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## Surgical Approaches in Total Knee Arthroplasty: A Meta-analysis comparing the midvastus and subvastus to the medial peripatellar approach.

Liu HW, Gu WD, Xu NW, Sun JY.

*J Arthroplasty. 2013 Oct 28. [Epub ahead of print]*

### ABSTRACT

Subvastus, midvastus and medial parapatellar approaches are the most popular approaches in total knee arthroplasty (TKA). However, the superior approach in TKA still remains controversial. We therefore conducted a meta-analysis to quantitatively compare the midvastus and subvastus approaches to the medial parapatellar approach in TKA. A total of 32 randomized controlled trials (RCTs) with 2451 TKAs in 2129 patients were included in this study. The meta-analysis suggested that, when compared with the medial parapatellar approach, the midvastus approach showed better outcomes in pain and knee range of motion at postoperative 1-2 weeks but also was associated with longer operative time; the subvastus approach showed better outcomes in knee range of motion at postoperative 1 week, straight leg raise and lateral retinacular release.

## Intramedullary nailing versus plating for extra-articular distal tibial metaphyseal fracture: A systematic review and meta-analysis.

Xue XH, Yan SG, Cai XZ, Shi MM, Lin T.

*Injury. 2013 Oct 26. [Epub ahead of print]*

### INTRODUCTION

With development in the techniques of reduction and fixation, there has been a controversy in comparison between intramedullary nailing (IMN) and plating for the treatment of distal tibial metaphyseal fracture (DTF). The study aimed to investigate: (1) which fixation, IMN or plating, was better in the clinical outcomes and in the complications for the treatment of DTF and (2) which modifying variables affected the comparative results between the two modalities.

### METHODS

PubMed, EMBASE, OVID, Scopus, ISI Web of Science, the Cochrane Library, Google Scholar and specific orthopaedic journals were searched from inception to July 2013, using the search strategy of ('Fracture Fixation, Intramedullary' [MeSH]) AND ('Tibial Fractures' [MeSH]) AND (plate OR plating). All prospective and retrospective controlled trials comparing function, pain, bone union and complications between IMN and plating for DTF were identified. Our analysis had no limitation of the language or the publication year. The primary outcome measurements were complication rate, union time, operation time and hospital stays, while the secondary outcome measurements were functional score and pain score.

### RESULT

Fourteen of 6620 studies with 842 patients were included. IMN was probably preferential to plating for DTF given its higher functional score ( $p=0.01$ ), lower risk of infection ( $p=0.02$ ) and comparable pain score ( $p=0.33$ ), total complication rate ( $p=0.53$ ) and time to union ( $p=0.86$ ). However, plating had a lower malunion rate than IMN ( $p<0.0001$ ). All the results were based on the Grading of Recommendations Assessment, Development and Evaluation (GRADE) evidence of moderate quality.

### CONCLUSIONS

With a satisfying alignment obtained, IMN may be preferential to plating for fixation of DTF with better function and lower risk of infection. However, IMN showed higher malunion rate for fixation of DTF. With the biases in our meta-analysis, it will ultimately require a rigorous and adequately powered randomised controlled trial (RCT) to prove.

## Comparison between posterior lumbar interbody fusion and posterolateral fusion with transpedicular screw fixation for isthmic spondylolithesis: a meta-analysis.

Ye YP, Xu H, Chen D.

*Arch Orthop Trauma Surg. 2013 Dec;133(12):1649-55.*

### INTRODUCTION

Primary aim of this study was to compare long-term pain relief and quality of life in adults with isthmic spondylolisthesis (IS) who were treated with posterior lumbar interbody fusion (PLIF) and posterolateral fusion (PLF). Secondary aim was to compare the fusion and infection rates of PLIF- or PLF-treated groups.

### MATERIALS AND METHODS

We searched four databases and the cited reference lists of the included studies. Inclusion criteria were pain assessment with visual analog scale (VAS), and clinical studies that compared long-term pain relief of PLF and PLIF-treated adults with IS. Exclusion criteria were use of only one treatment and non-English language.

### RESULTS

Three of five included studies used VAS to assess the decline in low back pain, radicular pain, or leg pains in PLF- or PLIF-treated patients during the follow-up periods (0.5-6 years). Long-term pain relief significantly improved in both treatment groups. Pooled differences in mean improvement of Oswestry disability index after the operation revealed no significant difference in pain relief between the PLF and PLIF groups ( $P = 0.856$ ). The five studies together indicated that fusion rate was significantly greater in the PLIF group than that in the PLF group.

### CONCLUSIONS

The majority of PLIF- and PLF-treated adults with low-grade IS experienced long-term pain relief to a similar extent in most studies. PLIF treatment provided significantly better fusion rates than PLF treatment. This meta-analysis indicates that the use of separate, well-defined scales for pain relief and functional outcomes are needed in studies of PLF or PLIF-treated patients.

## Immobilization in internal or external rotation does not change recurrence rates after traumatic anterior shoulder dislocation.

Vavken P, Sadoghi P, Quidde J, Lucas R, Delaney R, Mueller AM, Rosso C, Valderrabano V.

*J Shoulder Elbow Surg. 2013 Sep 30. [Epub ahead of print]*

### BACKGROUND

The objective of this study was to systematically review and quantitatively synthesize the data on recurrence rates after shoulder immobilization in internal versus external rotation in first-time, traumatic shoulder dislocations.



## MATERIALS AND METHODS

We performed a systematic search of the keywords “((external rotation) OR internal rotation) AND immobilization) AND shoulder” in the online databases PubMed, EMBASE, CINAHL (Cumulative Index to Nursing and Allied Health Literature), and the Cochrane Library. Random-effects models were used to calculate the cumulatively pooled risk ratios (RRs) of recurrent shoulder dislocations. All analyses were also stratified by age.

## RESULTS

We included 5 studies with a total of 471 patients (230 internal rotation and 241 external rotation) published between 2001 and 2011 in English. The pooled random-effects RR for recurrence of shoulder dislocations at all ages was 0.74 (95% confidence interval [CI], 0.44-1.27;  $P = .278$ ). The RR was 0.70 (95% CI, 0.38 to 1.29;  $P = .250$ ) for patients aged 30 years or younger and 0.78 (95% CI, 0.32 to 1.88;  $P = .579$ ) for those aged older than 30 years.

## CONCLUSION

The current best evidence does not support a relative effectiveness of immobilization in external rotation compared with internal rotation to avoid recurrent shoulder dislocations in patients with traumatic anterior shoulder dislocations.

## Ponseti method compared with soft-tissue release for the management of clubfoot: A meta-analysis study.

Lykissas MG, Crawford AH, Eismann EA, Tamai J.

*World J Orthop.* 2013 Jul 18;4(3):144-53.

### AIM

To compare the functional outcomes of patients who underwent open surgery vs Ponseti method for the management of idiopathic clubfoot and to determine whether correlations exist between functional outcome and radiographic measurements.

### METHODS

A meta-analysis of the literature was conducted for studies concerning primary treatment of patients with idiopathic clubfoot. We searched PubMed Medline, EMBASE, and the Cochrane Library databases from January 1950 to October 2011. Meta-analyses were performed on outcomes from 12 studies. Pooled means, SDs, and sample sizes were either identified in the results or calculated based on the results of each study.

### RESULTS

Overall, 835 treated idiopathic clubfeet in 516 patients were reviewed. The average follow-up was 15.7 years. Patients managed with Ponseti method did have a higher rate of excellent or good outcome than patients treated with open surgery (0.76 and 0.62, respectively), but not quite to the point of statistical significance ( $Q = 3.73$ ,  $P = 0.053$ ). Age at surgery was not correlated with the functional outcome for the surgically treated patients ( $r = -0.32$ ,  $P = 0.68$ ). A larger anteroposterior talocalcaneal angle was correlated with a higher rate of excellent or good outcomes ( $r = 0.80$ ,  $P = 0.006$ ). There were no other significant correlations between the functional and radiographic outcomes.

### CONCLUSION

The Ponseti method should be considered the initial treatment of idiopathic clubfeet, and open surgery should be reserved for clubfeet that cannot be completely corrected.

## Treatment of acute ankle ligament injuries: a systematic review.

Petersen W, Rembitzki IV, Koppenburg AG, Ellermann A, Liebau C, Brüggemann GP, Best R.

*Arch Orthop Trauma Surg.* 2013 Aug;133(8):1129-41.

### BACKGROUND

Lateral ankle sprains are common musculoskeletal injuries.

### OBJECTIVES

The objective of this study was to perform a systematic literature review of the last 10 years regarding evidence for the treatment and prevention of lateral ankle sprains.

### DATA SOURCE

Pubmed central, Google scholar.

### STUDY ELIGIBILITY CRITERIA

Meta-analysis, prospective randomized trials, English language articles.

### INTERVENTIONS

Surgical and non-surgical treatment, immobilization versus functional treatment, different external supports, balance training for rehabilitation, balance training for prevention, braces for prevention.

### METHODS

A systematic search for articles about the treatment of lateral ankle sprains that were published between January 2002 and December 2012.

### RESULTS

Three meta-analysis and 19 articles reporting 16 prospective randomized trials could be identified. The main advantage of surgical ankle ligament repair is that objective instability and recurrence rate is less common when compared with non-operative treatment. Balancing the advantages and disadvantages of surgical and non-surgical treatment, we conclude that the majority of grades I, II and III lateral ankle ligament ruptures can be managed without surgery. For non-surgical treatment, long-term immobilization should be avoided. For grade III injuries, however, a short period of immobilization (max. 10 days) in a below knee cast was shown to be advantageous. After this phase, the ankle is most effectively protected against inversion by a semi-rigid ankle brace. Even grades I and II injuries are most effectively treated with a semi-rigid ankle brace. There is evidence that treatment of acute ankle sprains should be supported by a neuromuscular training. Balance training is also effective for the prevention of ankle sprains in athletes with the previous sprains. There is good evidence from high level randomized trials in the literature that the use of a brace is effective for the prevention of ankle sprains.

### CONCLUSION

Balancing the advantages and disadvantages of surgical and non-surgical treatment, we conclude that the majority of grades I, II and III lateral ankle ligament ruptures can be managed without surgery. The indication for surgical repair should be always made on an individual basis. This systematic review supports a phase adapted non-surgical treatment of acute ankle sprains with a short-term immobilization for grade III injuries followed by a semi-rigid brace. More prospective randomized studies with a longer follow-up are needed to find out what type of non-surgical treatment has the lowest re-sprain rate.

## Methods to diagnose acute anterior cruciate ligament rupture: a meta-analysis of physical examinations with and without anaesthesia.

van Eck CF, van den Bekerom MP, Fu FH, Poolman RW, Kerkhoffs GM.

*Knee Surg Sports Traumatol Arthrosc.* 2013 Aug;21(8):1895-903

### PURPOSE

The aims of this meta-analysis were to determine the sensitivity and specificity of the Lachman, pivot shift and anterior drawer test for acute complete ACL rupture in the office setting and under anaesthesia. It was hypothesized that the Lachman test is the most sensitive and the pivot shift test the most specific. Secondly, it was hypothesized that the sensitivity and specificity of all three exams increases when the examination is performed under anaesthesia.

### METHODS

An electronic database search was performed using MEDLINE and EMBASE. All cross-sectional and cohort studies comparing one or more physical examination tests for diagnosing acute complete ACL



rupture to an accepted reference standard such as arthroscopy, arthrotomy and MRI were included.

## RESULTS

Twenty studies were identified and included. The overall sensitivity of the Lachman test was 0.81 and the specificity 0.81; with anaesthesia, the sensitivity was 0.91 and the specificity 0.78. For the anterior drawer test, the sensitivity was 0.38 and the specificity 0.81; with anaesthesia, the sensitivity was 0.63 and the specificity 0.91. The sensitivity of the pivot shift test was 0.28 and the specificity 0.81; with anaesthesia, the sensitivity was 0.73 and the specificity 0.98.

## CONCLUSION

In the office setting, the Lachman test has the highest sensitivity for diagnosing an acute, complete ACL rupture, while all three tests had comparable specificity. When the examination was performed under anaesthesia, the Lachman test still obtained the highest sensitivity, but the pivot shift test was the most specific.

## The effects of arthroscopic joint debridement in the knee osteoarthritis: results of a meta-analysis.

Spahn G, Hofmann GO, Klinger HM.

*Knee Surg Sports Traumatol Arthrosc.* 2013 Jul;21(7):1553-61.

## PURPOSE

Knee osteoarthritis is one of the most common orthopaedic diseases. Therapeutic options for this disease include conservative treatments and arthroscopic debridement and partial or complete replacement. This meta-analysis aimed to collect and analyse the available information on the effects of arthroscopic joint debridement related to the clinical outcomes, the required conversion to replacement and the factors for patient selection.

## METHODS

A search for publications was performed in the PubMed, Cochrane and EMBASE medical databases. The primary search resulted in a total of 1,512 citations. The results from 30 papers were included in this study. The extracted dates were listed in a standardised protocol. The statistical evaluation was performed using Comprehensive Meta-analysis software (V2 Biostat, Englewood, NJ, USA).

## RESULTS

No randomised study that compared conservative and arthroscopic treatments for knee osteoarthritis was found. Most studies reported middle-term results after arthroscopic operations. The results of these studies showed excellent or good outcomes in more than 60 % of all patients. These results were correlated with a significant increase in the knee scores from baseline to follow-up; the standardised difference in means was 2.3 (CI 95 % 1.5-3.0,  $p < 0.001$ ). The required conversion rate to replacement increased as the follow-up interval increased. The rates were as follows: 1 year-6.1 % (CI 95 %, 2.1-16.6 %), 2 years-16.8 % (CI 95 %, 10.2-26.3 %), 3 years-21.7 % (CI 95 %, 15.5-29.1 %) and 4 years-34.1 % (CI 95 %, 22.8-47.6 %). The mean survival time was 42.7 (CI 95 %, 14.5-71.1) months. Numerous factors influenced the outcome, including the radiological stage of the osteoarthritis and individual patient factors (e.g. time of history of osteoarthritis, weight and smoking). The local knee findings, such as axial dysalignment, missing effusion and massive crepitus, were also correlated with patient outcome.

## CONCLUSION

Arthroscopic joint debridement is a potential and sufficient treatment for knee osteoarthritis in a middle-term time interval. This procedure results in an excellent or good outcome in approximately 60 % of patients in approximately 5 years.

## Anterior versus posterior approach for treatment of thoracolumbar burst fractures: a meta-analysis.

Xu GJ, Li ZJ, Ma JX, Zhang T, Fu X, Ma XL.

*Eur Spine J.* 2013 Oct;22(10):2176-83.

## PURPOSE

To critically review and summarize the literature comparing the results of surgery via an anterior approach and that via a posterior approach for the treatment of thoracolumbar burst fractures to identify the better approach.

## METHODS

In this meta-analysis, we conducted electronic searches of MEDLINE, EMBASE, the Cochrane Central Register of Controlled Trials and other databases using the search terms "thoracolumbar fractures", "anterior", "posterior", "controlled clinical trials". Relevant journals or conference proceedings were also searched manually. Data extraction and quality assessment were in accordance with Cochrane Collaboration guidelines. The analysis was performed on individual patient data from all the trials that met the selection criteria. Sensitivity analysis was performed when there was significant heterogeneity. Results were expressed as risk difference for dichotomous outcomes and mean difference for continuous outcomes with 95 % confidence interval.

## RESULTS

Four randomized clinical trials and three controlled clinical trials comparing the results of the anterior versus posterior approach in the treatment of thoracolumbar burst fractures were retrieved; these studies included 179 and 152 patients in the anterior and posterior approach groups, respectively. There were no differences in terms of neurological recovery, return to work, complications and Cobb angle between the two groups. The anterior approach was associated with longer operative time, greater blood loss and higher cost than the posterior approach.

## CONCLUSIONS

The posterior approach may be more effective than the anterior approach. However, more high-quality, randomized controlled trials are required to compare these approaches and guide clinical decision-making.

## Do we really need closed-suction drainage in total hip arthroplasty? A meta-analysis.

Zhou XD, Li J, Xiong Y, Jiang LF, Li WJ, Wu LD.

*Int Orthop.* 2013 Nov;37(11):2109-18.

## PURPOSE

The clinical use of closed-suction drainage, which aims to reduce postoperative wound haematomas and infection, is common. This study was performed to determine whether closed-suction drainage is safe and effective in promoting wound healing and reducing blood loss and other complications compared with no-drainage in total hip arthroplasty.

## METHODS

The literature search was based on PubMed, the Cochrane Library, MEDLINE, and EMBASE. The data were evaluated using the generic evaluation tool designed by the Cochrane Bone, Joint and Muscle Trauma Group, and then analysed using RevMan 5.0. Twenty randomised controlled trials involving 3,186 patients were included in our analysis.

## RESULTS

The results of our meta-analysis indicate that closed-suction drainage reduces the requirement for dressing reinforcement, but increases the rate of homologous blood transfusion. No significant difference was observed in the incidence of infection, blood loss, changes in haemoglobin and haematocrit, functional assessment, or other complications when the drainage group was compared with the no-drainage group.

## CONCLUSIONS

Our results of the comparison between closed-suction drainage and no drainage in THA have indicated that the routine use of closed-suction drainage for elective total hip arthroplasty may be of more harm than benefit.

