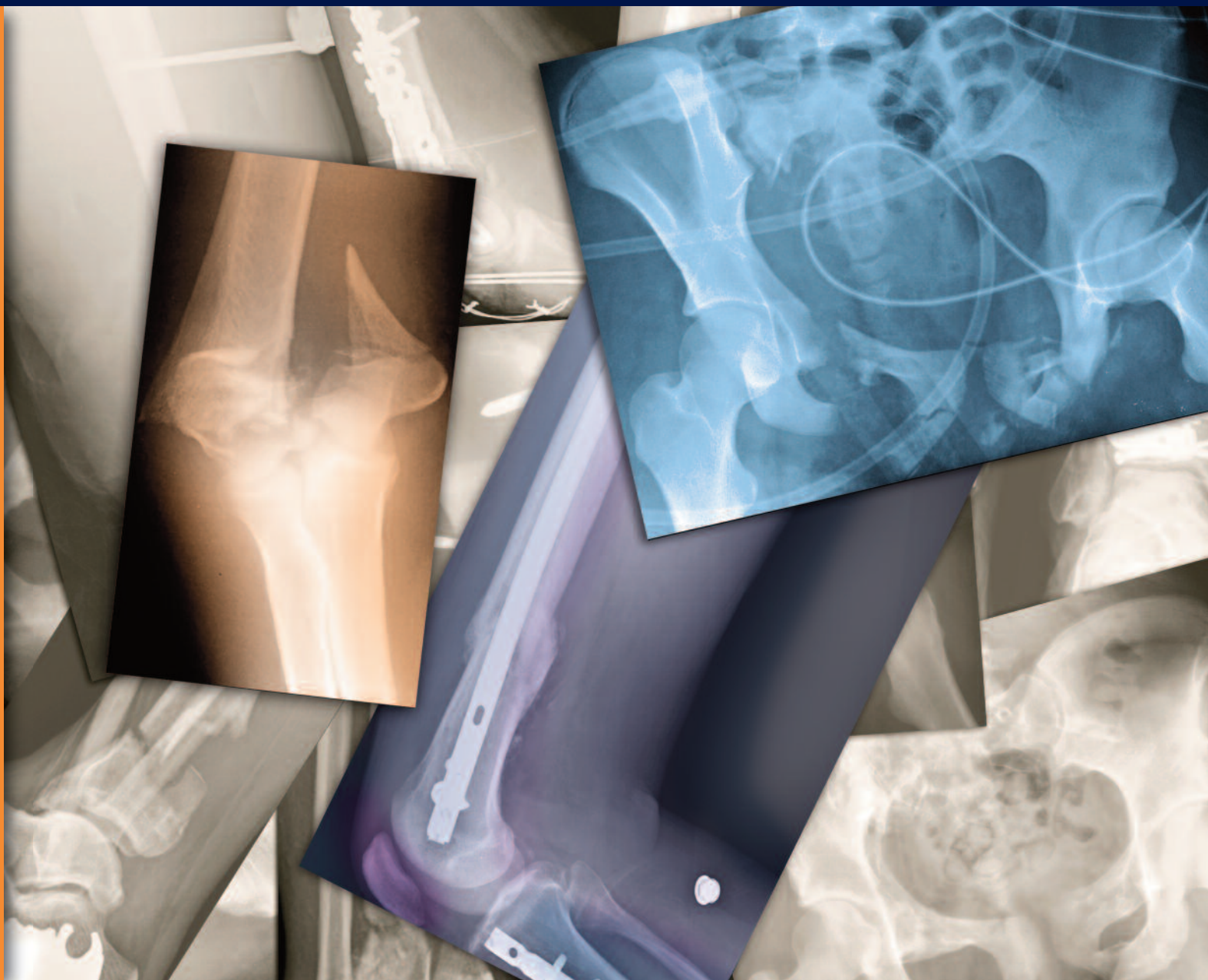


HOSPITAL
FOR
**SPECIAL
SURGERY**



**DEPARTMENT OF
ORTHOPAEDIC SURGERY**
2009-2010 ANNUAL REPORT



**THE ART AND SCIENCE OF
SOLVING COMPLEX CASES**



Photo at right:
 Dr. S. Robert Rozbruch, Chief of the Limb Lengthening and Complex Reconstruction Service (center), frequently confronts some of the most difficult orthopaedic challenges, often involving severe loss of bone due to major trauma. He is assisted here by Ryhor Harbacheuski, MD, Fellow. On the following pages, Dr. Rozbruch documents the stages of treatment of a 60-year-old female with a failed pilon fracture repair, osteomyelitis, and advanced destruction of the ankle and distal tibia.

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THE PROBLEM

A 60-year-old woman sustained multiple injuries, including a comminuted pilon fracture, in a motor vehicle accident. The fracture was repaired at an outside hospital, but it became infected with MRSA. She presented to HSS with advanced destruction of the ankle and distal tibia. The total bone loss was 12 cm (bone defect 6 cm + leg shortening 6 cm). This was a limb salvage undertaking.

The challenges included eradication of infection, reconstruction of the ankle, and bone lengthening within a reasonable amount of treatment time.

SURGICAL PLANNING

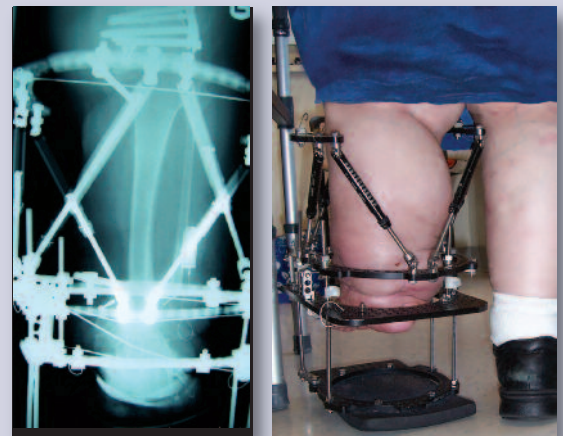
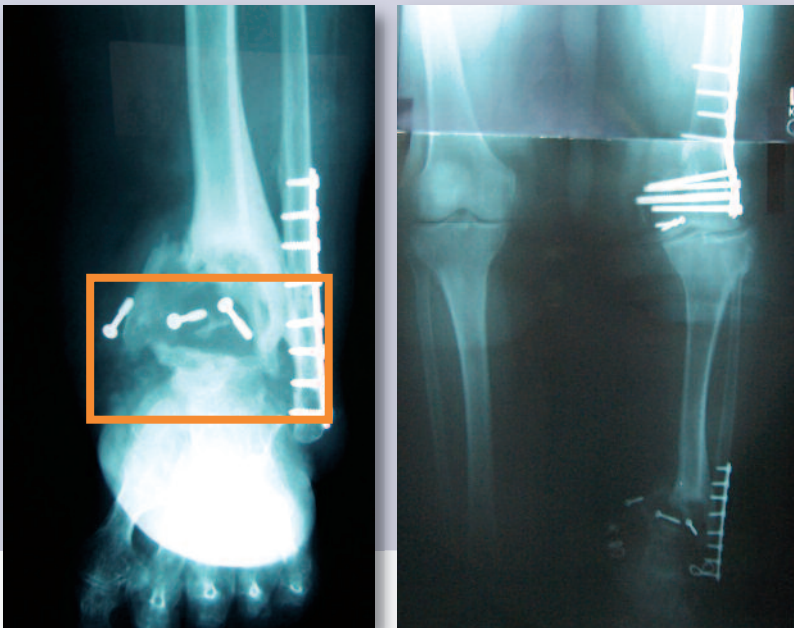
A three-stage surgical plan was organized. First, we would eradicate the infection and fuse the ankle. Second, we would lengthen the tibia using a new hybrid technique that has significantly shortened the time needed in external fixation. Third, we would insert an intramedullary rod and remove the external fixator.

STAGE 1

Debridement and Ankle Fusion

A debridement of all infection, dead bone, and hardware was done. The tibial bone and talus bone were prepared for eventual contact and fusion. Gradual shortening was used to achieve contact between the tibia and talus. As shown in images below, the massive leg shortening is apparent. Intravenous antibiotics (vancomycin) were used for six weeks to eradicate the MRSA infection.

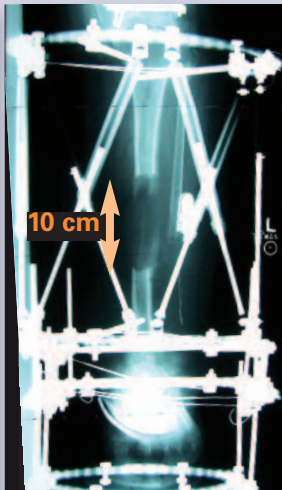
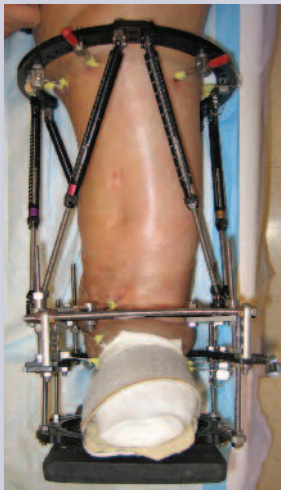
Ankle fusion reconstruction with an Ilizarov/Taylor Spatial Frame (TSF) and eradication of infection



STAGE 2

Lengthening with LATN

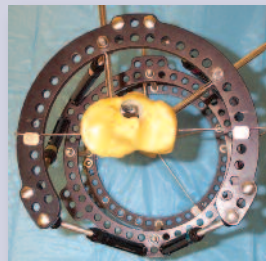
Six weeks later, after the infection was treated, we returned to the operating room for the tibial lengthening. The TSF was applied in a unique fashion to enable a staged intramedullary rod insertion. We developed lengthening and then nailing (LATN) to minimize the time needed in external fixation. Pins were placed so the path of the rod would not be blocked or contaminated. The osteotomy of the tibia was performed and a gradual 10 cm lengthening was accomplished over the next four months.



STAGE 3

Rod Insertion

Six months after the start of our treatment, the ankle fusion was healed and the optimal leg length was achieved. However, the newly lengthened bone still needed time to consolidate. We returned to the operating room to insert the intramedullary rod using the LATN technique and removed the external fixator. The rod did not make contact with the external fixation pins or the previously infected ankle area. The total time in the external fixator was six months.



THE OUTCOME

At nine months, equal leg length was achieved and the patient was walking without any assistance.



Relevant Publications

Rozbruch SR, Pugsley JS, Fragomen AT, Ilizarov S. Repair of tibial nonunions and bone defects with the Taylor Spatial Frame. *Journal of Orthopaedic Trauma* 2008; 22(2): 88-95.

Tellisi N, Fragomen AT, Ilizarov S, Rozbruch SR. Limb salvage reconstruction of the ankle with fusion and simultaneous tibial lengthening using the Ilizarov/Taylor Spatial Frame. *HSS Journal: The Musculoskeletal Journal of Hospital for Special Surgery* 2008; 4:32-42.

Rozbruch SR, Kleinman D, Fragomen AT, Ilizarov S. Limb lengthening and then insertion of an intramedullary nail: A case-matched comparison. *Clinical Orthopaedics and Related Research* 2008; 466:2923-2932.

Rozbruch SR, Segal K, Ilizarov S, Fragomen AT, Ilizarov G. Does the Taylor Spatial Frame accurately correct tibial deformities? *Clinical Orthopaedics and Related Research* 2010; 468:1352-61.



As you will read in the Department of Orthopaedic Surgery's *2009-2010 Annual Report*, Hospital for Special Surgery is a hospital of choice for the management of complex and atypical orthopaedic cases. Each of our 12 subspecialty services provides expertise in highly complicated issues that involve bone healing, soft tissue deficiency, bony deformity, and joint reconstruction. Collaboration with multiple disciplines frequently makes the difference in successful outcomes for patients with limb threatening injuries.