



## 1. Systematic review of anterior interbody fusion techniques for single and double level cervical degenerative disc disease.

Jacobs W, Willems PC, Kruyt M, van Limbeek J, Anderson PG, Pavlov P, Bartels R, Oner C.

*Spine (Phila Pa 1976). 2011 Jun 15;36(14):E950-E960.*

### STUDY DESIGN

A systematic review of randomized controlled trials.

### OBJECTIVE

To determine which technique of anterior cervical interbody fusion (ACIF) gives the best outcome in patients with cervical degenerative disc disease.

### SUMMARY OF BACKGROUND DATA

The number of surgical techniques for decompression and ACIF as treatment for cervical degenerative disc disease has increased rapidly, but the rationale for the choice between different techniques remains unclear.

### METHODS

From a comprehensive search, we selected randomized studies that compared anterior cervical decompression and ACIF techniques, in patients with chronic single- or double-level degenerative disc disease or disc herniation. Risk of bias was assessed using the criteria of the Cochrane back review group.

### RESULTS

Thirty-three studies with 2267 patients were included. The major treatments were discectomy alone and addition of an ACIF procedure (graft, cement, cage, and plates). At best, there was very low-quality evidence of little or no difference in pain relief between the techniques. We found moderate quality evidence for few secondary outcomes. Odom's criteria were not different between iliac crest autograft and a metal cage (risk ratio [RR]: 1.11; 95% confidence interval [CI]: 0.99-1.24). Bone graft produced more fusion than discectomy (RR: 0.22; 95% CI: 0.17-0.48). Complication rates were not different between discectomy and iliac crest autograft (RR: 1.56; 95% CI: 0.71-3.43). Low-quality evidence was found that iliac crest autograft results in better fusion than a cage (RR: 1.87; 95% CI: 1.10-3.17); but more complications (RR: 0.33; 95% CI: 0.12-0.92).

### CONCLUSION

When fusion of the motion segment is considered to be the working mechanism for pain relief and functional improvement, iliac crest autograft appears to be the golden standard. When ignoring fusion rates and looking at complication rates, a cage as a golden standard has a weak evidence base over iliac crest autograft, but not over discectomy.

## 2. Comparison between closed suction drainage and nondrainage in total knee Arthroplasty: a meta-analysis.

Zhang QD, Guo WS, Zhang Q, Liu ZH, Cheng LM, Li ZR.

*J Arthroplasty. 2011 Mar 1. [Epub ahead of print]*

From individual randomized studies, it is not clear whether a closed suction drainage should be used after total knee arthroplasty. Our meta-analysis compares the clinical outcomes of closed suction

drainage with nondrainage after total knee arthroplasty in randomized controlled trials reported between January 1966 and May 2010. Fifteen eligible trials involving 1361 knee incisions (686 knees with closed suction drainage and 675 knees without drainage) satisfied the inclusion criteria for our meta-analysis. The result of the meta-analysis indicates that closed suction drainage reduces the incidence of soft tissue ecchymosis and requirement for dressing reinforcement, but increases the rate of homologous blood transfusion. No significant difference between drainage and nondrainage was observed in the incidence of infection, deep venous thrombosis, or postoperative range of motion.

## 3. Meta-analysis comparing arthroplasty with internal fixation for displaced femoral neck fracture in the elderly.

Dai Z, Li Y, Jiang D.

*J Surg Res. 2011 Jan;165(1):68-74.*

### BACKGROUND

The treatment of displaced femoral neck fracture includes internal fixation and arthroplasty. However, which is the best surgical treatment for the elderly patient with displaced femoral neck fractures has been controversial. Our objective was to compare the clinical effects of internal fixation with that of arthroplasty for displaced femoral neck fracture in the elderly ( $\geq 60$  y of age).

### MATERIALS AND METHODS

We searched for all randomized controlled trials of hip arthroplasty versus internal fixation for displaced femoral neck fractures in the elderly by electronically searching PUBMED (1966 to December, 2008), MEDILINE (1966 to December, 2008) and manually searching grey literatures. The quality of the trials was assessed and meta-analyses were conducted using the Cochrane Collaboration's RevMan 4.2 software.

### RESULTS

Nineteen published randomized controlled trials involving a total of 3505 patients were suitable for inclusion in the review. The combined results of meta-analyses showed no significant difference in mortality at 1 y postoperatively between the two methods. However, compared with internal fixation, arthroplasty could reduce the rate of reoperations and the major method-related complications.

### CONCLUSIONS

Compared with internal fixation, arthroplasty can not only reduce the surgical revision, but also decrease the incidence of complications, and does not increase mortality. The present meta-analysis shows that there is an evidence base to support arthroplasty as a primary treatment for displaced femoral neck fractures in the elderly.

## 4. Metal-on-metal or metal-on-polyethylene for total hip arthroplasty: a meta-analysis of prospective randomized studies.

Qu X, Huang X, Dai K.

*Arch Orthop Trauma Surg. 2011 Jun 4. [Epub ahead of print]*

### BACKGROUND

There has been recent concern regarding the increased use of metal-on-metal total hip arthroplasty (MOM-THA) as an alternative to



contemporary metal-on-polyethylene total hip arthroplasty (MOP-THA), and the choice remains controversial. We performed a meta-analysis to evaluate and compare metal ion concentrations, complications, reoperation rates, clinical outcomes and radiographic outcomes of MOM-THA and MOP-THA.

## METHODS

We performed a systematic review of English and non-English articles identified from MEDLINE, Embase, the Cochrane Central Register of Controlled Trials, PreMEDLINE and HealthSTAR. Metal ion concentrations, complications, reoperation rates and other outcomes of MOM bearings were compared with MOP bearings in THA based on relative risks, mean differences and standardized mean difference statistics.

## RESULTS

Eight prospective randomized trials were identified from 1,075 citations. Our results demonstrated significantly elevated erythrocyte, serum and urine levels of metal ions (cobalt and chromium) among patients who received MOM-THA. No significant differences in titanium concentrations or total complication or reoperation rates were found between MOM-THA and MOP-THA. Clinical function scores and radiographic evaluations were similar between the two groups.

## CONCLUSIONS

This analysis found insufficient evidence to identify any clinical advantage of MOM-THA compared with MOP-THA. Although cobalt and chromium concentrations were elevated after MOM-THA, there were no significant differences in total complication rates (including all-case mortality) between the two groups in the short- to mid-term follow-up period. The MOM bearing option for THA should be used with caution.

## 5. Minimally invasive total hip arthroplasty trend or state of the art? : A meta-analysis.

Kappe T, Bieger R, Wernerus D, Reichel H.

*Orthopade. 2011 Apr 10. [Epub ahead of print]*

Minimally invasive approaches in total hip arthroplasty are being used worldwide and continue to grow in popularity. Despite early reports of catastrophic failures, both the number of scientific publications as well as the number of orthopaedic surgeons practicing minimally invasive techniques in total hip arthroplasty are steadily increasing. By means of a systematic review of the literature, the current article weighs the potential advantages and disadvantages of minimally invasive techniques. A shorter skin incision, potentially less muscle damage, a faster rehabilitation and a clinically irrelevant lower blood loss may support the use of minimally invasive techniques. However, the potential impairment of wound cosmetics, the increased risk of periprosthetic fractures, implant malpositioning and lack of long-term results contradict the use of minimally invasive total hip arthroplasty as a standard treatment.

## 6. Is there evidence for a superior method of socket fixation in hip arthroplasty? A systematic review.

Pakvis D, van Hellemond G, de Visser E, Jacobs W, Spruit M.

*Int Orthop. 2011 Mar 15. [Epub ahead of print]*

## PURPOSE

Total hip arthroplasty has been a very successful orthopaedic procedure. The optimal fixation method of the acetabular component however, has not yet been defined.

## METHODS

We performed a systematic review using the Medline and Embase databases to find evidence for the superiority of cemented or cementless acetabular components on short- and long-term clinical and radiological parameters. Methodological quality for randomised trials was assessed using the van Tulder checklist, and for the non-randomised studies we used the Newcastle-Ottawa quality assessment scale. RESULTS: Our search strategy revealed 16 randomised controlled trials (RCT) and 19 non RCT studies in which

cemented and cementless acetabular components are compared. A best evidence analysis for complications, wear, osteolysis, migration and clinical scores showed no superiority for either cemented or cementless socket in the RCTs. A best evidence analysis for non RCT studies revealed better osteolysis, migration properties and aseptic loosening survival for cementless sockets; however, wear and overall survival favoured the cemented sockets.

## CONCLUSIONS

We recommend that an orthopaedic surgeon should choose an established cemented or cementless socket for hip replacement based on patient characteristics, knowledge, experience and preference.

## 7. Survival of metal-on-metal hip resurfacing arthroplasty: a systematic review of the literature.

van der Weegen W, Hoekstra HJ, Sijbesma T, Bos E, Schemitsch EH, Poolman RW.

*J Bone Joint Surg Br. 2011 Mar;93(3):298-306.*

We systematically reviewed the peer-reviewed literature to relate the survival of hybrid metal-on-metal hip resurfacing arthroplasty devices to a National Institute of Clinical Excellence (NICE) benchmark for choosing a primary total hip replacement, which is a survival rate of 90% at a follow-up of ten years. A total of 29 articles (10 621 resurfaced hips) met the inclusion criteria. The mean follow-up ranged from 0.6 to 10.5 years and the survival of the implant ranged from 84% to 100%. Of the 10 621 hips, 370 were revised (3.5%), with aseptic loosening as the most frequent mode of failure. None of the hip resurfacing arthroplasty implants used to date met the full ten-year NICE benchmark of survival. A total of 13 studies showed satisfactory survival compared with the three-year NICE benchmark.

## 8. Infection in total hip replacement: meta-analysis.

Senthi S, Munro JT, Pitto RP.

*Int Orthop. 2011 Feb;35(2):253-60.*

While total hip arthroplasty has progressed to become one of the most successful surgical procedures ever developed, infection remains a serious complication. We have conducted a review of the literature pertaining to management of deep infection in total hip arthroplasty, specifically focusing on clinically relevant articles published in the last five years. A search was conducted using MEDLINE and PubMed, as well as a review of the Cochrane database, using the terms "total hip arthroplasty", "total hip replacement" and "infection". References for all selected articles were cross-checked. While the so-called two-stage revision is generally considered to be the gold standard for management, numerous studies now report outcomes for implant retention and reassessing one-stage revision strategies. There are encouraging reports for complex reconstruction options in patients with associated severe bone stock loss. The duration of antibiotic therapy remains controversial. There is concern about increasing bacterial resistance especially with the widespread use of vancomycin and ertapenem (carbapenem).

## 9. Survival of Hard-on-Hard Bearings in Total Hip Arthroplasty: A Systematic Review.

Zywiel MG, Sayeed SA, Johnson AJ, Schmalzried TP, Mont MA.

*Clin Orthop Relat Res. 2011 Jun;469(6):1536-46.*

## BACKGROUND

Improvements in prosthetic materials, designs, and implant fixation for THA have led to bearing surface wear being the limitation of this technology. Hard-on-hard bearings promise decreased wear rates and increased survival. However, there may be different survival rates based on bearing materials, manufacturing technologies, and femoral component designs. Additionally, survival rate variability may be based on study design.

## QUESTIONS/PURPOSES

We determined survival rates and study levels of evidence and qua-



lity for the following bearings: stemmed metal-on-metal THA, metal-on-metal hip resurfacing, ceramic-on-ceramic THA, and ceramic-on-metal THA.

shows that further clinimetric evaluation of commonly used PRO instruments for nonarthritic hip pathology is warranted.

## METHODS

We performed a systematic review of the peer-reviewed literature addressing THA hard-on-hard bearings. Quality for Level I and II studies was assessed.

## RESULTS

The four Level I or II second-generation stemmed metal-on-metal THA studies reported between 96% and 100% mean survival at 38 to 60 months. The two Level I hip resurfacing studies reported 94% and 98% mean survival at 56 and 33 months. The four Level I studies of ceramic-on-ceramic THA reported survival from 100% at mean 51 months to 96% at 8 years.

## CONCLUSIONS

While hard-on-hard bearing survival rates have generally been variable with earlier designs, contemporary implants have demonstrated survival of 95% or greater at followup of between 3 and 10 years. Some variability in survival may be due to differences in surgical technique, component positioning, and implant designs. As bearing designs continue to improve with modified materials and manufacturing techniques, use will increase, especially in young and active patients, though concerns remain about the increased reports of adverse events after metal-on-metal bearings.

## 10. Patient-reported outcome instruments for femoroacetabular impingement and hip labral pathology: a systematic review of the clinimetric evidence.

Lodhia P, Slobogean GP, Noonan VK, Gilbert MK.

*Arthroscopy. 2011 Feb;27(2):279-86.*

## PURPOSE

The purpose of this study is to systematically review the content and clinimetric evidence (rigor of rating scales and indexes for the description of clinical phenomena) of published patient-reported outcome (PRO) instruments used to assess femoroacetabular impingement (FAI) and labral hip pathology.

## METHODS

We used Medical Subject Heading terms related to FAI and labrum/labral tears to search the Medline, Embase, and Cochrane databases for studies of FAI and labral hip pathology. Studies with hip-related PRO instruments, with any operative intervention except total hip arthroplasty, were included. We excluded studies with a skeletally immature population, revision surgeries in more than 10% of cases, or a primary diagnosis of hip osteoarthritis. We conducted a second review using the same databases for studies reporting clinimetric properties of at least 1 of the PRO instruments identified previously. Articles were selected in an independent, stepwise manner by 2 reviewers. Selected articles were evaluated to determine the presence and quality of measurement properties of the outcome instruments.

## RESULTS

We found 5 articles assessing 3 PRO instruments: the Hip Outcome Score (HOS), the Non-Arthritic Hip Score, and the 12-item modified Western Ontario and McMaster Universities Osteoarthritis Index. The HOS had the highest positive rating for internal consistency, construct validity, agreement, responsiveness, lack of floor/ceiling effect, and interpretability. The Non-Arthritic Hip Score showed evidence for validity and lack of floor/ceiling effect. The modified Western Ontario and McMaster Universities Osteoarthritis Index was only strong for internal consistency and was indeterminate for construct validity.

## CONCLUSIONS

Only 3 PRO instruments have shown clinimetric evidence to support their use to measure outcomes in FAI and labral pathology patients. The HOS has the greatest amount of clinimetric evidence and is the most proven instrument for use in this population. This review

