Patellar resurfacing in total knee arthroplasty for osteoarthritis: a systematic review

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CRD summary
This review assessed the advantages and disadvantages of patellar resurfacing during total knee replacement for osteoarthritis. The author concluded that resurfacing reduces the reoperation rate, although there is no benefit for revision rates and any reduction in anterior knee pain is unconfirmed. Poor reporting of the review process makes it difficult to verify the findings.

Authors' objectives
To determine the advantages and disadvantages of patellar resurfacing during total knee replacement for osteoarthritis.

Searching
MEDLINE (from 1966) and the Cochrane Library were searched. The bibliographies of potentially relevant papers were also checked.

Study selection
Study designs of evaluations included in the review
Prospective trials, with a minimum length of follow-up of 5 years, were eligible for inclusion.

Specific interventions included in the review
Studies comparing resurfacing with retention of the patella were eligible. All of the included studies used a cemented, all polyethylene component for patellar resurfacing and compared this with not resurfacing. In one of the included studies the unresurfaced group received a patelloplasty; this information was not reported in the other included studies. Each of the included studies used a different prothesis: Kinematic, Miller-Galante II and anatomic medullary knee.

Participants included in the review
Patients with osteoarthritis undergoing total knee arthroplasty were eligible.

Outcomes assessed in the review
The inclusion criteria for the outcomes were not explicitly stated. The outcomes of interest were anterior knee pain, reoperation for patellofemoral problems (including secondary resurfacing) and revision (excluding secondary resurfacing).

How were decisions on the relevance of primary studies made?
The author did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
The studies were assessed on the basis of the method of randomisation, blinding of the outcome assessor and patients, and the number of patients evaluated. The author did not state how many reviewers performed the validity assessment.

Data extraction
The author did not state how the data were extracted for the review, or how many reviewers performed the data extraction.

The odds ratio (OR) and 95% confidence interval (CI) were calculated for each of the outcomes of interest in the individual studies. In one study some patients were randomised to a selective resurfacing group where the surgeon made the decision, and these patients were excluded from the analysis.
Methods of synthesis
How were the studies combined?
Where there was no evidence of statistically significant heterogeneity, the studies were combined in a meta-analysis using a fixed-effect model. The pooled OR and 95% CI were calculated for reoperation.

How were differences between studies investigated?
Heterogeneity was assessed using the Cochran Q test (significance level of P<0.10).

Results of the review
Three RCTs (302 knees) were included.

Anterior knee pain (2 RCTs).
The studies had contradictory findings. One RCT found higher rates of anterior knee pain with no resurfacing than with resurfacing (24% versus 0%), whereas the other study found similar rates of pain in both groups (around 18%). There was statistically significant heterogeneity, therefore the 2 studies were not pooled.

Reoperation for patellofemoral problem (3 RCTs).
Reoperation for patellofemoral problems was more likely in the unresurfaced group than in the resurfaced group; the pooled OR was 0.11 (95% CI: 0.02, 0.48, P=0.003). The overall rates for reoperation were 0.7% and 11% in the surfaced and unresurfaced groups, respectively. There was no evidence of statistically significant heterogeneity.

Revision (1 RCT).
The RCT found one revision in the resurfaced group and three in the unresurfaced group. There was no statistically significant difference.

Authors' conclusions
Reoperation for patellofemoral problems is significantly reduced by resurfacing the patella. Any reduction in knee pain could not be confirmed and there was no benefit in terms of revision rates.

CRD commentary
The review addressed a clear research question using defined inclusion criteria. Only two relevant databases were searched and there were no specific attempts to locate unpublished studies; it is therefore possible that relevant studies were missed. Details of the search strategy were not reported and it was unclear whether language restrictions were applied. The review methodology for the study selection, validity assessment and data extraction processes was not described, thus it was not possible to assess whether appropriate measures had been taken to minimise error and bias. Although there was a quality assessment, important criteria such as the validity of methods used to assess anterior knee pain were not considered. The evidence came from 3 RCTs with a small number of patients reporting outcome events of interest. Given these limitations, the conclusions may not be reliable.

Implications of the review for practice and research
Practice: The author did not state any implications for practice, though it was pointed out that the results of the older implants may not be transferable to newer designs.

Research: The author did not state any implications for further research.

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.