Chen K, Li G, et al. Patellar resurfacing versus nonresurfacing in total knee arthroplasty: a meta-analysis of randomised controlled trials. Int Orthop. 2013 Jun;37(6):1075-83.

Design: Meta-analysis of randomized clinical trials

Study question: In patients having total knee arthroplasty, does patellar resurfacing improve knee pain and function and does it reduce the risk of later reoperation?

PICOS:

- Patient population: Adults undergoing primary TKA for osteoarthritis
- Interventions: patellar resurfacing at the time of TKA
- Comparison: no patellar resurfacing with TKA
- Outcomes: numbers of reoperations, cases with postoperative knee pain, symptoms and function scores such as the WOMAC and Knee Society Score (KSS)
- Study types: Randomized trials in English

Study selection:

- Databases were MEDLINE, EMBASE, and the Cochrane database from 1966 to the "present"
- Two authors independently extracted data for inclusion criteria and for assessment of quality, emphasizing risk of bias considerations from the Cochrane Risk of Bias tool—randomization method, allocation concealment, blinding of participants, personnel, and outcome assessment, complete outcome data, and selective data reporting

Results:

- 14 independent RCTs with 1725 knees were included in an overall meta-analysis
- The relative risk for reoperation favored patellar resurfacing (RR 0.50, 95% CI 0.33 to 0.76); the absolute risk of reoperation was reduced 4%
    - The absolute risk reduction of 4% means that the number needed to treat (NNT) is 25; when 25 patellar resurfacing operations are performed when 25 TKAs are being done, one reoperation at a later time can be avoided
- The relative risk of later anterior knee pain was not significantly influenced by patellar resurfacing
- The Knee Society Score (KSS) data from nine combined studies was not conclusive, but when data from five studies with long-term followup (5 years or more) was combined, the KSS was better with patellar resurfacing by 2.14 points (95% CI from 0.76 to 3.52)

- Seven studies which provided details on knee function did not show a difference between patellar resurfacing and no resurfacing; four studies providing knee pain scores also showed no significant difference

Authors' conclusions:

- The rate of reoperation was lower following TKA with patellar resurfacing than without resurfacing, but there was no difference with respect to anterior knee pain
- Many studies were small, and not all studies provided the details of anterior knee pain and knee function
- Various prosthetic designs were used among the included studies, and any influence of these variations could not be assessed
- Patellar resurfacing may make a difference in the long term in Knee Society Scores, but in other aspects of knee scoring, the influence is limited

Comments:

- A misprint is present in the inclusion criteria; the studies were required to have resurfacing at the time of TKA ("not at the same time as primary TKA" is an error)
    - A second misprint is in the second line of the left hand column on page 1078, where the effect size for the KSS score is given as RR=2.14, implying a relative risk of 2.14; in fact, this is a mean difference of 2.14 points
- Although the pooled KSS in the long term followup favored resurfacing by 2.14 points, this is a scale for which the minimal clinically important difference has not been established and is being debated
    - The KSS is a 100 point scale with 25 points awarded for range of motion, 50 points for pain, and 25 points for stability in anteroposterior (10 points) or mediolateral (15 points) direction
    - There is a functional score for walking which is separate from the KSS and appears to be optional
    - This may account for a feature of Figure 8 where the long term KSS is presented; Campbell 2006 has mean scores greater than 100, while the other scores are all less than 100; the outcomes are not better, but the scoring is different

Assessment: Adequate meta-analysis supporting good evidence that patellar resurfacing reduces the risk of later reoperation; if 25 arthroplasties are done with resurfacing, one later reoperation may be avoided