

Posterior Ankle and Hindfoot Arthroscopy: Complications and Posterior Ankle Impingement Pathologies

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Disclosures

- Aly Fayed, MD, MSc: Nothing to disclose
- Nacime Mansur, MD, PhD: Nothing to disclose
- Karthikeyan Chinnakkannu, MD: *Nothing to disclose*
- Natalie Glass, PhD: *Nothing to disclose*
- Phinit Phisitkul, MD: *Arthrex: royalty, First Ray: Stocks, Mortise Medical: Stocks*
- Annunziato Amendola, MD: ARC Techtonics: Unpaid consultant, Arthrex: IP royalties; Paid consultant, Bio2 Technologies: Stock or stock Options, Bioventus: Paid consultant, Bone Solutions Inc: Stock or stock Options; Unpaid consultant, CONMED Linvatec: Paid consultant, extremity development corporation: Unpaid consultant, Lima Corporation: Paid consultant, Miach Orthopaedics: Stock or stock Options; Unpaid consultant, Rubber city bracing: Unpaid consultant, Stryker: Research support
- John E Femino, MD: *Consultant for Arthrex and Integra.*

Background

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ANKLE

Complications in ankle arthroscopy

Maartje Zengerink · C. Niek van Dijk

- 311 patients- 2.3% complication rate.
- 1% Neurological- mentioned only about permanent complication.
- Indications were not mentioned.
- Advancing age is a risk factor.

Postoperative Complications of Posterior Ankle and Hindfoot Arthroscopy

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Investigation performed at the University of Utah Orthopaedic Center, Salt Lake City, Utah, and the University of Iowa Hospitals and Clinics, Iowa City, Iowa

- 189 ankles- 8.5 % overall.
- 3.7 % neurological complications.
- No predictive risk factors.
- Included cases of Insertional Achilles tendinopathy.

Aim

- To find out the complications of posterior ankle arthroscopy procedure
- To list the indications for posterior/hindfoot ankle scope
- To categorize the structures involved in the posterior ankle impingement syndrome

Patients and Methods

- Retrospective chart review.
- Ankle and subtalar arthroscopic CPT codes were used to retrieve the patients list from 2009-16 at UIHC.
 - **There is no patient overlap with the previous Utah/Iowa study.**
- Operative notes were reviewed to confirm the prone posterior ankle/hindfoot arthroscopy procedures performed.
- 250 ankle/subtalar scopes in 237 patients were reviewed and included in analysis.
- Chart was reviewed for demographic details, Operative findings, and complications.

Statistical analysis

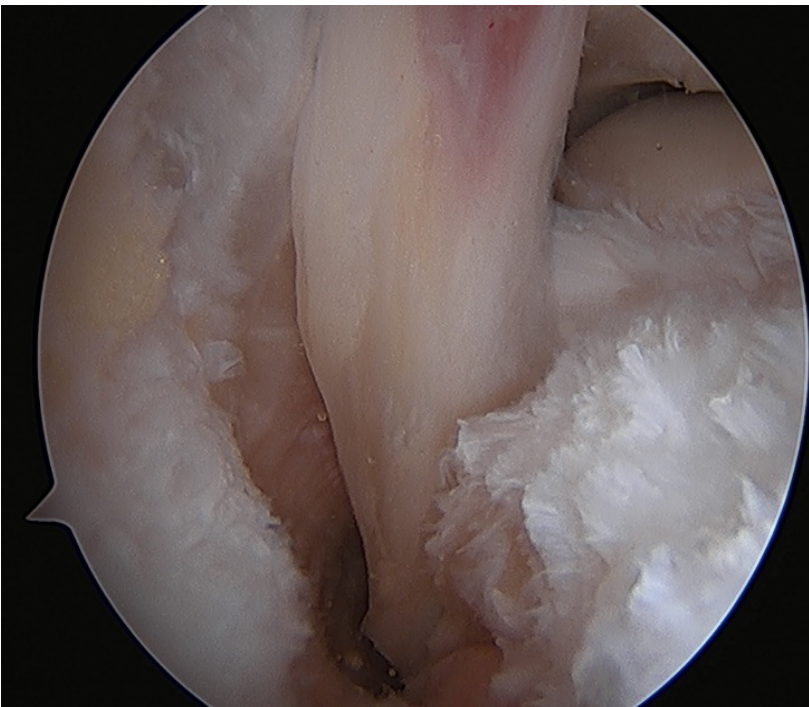
- To investigate a priori factors predictive of neurological complication after PAHA, unadjusted and multivariable regression techniques were utilized.
- Sparse events sensitivity analysis was tested by fitting models with Firth log-likelihood approach; penalizing estimates for first-order bias correction and stability of regression coefficients.
- To control for clustering of outcomes across surgeons (n=3), estimates were assessed by fitting the primary log-binomial model with generalized estimating equation.

Results

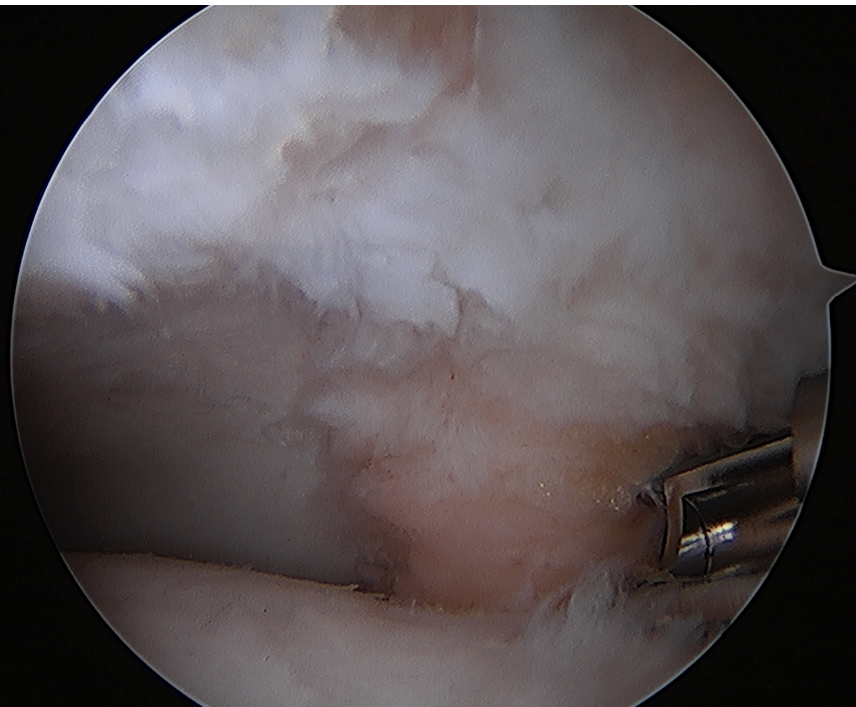
- Posterior ankle/hindfoot impingement(96-isolated)(148-including other pathologies) is the most common preoperative indication followed by FHL pathology(36-isolated) ST arthritis(26) or Coalition(12).
- Males-94/237 , Females-153/237
- Mean age: 34.3 years (12-73)
- Right -126 , Left- 112, Bilateral -6
- Mean tourniquet time was 56.6 mins(237 patients)
 - 9 patients had tourniquet time more than 120 mins.
 - Tourniquet was deflated and inflated again after minimum gap of 15 mins.

Indication	No. of procedures	Percent
Calcaneofibular impingement	2	0.8
FHL tendinitis	9	3.6
OCL /PAI (predominant symptom)	14	5.6
PAI	95	38
PAI and FHL pathology	27	10.8
PAI and OCL	13	5.2
PAI and subtalar arthritis	5	2
Subtalar nonunion	5	2
Subtalar arthritis	21	8.4
Synovial chondromatosis	3	1.2
Subtalar Coalition	12	4.8
FHL transfer	2	0.8
PAI, OCL, FHL	4	1.6
Subtalar impingement	4	1.6
Infection (Septic arthritis)	4	1.6
Equinus	1	0.4
Gout	1	0.4
FHL Contracture	5	2
FHL Stenosis	22	8.8
PM Fracture talus	1	0.4
Total	250	100

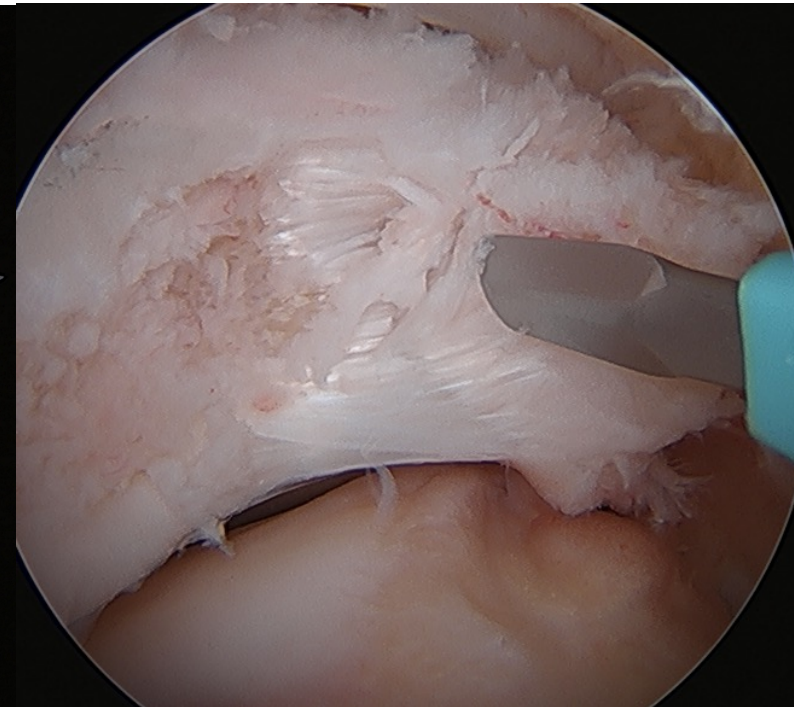
Table 1 A– Listing various indications for Posterior Ankle/hindfoot arthroscopy (PAI- posterior Ankle impingement, FHL-Flexor Hallucis longus PM- posteromedial, OCL- osteochondral lesions)



FHL Release



**Posteromedial
impingement**



Os Trigonum

Complications

Complications	Numbers	Follow up
Sural N(A)	5(2%)	3 -resolved, 1- transection and burial, 1- neurolysis
Tibial N(B)	5(2%)	4 - resolved, 1- Tarsal tunnel release
Nerve issues (Total- A+B)	10(4%)	
PM portal nodularity/thickening(C)	1(0.4%)	Resolved
PM portal draining/Hematoma(D)	3(1.2 %)	Resolved, 2- Started on antibiotics , resolved in 10 days, 1 -resolved without antibiotics at 2 weeks
Wound issues(Total- C+D)	4(1.6%)	
PL Achilles pain(E)	1(0.4 %)	Resolved
DVT(F)	1(0.4 %)	Happened 1 month later after long travel , Heavy smoker. Treated with anticoagulation
Total overall complication (A+B+C+D+E+F)	16(6.4%)	

Results

- In unadjusted analysis, advancing age (OR: 1.04; $p=0.029$) and accessory portal (OR: 15.64; $p<0.001$) were associated with neurological complication.
- In multivariable regression models controlled for confounders, accessory posterolateral portal usage (OR: 12.37; 95% CI: 3.11-49.27; $p<0.001$) was the most significant driver for neurological complication after PAA.
- No significant correlation exists between neurological complications and surgical duration, surgeon, tourniquet time, BMI, FHL release.

Posterior Ankle Impingement syndrome

- There is no consensus regarding the definition
- PAIS is a clinical disorder characterized by posterior ankle pain in plantarflexion with or without posterior manual pressure
- We defined the PAI based on arthroscopic findings along with clinical findings
- Impingement between tibia and talus/calcaneum or in subtalar area by bone or soft tissue

Zone	No of ankles*
Posterior(synovitis, Os trigionum, PITFL, intermalleolar ligament, bony spurs from tibia, talus)	140
Posteromedial (deep deltoid, synovitis, spurs)	33
Posterolateral (meniscoid PITFL, scarred intermalleolar ligament, synovitis, torn PTFL)	22
Subtalar(Synovitis, spurs, torn PTFL)	77
Combined (2 or more)	82

***Numbers are not exclusive**



Positives and Limitations

- Positives

- This is a large series of patients
- all complications in this series were followed to conclusion
- 3 experienced surgeons- Same technique

- Limitations

- Retrospective
- We did not include patient outcomes
- Confounding variables like Combined anterior scope and other procedures

Conclusion

- Posterior ankle arthroscopy compares favorably with reports of open treatment
- Use of accessory portals is associated with a significant incidence of sural nerve complication especially in subtalar fusion. Caution should be exercised when placing accessory PL portal
- The ability to visualize the structures with the arthroscope provides greater magnification, detail and precision in the treatment.