

Giants of Orthopaedic Surgery

Giants of Orthopaedic Surgery: Professor Heinz Wagner

Michael B. Millis MD

Introduction

The German orthopaedic surgeon, Professor Heinz Wagner was widely known for his surgical skills, innovative mechanical concepts on which his hip and knee procedures were based, and his deep insight into the patient psyche. As a founding member of the German section of the Arbeitsgemeinschaft für Osteosynthesefragen (AO) and a president of the German Orthopaedic

A note from the Editor-In-Chief:

In “Giants of Orthopaedic Surgery,” a columnist explores the life and achievements of an orthopaedic surgeon who changed our profession, by interviewing other surgeons whose lives the “Giant” touched through mentorship or collaboration, or by using other historical sources that provide similar insight. We welcome reader feedback on all of our columns and articles; please send your comments to eic@clinorthop.org.

The author certifies that neither he, nor any members of his immediate family, have any commercial associations (such as consultancies, stock ownership, equity interest, patent/licensing arrangements, etc.) that might pose a conflict of interest in connection with the submitted article. The opinions expressed are those of the writers, and do not reflect the opinion or policy of *CORR*® or The Association of Bone and Joint Surgeons®.

Congress, Prof. Wagner (Fig. 1) was, by any definition, a leading international figure.

“Prof. Wagner was a brilliant surgical tactician with a comprehensive knowledge and a fascinating technical understanding of clinical orthopaedics,” Prof. Wagner’s former resident and colleague Wilhelm Baur MD, told *Clinical Orthopaedics and Related Research*®. “All of this, in combination with his immense knowledge of musculoskeletal physiology and biomechanics, made Prof. Wagner a world-renowned surgeon.”

Despite the respect and esteem with which he was regarded—or perhaps because of it—Prof. Wagner seemed, to some, remote, imperious, and intimidating. For those who worked within his system, the rewards were

The opinions expressed are those of the writers, and do not reflect the opinion or policy of *Clinical Orthopaedics and Related Research*® or The Association of Bone and Joint Surgeons®.

M. B. Millis MD (✉)
Harvard Medical School, Boston
Children’s Hospital, 300 Longwood
Avenue, Fegan 140, Boston, MA 02115-
5724, USA
e-mail:
Michael.Millis@childrens.harvard.edu



Fig. 1 Prof. Heinz Wagner (Published with permission from Michael Wagner MD).

often great, though he was known as a demanding and complex man.

“He set extremely high standards for himself, his staff, and his clinic employees,” Dr. Baur told *CORR*®. “Although he had a great passion for his work, he maintained a distance between his work and his personal life. His private sphere was extremely important to him; he always defended it.”

Giants of Orthopaedic Surgery

Some insight into the origins of his complexity may be found in Prof. Wagner's early life. Born into a wealthy German family in Kronstadt, a culturally rich German enclave in the Siebenbürgen region of Romania, Heinz grew up trilingual, speaking German, Hungarian, and Romanian (giving him a solid foundation for his later fluency in Italian and English). Though he had a comfortable and stable childhood, WWII disrupted his early adolescence when his family was forced to retreat into Germany at the start of the war. Heinz was conscripted into the German Army at the age of 14 and was sent to the Eastern Front. Although the Russians captured him twice [3], Heinz managed to escape back to Germany each time. His difficult wartime and post-war life experiences gave him perspective on hard work, and little patience for those whom he felt did not share his work ethic, no matter their station in life. Like many young men in post-war Germany, he struggled to find employment, working as a factory worker and truck driver before being accepted into medical school in Erlangen, Germany.

Prof. Wagner entered orthopaedic training at the University Orthopaedic Hospital in Münster, Germany in 1960, and his work on fracture healing was awarded with an AO-First Prize in 1962. He turned down an offer as Head

of the AO Research Institute in Davos, Switzerland, deciding instead to remain in clinical work at the University Orthopaedic Hospital where he was promoted to assistant professor in 1965. His life took a fascinating turn when he became Oberarzt (head staff physician) under the well-respected Prof. Franz Becker at the remote, but highly active, Wichernhaus Clinic in tiny Altdorf, near Nuremberg, Germany. In 1966, he succeeded Prof. Becker as Chief of the Wichernhaus, which served large numbers of patients with hip dysplasia.

A Rare Opportunity

Housed within the centuries-old Das Collegium, a complex constructed within the old University of Nuremberg dating back more than 300 years, the relative isolation of the Wichernhaus Clinic offered the young German orthopaedist a rare opportunity to work independently in a clinical setting with a large volume of patients.

Prof. Wagner gained prominence as he built the Wichernhaus Clinic into one of the highest volume elective orthopaedic surgical clinics in Germany. His hospital became known for its areas of specialization, including deformities of the hip and knee and congenital lower extremity shortening. His intertrochanteric double

osteotomies for complex growth disturbances in patients with developmental dysplasia of the hip were renowned for their conceptual and technical elegance [6, 8, 9, 11]. During this time, he also developed multistage programs for the correction of lower-extremity deformities associated with shortening, using a novel external fixator [7, 10].

His immense creativity could be found in every stage of the treatment process, from analysis to surgical strategy, and from implant design to surgical technique. His Wagner Pfannenosteotomie (spherical acetabular osteotomy) corrected acetabular dysplasia [4–6, 8, 11] in a similar way to the Japanese rotational acetabular osteotomy [2], and was developed at about the same time, though independently of the work done in Japan. These acetabular osteotomies greatly increased the power of acetabular correction of the mature dysplastic hip beyond the innominate osteotomy. He also pioneered the use of combined supracondylar and proximal tibial osteotomy for complex knee deformity [12].

“Even though Prof. Wagner is well-known for his great innovations in endoprostheses and revision endoprostheses, I consider his contributions to true reconstruction of native joints, and especially joint-preserving osteotomies of the knee, to be ingenious,”

Giants of Orthopaedic Surgery

Dr. Baur told *CORR*[®]. “He demonstrated that if axis malalignment and mechanical overload were corrected, even damaged joints could heal over long periods of time.”

By the late 1970s, Professor Wagner’s accomplishments were recognized worldwide. In 1979, he was acknowledged in the United States with the Herman Robbins Visiting Professorship at New York University.

Krankenhaus Rummelsberg

With the support of the Lutheran Church, Prof. Wagner planned his dream orthopaedic hospital, Krankenhaus Rummelsberg, which opened in 1980. The hospital was designed in a way that facilitated the rehabilitation and care of his patients. He controlled the interior design of Krankenhaus Rummelsberg, down to the novel lighting systems in the surgical suites, a good example of how much he cared about seemingly small details that matter.

Dr. Lynn Staheli, pediatric orthopaedic surgeon from Seattle, WA, USA, was an early visitor to Rummelsberg [3]. While walking the halls with Prof. Wagner, Dr. Staheli recalled feeling as though he was visiting a new realm of medicine.

“Patients had small rooms, but there were large public spaces,” Dr. Staheli

told *CORR*[®]. “There was great encouragement to get the patients out of the room and moving, which I thought was a great design.”

Prof. Wagner’s personal design extended to the surgical suite, which contained eight enclosed operating theatres, called “boxes”, within a large common area. He designed these boxes so surgeons and anesthesiologists could move from one site to the next with ease. If there was an emergency, for example, everyone was available and could easily move from one site to another. The unique architecture of four enclosed box-like surgical chambers, each with two mobile radiolucent operating tables, and personally-designed ceiling banks of multi-angling Mercedes-Benz lights, was fascinating for visitors to see. Only the surgical team was allowed within the glass walls of the box-like chambers.

Flawless Execution

At Rummelsberg, Prof. Wagner built upon his experience with both joint-preserving and joint-replacing procedures. Though his passion remained in joint preservation, a major innovation of his Rummelsberg years was his revision total hip replacement system, in particular the Wagner Revision Femoral Stem [1]. More than 30 years

after its introduction, and more than 16 years after his death, the Wagner revision stem remains a mainstay in revision hip arthroplasty surgery in both Europe and North America.

His surgical concept of precise periacetabular redirection in treating congruous acetabular dysplasia was seminal, leading directly to the PAO and variants, which are commonly used to treat acetabular dysplasia in adults today. Observing his detailed analysis of complex hip and lower extremity deformities, followed by flawless surgical execution of a detailed operative plan was a profoundly moving experience for Dr. Staheli.

“He was the most magnificent surgeon I have ever seen operate,” Dr. Staheli said. “He did everything himself with few assistants. Watching him was kind of an amazing sight because there was basically no blood loss. He was a superb technician. It was like a symphony and Prof. Wagner was the conductor. It was very smooth and efficient, and seemingly bloodless.”

Devotion to Patients

Though he was a deeply private and reserved man by nature, perhaps Prof. Wagner’s greatest clinical satisfaction came from working with his patients, particularly those with complex

Giants of Orthopaedic Surgery

congenital limb deformities [7, 10]. His devotion to them, and them to him over decades was something to admire. Prof. Wagner delighted in teaching his patients how their orthopaedic issues could be treated.

“He seemed to know every patient in the clinic and very closely examined the treatment indications, the wound healing, and the results of each operation,” Dr. Baur told *CORR*®.

He recognized that the stresses of even gradual long bone lengthening were quite traumatic to congenitally abnormal joints and limbs, and no less so to the patients and families. He would say: “What you are doing is trying to help the patient cope with life.”

Prof. Wagner believed that all pathological elements should be addressed, including a patient’s frame

of mind, prior to considering long-bone lengthening as the final step in restoration of function.

“He never operated solely based on radiographs; he always included the whole human being in the analysis,” Dr. Baur said. “He was ahead of his time in that he considered the patient’s personality and environment before deciding on treatment options.”

A detailed treatment plan, frequently involving years, and multiple operations, would be discussed. Prof. Wagner always included multiple perspectives before selecting the best treatment program for the patient (Fig. 2).

“A failure to plan is a plan to fail” was a maxim often recited by Prof. Wagner and accepted by staff and patients. Other Wagner axioms come to mind:

“Think not only of the operation before you, but also of the operation that may follow it.”

“Restore function; bone structure will take care of itself.”

“Not every problem has a solution—yet!”

For those of us who were privileged to know Prof. Wagner well, his voice and enduring lessons continue to guide us.

Acknowledgment The author would like to thank both Dr. Wilhelm Baur and Professor Michael Wagner for their great assistance in creating this manuscript.

References

1. Kolstad K, Adalberth G, Mallmin H, Milbrink J, Sahlstedt B. The Wagner revision stem for severe osteolysis. 31 hips followed for 1.5-5 years. *Acta Orthop Scand.* 1996;67:541–544.
2. Ninomiya S, Tagawa H. Rotational acetabular osteotomy for the dysplastic hip. *J Bone Joint Surg Am.* 1984;66:430–436.
3. Staheli L. A visit with Professor Heinz Wagner: Orthopädische Klinik Wichernhaus Rummelsberg/Nuremberg. *J Pediatr Orthop.* 1982;2:448–452.
4. Wagner H. Experiences with spherical osteotomy [in German]. *Orthopäde.* 1973;2:253–259.
5. Wagner H. Experiences with spherical acetabular osteotomy for the correction of the dysplastic acetabulum. In: Weil UH, ed. *Acetabular*



Fig. 2 Prof. Wagner frequently taught techniques for hip osteotomy at international courses—here with Dr. Baur in Boston. (Published with permission from Michael B. Millis MD).

Giants of Orthopaedic Surgery

- Dysplasia. Progress in Orthopaedic Surgery*. Vol 2. Heidelberg, Germany; Springer Berlin Heidelberg: 1978.
6. Wagner H. Femoral osteotomies for congenital hip dislocation. In: Weil UH, ed. *Acetabular Dysplasia. Progress in Orthopaedic Surgery*. Vol 2. Heidelberg, Germany; Springer Berlin Heidelberg: 1978.
 7. Wagner H. Operative lengthening of the femur. *Clin Orthop Relat Res*. 1978;136:125–142.
 8. Wagner H. Principien der Korrekturosteotomie am Bein. *Orthopäde* 1977;6:145–177.
 9. Wagner H. Surface replacement arthroplasty of the hip. *Clin Orthop Relat Res*. 1978;134:102–110.
 10. Wagner H. Surgical lengthening or shortening of femur and tibia. Technique and indications. In: Hungerford DS, ed. *Leg Length Discrepancy The Injured Knee*. Heidelberg, Germany; Springer Berlin Heidelberg: 1977;1:71–94.
 11. Wagner H, Wagner M. Reconstructive operations of the hip [in German]. In: Bauer R, Kerschbaumer F, Poisel S, eds. *Orthopedic Surgery: Pelvis and Lower Limb* [in German]. Vol. 2. New York, NY; Thieme Medical Publishers: 1994.
 12. Wagner H, Zeiler G, Baur W. Indication, technic, and results of supra- and infra-condylar osteotomy in osteoarthritis of the knee joint [in German]. *Orthopäde*. 1985;14:172–192.