

DR. GEORGE BROWN—1976 RESIDENT RESEARCH PROJECT

CONGENITAL PSEUDARTHROSIS, FIBROUS DYSPLASIA, AND NEUROFIBROMATOSIS: CLINICAL, PATHOLOGIC, AND ULTRASTRUCTURAL STUDY

Brown, GA; Osebold, WR; Ponseti, IV. "Congenital Pseudarthrosis of Long Bones: A Clinical, Radiographic, Histologic and Ultrastructural Study," *Clinical Orthopedics and Related Research*, Vol. 128, Oct: p228-42, 1977.



One of the exciting things about my residency at The University of Iowa was the opportunity to combine my clinical experience with work in pathology and studies of the ultrastructure of bone. I was very interested in congenital pseudarthrosis of the long bones. Stimulated by Dr. Jerry Maynard, I started working in the orthopaedic ultrastructural laboratory estab-

lished by Dr. Cooper.

My interest in congenital pseudarthrosis led me to work with Dr. Ponseti, and I found that he had been treating 17 patients in Iowa with this rare condition. By 1975, he had 20- to 30-year follow-up for these patients. In looking at the clinical series, I was impressed that if a patient was under age two when the leg fractured, and the x-ray showed tapering and sclerosis of the bone ends, nonunion universally resulted: operations and any other procedure that attempted to achieve union failed. Amputation of the lower leg and a standard prosthesis allowed these children to continue their lives with few or no further surgeries with good and excellent functional outcomes. This impression was borne out by the observation that only two of the 17 patients had healed their tibial pseudarthroses, despite 59 operations on this group. One of the many things I learned from Dr. Ponseti while working on this project was a sense of when to quit trying to fix the unfixable and instead help the patient achieve the best possible function.

I was very pleased with the results of my basic science and clinical study of congenital pseudarthrosis and had the opportunity to present findings at the Interna-

tional Pediatric Orthopaedic Meeting in Chicago in 1975.

In addition to all I learned during research, I found that this project helped me know Dr. Ponseti and learn from him. He told me that he was once considered an aggressive surgeon because he operated to lengthen the heel cords of patients with clubfeet. He also taught me that patients with idiopathic scoliosis may have less pain than the general population. It is interesting and satisfying to see that Stu Weinstein has pursued this idea with his 50-year follow-up study of patients with idiopathic scoliosis.

There is no question that working with Dr. Ponseti on this research project affected my career. I use what he taught me daily. I am so pleased to see that the Ponseti Technique for clubfeet is now rapidly becoming the standard of care. When I first started in practice, I bought the Turco videotape on comprehensive clubfoot surgery because I was concerned that I did not have enough experience with surgical treatment of clubfeet during my residency. I found that I never needed the Turco tape and that the Ponseti Technique has worked well in all my years of practice. I also enjoyed the opportunity to work closely with Dr. Bonfiglio at Iowa and learned a great deal from him about the importance of studying pathology and pathophysiology. Both Dr. Ponseti and Dr. Bonfiglio taught me to be patient as a teacher.

As I look back on my resident research project and my years at Iowa, I recognize how much both the teaching I received and the research work I did have affected my career for the better. It is great to see the continuation of the Iowa traditions of resident research and teaching that stress critical analysis, combining all available data and questioning established concepts and ideas.

JACK LINDSTROM—1977 RESIDENT RESEARCH PROJECT

ACETABULAR DEVELOPMENT, PROXIMAL FEMORAL DEVELOPMENT, AND FUNCTIONAL IMPLICATIONS

Lindstrom, JR; Ponseti, IV; Wenger, DR: "Acetabular Development after Reduction in Congenital Dislocation of the Hip," *Journal of Bone and Joint Surgery, American Vol.* 61(1), p. 112-8, 1979.



As I recall, my resident research efforts started in the academic year of 1975-76 which I think was Denny Wenger's last year in Iowa City. The idea for the study of acetabular development was not mine: I believe it grew out of discussions between Denny Wenger and Dr. Ponseti. I had some concern about starting this project since it was Dr. Ponseti's opinion that there

was great developmental potential for the acetabulum, and that if we found this in our study we would call into question points that had been "well established" by the well-known authority Bob Salter.

Taking advantage of the outstanding facilities in the department and Dr. Ponseti's guidance and private collection of patient radiographs, Denny Wenger and I began to outline the parameters of the study and gather x-rays in order to mark and measure the development of the acetabulum. Needless to say, there were many patients and each patient had numerous x-rays. When we were residents, most of us, with or without our research, felt that our lives were very busy. Looking back, I don't know how we found time to complete this extensive, detailed, meticulous review. I can certainly remember the many hours I spent feeling as though I was drowning in radiographs and wax pencils.

When I started I was totally unfamiliar with computer analysis, but I recall we were able to transfer our data to "IBM cards" in order to initiate the analysis. I think at that time the cards were then placed in an off-the-shelf data analysis program which produced computer print-outs that were nearly as voluminous as the radiographs. The correlations that were generated were sometimes along the lines of our investigational questions, but in other cases they seemed to be correlations

that were totally unrelated to any of our questions, or did not make sense clinically.

When I started writing the paper, I had high hopes that it would be accepted for publication; however my major was biology, not English. I expect Dr. Ponseti readily attest to that fact. I often brought him sections of the paper that I thought were fairly well-written and concise and he would literally take them apart and put them back together word for word, time and time again. I was disappointed not to be able to learn to write as Dr. Ponseti wanted, and the process was at times humbling and frustrating, but he was always patient and I learned how to organize my thoughts and express myself in writing more clearly.

As I had expected, in the spring of 1977 I found myself frantically trying to put the finishing touches on my paper for presentation at the Senior Residents Day conference and also at the Academy meeting in New Orleans. The presentation at the Academy was a thrill. Prior to the presentation, I had visions of Dr. Bob Salter taking me to task on a topic that was clearly well within his level of expertise, but not mine. Fortunately, Dr. Ponseti had arranged for Dr. Bill Smith from Michigan to review the paper and raise some gentle questions in the discussion. I felt lucky to have survived the Academy presentation and the Senior Residents Day presentation in the spring of 1977.

Dr. Ponseti was generous with his praise as well as in encouraging me to continue to work and revise and polish the paper so it could be accepted by the *Journal of Bone and Joint Surgery*. If I thought writing to satisfy Dr. Ponseti's taste and style was a challenge, I was not ready for the even greater challenge of writing in a style that was acceptable to the editors of the *Journal of Bone and Joint Surgery*. My recollection is that some of the comments from the *Journal of Bone and Joint Surgery* editors surprised even Dr. Ponseti, and I think he felt some of the frustration that I was experiencing.

I left Iowa City in the spring of 1977 to start a two-year active duty assignment with the United States Air

Force in Rantoul, Illinois. I had just gotten married in the fall of 1976 and our first child, a son, was born in June 1978. This is pertinent because I will never forget returning to Iowa City to visit with Dr. Ponseti and his wife Helena in their home. They were kind enough to include my wife, Ann and our son, John, who at that point was less than a year old. Our family will always cherish the picture of Dr. Ponseti in one of his British driving caps, with our son John sitting in his lap and basking in the warm glow of Dr. Ponseti's affection.

Looking back, I was very fortunate to have been a resident at Iowa. I gained much more from it than I was able to return during the years I spent in the department. My skills did not then, and do not now, lend themselves toward original research. Along with many

others, I have found myself wrapped up in the business of the practice of medicine throughout my career. Nonetheless, I will never forget my experiences in Iowa City in the Department of Orthopaedics. I will always remember my outstanding colleagues who have gone on to distinguish themselves nationally and internationally, and I have always felt privileged to have been able to work with them and share in the remarkable environment in Iowa City. I do look back on my resident research project with great fondness, not just for all I learned about development of the acetabulum, how to write for publication and how to analyze data, but for the close relationship I developed with Dr. Ponseti during the process and the depth of understanding I gained from working with him on this research project.

STERLING LAAVEG—1976 RESIDENT RESEARCH PROJECT

LONG-TERM RESULTS OF CLUBFOOT TREATMENT

Laaveg SJ, Ponseti IV: Long-term results of the treatment of congenital clubfoot. *J Bone Joint Surg* 62A:23-31, 1980.



The opportunity to work with Dr. Ponseti on my long-term clubfoot study was a critical event in my career. Dr. Ponseti continues to be an inspiration to me. His life story of fleeing from Spain when Franco arose to power, then finding his way from Spain to Mexico and then to Arthur Steindler's orthopaedic program in Iowa City still thrills me. His life-

long commitment to the science of musculoskeletal medicine, his clinical and scientific accomplishments and the large number of talented orthopaedists he has taught make him one of the greatest figures in the history of orthopaedics, and I am so pleased that he continues to have the enthusiasm and zeal to pursue new knowledge, teach and improve treatment for orthopaedic patients.

In 1976, I was naive when I began the study of children treated with clubfoot and the changes that may have occurred over time. The tasks of locating adult patients treated as children, arranging follow-up schedules, developing follow-up function questions, selecting physical examination parameters, defining radiographic measurements, collecting raw data, correlating meaningful data and drawing appropriate conclusions were far more formidable than I had imagined in the start.

Dr. Ponseti was always gracious, patient and helpful in advising me and encouraging me to continue. At the time I was performing this study it seemed very time consuming, but in retrospect I realize the time was well worth it, and it was not as much of a burden as I may have thought at the time.

Selecting the pertinent data and drawing meaningful conclusions for presentation at my Senior Residents' Day Conference was difficult; but writing a paper, dealing with the multiple revisions, and having it finally accepted for journal publication was truly daunting. Dr. Ponseti was extremely helpful and uniformly positive throughout this process and always gave me thoughtful advice, support and encouragement whenever I hit an impasse.

The opportunity to perform this study of clubfoot treatment taught me that good quality research is difficult and hard to deliver in a meaningful format that contributes to the science and clinical practice of orthopaedic surgery. The effort left me with a much better understanding and appreciation for the work of other clinicians and scientists and gave me throughout my career the critical eye I needed to review scientific work. It was clearly one of the most valuable experiences of my residency.

Dr. Ponseti, always with his dry sense of humor, once told me as I was putting a clubfoot cast on a newborn baby, "Poor baby! Your hands are so big, Dr. Laaveg." Dr. Ponseti was smiling at me, but the mother of the child looked nervous. My opportunity to work so closely with Dr. Ponseti in this program allowed me to come to know him well. He is a rare gem to me as well as to patients, students, residents and physicians.