumatic
Diseases"
The Cleveland Clinic Education Foundation
Postgraduate Symposium, April 1976.
- Surgery for the Rheumatoid Patient

3. "The Shoulder and Arm in Sports"
The Cleveland Clinic Education Foundation
Postgraduate Symposium, April 1976
- Athletic Participation for the
Arthritic Patient

4. "The Guepar Knee"
The Cleveland Orthopaedic Club, Cleveland,
OH June 1976

5. "Shoulder Impingement Syndrome"
The Cleveland Clinic Education Foundation
Sports Medicine Symposium, August 1976.

6. "Advancement in Surgical Treatment of
Rheumatoid Arthritis" The Aufranc
Postgraduate Course, New England

October 1976.

7. "Advances in Joint Surgery"
   The Cleveland Clinic Postgraduate
   Symposium, March 1977.
   - Non-Constrained Total Elbow
     Arthroplasty in Rheumatoid Arthritics
   - Total Hip Replacement in Congenital Hip
     Disease
   - The Indications and Technique for
     Trochanteric Osteotomy in Total Hip
     Replacement

8. "Current Treatment of Knee Disease"
   The American Academy of Orthopaedic
   Surgeons
   Cleveland, OH, September 1977.
   - The Guepar Hinge

9. "Selected Topics in Rheumatic Disease"
   The Cleveland Clinic Postgraduate
   Symposium,
   October 1977.
   - Current Status of Large Joint
     Replacement in Rheumatoid Arthritis

10. "Current Concepts in Orthopaedic Surgery"
    The Cleveland Clinic Postgraduate
    Symposium,May 1978.
    - Double Cup Arthroplasty for the
      Management of the Arthritic Hip
    - Results of Patellar Resurfacing and
      Total Knee Replacement

11. "Reconstructive Surgery of the Knee"
    American Academy of Orthopaedic Surgeons
    Postgraduate Symposium, Rochester, NY
    June 1978.
    - Hinged Prostheses

12. Ohio Rheumatism Society Annual Meeting
    Salt Fork, OH, June 1978.
    - Surgical Management of Arthritis

13. The Cleveland Clinic Sports Medicine
    Symposium
    April 1979.
    - Athletics for the Arthritic

14. American Geriatric Society Annual Meeting, Chicago, IL, April 1980.
    - Hip-Spine Syndrome

15. "Surgery of the Knee"
    American Academy of Orthopaedic Surgeons Postgraduate Course, Cleveland, OH, September 1979.
    - The Guepar Hinge
    - Patellar Resurfacing in Total Knee Replacement

16. "Rheumatoid Disease"
    Cleveland Clinic Postgraduate Symposium, September 1979.
    - Surgical Treatment of Rheumatoid Arthritis, An Overview

17. "Adult Reconstructive Surgery"
    The Cleveland Clinic Postgraduate Symposium, November 1979.
    - Patellar Resurfacing in Total Knee Replacement
    - Surface Replacement Arthroplasty of the Hip

18. American Academy of Orthopaedic Surgeons, Annual Meeting, Atlanta, GA, February 1980.
    - Capitello-Condylar Total Elbow Replacement

19. The Cleveland Clinic Sports Medicine Symposium
    April 1980.
    - Shoulder Impingement Syndrome

20. "Techniques in Orthopaedic Surgery"
    The Cleveland Clinic Postgraduate Symposium
    October 1980.
    - Technique of Total Hip Joint Resurfacing
    - Total Elbow Arthroplasty

21. Cleveland Academy of Medicine Symposium
    Orlean, New York, January 1981.
    - Winter Sports for the Arthritic

22 American Academy of Orthopaedic Surgeons
    Annual Meeting, Las Vegas, Nevada, February 1981
    - Near Total Shoulder Replacement

23. Cleveland Clinic-University of Vermont Sports Medicine Symposium
Sugarbush, Vermont, March 1981
- Athletics for the Arthritic

24. Howmedica Surgeons Advisory Panel Meeting
Cleveland Clinic Sports Medicine Symposium, April 1980.
- Two-Year Experience with Collarless Total Hip Stems

25. Zimmer Orthopaedic Surgeons Panel Meeting
Hilton Head, South Carolina, June 1981.
- Reconstruction of the Acetabulum in Total Hip Replacement

26. Visiting Professorship at the University of Florida, Gainesville, Florida, November 1981.
- Acetabular Revision in Total Hip Replacement

27. Visiting Professorship at the Albert Einstein Medical Center
Philadelphia, PA, December 1982
- Total Hip Resurfacing Arthroplasty

28. The Cleveland Clinic Postgraduate Symposium
November 1982.
- Surface Replacement Arthroplasty of the Hip the Cleveland Clinic Experience
- Acetabular Problems in Total Hip Replacement

29. "Total Knee Arthroplasty"
Memorial Hospital Medical Center
Postgraduate Course, Long Beach, CA,
December 1981.
- Indications for Constrained Total Knee Prostheses

30. "Total Knee Arthroplasty"
Johns Hopkins University Postgraduate Course
May 1982.
- Role of Constrained and Semiconstrained Prostheses in Severe Deformity and Revision Surgery

31. Ohio Orthopaedic Society
Annual Meeting, April 1982
- Experience with the Neer Total Shoulder Replacement

32. New York State Orthopaedic Society
Annual Meeting, Cancun, Mexico, April 1982.
- Total Hip Resurfacing, Current Status

33. American Academy of Orthopaedic Surgeons
Annual Meeting, New Orleans, LA, January 1982.
- Ten Year Results of the Charnley Mueller Total Hip

34. "Total Knee Arthroplasty"
Moore Clinic Workshop, Hilton Head, SC, November 1982.
- Role of Constrained Prosthesis in Severe Deformity
- Management of Infection in Total Knee Replacements

35. Cleveland Orthopaedic Club Meeting
Cleveland, OH, October 1982.
- Experience with P.C.A. Knee

36. "Joint Reconstruction: Sports and Arthritis
National Association of Orthopaedic Nurses
Workshop, Westlake, OH, October 1982
- Porous Coated Arthroplasty

37. American Academy of Orthopaedic Surgeons
Summer Institute, Monterey, CA, September 1982.
- Total Knee Arthroplasty

38. "Total Knee Arthroplasty"
University of Colorado School of Medicine
Postgraduate Course
Vail Colorado, January 1983.
- Management of the Infected Total Knee
- Role of the Constrained and Semiconstrained Prostheses in Severe Deformity and Revisions

39. Great Lakes Orthopaedic Club Annual Meeting
Cleveland Clinic, Cleveland, OH, April 1983
- Total Knee Arthroplasty

40. American Academy of Orthopaedic Surgeons
Summer Institute, Boston, Mass., April 1983
- Total Knee Arthroplasty

41. "Total Knee Arthroplasty"
New England Baptist Hospital
Newport, Rhode Island, August 1983
- Surgical Management of Infected Total

Knee Replacement

42. Orthopaedic Surgery Resident Symposium
San Francisco, CA, August 1983.
- The Surgical Management of Infected Total Knee Replacements

43. "Reconstructive Surgery of the Knee"
American Academy of Orthopaedic Surgeons Continuing Education Course, Cleveland Clinic
Foundation, Cleveland, OH, October 1983.
- Reimplantation of Prostheses After Sepsis

44. Howmedica, Inc.
New York, New York, October 1983
- Surgical Approaches for Press-Fit Hips

45. "Complications in total Joint Replacement"
American Academy of Orthopaedic Surgeons
Phoenix, Arizona, October 1983.
- Infected Total Knee Replacement
- Arthrodesis of the Knee
- Management of Infected Total Hip Replacement
- Lucency vs. Loosening

46. "Hip Diseases of All Ages"
American Academy of Orthopaedic Surgeons
Continuing Education Course, Columbus, OH
November 1983.
- Determining the Source of Pain in Total Hip Replacement Arthroplasty.

47. "Workshop on Total Knee Arthroplasty"
West German Orthopaedic Congress
Mainz, West Germany, March 1984.
- Uncemented Total Knee Arthroplasty, Concepts and Results
- Uncemented Total Knee Arthroplasty Technique
- Management of Sepsis

48. Eighth Otto E. Aufranc Course
New England Baptist Hospital, Boston, Mass.
April 1984
- Rationale and Experience with P.C.A. Hip

49. "Total Knee and Hip Bioskills Workshop"
University of Utah School of Medicine
Snowbird, Utah, April 1984
- Management of Infected Total Knee Replacement
- Early Results of P.C.A. Total Hip

Replacement

50. "The P.C.A. System with Bioskills Workshop"
Johns Hopkins University
Williamsburg, VA, May 1984.
- Surgical Approaches to the Hip

51. "Total Knee-Hip Arthroplasty Course
Vail, Colorado, January 1984.
- Management of the Infected Total Knee
- Surgical Approaches to the Hip
- Preliminary Clinical Experience with the P.C.A. Total Hip Replacement

52. "Total Knee and Hip Arthroplasty"
The P.C.A. System with Bioskills Workshop
Johns Hopkins University, Baltimore, MD
July 20-21, 1984.
- Direct Lateral and Posterior Approaches for Hip Replacement
- Preliminary Clinical Results and Post operative Management
- Detail OR Sequence for Primary Total Knee Replacement

53. "Total Hip and Knee Bioskills Workshop"
Burns Clinic Foundation
Boyne Highlands, Harbor Springs, MI
August 1-3, 1984.
- Aseptic Loosening - Why Total Hips Fail
- Laboratory and Clinical Basis for Biological Ingrowth
- Surgical Approaches to the Hip
- Clinical Results and Post-Operative Management
- Anatomy and Kinematics of the Normal Knee
- Detailed O.R. Sequence for Primary Total Knee Replacement

54. "Total Knee and Hip Arthroplasty"
The P.C.A. System with Bioskills Workshops
Emory University, Kiawah Island, SC
August 10-11, 1984
- Detailed O.R. Sequence for Primary Total Knee Replacement
- Clinical Results and Discussion
- Direct Lateral and Posterior Approaches for Hip Replacement (to include pre-op planning)
- Clinicial Results and Discussion

55. "The Knee" Current Concepts of Treatment and Techniques

American Academy of Orthopaedic Surgeons
Post-graduate Course, Rochester, MN,
August 20-22, 1984.
- Results and Rationale Without Patellar Replacement
- The Unstable Knee and Primary Replacement
- Revision Total Knee Arthroplasty - Cleveland Clinic Experience

56. "Annual Meeting of Orthopaedic Section of the Puerto Rico Medical Association
San Juan, Puerto Rico, August 31-September 4, 84
- Biological Ingrowth Hip Replacement
- Total Knee Replacement
- Design Concepts
- Moderate Daily Workshops

57. American Academy of Orthopaedic Surgeons
Summer Institute, San Diego, CA,
September 10-14, 1984.
- Management of Infected Total Knee Replacement
- Technique of Total Knee Replacement

58. "P.C.A. Total Hip System"
Northwestern University, Chicago, IL
October 13, 1984
- The Design Rationale of the P.C.A. Total Hip Replacement System
- Surgical Approaches for the P.C.A. Total Hip
- Early Results of the P.C.A. Total Hip

59. "Primary Care Update"
Interstate Postgraduate Medical Association
Las Vegas, Nevada, October 22-25, 1984.
- Joint Prostheses - Current Status

60. "Total Knee and Hip Arthroplasty"
'Hands On' Course
Memorial Medical Center of Long Beach,
October 26-29, 1984.
- Management of the Infected Total Knee
- Surgical Approaches to the Hip
- Preliminary Clinical Experience with the P.C.A. Total Hip Prosthesis Replacement
- Workshop Instructor
- Moderator - Video

61."Revision Total Hip Arthroplasty"

American Academy of Orthopaedic Surgeons
Postgraduate Course, Boston, Mass. Nov. 1-3, 1984
- Anticipated and Actual Long Term Results with Current Techniques of Total Hip
- Primary vs. Delayed Reimplantation
- Management of the Femur

62. "P.C.A. Total Hip and Knee Arthroplasty"
Lewis-Gale Medical Foundation
Salem, Virginia, November 9, 1984
- Laboratory and Clinical Basis for Biologic Ingrowth
- Design Rationale for the P.C.A. Hip System
- Direct Lateral and Posterior Approaches for Hip Replacement
- Workshop Instructor
- Panelist

63. "Uncemented Total Joint Replacement"
Harrington Arthritis Research Center
Phoenix, Arizona, November 19-21, 1984
- Tissue Ingrowth Total Hip Replacement
- Tissue Ingrowth - Total Knee

64. American Academy of Orthopaedic Surgeons
52nd Annual Meeting
Las Vegas, Nevada January 21-29, 1984
- Instructional Course Lecture-Surgical Approach to the Hip
- Moderator of Scientific Papers
- Executive Committee Meeting - Knee Society
- Secretary - Committee on the HIp
- Program Committee for AAOS Summer Institute

65. "Porous Ingrowth Total Hip Arthroplasty"
St. Louis University, St. Louis, MO
February 15-16, 1984.
- Porous Ingrowth Total Hip Arthroplasty Biologic Process
- Acetabular Grafting
- Grand Rounds

66. "Total Knee - Hip Arthroplasty"
University of Colorado School of Medicine,
Vail, Colorado, March 4-8, 1985
- Management of the Infected Total Knee
- Surgical Approaches for Total Hip Replacement
- Postoperative Management, Follow-up Evaluation and Clinical Results with

the P.C.A. Total Hip Replacement
- Moderator - Bioskills Workshop (Primary P.C.A. Hip Arthroplasty)
- Instructor - Bioskills Workshop (Primary P.C.A Hip Arthroplasty)

67. "P.C.A. System Update - Bioskills Workshop" Scottsdale, Arizona April 11-13, 1985.
- Approaches and Longstem Technique
- Results/Discussion
- Results Revision Knees

68. "Annual Meeting and Clinical Session" Ohio Orthopaedic Society Akron, OH April 19-20, 1985.
- Infected Total Knee
- Capitellocondylar Total Elbow Replacement

69. "Porous Hip and Knee Implants" A Look at the Choices" Chicago, IL April 25-27, 1985.
- Porous total Hip Systems: Surgical Techniques The P.C.A. System
- Results of Total Knee Replacements The P.C.A. TKR

70. "Total Hip-Knee Arthroplasty" Orlando, Florida May 16-18, 1985.
- Design Rationale for the P.C.A. Hip System
- Design Rationale for the P.C.A. Long Stem System
- Surgical Approaches for Total Hip Replacement
- Operative Management, Follow-up Evaluation and Clinical Results with the P.C.A. Total Hip Replacement
- Basic Concepts in Total Knee Instrumentation
- Design Rationale for the P.C.A. Total Knee Instrumentation System
- Detailed O.R. Sequence for Primary P.C.A. Total Knee Replacement
- Management of Fixed Deformity-Varus, Valgus and Flexion

71 "Total Knee and Hip Arthroplasty" Albert Einstein Medical School New York City, New York, June 6-7, 1985.
- Surgical Considerations for the Arthritic Knee
- Clinical Results with the Primary P.C.A. Total Knee
- Management of the Infected Total Knee
- The Direct Lateral and Posterior

Approaches
Using the P.C.A. Hip System

- Clinical Results with the P.C.A. Total Hip Replacement
- Bioskills Workshop: Primary P.C.A. Total Hip Replacement
- Moderator - Video
- Cement Removal Techniques/Presentation of the Acetabulum, and Femur for Cementless Revision Total Hip Arthroplasty
- Surgical Techniques for Cementless P.C.A. Long Stem Hip Using the Direct Lateral Approach
- Bioskills Workshop - P.C.A. Long Stem Hip
- Instructor

72. "Total Hip and Knee Replacement"
University of Vermont
Stowe, Vermont June 20-22, 1985
- Surgical Considerations for the Arthritic Knee
- Details Surgical Sequence for the Unicompartmental, Primary and Revision Total Knee Systems
- Clinical Experience with the Revision P.C.A. Prosthesis
- Moderator
- Instructor
- Design Rationale for P.C.A. Total Hip Replacement
- The Direct Lateral and Posterior Approaches
Using the P.C.A. Hip System
- Preliminary Clinical Results Using the P.C.A. Hip System
- Cement Technique for Cementless P.C.A. Long Stem Hip Using the Direct Lateral Approach
- Cement Removal Techniques/Preparation of the Acetabulum and Femur for Cementless Revision Total Hip ARthroplasty
- Preliminary Clinical Results of Cementless P.C.A. Longstem Hip

73. "Total Hip and Knee Bioskills Workshop"
University of Utah School of Medicine
January 2-5, 1985
- Surgical Approach to the Hip
- Management of Infected Total Knees
- Management of Bone Loss in the Hip

PUBLICATIONS:

1. "Geometric Total Knee Replacement: An Eight Year Experience at the New England Baptist Hospital." Orthopaedics, Vol. 3/No. 6, pg. 537-546, 1980.
Hopson, C.M.; Lansing, J.F.; **Borden, L.S.**; Stillwell, W.T.; Snyder, M.A.; and Potter, T.

2. "Athletics for the Arthritic". The Physician and Sports Medicine, June, 1979,
Borden, L.S.

3. "Symposium: Total Hip Revision or Conversion" Contemporary Orthopaedics, pg. 402-418, August , 1980.
Mallory, T.H.; **Borden, L.S.**; Head, W.C.; Salvati, E.A.; and Welch, R.B.

4. "Surface Replacement Arthroplasty of the Hip" Mediguide to Orthopaedics, Vol. 2/Issue 1, 1981. **Borden, L.S.**

5. "Total Condylar Prosthesis" The Orthopaedic Clinic of North America, pg. 123-130, January 1982. **Borden, L.S.**; Heyne, T.; Belhobek, G.; Marks, K.E.; Stulberg, B.; and Wilde, A.H.

6. "Ten-Year Results of 100 Consecutive Cases of Mueller Curved Stem Total Hip Replacement Arthroplasties" Journal of Bone and Joint Surgery, Vol. 64A, pg 970-982, September 1982. Sutherland, C.J.; Wilde, A.H.; **Borden, L.S.**; and Marks, K.E.

7. "Shoulder Impingement and Dislocations" Audio Digest Orthopaedics, Vol. 3, No. 7, July, 1980. **Borden, L.S.**

8. "A New Technique of Rotational Osteotomy for the Management of Avascular Necrosis of the Hip"
Orthopaedic Review, Vol. XII, No. 5, 1983.
Borden, L.S.; Gearen, P.F.

9. "Techniques of Revision of the Femoral Component"
Techniques in Orthopaedics, Edited by L. Dorr for University Park Press.
Borden, L.S.

10. "Total Hip Arthroplasty: A New Approach"
Test Book, University Park Press, 1984.
Hungerford, D.; Hedley, A.; **Borden, L.S.**; Haberman, E.; Kenna, R.

11. "Experience with the Neer Total Shoulder Replacement"
Chapter in book entitled, Surgery of the Shoulder., pgs. 226-228. Editors; Bateman and Welch. Publishers, Decker and Mosby, Toronto 1984. Wilde, A.H., **Borden, L.S.**, Brems, J.J.

12. "Osteoarthritis of the Shoulder and Elbow"
Chapter in book entitled, Surgery of the Shoulder., pgs. 226-228 Editors; Bateman and Welch.
Publisher, Decker and Mosby, Toronto 1984.
Wilde, A.H., **Borden, L.S.**, Brems, J.J.

PUBLICATION IN PRESS

1. "Current Status of Non-Cemented Hip Implants" Hedley, A.K., **Borden, L.S.**, Hungerford, D.S., Habermann, E.T., and Kenna, R.V., The Hip, C.V. Mosby, Toronto.

2. "Capitellocondylar Total Elbow Replacement- Two to Eight Year Experience. Trancik, T.M., Wilde, A.H., **Borden, L.S.**, Clinical Orthopaedics and Related Research.

3. "Principles and Techniques of Cementless Total Hip Arthroplasty" **Borden, L.S.**

4. "Glenlid Lucent Lines" Transactions of the American Shoulder and Elbow Surgeons, 1986. Brems, J.J., Wilde, A.H., **Borden, L.S.**, and Boumphrey, F.R.S.

PUBLICATIONS IN MANUSCRIPTS

1. "The Management of Infected Total Knee Replacement" Submitted to Journal of Bone and Joint Surgery. **Borden, L.S.**; Gearen, P.F.

2. "Management of Infected Total Hip and Knee Replacement", University Park Press **Borden, L.S.**: Editor.

3. "Acetabular Reconstruction in Primary and Revision Total Hip Arthroplasty", **Borden, L.S.** A chapter in "The Hip and Its Disorders" Steinberg, M.E., editor. W.B. Saunders, Philadelphia.

EXHIBITS:

3. "Total Hip Replacement with the Aufranc Turner System: A Historical Prospective and Current Implant Designs". American Academy of Orthopaedic Surgeons Annual Meeting, Las Vegas Nevada, 1981. Aufranc, O.; Turner, R.H.; Scheller, A.D.; Krengel, W.F.; **Borden, L.S.**

2. "Revision Total Hip Arthroplasty: Indications, Surgical Techniques and New Implant Designs" American Academy of Orthopaedic Surgeons Annual Meeting, New Orleans, LA 1982. Scheller, A.D.; **Borden, L.S.**; Lowell, J.D.; Krengel, W.F.; Anas, P.; White, R.P.; MacKenzie, J.

3. "The Hip-Spine Syndrome"
American Academy of Orthopaedic Surgeons
Annual Meeting, Annaheim, CA 1983.
Boumphrey, F.; MacNab, I.; **Borden, L.S.**

CURRENT RESEARCH PROJECTS :

1. P.C.A. Total Knee Arthroplasty, F.D.A. Study. RPC.

2. P.C.A. Total Hip Arthroplasty, F.D.A. Study, RPC.

3. Long Term Follow-Up of Ewald Total Elbow Replacement with Drs. Wilde and Trancik. Submitted to American Academy of Orthopaedic Surgeons and Mid-American Orthopaedic Association.

4. Radiographic and clinical comparison of posterior cruciate ligament retaining and sacrificing total knee prosthesis, 3-5 year follow-up study. **Borden, L.S.** and Selby, R.

5. Gentamycin impregnated Palacos cement, FDA Clinical Study. Departmental, Dr. B. Stulberg principal investigator.

6. Comparative results of multiple modalities of prophylaxis in lower extremity total joint arthroplasty. Orthopaedic and P.V.D. combined project.

7. Classification and surgical management of major acetabular bone loss in revision total hip arthroplasty. Adequate follow-up for publication in 1986.

8. "9-10 Year Follow-Up On 100 Total Condylar Knee Replacement Arthroplasty" Publication in 1986

9. Clinical evaluation of the Dual-Lok total hip prostheses.

10. Clinical evaluation of Continuous Passive Motion in the postoperative management of total knee arthroplasty

11. Long term follow-up of the Capitello-Condylar total elbow arthroplasty

12. Bone grafting combined with rigid internal

fixation in the management of massive acetabular bone loss in revision total hip arthroplasty