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Appendix I

Surgical Technique

Tibia

The sequestrectomy, harvesting of the graft, and transfer were all performed through the same anterolateral incision. A fibular graft of appropriate size was telescoped into the distal segment of the tibia, and a Kirschner wire was advanced in an antegrade fashion, passing through the graft and the distal segment of the tibia, crossing the ankle and subtalar joints, and exiting through the foot. The Kirschner wire was of the largest size that could traverse through the inner diameter of the fibula and ranged from 2 to 3 mm in our series. The proximal end of the Kirschner wire and the fibular strut graft were then telescoped into the proximal segment of the tibia, and the Kirschner wire was advanced into the cancellous metaphyseal region. The distal end of the Kirschner wire was kept out of the skin over the calcaneus to facilitate removal.

Femur and Humerus

The technique was similar to the one described above, with the proximal segment drilled first. The Kirschner wire was advanced proximally from the distal end of the proximal segment to exit through the greater trochanter of the femur or the greater tubercle of the humerus. An adequate length of Kirschner wire was drilled in this manner. The graft was then placed into the defect, with antegrade drilling of the Kirschner wire into the fibular graft and advancement into the distal fragment. In these cases, the proximal end of the Kirschner wire was kept slightly proud to the bone and was bent to prevent migration of the wire. In one patient, postoperative stabilization of the femur was done with use of an external fixator followed by immobilization in a Thomas splint (Fig. 3); however, within four weeks, the pins were loose and the fixator was removed and a spica cast was applied.

Radius and Ulna

The Kirschner wire was inserted through normal intramedullary nailing entry points, proximal for the ulna and distal for the radius (i.e., physeal-sparing). The fibular strut graft was placed in the bone defect, and the Kirschner wire was advanced across the graft to reach the opposite segment of the bone. The Kirschner wire was kept out of skin (at the distal end for a radial defect and the proximal end for an ulnar defect) to facilitate removal. An external fixator was applied to maintain the radioulnar variance (Fig. 4).

TABLE E-1 Patient Demographics

Bone Affected	No. of Cases	Mean Age (Range) *(yr)*	Male:Female
Femur	7	5.85 (3-12)	4:3
Tibia	12	8.08 (6-11)	4:8
Humerus	3	4.7 (4-5)	1:2
Radius	3	7 (5-9)	2:1
Ulna	1	6	0:1