



Selective Patellar Resurfacing in Total Knee Arthroplasty: A Prospective, Randomized, Double-Blind Study



Donald W. Roberts, MD^a, T. David Hayes, MD^a, Christine T. Tate, PT^b, James P. Lesko, PhD^c

^a Northwest Surgical Research Foundation, Vancouver, Washington

^b Department of Physical Therapy, Southwest Washington Medical Center, Vancouver, Washington

^c Biostatistics and Outcomes Research, DePuy Orthopaedics, Warsaw, Indiana

ARTICLE INFO

Article history:

Received 2 June 2014

Accepted 16 September 2014

Keywords:

knee arthroplasty/replacement
patella
resurfacing
treatment outcome
prospective study
patient satisfaction

ABSTRACT

350 knees were evaluated in a prospective, randomized, double-blinded study of selective patellar resurfacing in primary total knee arthroplasty. Knees with exposed bone on the patellar articular surface were excluded. 327 knees were evaluated at a mean follow-up of 7.8 years. 114 knees followed for greater than 10 years were analyzed separately. Satisfaction was higher in patients with a resurfaced patella. In patients followed for at least 10 years, no significant difference was found. No difference was found in KSS scores or survivorship. No complications of patellar resurfacing were identified. The vast majority of patients with remaining patellar articular cartilage do very well with total knee arthroplasty regardless of patellar resurfacing. Patient satisfaction may be slightly higher with patellar resurfacing.

© 2014 Elsevier Inc. All rights reserved.

Whether or not to resurface the patella at the time of total knee arthroplasty has been controversial since the development of the first patellar prosthesis. The earliest knee arthroplasties did not include patellar resurfacing. The frequent complaint of anterior knee pain stimulated the development of patellar resurfacing components [1]. A trend toward routine resurfacing was accompanied by the rapid recognition of patellofemoral complications related to resurfacing [2,3]. Patellar malalignment, dislocation, avascular necrosis, extensor mechanism failure, loosening, anterior knee pain, and difficulties with fracture management of the resurfaced patella were reported as the most common complications of total knee arthroplasty [4,5]. Given the prevalence of these complications, the benefits of patellar resurfacing are debatable. Even as recently as 2002 a randomized trial of 220 knees found that 10% of the resurfaced patellae required revision [6]. Prior studies were either inconclusive or failed to agree in the quest for resolution of the resurfacing dilemma [6–21]. Design features of early generations of arthroplasty components appear to have compromised the function and durability of the patellofemoral joint [22,23].

We questioned whether a modern implant with a more accommodating trochlear design could produce a predictably well functioning arthroplasty without the complications previously associated with patellar resurfacing. Additionally, previous randomized studies of patellar resurfacing had included knees with exposed bone in the patellofemoral

joint [13,16,24–26]. This subset of knees with severe patellar damage may have less optimal outcomes if the patella is not resurfaced. We chose to study whether or not the patella should be resurfaced in the population of knees that had remaining articular cartilage on the patellar articular surface. Considering the reported risk of resurfaced patellar complications, we hypothesized that the not resurfaced patella should have a better outcome compared to the resurfaced patella when knees with exposed bone on the patellar articular surface are excluded.

Methods

Enrollment

From July 1996 to April 2001, the patients of two surgeons at one center were enrolled in a prospective, blinded, randomized study of selective patellar resurfacing. All patients undergoing primary total knee arthroplasty for a primary diagnosis of osteoarthritis were recruited to participate in this study. Patients with inflammatory arthritis, avascular necrosis, previous patellar fracture or osteotomy, or who were undergoing revision knee arthroplasty were excluded from participation. Patients who were found at the time of surgery to have any exposed bone on the patellar articular surface were excluded. Institutional Review Board approval was obtained prior to the initiation of the study and informed consent was obtained from each patient.

An independent physical therapist examined the lower extremity and obtained a medical history and Knee Society Scores preoperatively. The same researcher, blinded to the treatment allocation, performed

The Conflict of Interest statement associated with this article can be found at <http://dx.doi.org/10.1016/j.arth.2014.09.012>.

Reprint requests: Donald W. Roberts, M.D., Northwest Surgical Research Foundation, 200 Mother Joseph Place, Suite 210, Vancouver, WA 98664.

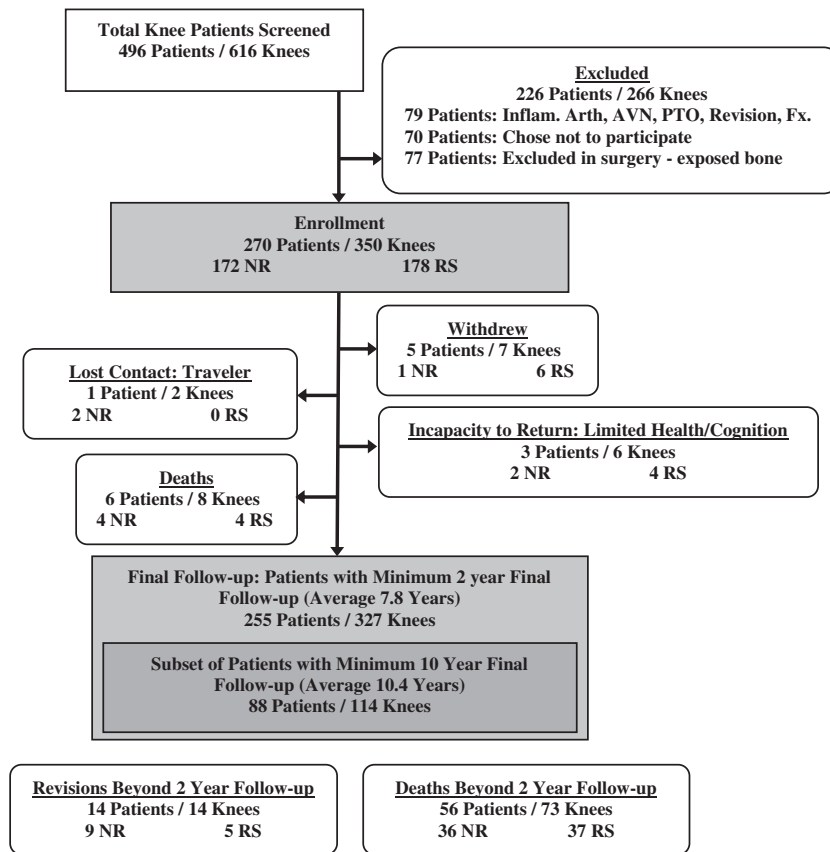


Fig. 1. Study enrollment and knee accountability flowchart.

postoperative evaluations at 6 weeks, 3 months, 1 year, 2 years and every subsequent 2-year interval.

Knee evaluations used for this study were a pre-operative evaluation and a final follow-up (minimum 2-year) evaluation. All knees with a minimum 10-year follow-up were also analyzed separately to provide a comparison to other reports with 10-year follow-up.

The primary outcomes in this study were patient satisfaction, revision, Knee Society score and Knee Society function score. Secondary outcomes included active and passive range of motion, presence of anterior knee pain and stair climbing ability. Satisfaction was documented at each follow-up visit on an ordinal scale [27].

Radiographs were evaluated preoperatively, one year postoperatively and at the time of final evaluation. The radiographs were evaluated for coronal alignment (whether the patella was located centrally, medially or laterally in the trochlea on the Merchant radiograph) Insall ratio, the presence of articular cartilage space on the un-resurfaced patella, whether the patella was congruent to the trochlea and the angle of patellar tilt.

Surgical Procedure

The surgical procedure was performed under spinal anesthesia. No peripheral nerve blocks were used. We employed a midline incision and a medial parapatellar arthrotomy. The patella was everted and the patellofemoral joint was inspected. If exposed bone was found on the patellar articular surface or grossly evident chondrocalcinosis, the patella was resurfaced and the patient was not included in the study. If no exposed bone was found on the patellar articular surface, an envelope was opened instructing the surgeon whether or not to resurface the patella. If the patient was undergoing a simultaneous bilateral total knee arthroplasty, only a single envelope was opened and both patellae were treated the same.

The implant was the DePuy Sigma fixed bearing cruciate-retaining knee system. The femoral component was externally rotated three degrees from the posterior condylar axis and was placed toward the lateral side of the resected femoral surface.

Patellar osteophytes were excised. When the patella was resurfaced the composite patellar thickness was restored to within 2 mm of the pre-resection thickness. The patellar component was an all-polyethylene dome-shaped implant with three fixation pegs. The patellar surface was prepared with standard cementing technique. A lateral retinacular release was performed when the patella was not centered in the trochlea with the knee flexed 45° and the medial capsular retinaculum unapproximated. The superior lateral geniculate artery was identified and preserved when possible.

Postoperatively, a continuous passive motion machine was used for the duration of the hospitalization. Weight bearing as tolerated was allowed immediately; no immobilization devices were used. Physical therapy was prescribed three times a week for four to six weeks.

Randomization

Prior to initiating the study, the assignment of patellar resurfacing had been made by a random number generator. The assignments were placed in opaque envelopes and the envelopes were taken in consecutive order. The envelopes were opened in the operating room after evaluation of the patellar surface. At that time the patient was assigned to the patellar resurfacing or non-resurfacing group. No discrepancies of randomization occurred. The treatment allocation was concealed from the patient. An independent observer who had no knowledge of the treatment allocation performed clinical evaluations.

Download English Version:

<https://daneshyari.com/en/article/6209509>

Download Persian Version:

<https://daneshyari.com/article/6209509>

[Daneshyari.com](https://daneshyari.com)