Repair and reconstruction of the greater trochanter in revision total hip arthroplasty requires rigid fixation of fragile bone stock. Fixation must not disrupt the blood supply and soft-tissue attachments to the bone fragments. The purpose of this study was to describe and evaluate two techniques to repair and reconstruct the greater trochanter, depending on the severity of the bone destruction.

**Surgical Procedure—Cable Reconstruction**

Eleven revision total hip replacements (11 patients) with severely damaged bone stock and fractured greater trochanter had the greater trochanter repaired with cable reconstruction. After curettage and grafting of the trochanteric cyst, a cable was passed, with minimal dissection, around the femoral shaft just below the lesser trochanter and tightened partially.

Two cables were passed under the circumferential cable, then around the greater trochanter using a Burlischer clamp or other suitable instrument to pass the cable subperiosteally with multiple passes. First the circumferential cable was tightened partially, then the three cables all were tightened sequentially until motion in the trochanteric fragments was minimal and the entire structure moved as a unit with the femur.

The vastus lateralis was closed over the cables and crimps. After surgery the patients were allowed partial weight-bearing early on, but two-handed support or a walker and protection from abductor exercises were enforced for 6 weeks.

**Results**

During 6-35 month followup, one repair failed and had to be repeated with the addition of iliac crest bone graft, and one had removal of the cables because of irritation after solid healing. Seven hips (7 patients) had good or excellent results. None of the patients has severe or moderate limp. Four have mild limp.

All patients can abduct against gravity. None has dislocated. None of the cables has broken or frayed.
**Surgical Procedure—Gluteus Maximus Flap Transfer**

When major bone loss has occurred and the greater trochanter has unreducible displacement, a gluteus maximus flap transfer is done.

The greater trochanter was reconstructed with a gluteus maximus flap transfer in five hips (5 patients). The hip was exposed through a posterior approach that split the gluteus maximus in its midsubstance. (Fig 1) A flap was raised from the posterior portion of the gluteus muscle that was elevated proximally to create a triangular muscle flap. (Fig 2) The flap was sewn into the gap between the greater trochanter and lateral cortex of the femur and secured to the inner surface of the anterior capsule of the hip. (Fig 3) With the hip abducted 10° to 15°, the edges of the gluteus maximus were closed over the flap and the greater trochanter. (Figs 4 and 5)

**Results**

All patients could abduct against gravity. Three of 5 patients had mild limp. None had positive Trendelenberg sign.

**Conclusions**

Cable reconstruction is effective when no major displacement of the bone has occurred, even when damage to the bone stock was severe.

Gluteus maximus flap transfer is effective when major bone loss and unreducible displacement has occurred.