Intermediate outcome of interpositional arthroplasty for the treatment of hallux rigidus

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CONFLICT TO DISCLOSE

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My disclosure is in the Final AOFAS Mobile App.

I have a potential conflict with this presentation due to:
Consultant: Arthrex
Introduction

Arthrodesis remains gold standard for surgical treatment of advanced hallux rigidus

Select patients may not be appropriate candidates for arthrodesis
- Perceived needs for 1\textsuperscript{st} MTP joint motion maintenance by both physician and patient for professional or recreational activity

The purpose of this study was to assess a subgroup of patients with advanced, end stage hallux rigidus in whom arthrodesis was considered unacceptable who underwent hallux interpositional arthroplasty using an acellular dermis graft
Methods

- Retrospective review of prospective collected data
  - Tegner scores, VAS scale, SF12, AOFAS Hallux score

- Minimum follow-up 2 years

- Inclusion criteria:
  - Patient and physician perceived need for maintenance of joint motion for recreational or professional activity
  - Refused arthrodesis
  - Hallux rigidus advanced (grade 3, 4)

- Exclusion criteria
  - Shoe wear or cosmesis concerns as perceived indication for joint preservation
  - Significant associated additional surgery
Surgical Technique

- Dorsal approach with aggressive release of the medial and lateral collateral ligaments and tissue synovectomy to expose the first metatarsal head

- Aggressive cheilectomy and dorsal phalangeal exostectomy (Fig 1,2)

- Conical reaming of the metatarsal head to penetrate the subchondral bone to create a bleeding bony surface

- A 3.5cm x 3.5cm x 2mm acellular dermal regenerative tissue matrix graft (Arthroflex, Arthrex, Naples FL) was then prepared to match the metatarsal head dimensions
Surgical Technique

One centimeter proximal to the metatarsal head two dorsal to plantar bone tunnels are made with a 2.0mm drill bit (Fig 3)

- Suture passer is utilized to pass the graft dorsal to plantar with attention to assure the reticular layer of the graft is placed against the metatarsal head (Fig 4)

- Suture is then tied to the dorsal lip of graft to secure the parachuted graft and then further secured medially and laterally to the adjacent capsular tissue as needed (Fig 5,6)
The first metatarsophalangeal joint is placed through range of motion and stability is confirmed (Fig 7,8)
Results

8 feet (7 patients) eligible were all available for follow-up
  – 5 feet (1 bilateral) tennis
    ● 3 of 5 feet tennis pro instructors
  – 2 feet soccer
    ● 1 foot professional MLS player
  – 1 foot yoga instructor

● Ave age 42 yrs. (26 - 53)

● Ave follow-up 2.4 years (2 - 3.4)

● 2 feet additional procedure
  – 1 foot 3rd interspace interdigital neuroma resection
  – 1 patient midfoot dorsal ostectomy
Results

AOFAS Hallux score: 51 preop to 81 postop (p<0.05)

- VAS score 6.8 preop to 1.6 postop (p<0.05)

- Tegner score 8.5 preop to 8.5 postop (not significant)
  - 1 professional soccer player returned to play same level MLS
  - 2 tennis pros returned to same level tennis pro instruction
  - All patients reported ability to return to preop activity / sport

- Range of motion (not significant)
  - DF preop 12 degrees to 17 degrees postop
  - PF preop 10 degrees to 12 degrees postop

- All patients would undergo surgery
Discussion

1st study of which aware to assess return to sport / Tegner scores

- Avoid potential morbidity associated with autograft procedures
- Accelular dermal graft material may minimize concerns associated with graft reaction
- Motion is not reliably improved however pain relief and ability to return to previous level of athletic activity appears reliable
- Minimal bone resection may allow for uncomplicated 1st MTP arthrodesis in future if necessary
Limitations

- Small sample size
- Very selective inclusion criteria of younger athletic individuals with narrow clinical criteria
- Limited follow-up
- Although outcome measures and physical exam parameters were collected prospectively, study is retrospective review


