

Technical note

Patella osteotomy for lateral retinaculum decompression in total knee arthroplasty

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Submitted 99-11-22. Accepted 00-05-05

Patella resurfacing in total knee arthroplasty is the major reason for revision (Rae et al. 1990). Despite the fact that the debate continues on whether the patella should be resurfaced or not (Boyd et al. 1993, Barrack et al. 1997), the main question seems to be how to maintain proper patella tracking and how to perform patella preparation adequately. This paper describes a new method to prepare the patella for total knee arthroplasty, including an intracapsular lateral retinaculum decompression.

Surgical technique

The knee is opened through a long central median skin incision. A straight subcutaneous incision is made in order to cut the medial fascia so that it can be mobilized en bloc with the skin and the subcutis over the vastus medialis. The fibers of the vastus medialis muscle are split at the superior-medial corner of the patella in a proximal direction (Engl and Parks 1998). The medial arthrotomy is completed by sectioning the medial retinaculum. The quadriceps tendon is left untouched. The patella is everted laterally, visualizing the articular surface. The osteophytes around the patella are resected using a rongeur. With an oscillating saw the lateral border of the patella is osteotomized parallel to the long axis of the patella, so that 7–9 mm of bone can be resected (Figure 1) and excised by subperiosteal dissection (Figure 2). Care is taken not to cut the lateral retinaculum, so that its fibers stay attached to the remaining part of the patella. The excision of the lateral border of the patella re-

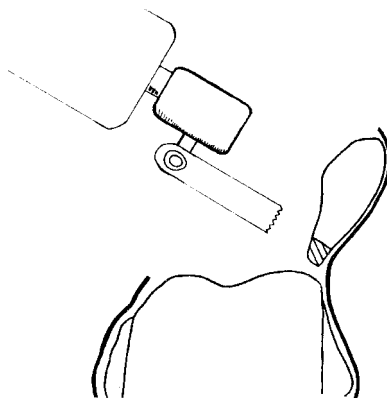


Figure 1. Axial view of the knee. The knee was opened through a medial arthrotomy and the patella everted laterally. The hatched part of the patella represents the lateral part that was resected by a longitudinal osteotomy with an oscillating saw.



Figure 2. Intraoperative view after medial arthrotomy, mid-vastus approach and patella eversion. The lateral border is resected with the oscillating saw.

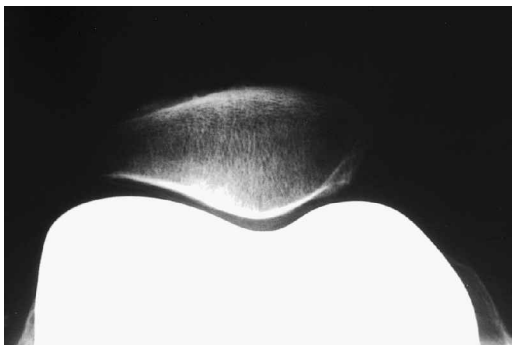


Figure 3. Merchant view: the patella is centered in the middle of the femoral groove (Merchant et al. 1974).

sults in decompression of the lateral patellar ligamentous structures, rather than in a lateral release. Knee replacement is then performed, according to the selected method and type of implant.

Patients and results

Between 1.1.1996 and 31.9.1998, 76 primary TKR were implanted by the senior author (RPJ) for arthrosis in 24 males and 52 females with a mean age of 73 (55–89) years. 69 patients were followed for more than 12 months with a mean of 31 (12–50) months (Figure 3). There were 7 Freeman (Sulzer Medica, Winterthur, Switzerland), 41 Wallaby (Sulzer Medica) and 21 SAL prostheses (Sulzer Medica).

No reoperation was necessary. 2 patients had a lateral subluxation, according to Ogata et al. (1997), of 11% and 13%, respectively, at the 1-year follow-up (Figure 4). According to Gomes et al. (1988), 85% of the patella tracked centrally,

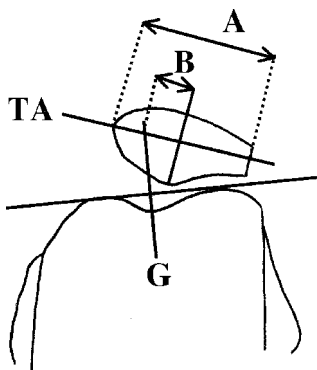


Figure 4. Evaluation of the patellar tilt according to Ogata et al. (1997).

15% tilted laterally, none tilted medially or displaced (Figure 5). There was no significant difference in subluxation between the prosthetic designs.

Discussion

Although proper patella tracking depends on many factors (Chew et al. 1997) such as femoral compound geometry, design and geometry, tibial compound geometry, design and positioning, soft tissue constraints and balancing, restoration of joint line, restoration of mechanical axis, preparation of the patella in non-resurfacing total knee replacement is important. Our resection of the patella leads to a decompression of the lateral retinaculum rather than a lateral release by cutting of the retinaculum. The latter procedure has been associated with compromise of the patellar blood supply by a lesion of the superolateral geniculate vessels, when a medial arthrotomy is performed at the same time. Scuderi et al. (1987) found in bone scans, patellar vascular compromise in 9/16 after total knee arthroplasty using a lateral release, compared to 3/20 in knees in which a lateral release was not performed. However, all cases of “cold patella” improved 3–10 months after surgery. A reduced blood supply has been shown to be responsible for patellar fracture after arthroplasty. Ritter et al. (1996) identified 4% fractured patellae when a lateral release was performed versus 0.5% in patients with no lateral release. Since the osteotomy is performed from the inside, leaving the soft tissue lateral to the patella untouched,

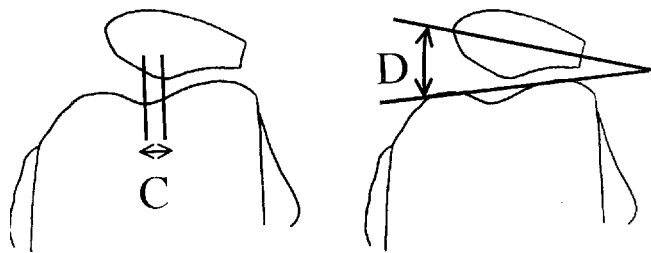


Figure 5. Measurement of patellar displacement C and patellar tilt D, according to Gomes et al. (1988).

the blood supply coming from the anterior cortical perforating vessels (Bonutti et al. 1998) is not endangered with our method. Johnson and Eastwood (1992) reported that a lateral release resulted in a significant reduction in transcutaneous measurement of skin oxygen tension in the wound edges and that the rate of wound infection in patients with lateral release was 38%, against 4% in patients without. Further, since the lateral osteotomized bone fragment is resected subperiostally and the lateral retinaculum is only decompressed, the blood supply from the superolateral geniculate vessels is not damaged.

Comparison of patellar maltracking after total knee replacement is difficult, because the definition varies between studies. To compare our results with other studies, we used two evaluation systems. Nevertheless, it seems that patellar maltracking is not unusual. Rorabeck et al. (1991) found a 7% incidence of excessive tilt, subluxation or frank dislocation. Campbell et al. (1995) reported in a consecutive series of 289 prostheses an incidence of 5% patellar maltracking. Bindelglass et al. (1993) noted in a series of 234 total knee arthroplasties that 55% tracked centrally, 18% tilted laterally, 13% medially and 14% were more than 5 mm displaced from the femoral groove. In a comparison of 40 total knee arthroplasties, performed via a subvastus approach with 49 prostheses implanted via a standard parapatellar approach, Bindelglass and Vince (1996) noted that following the subvastus approach, 40% of the patellae tracked centrally, compared to 45% for the parapatellar approach. Our results with more than 80% of patellae tracking centrally compare favorably with earlier publications.

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