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A Randomized Comparison of Volar Plate and External Fixation for Intra-Articular Distal Radius Fractures

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Relevance of the study:

Distal Radius fractures are the most common skeletal injuries of the upper limb. With improving life expectancy and functional demand of the upper limb, the effective treatment of these injuries is a surgical dilemma. There is a growing tendency towards more aggressive surgical fixation of these fractures. The treatment of simple extrarticular distal radius fractures may be straightforward but the effective treatment of complex intraarticular distal radius fractures is unclear. This study explores the comparative results between external fixation (EF) with or without Kirschner wires versus osteosynthesis with Volar Plate (VP). The authors conducted a prospective study to evaluate the differences in the two surgical techniques of treatment of these complex injuries.

Materials and methods:

Study Design: Prospective, randomized controlled trial

- A total of 92 consecutive patients with complex articular distal radius fractures were chosen for this study conducted from June 2012 to May 2013.The subjects were recruited from a tertiary care centre in Seoul, South Korea.
- Only patients with AO type C2 or C3 were considered in this study.
- Only 74 subjects out of the 92 met the inclusion criteria and were included in this study.
- Patients were assigned to VP or EF group by random computer generated numbering.

- Patients in the VP group were operated using a FCR approach and implants used were Synthes 2.4 LCP Distal Radius Plating System or Medartis Aptus Radius 2.5 system.
- In patients of the EF group, either closed or mini-open reduction was performed. Kirschner wires were used to aid reduction or to secure intraarticular fragments. The external fixator was removed at 5 to 7 weeks (Mean 5.3 weeks)
- Scoring was done using MHQ scoring system

Results:

- VP group had 17% complication rate versus 29% of the EF group.
- Grip strength was higher in the VP group (78 +/-16%) versus (75+/-14%) of the EF group.
- VP group had superior short term functional recovery at three months compared to EF group.
- VP group had superior radiological outcome in terms of ulnar variance at 12 months.
- VP group had superior range of motion of the wrist at 3 months follow-up, but at 12 months follow-up there was no significant difference between the two groups.

Conclusion:

Volar Plating group demonstrated superior short term functional recovery with fewer complications at three month follow up. At 12 month follow up, the radiological outcome of VP group was superior with better ulnar variance. At 12 month follow up, the range of motion achieved was similar, although VP group achieved better range of motions at three months follow-up

Level of Evidence: 1

Funding:

This study received a grant from the Gachon University Gil Medical Center without any direct or indirect benefits received to the subject in study.

Ref:

http://www.jhandsurg.org/article/S0363-5023(14)01342-2/abstract

Arthrotomy versus arthroscopy in the treatment of septic arthritis of the knee in adults.

Knee Surg Sports Traumatol Arthrosc. 2016 Oct;24(10):3155-3162

AUTHORS: Luciano Rodrigo Peres · Raphael Oliveira Marchitto · Gustavo Souza Pereira · Fabio Seiti Yoshino · Miguel de Castro Fernandes · Marcelo Hide Matsumoto
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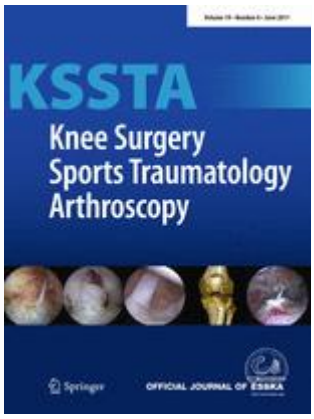


doi:10.1007/s00167-015-3918-8

Relevance of the study: The global incidence of septic arthritis is estimated at between 6 and 10 cases per 100,000 population/year. Septic arthritis is considered an emergency. The diagnosis of septic arthritis is based on physical examination, laboratory tests, imaging and joint aspiration, to complete the diagnosis. The current standard treatment includes surgical debridement under anaesthesia in aseptic conditions, joint lavage and antibiotic therapy. The objective of this study was to evaluate the functional and clinical results of standard treatment of arthrotomy compared with arthroscopy in the treatment of septic arthritis of the knee. The authors hypothesised that the arthroscopic procedure might offer at least the same effectiveness and safety as the open surgery technique.

Materials and Methods

Study Design: Prospective, randomized controlled trial

- 25 patients were admitted to this hospital during the study period, with a diagnosis of septic arthritis involving only the knee joint. Four patients were lost to follow-up: one died for reasons not related to the septic arthritis, and three did not return to follow-up visits 2 years after surgery. The final sample of this study therefore consisted of 21 patients.

- Eleven patients were randomized to the arthrotomy group, and 10 to the arthroscopy group. For allocation purposes, a randomization sequence was generated by a statistician using a Microsoft Excel spreadsheet without restrictions. The surgeon examining the patient on admission consulted the table to verify the allocation.
- Inclusion criteria: knee septic arthritis confirmed by clinical and laboratory exams, and age (patients aged 16 years or more were included).
- Exclusion criteria- Patients with chronic septic arthritis, i.e. for more than 15 days, fractures, chronic wounds or ulcers in the knee, septic diseases affecting more than one joint and morbidities affecting the ability to walk or to move the knee, Allergic patients, or those who could not receive the standard antibiotic therapy for any reason
- Intervention- All Surgeries either by the traditional, open-field technique, or by arthroscopy was performed for all patient by one trained Ortho surgeon. For the arthrotomy, the approach used was the lateral parapatellar, of approximately 10 cm in extension. For the arthroscopy, three portals were used: a suprapatellar medial insertion of the cannula for irrigation and continuous infusion of saline (0.9 %), and anterolateral and anteromedial portals for the introduction of arthroscopic instruments. The articular irrigation was standardized for both groups, with a total volume of 10 l of 0.9 % saline, Patients in both groups received intra- articular suction drains installed by closed system. The drains were removed after 48 h. All patients in both groups were submitted to joint decompression and lavage with synovectomy.
- Postoperative care- both groups of patients received the same initial antibiotic therapy, with intravenous Oxacillin (100–200 mg/kg/day, every 6 h) , associated with intravenous Gentamicin (6 mg/kg/day, every 8 h) for 1 week, in the hospital. After discharge, the patient took oral cephalexin (500 mg every 6 h) for 3 weeks. The antibiotics were then adapted, depending on the culture and the antibiotic sensitivity tests results.
- Rehabilitation was also the same for both groups of patients.

Follow- up - 2 years assessment:

- Lysholm score was recorded for analysis.
- Pain was evaluated using the visual analogue scale (VAS).
- The blood tests included haemoglobin, leucocytes, erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP). All these evaluations took place before surgery and then 7, 14, 21 and 42 days after surgery.
- The patient was considered cured if there were no complaints and no signs of inflammation, and normal laboratory tests after 2 years of follow-up.
- Other demographic and clinical variables like patient age and sex, time to return to activities of daily living, oedema, Range of motion (ROM) in flexion and extension was

measured in degrees, with a goniometer, Body temperature, local warmth and redness in the knee.

Results:

- All patients of both groups were successfully treated and were considered cured. No incidence of infection or reinfection at the last follow-up (24 months) was reported, with no difference between two groups.
- Two patients of the arthrotomy group (18.2 %) had recurrence in the first week after admission, but were again surgically treated with lavage, and were free from infection. There was no recurrence in the arthroscopy group.
- One week after surgery, the arthrotomy group had significantly more cases of local warmth ($p = 0.044$) and redness ($p = 0.034$) in the affected knee, but this variable was similar in both groups at other moments of evaluation.
- In Pain evaluation significant improvements were found at 7 and 14 days after surgery for arthroscopy group but no difference in both group at 21 days and other followup visits.
- The functional and ROM evaluations and the return to the activities of daily living did not show significant differences between groups at any time.

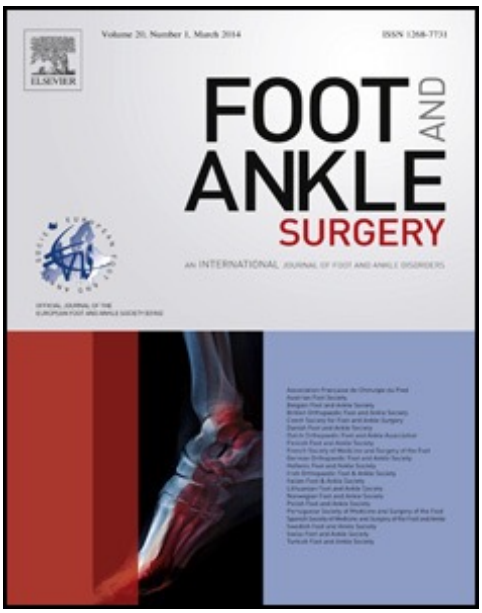
Conclusion:

- Arthroscopy is as effective as arthrotomy in the treatment of septic arthritis of the knee in adults.
- Arthroscopy has demonstrated a lower reinfection rate and less frequent clinical signs of initial inflammatory reaction e.g.l ocal warmth, redness, and pain.

Ref:

1. https://link.springer.com/article/10.1007%2Fs00167-015-3918-8

Extended plantar limb (modified) chevron osteotomy versus scarf osteotomy for hallux valgus correction: A randomised controlled trial



Foot and Ankle Surgery 2016; 22(2): 109-113

AUTHORS:
Devendra Mahadevan, Stephen Lines, Steven Hepple, Ian Wilson and William Harries
Investigation performed at Southmead Hospital, Bristol, UK.

Relevance of the study:

- Although distal chevron osteotomy is widely used for correction of hallux valgus, instability that results from lateral displacement of more than 50 percent limits it capability especially in correcting larger deformities. Risk of osteonecrosis due to possible injury to the nutrient vessels is also a cause of concern.
- The extended plantar limb (modified) chevron osteotomy was developed by the authors to overcome these issues.
- The scarf osteotomy technique is intrinsically stable and versatile, however it is technically more demanding and less forgiving.
- Aim of the study was to compare the efficacy between the extended plantar limb (modified) chevron osteotomy and the scarf osteotomy in the correction of hallux valgus

Material and Methods:

Study Design: Randomized Control Trial

- 84 patients (109 feet) with a mean age of 50.7 ± 14.1 years were included in the study. Indications for surgical intervention in the study were pain, difficulty shoe wear, intermetatarsal anlges (IMA) of 10-21 degrees, and patients with no prior tarso-metatarsal or metatarsophalangeal join pathology, or prior surgery to the 1st metatarsal bone.
- Patients were evaluated at 1 year post-operatively.

Assessment:

- Radiographic parameters: weight-bearing radiographs of the foot taken preoperatively and 1-year post-operatively. Intermetatarsal angle, hallux valgus angle (HVA), distal metatarsal articular angle (DMAA) and sesamoid position were documented.
- Functional outcome and patient satisfaction: Manchester Oxford Foot Questionnaire (MOxFQ) and patient satisfaction questionnaire were recorded at 1-year follow up.

Results:

- Both osteotomies achieved correction of HVA and DMAA with similar efficacy.
- The modified chevron osteotomy obtained greater correction of IMA, and tendency of medial relocation of the sesamoid.
- Significant improvement of MoxFQ index was noted in both osteotomies, with similar post-operative scores.
- 97% out of patients in the scarf osteotomy group and 98% in the modified chevron osteotomy group reported ‘good’ to ‘moderate’ outcome.
- There was no iatrogenic fracture, failure of fixation or osteonecrosis noted in the series.

Conclusion:

The extended plantar limb (modified) chevron osteotomy is efficacious as the scarf osteotomy, with the advantage of greater correction of IMA and sesamoid medialization, in hallux valgus correction.

Level of evidence: II.

There was no conflict of interest declared by the authors.

Ref:

Y. http://www.footanklesurgery-journal.com/article/S1268-7731 (15)00087-9/fulltext

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Long term Efficacy of cervical disc replacement for treatment of single-level cervical disc spondylosis

Effectiveness and safety of Mobi-C for treatment of single-level cervical disc spondylosis – A RANDOMISED CONTROL TRIAL WITH A MINIMUM OF FIVE YEARS OF FOLLOW-UP

Bone Joint J 2016;98-B:829–3

AUTHORS:

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Relevance of the study:

Anterior cervical discectomy and fusion (ACDF) is one of the commonly performed spine surgeries and is indicated in patients with cervical degenerative disc disease presenting with neurological symptoms. However, fusion may lead to accelerated degeneration of the adjacent segments warranting further surgery. Consequently, total cervical disc arthroplasty was developed to preserve cervical motion thus reducing the risks of adjacent segment disease later. The efficacy of Mobi-C (LDR Spine USA, Inc., Austin, Texas), cervical disc arthroplasty, has been demonstrated in short-term studies but there is a paucity of randomized controlled trials to evaluate its superiority over ACDF. The authors have performed a 10andomized controlled study comparing the Mobi-C prosthesis with ACDF in patients with single level cervical disc degeneration with a minimum of five years follow-up.

Material and Methods

Study Design: Prospective, randomized controlled trial.

Randomisation was performed when the patient was in the operating theatre prior to surgery by means of sealed envelopes. The surgical team was aware of the group allocation after induction of anaesthesia and those who undertook the postoperative clinical review were fully blinded to the group assignment and treatment.

- 108 patients who had single level cervical disc degeneration and had failed to respond to conservative treatment for at least three months formed the study group.
- Randomised as 56 in the Mobi-C group and 51 in the ACDF (cage with iliac crest graft) group. Eight were lost to follow-up, leaving 51 and 48 patients respectively. Clinical data and radiological outcomes were collected for five years. Patients' baseline demographic characteristics and cervical level did not differ substantially between the two groups.
- Patients were evaluated pre-operatively, at seven days and at one, six, 12, 36 and 60 months post-operatively

- Standard surgical technique was used in both the groups.

Assessment:

- The primary outcome measures were visual analogue scale (VAS) for pain, the Japanese Orthopaedic Association score (JOA) and the incidence of secondary surgery. The secondary outcomes were Neck Disability Index (NDI) and the ROM of the treated segment.
- Minimum follow-up – 5 years.

Results:

- There was no significant difference between the two groups with respect to the mean length of surgery and length of hospital stay.
- The mean total blood loss of Mobi-C group was significantly less than the ACDF group.
- Only 1/51 patients in the Mobi-C group required further surgery whereas 7/48 patients in the ACDF group required further surgery during the follow-up period;
- The post-operative mean JOA, NPS and NDI improved in both groups after surgery.
- ROM of the treated segment almost returned to pre-operative extent by three months post-operatively in the Mobi-C group, but remained significantly lower than pre-operative levels in the ACDF group

Limitations:

- Small number of patients
- The surgical indication and the MRI findings are not clearly defined as to whether it is myelopathy, radiculopathy, soft disc or hard disc.
- The pre-operative status of the discs which later required surgery has not been considered.

- The cost differences between the two procedures has not been discussed.
- The numbers do not add up in the methodology section. (*Between January 2008 and July 2009, 108 patients with single level cervical disc spondylosis were enrolled. They were divided randomly into two groups, 56 in the Mobi-C group and 51 in the ACDF group.)*

Conclusion:

- This study indicates that both Mobi-C surgery and ACDF surgery were effective in improving the patient's clinical status at up to five years follow-up. However, Mobi-C arthroplasty is a safe and encouraging alternative to ACDF surgery in terms of reducing the need for further surgeries at adjacent levels.

Level of Evidence: 2.

Funding:

No benefits in any form have been received or will be received from a commercial party related directly or indirectly to the subject of this article.

Ref: http://bjj.boneandjoint.org.uk/content/98-B/6/829

Intra-Articular, Single-Shot Hylan G-F 20 Hyaluronic Acid Injection Compared with Corticosteroid in Knee Osteoarthritis A Double-Blind, Randomized Controlled Trial

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J Bone Joint Surg Am. 2016;98:885-92

Relevance of the study:

Intraarticular injections of hyaluronic acid and corticosteroids are commonly employed for knee osteoarthritis treatment. Though superior to placebo treatment, efficacy of one agent above another has not been proved.

The study was carried out to compare and establish the efficacy of single shot of these agents in decreasing pain and improving function and knee range of movement in knee osteoarthritis

Materials and Methods:

Study Design: Double Blind Randomized Control Trial.

Randomization generated using computer software

- Population: 110 patients with symptomatic primary knee osteoarthritis diagnosed both clinically and radiographically according to the American Rheumatism Association classification criteria. The exclusion criteria were an allergy to the drugs,

radiographically bone-on-bone arthritis, deformity >5 , old fracture or surgery on the knee, previous injection in the knee during the last 6 months, and active infection

Hyaluronic Acid group: injected with single shot of 6 mL hylan G-F 20

Corticosteroid group: injected with single shot of triamcinolone acetonide (1 mL of 40-mg) + 5 mL of 1% lidocaine hydrochloride with 1:100,000 epinephrine.

- Outcome Measures: (1) knee pain using a Visual analog scale (VAS) (2) functional improvement using modified Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) and (3) knee range of motion using a goniometer at 6-month follow-up.

Adverse drug reactions to the injected drug was recorded as secondary outcome.

Results:

- Pain Relief: Significant difference in knee pain relief was observed at the end of 6 months ($p < 0.0001$) however no significant intra-agent difference was observed for overall pain relief ($p > 0.05$).
- Functional Improvement: Significant improvement in WOMAC score observed at the end of 6 months for both the groups ($p<0.0001$), however no significant difference was observed among the two compared agents ($p > 0.05$)
- Range of Motion: Significant improvement in knee range of movement observed at the end of 6 months for both the groups ($p<0.0001$) however no significant difference was observed among the two compared agents ($p > 0.05$)

Conclusion:

- Both the agents are equally efficacious in relieving pain, improving the functional outcome and range of movement in Knee osteoarthritis patient and effect appears from the first day and lasts upto 6 months. However corticosteroids offer faster relief and improvement as compared to hyaluronic acid in first week after which the effects have no significant difference.
- Strength of the study: double blind randomized study.
- Limitation: no control group. Another limitation being no effect of the drugs on joint structure such as cartilage was investigated.

Take home message:

Corticosteroid may be a more cost effective agent to achieve pain relief, improve functionality and improve range of motion in early knee osteoarthritis, though a basic science study to evaluate its effect on cartilage is required.

Ref:
http://journals.lww.com/jbjsjournal/Abstract/2016/06010/Intra_Articular,_Single_Shot_Hylan_G_F_20.1.aspx

Video of the Month: https://youtu.be/LG-uJmV-l7w "Hierarchy of Evidence" by Prof Mohit Bhandari, Canadian Trauma Research Chair, McMaster University, Ontario, Canada

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