

# Minimally Invasive Arthroscopy of the First Metatarsal Phalangeal Joint: A New Approach

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## Statement of Purpose

First metatarsal phalangeal joint (MTPJ) pain is a common podiatric ailment that has been associated with decreased quality of life. These patients often fail conservative treatment. Surgical procedures are invasive and require longer periods of healing and postoperative course. For patients with first MTPJ pain that have failed conservative treatment options but do not want or are not candidates for an invasive procedure, minimally invasive arthroscopy can be a novel approach that provides a viable option. In the current literature there are no documented cases utilizing a single portal arthroscopy with injectable saline and steroid for first MTPJ pain. This case series documents cases of first MTPJ pain that were successfully treated with this modernistic technique.



Figure 1: Preoperative trocar placement planning

## Literature Review

Arthroscopic debridement and minimally invasive intervention to the first MTPJ can provide additional diagnostic and treatment options. Indications for utilizing arthroscopy may include: osteochondritis, chondromalacia, synovitis, loose bodies, impingements, debridement of septic, gouty or traumatic joint (1). Advantages to arthroscopic approach provides cosmetically appealing post operative results as well as faster recovery period to daily routine and/or physical activity (2). Van Dijk et al. reported good to excellent results with a 2 year follow up for patients with joint pain. (3) Ahn et al demonstrated there can be predictable results with significant improvements with AOFAS score (4). First MTPJ has also been subject to regenerative medicine, such as amnion and arthroscopic may provide a safe and effective delivery (5). Despite the encouraging results and minimally invasive procedure, there are still considerable risks, such as: pain, articular injury, cutaneous nerve injury, instrument breakage, compartment like symptoms due to fluid imbalance, wound dehiscence (2).

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Figure 2: Trocar Placement into first MTPJ



Figure 3: Trocar retracted with camera exposed



Figure 4: Trocar without Camera



Figure 5: Trocar with Camera



Figure 6: Intraarticular first MTPJ



Figure 7: Intraarticular first MTPJ

## Case Study

Forty-five patients (57 feet) who underwent minimally invasive arthroscopy with injectable saline and steroid to the first MTPJ are included in this series. Preoperative and Postoperative VAS was assessed to gauge patients' pain and functionality. A preoperative MRI was obtained to gauge the patient's level of chondromalacia. This procedure was utilized as a salvage procedure to prolong surgery. No patients from the original cohort were excluded. The group was composed of approximately 62% female and 38% male with a mean age of 57 years. Patients were treated by a single surgeon utilizing a single portal arthroscopy. The incision was created at the lateral aspect of the first MTPJ and under fluoroscopy guidance the arthroscope was inserted into the joint with camera retracted (Figure 1-2,4). The joint was visualized with the camera exposed (Figure 3,5) and irrigated with an average of 30mLs sterile saline with aspiration followed by the induction of injectable saline and 1 mL steroid in order to re-lubricate the joint (Figure 6-7). The incision was closed with a single stitch. Patients were immediately weightbearing in a compressive dressing for 48 hours. No infections or adverse events occurred. Follow up was performed at 3 days, 3 weeks, 3 months and 12 months. All patients transitioned to a regular shoe and started Physical Therapy after day 3.

## Analysis & Discussion

VAS demonstrated 85% improvement for all patients at one year follow up. Only two patients had a return to baseline symptoms and underwent the procedure a second time. All patients were full weight-bearing immediately postoperative and underwent aggressive physical therapy. Joint ROM improved without crepitation and pain within week one. They returned to full activity after 3 weeks. Previous studies have shown arthroscopy and saline or steroid injection into the first MTPJ to be beneficial in pain reduction. This case series outlines a novel approach as an interim between conservative clinical management and invasive surgery. For patients who have failed more conservative options, this procedure can become part of stepwise care and provide insight to the joint integrity for future surgery planning.

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