

## 1. A systematic survey of the quality of research reporting in general orthopaedic journals.

Parsons NR, Hiskens R, Price CL, Achten J, Costa ML.

*J Bone Joint Surg Br.* 2011 Sep; 93(9):1154-9.

The poor reporting and use of statistical methods in orthopaedic papers has been widely discussed by both clinicians and statisticians. A detailed review of research published in general orthopaedic journals was undertaken to assess the quality of experimental design, statistical analysis and reporting. A representative sample of 100 papers was assessed for compliance to CONSORT and STROBE guidelines and the quality of the statistical reporting was assessed using a validated questionnaire. Overall compliance with CONSORT and STROBE guidelines in our study was 59% and 58% respectively, with very few papers fulfilling all criteria. In 37% of papers patient numbers were inadequately reported; 20% of papers introduced new statistical methods in the 'results' section not previously reported in the 'methods' section, and 23% of papers reported no measurement of error with the main outcome measure. Taken together, these issues indicate a general lack of statistical rigour and are consistent with similar reviews undertaken in a number of other scientific and clinical research disciplines. It is imperative that the orthopaedic research community strives to improve the quality of reporting; a failure to do so could seriously limit the development of future research.

## 2. Systematic review on interventions to improve osteoporosis investigation and treatment in fragility fracture patients.

Sale JE, Beaton D, Posen J, Elliot-Gibson V, Bogoch E.

*Osteoporos Int.* 2011 Jul; 22(7):2067-82.

This study aims to determine osteoporosis (OP) investigation and treatment within post-fracture initiatives conducted in fracture clinics and other orthopedic environments. A systematic review was conducted. Eligibility criteria were: hip fracture patients plus all other fracture patients presenting with a fragility fracture, orthopedic setting where orthopedic physicians/staff were involved, intervention to improve OP management, primary data on  $\geq 20$  patients from randomized controlled trials (RCTs) and other study designs. We calculated outcome data within 6 months of screening from an intention-to-treat principle to derive an equated proportion (EP) across interventions. Outcomes were: (1) proportion of patients investigated with bone densitometry, (2) proportion of patients initiating OP medication, and (3) proportion of patients taking OP medication. We identified 2,259 citations, of which 57 articles that included 64 intervention groups were eligible. The median EP for patients investigated was 43% and the 75th percentile was 71%. The median EP for medication initiation was 22% and the 75th percentile was 34%. The median EP for medication taking was 27.5% and the 75th percentile was 43%. The EPs for all outcomes were higher for interventions with dedicated personnel to implement the intervention and those within which bone mineral density testing and/or treatment were included. In studies with an EP, up to 71% of patients were investigated for OP, but <35% initiated medication, and <45% were taking medication within 6 months of screening. Calculating an EP allowed us to compare outcomes across the studies, therefore capturing both RCTs and other study designs typical of real-world settings.

## 3. Implant survival, knee function, and pain relief after TKA: are there differences between men and women?

O'Connor MI.

*Clin Orthop Relat Res.* 2011 Jul; 469(7):1846-51.

## BACKGROUND

As efforts continue to improve the results of TKA, the potential influence of sex and gender on long-term survival of implants, knee function, pain relief, and patient satisfaction remains relevant, particularly given the increased incidence of osteoarthritis of the knee in women and reports that women derive equal benefit from TKA.

## QUESTIONS/PURPOSES

This article reviews the literature pertinent to the question of whether long-term survival, knee function, pain relief, and patient satisfaction after TKA differ between men and women.

## METHODS

Large clinical series (> 1000 patients) published in the last 10 years were identified in PubMed and reviewed.

## RESULTS

Men may be at higher risk of revision surgery than women. Sex/gender has been consistently shown to impact both function and pain relief both before and after TKA. Although women achieve at least the same degree of functional improvement as men, women have worse preoperative physical function and do not reach the same final level of physical function as men. Likewise women may have similar or even greater improvement in pain after arthroplasty than men but still have final pain scores that are less favorable.

## CONCLUSIONS

Further research is required to understand the sex and gender differences contributing to implant survival, physical function, and pain relief after TKA. Strategies need to be developed to identify any patient who is at higher risk of implant failure, suboptimal postoperative function, and incomplete pain relief.

## 4. Do we need gender-specific total joint arthroplasty?

Johnson AJ, Costa CR, Mont MA.

*Clin Orthop Relat Res.* 2011 Jul; 469(7):1852-8.

## BACKGROUND

Gender-specific differences in knee and hip anatomy have been well documented. Although it has been accepted these differences exist, there is controversy regarding if and how these differences should be addressed with gender-specific implant designs.

## QUESTIONS/PURPOSES

(1) What are the anatomic and morphologic differences, if any, in the knee and hip between men and women? (2) Do gender-specific TKA designs provide better clinical functioning, survivorship, and improved fit in women? (3) How have anatomic differences in the hip been addressed, if at all, by THA?

## METHODS

We conducted a systematic review of the MEDLINE database to identify all articles reviewing basic science and clinical outcomes of gender-specific total knee and total hip implants. From these, we reviewed 253 studies.

## RESULTS

The anatomic studies elucidated multiple differences in the anatomy of knees and hips between men and women. All reviewed studies report similar clinical function and satisfaction scores between men



and women for gender-specific TKA and no improvement in these scores when comparing gender-specific TKA to unisex TKA. Current modularity in THA appears to accommodate any anatomic differences in the hip.

## CONCLUSIONS

Based on the available literature, there is no difference in the outcome of patients with a gender-specific knee arthroplasty versus a unisex arthroplasty. It does not appear gender-specific THAs would provide any benefit over current systems.

## 5. Metal-backed versus all-polyethylene tibial components in primary total knee arthroplasty.

Cheng T, Zhang G, Zhang X.

*Acta Orthop. 2011 Oct; 82(5):589-95.*

### BACKGROUND AND PURPOSE

The choice of either all-polyethylene (AP) tibial components or metal-backed (MB) tibial components in total knee arthroplasty (TKA) remains controversial. We therefore performed a meta-analysis and systematic review of randomized controlled trials that have evaluated MB and AP tibial components in primary TKA.

### METHODS

The search strategy included a computerized literature search (Medline, EMBASE, Scopus, and the Cochrane Central Register of Controlled Trials) and a manual search of major orthopedic journals. A meta-analysis and systematic review of randomized or quasi-randomized trials that compared the performance of tibial components in primary TKA was performed using a fixed or random effects model. We assessed the methodological quality of studies using Detsky quality scale.

### RESULTS

9 randomized controlled trials (RCTs) published between 2000 and 2009 met the inclusion quality standards for the systematic review. The mean standardized Detsky score was 14 (SD 3). We found that the frequency of radiolucent lines in the MB group was significantly higher than that in the AP group. There were no statistically significant differences between the MB and AP tibial components regarding component positioning, knee score, knee range of motion, quality of life, and postoperative complications.

### INTERPRETATION

Based on evidence obtained from this study, the AP tibial component was comparable with or better than the MB tibial component in TKA. However, high-quality RCTs are required to validate the results.

## 6. Patellar resurfacing in total knee arthroplasty: does design matter? A meta-analysis of 7075 cases.

Pavlou G, Meyer C, Leonidou A, As-Sultany M, West R, Tsiroidis E.

*J Bone Joint Surg Am. 2011 Jul 20;93(14):1301-9.*

### BACKGROUND

Patellar resurfacing in total knee arthroplasty remains controversial. The aim of this study was to compare outcomes following total knee arthroplasty with patellar resurfacing with those following total knee arthroplasty without patellar resurfacing. We also sought to identify any correlation between outcomes and prosthetic design.

### METHODS

Eighteen Level-I randomized controlled trials with a cumulative sample size of 7075 knees (3463 in the resurfacing group and 3612 in the non-resurfacing group) satisfied the inclusion criteria. In the primary analysis, patellar resurfacing total knee arthroplasty was compared with non-resurfacing total knee arthroplasty, with use of reoperation rates, incidence of anterior knee pain, and functional scores as outcome measures. The secondary analysis focused on comparing patella-friendly and non-patella-friendly total knee arthroplasty designs with regard to the same three outcome measures.

## RESULTS

No significant differences were found between the resurfacing and non-resurfacing groups with regard to the incidence of anterior knee pain. A higher rate of reoperations was observed in the non-resurfacing group. Analysis of homogeneous data comparing patella-friendly with non-patella-friendly total knee arthroplasty designs demonstrated no differences in the incidence of reoperations.

## CONCLUSIONS

No evidence was found to suggest that either patellar resurfacing or the prosthetic design affects the clinical outcome of a total knee arthroplasty. The higher incidence of reoperations in the non-resurfacing group may be attributed to the fact that secondary patellar resurfacing adds a surgical option for the treatment of anterior knee pain following total knee arthroplasty, thus artificially increasing the rate of reoperations in the non-resurfacing group.

## 7. Obesity in total hip arthroplasty - does it really matter? A meta-analysis.

Haverkamp D, Klinkenbijn MN, Somford MP, Albers GH, van der Vis HM.

*Acta Orthop. 2011 Aug; 82(4):417-22.*

### BACKGROUND AND PURPOSE

Discussion persists as to whether obesity negatively influences the outcome of hip arthroplasty. We performed a meta-analysis with the primary research question of whether obesity has a negative effect on short- and long-term outcome of total hip arthroplasty.

### METHODS

We searched the literature and included studies comparing the outcome of hip arthroplasty in different weight groups. The methodology of the studies included was scored according to the Cochrane guidelines. We extracted and pooled the data. For continuous data, we calculated a weighted mean difference and for dichotomous variables we calculated a weighted odds ratio (OR). Heterogeneity was calculated using I(2) statistics.

### RESULTS

15 studies were eligible for data extraction. In obese patients, dislocation of the hip (OR = 0.54, 95% CI: 0.38-0.75) (10 studies, n = 8,634), aseptic loosening (OR = 0.64, CI: 0.43-0.96) (6 studies, n = 5,137), infection (OR = 0.3, CI: 0.19-0.49) (10 studies, n = 7,500), and venous thromboembolism (OR = 0.56, CI: 0.32-0.98) (7 studies, n = 3,716) occurred more often. Concerning septic loosening and intraoperative fractures, no statistically significant differences were found, possibly due to low power. Subjective outcome measurements did not allow pooling because of high heterogeneity (I(2) = 68%).

### INTERPRETATION

Obesity appears to have a negative influence on the outcome of total hip replacement.

## 8. Mobile-bearing total knee arthroplasty: a meta-analysis.

Carothers JT, Kim RH, Dennis DA, Southworth C.

*J Arthroplasty. 2011 Jun; 26(4):537-42.*

An extensive database search was completed to perform a meta-analysis of outcomes of mobile-bearing total knee arthroplasty. Nineteen manuscripts encompassing 3506 total knee arthroplasty met criteria for analysis (average follow-up, 8.6 years).

Data were subdivided based on design type and included rotating platform, meniscal bearing, and anterior-posterior glide-rotation subgroups. Fifteen-year survivorship of rotating platform designs (96.4%) was greater than meniscal bearing implants (86.5%). Mean component loosening (0.33%) and bearing instability (<1%) for all subgroups were uncommon. Implants placed prior to 1995 exhibited higher rates of bearing complications (1.6% vs 0.1%). Excellent results were obtained with mobile-bearing TKA over 2 decades. Loosening and bearing instability were uncommon. Bearing complications lessened after 1995, possibly secondary to improved surgical technique.



## 9. Is patellar resurfacing superior than nonresurfacing in total knee arthroplasty? A meta-analysis of randomized trials.

He JY, Jiang LS, Dai LY.

*Knee. 2011 Jun; 18(3):137-44.*

Conflicting results from abundant studies have made it unclear whether the patella should be resurfaced during total knee replacement. A meta-analysis was undertaken to pool the results of randomized controlled studies (RCTs) and to compare the outcomes and postoperative complications after total knee arthroplasty with patellar resurfacing or nonresurfacing. Sixteen RCTs including 3034 knees between 1966 and December 2009 were analyzed. Reoperation for patellofemoral problems was significantly more likely in the nonresurfacing group ( $P = 0.03$ ). There was no difference between the two groups in terms of anterior knee pain rate, knee pain score, knee society score and knee function score. The results indicate that patellar resurfacing would reduce the risk of reoperation after total knee replacement, but it seems that the benefits are limited on other aspects, and the analysis of high-quality studies shows no advantage of resurfacing over nonresurfacing group, even in the aspect of reoperation risk. More carefully and scientifically designed RCTs are beneficial and necessary to further prove the results.

## 10. Nonoperative treatment for acute scaphoid fractures: a systematic review and meta-analysis of randomized controlled trials.

Doornberg JN, Buijze GA, Ham SJ, Ring D, Bhandari M, Poolman RW.

*J Trauma. 2011 Oct; 71(4):1073-81.*

### BACKGROUND

Recommendations for cast immobilization of acute scaphoid fractures vary substantially. We reviewed data from randomized controlled trials comparing nonoperative treatment methods for acute scaphoid fractures to determine the best available evidence.

### METHODS

A systematic search of the medical literature from 1966 to 2010 was performed. Two authors independently screened titles and abstracts, reviewed articles, assessed methodological quality according to the Grading of Recommendations Assessment Development and Evaluation system, and extracted data.

The primary outcome parameter was nonunion. Data were pooled using random effects models with standard mean differences for continuous and risk ratios for dichotomous variables, respectively. Heterogeneity across studies was assessed with calculation of the I statistic.

### RESULTS

The search resulted in five potentially eligible trials of which four met our inclusion criteria. In total, 523 patients were included in four trials including two evaluating below-elbow casting versus above-elbow casting; one trial comparing below-elbow casting including the thumb versus excluding the thumb; and one trial comparing fractures with a below-elbow cast with the wrist in 20-degrees flexion to 20-degrees extension, with both types excluding the thumb. There were no significant differences in union rate, pain, grip strength, time to union, or osteonecrosis for the various nonoperative treatment methods.

### CONCLUSIONS

There is no evidence from randomized controlled trials on physician-based or patient-based outcome to favor any nonoperative treatment method for acute scaphoid fractures.

