A new osteotome for performing chevron trochanteric osteotomy

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We report on the use of a new modified osteotome for performing chevron trochanteric osteotomy during hip arthroplasty. It is easy to use and the apex of the chevron is directed distally, thus producing a large segment of osteotomized trochanter, while avoiding the problems of fragmentation and splintering. At the end of the procedure, the trochanter is easily seated back within its concave bed, automatically achieving anatomical reduction and allowing easier fixation using the cruciate wiring technique. In a series of 77 primary hip arthroplasties, bony trochanteric union was achieved within 6 months in all patients.

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The instrument used is a modified osteotome developed specifically for performing trochanteric osteotomy. It consists of a V-shaped cutting blade mounted on a wooden handle with the sharp edges and angles rounded off to avoid the problems of splintering encountered with earlier and alternative designs.

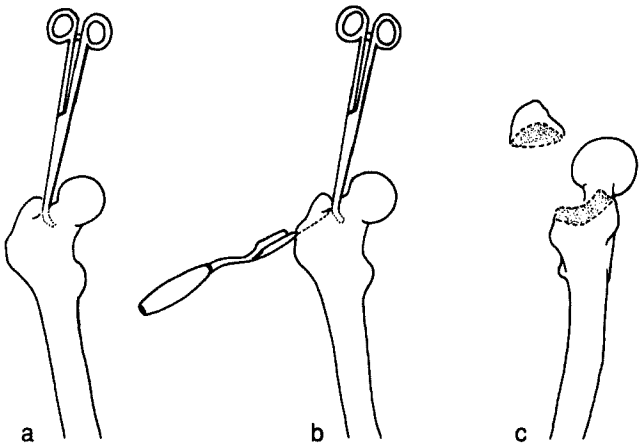
The hip is approached in the standard manner (Charnley) and the anterior capsule is incised. The tip of a Moynihan cholecystectomy forceps is then introduced over the superior aspect of the base of the femoral neck within the capsule and is used as a guide at which to aim the osteotome. The soft tissues are retracted and the osteotome, with the apex of its V pointing distally, is held at 45 degrees to the long axis of the femur. The osteotomy should commence just proximal to the ridge for the attachment of the vastus lateralis and should be aimed at the tip of the forceps. Posteriorly, the osteotome will exit just below the quadrate tubercle. This produces a neat, precise, guaranteed chevron at the desired level and a large piece of greater trochanter is osteotomized without splintering. At the end of the procedure, the trochanter can be wired back more securely in an anatomical position due to the distally pointing chevron locating automatically in its concave bed, thus providing stability.

We performed trochanteric osteotomy, using this instrument in 77 patients undergoing primary total hip arthroplasty. There were no cases of splintering or fragmentation of the trochanter and in all cases a satisfactory chevron was created. All trochanters were wired back, using a cruciate technique. Postoperative radiographs confirmed anatomical reduction in 70 patients and reduction with less than 3 mm overlap in the other 7. All the patients were followed-up for at least 1 year and all trochanters had united after 6 months. Wire breakage occurred in 2 patients, 1 of whom developed symptoms of trochanteric bursitis, but neither trochanter became displaced and wire removal was not necessary.

Discussion

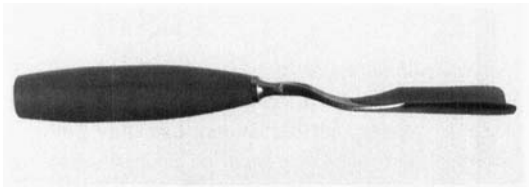
The best results after reattachment of the greater trochanter are reported following anatomical reduction or with an overlap of less than 5 mm (Schutzer and Harris 1988). Gottschalk et al. (1988) reported a nonunion rate of 11 percent when the trochanter was reattached in a tilted position, and Amstutz and Maki (1978) reported a nonunion rate of 11 percent for revision surgery and 5 percent for primary surgery. Using the traditional Charnley cruciate wiring technique, Boardman et al. (1978) reported a nonunion rate of 5 percent.

To overcome the problems with accurate reduction, the chevron trochanteric osteotomy was developed by Wroblewski and Shelley (1985), who observed a 98 percent success rate, using the spring wire technique. This commonly-practised procedure involves the use of a metal spike and a Gigli saw and the chevron thus produced has its apex pointing proximally. This invariably means that only a small piece of trochanter can be osteotomized and the risk of splintering or fragmentation is greater than with our technique.



Moynihan forceps being introduced over the femoral neck in the capsule (a). Positioning of the osteotome (b). The final chevron osteotomy (c).

Final appearance.



The S.P.K. chevron osteotome.

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References

Amstutz H C, Maki S. Complications of trochanteric osteotomy in total hip surgery. J Bone Joint Surg (Am) 1978; 60: 214-6.

Boardman K P, Bocco F, Charnley J. An evaluation of a method of trochanteric fixation, using three wires in the Charnley low-friction arthroplasty. Clin Orthop 1978; 132: 31-8.

Gottschalk F A, Gidon M, Weber F. Effect of the position of the greater trochanter on the rate of union after trochanteric osteotomy for total hip arthroplasty. J Arthroplasty 1988; 3 (3): 235-40.

Schutzer S F, Harris W H. Trochanteric osteotomy for revision total hip arthroplasty. Clin Orthop 1988; 227: 172-83.

Wroblewski P M, Shelley P. Reattachment of the greater trochanter after hip replacement. J Bone Joint Surg (Br) 1985; 67: 736-40.