The Knee 25 (2018) 146–152

Contents lists available at ScienceDirect

The Knee

The outcome of secondary resurfacing of the patella following total knee arthroplasty: Results from the Trent and Wales Arthroplasty Register

Christopher Thomas [a,*], Vishal Patel [b], Emad Mallick [b], Colin Esler [b], Robert U Ashford [b]

[a] NHS University Hospital Coventry, Coventry, UK
[b] NHS Leicester General Hospital, UK

ARTICLE INFO

Article history:
Received 16 December 2016
Received in revised form 18 September 2017
Accepted 10 October 2017

Keywords:
Arthroplasty
Total knee replacement
Patella resurfacing

ABSTRACT

Background: We sought to determine whether patients undergoing secondary patella resurfacing (SPR) benefited from the procedure by assessing postoperative satisfaction via a postal questionnaire.
Methods: All such patients included in the Trent and Wales Arthroplasty Register were invited to participate using patient-reported outcome measures (PROMs). We identified 223 patients who had undergone SPR over a 20-year period. Forty-two had died according to death register checks. Eighty-eight of 181 (48.6%) questionnaires were completed. The mean age at resurfacing was 67 (min. 42, max. 81); 52% were female. The median time to follow-up was 55 months (interquartile range (IQR) 41–111). Median time to SPR was 28 months (IQR 20–42).
Results: Thirty-nine patients (44%) felt that SPR resolved the problem of pain in the front of their knee. All PROMs were significantly better for those who felt that the resurfacing had worked (Oxford Knee Score 29 vs. 16, $P < 0.05$, modified Kujala 51 vs. 32, $P < 0.05$, EQ5D-3L 0.616 vs. 0.384, $P < 0.05$). Based on PROMs, SPR produces a satisfactory outcome in two of every five patients.
Conclusions: Surgeons must be clear on the cause of anterior knee pain post-total knee replacement, and patients must be made aware of what outcomes can be reasonably expected from this procedure.

1. Introduction

The management of the anterior compartment of the knee during total knee arthroplasty (TKA) remains a matter of controversy between orthopaedic surgeons. Whilst strong evidence supporting primary patella resurfacing remains elusive [1–3], some studies have demonstrated reduced rates of revision when the patella is primarily resurfaced [4,5]. However the cost implications and possibility of catastrophic complications, such as extensor mechanism failure, have led some to suggest that selective resurfacing may be the solution [6].

Despite this, persisting anterior knee pain remains a relatively common complication of bi-compartment TKA [7,8], for which secondary patella resurfacing is considered by some as the next step. A number of relatively small studies have considered the role of secondary resurfacing for patients who report anterior knee pain following bi-compartment TKA [6,9–14] with variations

* Corresponding author at: NHS University Hospital Coventry, Clifford Bridge Road, Coventry CV2 2DX, UK.
E-mail address: thomaschr@doctors.org.uk (C. Thomas).

https://doi.org/10.1016/j.knee.2017.10.004
0968-0160/

in methodology, outcomes measured and findings. All of these studies are single centre and consider relatively small cohorts of patients.

We studied a multi-centre, multi-prosthesis, multi-surgeon registry cohort of patients who had undergone resurfacing of their patella for anterior knee pain to establish whether this procedure is beneficial. To our knowledge, this is the largest patient cohort studied to date.

2. Patients and methods

2.1. The Trent and Wales Arthroplasty Register

The Trent (& Wales) Arthroplasty Audit Group was established to assess the outcome of hip and knee arthroplasty in these regions of the United Kingdom. Between 1990 and 2015, and with the agreement of all consultant orthopaedic surgeons in these regions, all primary and revision hip and knee arthroplasties were recorded prospectively and their details registered on the database at the University of Leicester. The information recorded by the surgeon at the time of the operation included demographic, medical and operative details for each patient and implant. Participation was by consent only following the 1998 Data Protection Act. Postoperative patient-related outcome measures (PROMs) were collected one year after surgery for primary arthroplasties, but no pre-operative scores were recorded. We identified patients who had had a revision procedure to secondarily resurface their patella. To assess patients' satisfaction and function after undergoing secondary resurfacing of the patella, we invited individuals who met the inclusion criteria to participate in a postal survey.

2.2. Patients

All patients registered on the Trent & Wales Register who had undergone secondary resurfacing of the patella following primary bi-compartment TKA were invited to participate in the study. We did not have any exclusion criteria. All operations were performed at least two years prior to participation to allow the results of the procedure to have stabilised [15,16]. Patients were invited to participate via a written questionnaire with a covering letter of explanation. After 12 weeks, the invitation pack was re-issued to all patients who had failed to respond to the first iteration. In all, 223 patients were identified in the register. After a pre-invitation death check, 42 patients were found to have died. The remaining 181 were invited to participate. Eight further patients had died in addition to those identified previously. Eighty-eight patients completed the questionnaire, three patients declined to participate, 10 packs were returned (presumed wrong address) and 72 invitees were not accounted for after two iterations.

2.3. Questionnaire

The questionnaire consisted of the Oxford Knee Score (OKS) [17] and a modified version of the Kujala patellofemoral score was used [18]. The modification involved the re-phrasing of all questions to convert the scoring system from physician-guided to patient-reported. Although not formally validated, these modifications were reviewed by a number of laypersons to ensure clarity and simplicity.

Assessment of overall health and well-being was by the Euroqol EQ-5D and Euroqol Visual Analogue Scores (VAS) [19]. In addition, a visual analogue score (VAS) was included for pain in the front of the knee whilst rising from a chair.

Questions regarding the patients' overall satisfaction with their knee were included as were questions to identify those patients that had undergone a further revision procedure. All questions had standardised answers or visual analogue scales, with a single additional free text entry box for participants to provide any additional information.

2.4. Outcome measures

The primary outcome measures that we considered were the direct questions “did knee cap surgery resolve the pain in the front of your knee?”, “were you satisfied with this kneecap resurfacing surgery?” and the visual analogue score for anterior knee pain (VAS AKP) (0–10, where 10 is the worst pain). Because no pre-operative data is available for comparison, the OKS, modified Kujala score, EQ-5D and visual analogue scores for general health are all considered secondary outcome measures used to compare our cohort of patients with others reported in the wider literature.

2.5. Statistics

In the analyses, *P*-values less than 0.05 were considered statistically significant. The analyses were performed using IBM SPSS version 21.0.0.0 (IBM, Armonk, New York). Patient demographics and prosthesis constraint variables were analysed for effect on all outcome measures using regression analysis: binominal logistic regression for binary outcomes and linear regression for continuous outcomes. Continuous secondary outcome variables were then analysed against the primary outcome measure using Student's *t*-test.