

Recent trends in foot and ankle orthopaedics for an Indian perspective

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Abstract

Foot and ankle orthopaedics in India is a rapidly growing and relatively new field being pursued by the Orthopaedic surgeon in view of patients recognizing the need for specialized treatment. The article attempts to guide the orthopaedic surgeon with a few commonly occurring conditions with evidence based medicine. This narrative review was performed following a literature search in the Pubmed database and Medline using the mentioned keywords. Related articles were then reviewed.

Keywords: Foot and ankle orthopaedics, Syndesmotic injuries, Ankle instability, Internal bracing, Standing CT Scans, Plantar fasciitis, Ankle arthroplasty, Ankle arthroscopy

Syndesmotic Injuries

Syndesmotic injuries associated with fractures are rather obvious and fixed by various techniques; however, the syndesmotic injuries associated with high ankle sprains are often missed. The diagnosis of syndesmotic injuries is ever increasing, especially with of a high index suspicion and the availability of stress radiographs and MRI scans. A Level 3 comparative study conducted by Boszczyk et al. [1] to understand the syndesmosis anatomy in 72 patients with the help of CT scans. They observed that patients with a deeper incisura were at higher risk of over compression and those with an anteverted incisura were at risk for anterior translation of fibula and malreduction. Taking into consideration variable anatomy in each patient, a comparative pre-operative CT scan of the unaffected limb might help in pre-operative planning. Choice of implant has also been a matter of debate. Zhang et al. [2] conducted a meta-analysis of the suture button versus syndesmotic screws

used in syndesmotic injuries and concluded that the suture button had similar functional outcomes based on AOFAS scores and post-operative complications. However, the objective range of movements could be better along with a quicker return to work. The rate of implant removal and the forgiving nature with minimal malreduction made the implant more favorable, however, the cost was limiting. They concluded that more long-term well-conducted randomized control trials were required to assess the long-term effects and the cost-effectiveness of the suture button.

Internal Bracing

The modified Brostrom procedure has been the gold standard for anterolateral ankle instability; however, recent trends have been toward augmenting the repair with an "internal brace." Batra et al. [3] conducted a study on 62 patients operated for anterolateral instability using a modified Brostrom procedure and augmentation with an internal brace,

the outcomes were measured with the NOFA score, they concluded the brace helped in increasing the stability and helped in a quicker return to sports. Cho et al. [4] conducted a randomized comparative study on young female patients with anterolateral ankle instability with and without the augmentation. They observed that there was'nt any statistically significant difference with respect to the clinical outcomes using the FAOS, foot and ankle ability measure (FAAM), recurrence rate of instability, and stress radiographs. They concluded that the outcomes using augmentation were similar to that of modified Brostrom, however, the low cost-effectiveness was to be taken into consideration.

Standing CT Scans

The foot and ankle are weight-bearing appendages, and deformities are often worsened while weight-bearing. Simulating the exact deformity would help in surgery planning and calculation of deformity correction. The pes planus deformity is a three-dimensional deformity and hence demonstrating the entire deformity with conventional radiographs would be difficult. de Cesar

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Netto et al. [5] conducted a prospective study on 20 patients with adult acquired flexible flatfoot deformity. A comparison was made between the weight-bearing and non-weight-bearing CT using a cone-beam CT measurement with assessed in the coronal, axial, and sagittal planes. Eighteen of 19 measurements differed on the weight-bearing versus non-weight-bearing scans. They concluded that the weight-bearing images better demonstrated the severity of osseous derangement in patients with flexible adult acquired flatfoot deformity.

Plantar Fasciitis

Plantar fasciitis is probably one of the most common conditions the orthopedician sees in the OPD, a large population of patients get better with a stretching regimen of the calves and plantar fascia along with the occasional addition of orthotics, however, a few patients continue to persist with pain, Johannsen et al. [6] conducted a study in which a group of 90 patients were diagnosed clinically and confirmed with USG plantar fascia thickness correlation, they were then grouped randomly into three groups, the group with combined treatment of corticosteroid injections along with stretching and strengthening had statistically higher scores over a period of 2-year follow-up and thus concluded that a combined approach had better short- and long-term results. Peerbooms et al. [7] conducted a randomized control trial with chronic plantar fasciitis with two groups either undergoing a platelet-rich plasma (PRP) injection or a corticosteroid injection, their results were based on several pain evaluation and functional outcome scores, they concluded that a local PRP injection was useful in reducing the pain as well as increasing the function when compared to a local corticosteroid alone.

Ankle Arthroplasty

End-stage ankle arthritis is an extremely painful condition which severely impairs

activities of daily living. Although ankle arthroplasty is a relatively new field in India, it has been used extensively in the west. There has always been a debate on whether the outcomes are more favorable than the workhorse ankle arthrodesis procedure. Norvell et al. [8] conducted a prospective multicenter study; the objective was to measure the physical and mental outcomes, along with complications of the ankle arthroplasty versus the ankle arthrodesis. Outcomes were measured with the FAAM, Short Form 36 (SF-36), physical and mental component summary scores. They concluded over a 2-year follow-up, both surgeries were effective; however, patient-related outcomes were slightly higher with total ankle arthroplasty (TAA) than with ankle arthrodesis, with no significant difference as far as revisions and complications are concerned. Veljkovic et al. [9] conducted a retrospective study to compare the clinical outcomes of TAA, arthroscopic ankle arthrodesis (AAA), and open ankle arthrodesis (OAA), all the patients had a Canadian Orthopaedic Foot and Ankle Society type 1 end-stage ankle arthritis without deformities, outcomes were measured with the ankle osteoarthritis scale and SF-36. They concluded that the clinical outcomes of AAA and OAA were similar to TAA, with similar rate of revisions; however, TAA patients underwent greater number of additional procedures.

Platelet rich plasma

Much hype has been generated around Platelet rich plasma (PRP) and its role with respect to improving tissue healing and reducing recovery time. However, very few studies are available to demonstrate the same, Blanco-Rivera et al. [10] conducted a study in which 21 patients with Grade 2 lateral ankle sprain, half of the patients had PRP injected along the ATFL and then immobilized with rigid immobilization for a period of 10 days, the other half was only

immobilized. Patients were followed up at intervals using the visual analog scale, the American Foot and Ankle Society score, and the Foot and Ankle Disability score. The experimental group showed better short-term results; however, follow-up at 24 weeks showed no similar results. Rowden et al. [11] conducted a prospective randomized double-blinded, placebo-controlled trial. PRP was injected along with bupivacaine and lignocaine at the site of maximum tenderness under ultrasound guidance, the control group was injected with 0.9% saline, they were evaluated with VAS and lower extremity functional scale at regular intervals; both groups were splinted for the same duration. They did not find any significant difference in clinical outcomes of both groups.

Ankle Arthroscopy

Over a period of time, ankle arthroscopy has developed from an only diagnostic tool to a useful therapeutic surgical tool in the present day. Shah et al. [12] described the evolution of ankle arthroscopy and its uses through a PubMed narrative review. Osteochondral lesions of the talus could be routinely evaluated and indicated procedures, namely, debridement, microfracture, or osteochondral grafts could be performed arthroscopically. Common sports injuries such as anterior impingement and anterior ankle instability are also addressed arthroscopically. Arthroscopic ankle arthrodesis has become the surgery of choice when indications permit and have shown good results with faster recovery rates [13]. Posterior ankle arthroscopy is routinely done for posterior impingement, it provides access to the posterior osteochondral lesions and of lately has been used for calcaneoplasties in Haglund's syndrome. The future procedures include arthroscopic intra-articular fracture fixation as well as all inside ligament repairs for anterior ankle instability.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the Journal. The patient understands that his name and initials will not be published, and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

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