

ADJUNCT FIBULA STRUT BONE GRAFT IN RESURFACING HIP ARTHROPLASTY

MARK R. BRINKER, MD; STEPHEN D. COOK, PHD;
HARRY S. SKINNER, MD; PHD

Femoral neck fracture following surface replacement is a reported complication. Adjunct autogenous fibula strut bone grafting has been proposed as a means of reducing or eliminating this occurrence. This paper reports the long-term follow-up of two cases. One patient did well for 9 years prior to sustaining a traumatic femoral neck fracture while intoxicated; the second patient continues to do well 8.5 years postoperatively. While definite conclusions cannot be drawn, these two patients represent our longest-clinical successes using surface replacement arthroplasty.

Femoral neck fracture following surface replacement hip arthroplasty has been reported by a number of authors.¹⁻⁵ In 1982, Cook et al⁶ proposed the use of a fibula strut bone graft in surface replacement hip arthroplasty as a means of reducing the rate of femoral neck fracture. Using finite element analysis, Cook et al⁶ reported markedly abnormal stress distribution in the femoral neck following surface replacement arthroplasty; stresses in the lateral femoral neck were found to be re-directed transversely across the femoral neck. The authors postulated that this abnormal stress pattern might be responsible for the femoral neck fractures following surface replacement. The authors further reported that stresses could be made physiologic (parallel to the femoral neck) through the use of a fibula strut bone graft placed in the femoral neck. This paper reports our long-term experience in two patients who underwent surface replacement hip arthroplasty with an adjunct autogenous fibula strut bone graft.

CASE REPORTS

Case 1. A 41-year-old man who had undergone open reduction with internal fixation of a right femoral neck fracture 13 years prior presented to the Veterans Administration Hospital of New Orleans in 1981, complaining of progressively debilitating right hip pain. A thorough work-up including a hip aspiration and serum laboratory tests ruled out infectious, metabolic, and endocrine disorders. Roentgenograms showed



Figure 1. Anteroposterior roentgenogram (Case 1) at 4 months postoperative shows the prosthesis and fibula strut bone graft in good position.

collapse of subchondral bone which was consistent with avascular necrosis (the patient had a history of heavy alcohol abuse).

The patient underwent a cemented THARIES (total hip articular replacement by internal eccentric shells) resurfacing arthroplasty with an autogenous fibula strut bone graft (Figure 1). Postoperatively, the