A New Technique of Treatment of Fracture-Subluxation of Chopart’s Joint

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TITLE:

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DISCLOSURES:

Andy Molloy, FRCS Tr&Orth. – Biomet (3B)
Anish R. Kadakia MD – Synthes (3B)
   Acumed (3B)
INTRODUCTION:

Injuries to the Chopart Joint

- Uncommon but debilitating injury that can result in significant morbidity if initial anatomic reduction is not achieved. Late collapse of the joint can occur despite appropriate initial stabilization and is a predictable complication if initial treatment is delayed. Current accepted treatment for chronic subluxation of the Chopart joint is an arthrodesis. However, this results in a significant loss of normal hindfoot motion. We describe a new technique for treatment of fracture-subluxation of Chopart’s joint utilizing a pre-tensioned hamstring autograft for reconstruction.
A 39 year old male (height 188cm, weight 114.1kg) slipped from a roof resulting in an isolated injury to the left foot. He presented with both medial and lateral hindfoot pain and tenderness. Initial NWB radiographs revealed a small fracture of the distal calcaneus (arrow) with anatomic alignment of Chopart’s joint and verified with a CT scan.
METHODS: Treatment

1st Visit – 3 days post injury
- Non-weight bearing molded cast for 4 weeks

2nd Visit – 4 weeks post injury
- Repeat WB radiographs revealed no change in alignment
- Placed into a tall fixed angle walker boot with an orthotic arch support
- Allowed to partially weight-bear within pain tolerance

3rd Visit – 8 weeks post injury
- Patient has self-weaned to occasional use of gym shoe/sneaker
- Stationary biking without pain or discomfort
- Instructed to gradually wean out of the boot to gym shoe with arch support within pain tolerance

4th Visit – 12 weeks post injury
- Increasing pain in gym shoe.
- Abduction deformity noted of the hindfoot without significant hindfoot valgus
METHODS: 12 weeks post-injury

Note abduction of the navicular relative to the talar head.

Collapse of the talus has occurred with dorsal subluxation of the navicular relative to the talus (arrow). Also note widening of the calcaneocuboid joint (arrowhead).
METHODS: Surgical Reconstruction

Calcaneal Lengthening Osteotomy
- 1cm tricortical iliac crest autograft
- Osteotomy created 1.5cm to the calcaneocuboid joint
- Correction of hindfoot abduction achieved
- As presumed per the preoperative plan, no correction of the talonavicular subluxation occurred.


Origin: Inferior Medial Neck
Insertion: Plantar Medial Cuneiform
Surgical Technique - Ligament Reconstruction

- Hamstring autograft
  - Pre-tensioned for 20 minutes at 10lbs with a 5cm diameter.
- Talar tunnel
  - 7mm tunnel created within the talar neck from originating from the inferomedial aspect of the talar neck.
- Cuneiform tunnel
  - 7mm tunnel created within the medial cuneiform angulated to follow the normal declination of the medial column.
- Initial Fixation
  - Graft was passed through the talar tunnel and fixed with a 7*25mm interference screw (Smith and Nephew®, Memphis, Tennessee USA).
- Deformity Correction
  - Adduction and Plantarflexion of the 1\textsuperscript{st} Metatarsal with dorsiflexion of the hallux with maximum tension placed on the graft after passing it through the cuneiform from plantar to dorsal.
- Final Fixation
  - 7*25mm interference screw placed to secure the graft within the cuneiform. Excess graft placed deep to the anterior tibial tendon and sutured to itself with number 1 non-absorbable suture.
Results

• Clinical
  • At 28 weeks he had fully returned to manual labor as well as his main hobbies of running, weight-training and Greco-Roman wrestling. His AOFAS score was 100 with full functional arc of movement of ankle and hindfoot and normal clinical and radiographic position. At final review at 1 year there had been his AOFAS remained at 100. His excellent function or clinical or radiographic position were retained

• Radiographic – 52 weeks
Conclusion

We present a new technique for treatment of fracture-subluxation of Chopart’s joint utilizing pre-tensioned hamstring autograft for reconstruction. This joint-sparing method of reconstruction provides excellent clinical and functional outcome, surpassing that previously reported in the literature.