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2024 ACFAS Poster Exhibits Guidelines
(Policies & Instructions)

Poster Grand Rounds: Submit your research for consideration to present at the **Annual Scientific Conference, February 1-4, 2024**, in **Tampa, FL**. Online submission system at acfas.org. Remember, not all submissions are accepted.

IMPORTANT DEADLINES

Abstract Submission Deadline: August 31, 2023
The online poster abstract submission site will close at 11:59 pm Central Time. **No extensions of this deadline will be granted. No edits can be made online after an application/abstract is submitted.**

Notification regarding acceptance of posters will be e-mailed by **September 29, 2023**

PDF Submission Deadline: November 2, 2023
PDF of accepted poster must be submitted online; **AND a printed poster** must also be brought to the annual conference for display on the assigned poster board. Instructions for uploading your poster PDF will be provided in the "accept" notification letter. **No extensions of the November 2 PDF submission deadline will be granted.**

Important! ***Before you begin your submission, carefully review the following policies and instructions.*** Failure to adhere to the Guidelines will result in your poster submission being disqualified.

Policies Governing Poster Submissions – The Do's and Don'ts

Do's	Don'ts *(may result in decline/disqualification)*
Submit original research *(not previously published OR displayed elsewhere prior to the ACFAS Annual Meeting).*	Submit a Literature Review (see page 3 for details)
Submit completed studies only.	Submit the same topic for oral presentation (manuscript/abstract) also as a poster.
Include "Level of Evidence" in the online submission. (See Chart on Page 4)	Use any commercial terminology. *(company/product name)*
Complete Financial Disclosure – Financial Conflict/Duality of Interest Disclosure.	Display any logos on the poster other than the names of hospital/practice, residency, or school/student club.
Must register at least one of the poster authors to attend the Annual Conference to participate and have poster displayed.	Make any title or author changes that are not communicated to ACFAS prior to uploading PDF poster (Research changes are not permitted after abstract submission.)

Posters will be categorized into one of the following classifications:

Arthroscopy	Neurological/Peripheral Nerve Disorders
Biomechanics and Anatomy	Physical Therapy/Rehabilitation
Diabetic Foot	Rearfoot and Ankle Reconstruction
Epidemiology/Population Study	Trauma
Forefoot Reconstruction	Wound Care/Infectious Disease
Orthotics/Prosthetics/Pedorthics	Soft Tissue/Tumor

Abstracts will be reviewed to determine if the poster meets ACFAS standards for presentation. Accepted abstracts are part of the judging process for the poster competition. Not all submissions are accepted.

Helpful Hints:

- Determine the lead/primary author before submission.
- Select the correct level of evidence for the case or scientific study. (i.e., is your study randomized, double blinded or a case series?)
- Number references consecutively in the order of their first use in the text (not alphabetically).
- Make sure pictures and graphs are legible and clear.
- Keep captions and all posted written material to a minimum.
- Use appropriate color combinations. For instance, do not use yellow or red on a blue background.
- Handout material may be provided by the author(s).

Acceptance Notification and Correspondence

Correspondence will be sent to the correspondent author (the person identified in the submission as the correspondent author). **Although, it is the correspondent author's responsibility** to communicate all pertinent information to their poster team, ACFAS may correspond with all authors.

- The **title** of your poster will appear in the program exactly as confirmed on the acceptance notification form.
- **Poster authors** will be listed on the on-site Conference program in the order they are listed on the acceptance notification form.
- ★ Any changes must be noted on the acceptance notification form prior to uploading your PDF; **any changes not communicated to ACFAS prior to uploading will result in poster being disqualified.**
- Original research submitted during the abstract submission must be on your PDF; research changes are not permitted, any changes on your PDF will result in disqualification.
- Once a poster PDF is submitted:
  - Poster titles cannot be changed.
  - Additional authors cannot be added, author names cannot be changed.
- **PDFs are part of the judging process for the poster competition, failure to adhere to the Guidelines will result in your poster submission being disqualified.**

Disclaimer:

The ACFAS Board of Directors, members of the Judging Panel, chair of the Annual Scientific Conference, or employees/independent contractors of the College are ineligible to participate in the ACFAS Annual Scientific Poster Exhibit Competition; with the caveat that residents supervised by the above referenced parties may participate, but the above referenced parties may not receive any monetary award.

The ACFAS does not endorse any procedures/treatments represented in the posters displayed in the Annual Scientific Conference Poster Exhibit.

The ACFAS is not responsible for any lost or damaged posters that are displayed in the Annual Scientific Conference exhibit hall. **ACFAS is also not responsible for any posters left behind in the exhibit hall area after 2:00 pm on Saturday, February 3, 2024.**

The ACFAS reserves the right to remove from the exhibit hall any poster displaying any commercial terminology, e.g., company/product names, logos other than the names of hospital/practice, residency, or school/student club.

Instructions for Submitting Your Poster Abstract

Before you begin your submission, determine the correct format (Case Study or Scientific) for your study.

Format Definitions

- **Case Study** format refers to the collection and presentation of detailed information about a particular participant or small group, frequently including the accounts of subjects themselves. A form of qualitative descriptive research, the case study looks intensely at an individual or small participant pool, drawing conclusions only about that participant or group and only in that specific context. Researchers do not focus on the discovery of a universal, generalizable truth, nor do they typically look for cause-effect relationships; instead, emphasis is placed on exploration and description. (See example abstract on page 5 and example PDF on page 7.)

  A **case series** is a group of case reports. It is preferred to use the scientific format in this situation if a conclusion about the subject is made by the author(s).

  A Case Study/Series is required to indicate follow-up length. The follow-up length needs to be at least 12 months prior to submission. In a case series, a mean follow-up length of more than 12 months does not itself qualify unless all patients had more than 12 months of follow-up.

- **Scientific** format refers to the study/evaluation of a question and formation of a hypothesis and the development of methodology directed to addressing the hypothesis; it could be prospective or retrospective. It involves gathering information, testing the hypothesis, interpretation of the data and drawing conclusions that validate or negate the hypothesis. Systematic or **traditional Literature Reviews without quantitative synthesis are NOT accepted.** (See example abstract on page 8 and example of PDF on page 10.)

- Systematic Review with Meta-analysis format refers to a review of the current scientific evidence related to a specific question or topic. Clear and reproducible methods are used to identify pertinent studies, extract/synthesize relevant data, and provide a summary/conclusion for the topic in question.
  - PRISMA Statement
  - PRISMA Elaboration and Explanation
  - PRISMA Abstract Checklist

Student Club / Individual Student Category Definition

- **Student Club Only one (1) poster** is accepted from each ACFAS Student Club. **Faculty members** may not be listed as authors or co-authors of a Student Club poster.
- **Individual Student** entries are allowed outside the Student Club category with or without faculty members listed as primary /co-authors.

Corporate Research Posters

- **Corporate research posters** submitted by author(s) who are employees of or have financial interest with the company will be disqualified from winning awards (though still may present) at the discretion of the poster chair.

Abbreviations may be used (Index Medicus). First spell out the terminology in full, followed by the abbreviation in parentheses. Thereafter, abbreviations only may be used.

Maximum number of words:

- 250 - Initial abstract submission
- 850 – PDF (final poster to be presented)
- Submit your abstract at acfas.org

Levels of Evidence for Primary Research Question

Types of Studies				
	Therapeutic Studies-- **Investigating the Results of Treatment**	**Prognostic Studies--** **Investigating the Effect of a Patient Characteristic on the Outcome of Disease**	**Diagnostic Studies--** **Investigating a Diagnostic Test**	**Economic and Decision Analyses--** **Developing an Economic or Decision Model**
Level 1	• High-quality randomized controlled trial with statistically significant difference or no statistically significant difference but narrow confidence intervals • Systematic review[2] of Level-1 randomized controlled trials (studies were homogeneous)	• High-quality prospective study[4] (all patients were enrolled at the same point in their disease with≥80% follow-up of enrolled patients) • Systematic review[2] of Level-1 studies	• Testing of previously developed diagnostic criteria in series of consecutive patients (with universally applied reference "gold" standard) • Systematic review[2] of Level-1 studies	• Sensible costs and alternatives; values obtained from many studies; multiway sensitivity analyses • Systematic review[2] of Level-1 studies
Level 2	• Lesser-quality randomized controlled trial (e.g. <80% follow-up, no blinding, or improper randomization) • Prospective[4] comparative study[5] • Systematic review[2] of Level-2 studies or Level-1 studies with inconsistent results	• Retrospective[6] study • Untreated controls from a randomized controlled trial • Lesser-quality prospective study (e.g., patients enrolled at different points in their disease or <80% follow-up) • Systematic review[2] of Level-2 studies	• Development of diagnostic criteria on basis of consecutive patients (with universally applied reference "gold" standard) • Systematic review[2] of Level-2 studies	• Sensible costs and alternatives; values obtained from limited studies; multiway sensitivity analyses • Systematic review[2] of Level-2 studies
Level 3	• Case-control study[7] • Retrospective[6] comparative study[5] • Systematic review[2] of Level-3 studies	• Case-control study[7]	• Study of nonconsecutive patients (without consistently applied reference "gold" standard) • Systematic review[2] of Level-3 studies	• Analyses based on limited alternatives and costs; poor estimates • Systematic review[2] of Level-3 studies
Level 4	Case series[8]	Case series	• Case-control study • Poor reference standard	• No sensitivity analyses
Level 5	Expert opinion	Expert opinion	Expert opinion	Expert opinion

1. A complete assessment of the quality of individual studies requires critical appraisal of all aspects of the study design.
2. A combination of results from two or more prior studies.
3. Studies provided consistent results.
4. Study was started before the first patient enrolled.
5. Patients treated one way (e.g., with arthrodesis) compared with patients treated another way (e.g., with arthroplasty) at the same institution.
6. Study was started after the first patient enrolled.
7. Patients identified for the study on the basis of their outcome (e.g., failed arthrodesis), called "cases", are compared with those who did not have the outcome (e.g., had a successful arthrodesis), called "controls".
8. Patients treated one way with no comparison group of patients treated another way.

This chart was adapted from material published by the Centre for Evidence-Based Medicine, Oxford, UK. For more information, please see www.cebm.net.

4/09

Example of a Case Study Abstract (250 word maximum)

Title: Subtle Syndesmotic Injuries: High Incidence in Isolated, Minimally-displaced Fibular Fractures

Authors: Mark J. Bullock, DPM, AACFAS, Raymond Delpak, DPM, AACFAS, Ted C. Lai, DPM, AACFAS
Mark H. Hofbauer, DPM, FACFAS

Format: Case Study

Length of follow-up (minimum 12 months prior to submission): 12 months

Level of Evidence: IV

Classification: Trauma

Purpose: The most commonly seen ankle fracture is an oblique isolated fibular fracture. This injury is most often relatively benign and treated conservatively in a cast or fracture boot. With the absence of a medial malleolar fracture or equivalent, these injuries should be isolated to the fibula with no other concomitant injuries according to the Lauge-Hansen (1942) classification system. This case series documents several cases of syndesmotic ligament ruptures in the presence of isolated, minimally-displaced fibular fractures.

Case Study: 30 patients undergoing ORIF of isolated fibular ankle fractures with syndesmotic repair are included in this study. Preoperative standard x-rays revealed no significant diastasis of the tibiofibular clear space. Syndesmotic ligament ruptures were confirmed either via MRI or intraoperative stress test.

Procedures: Open Reduction Internal Fixation ankle fracture.

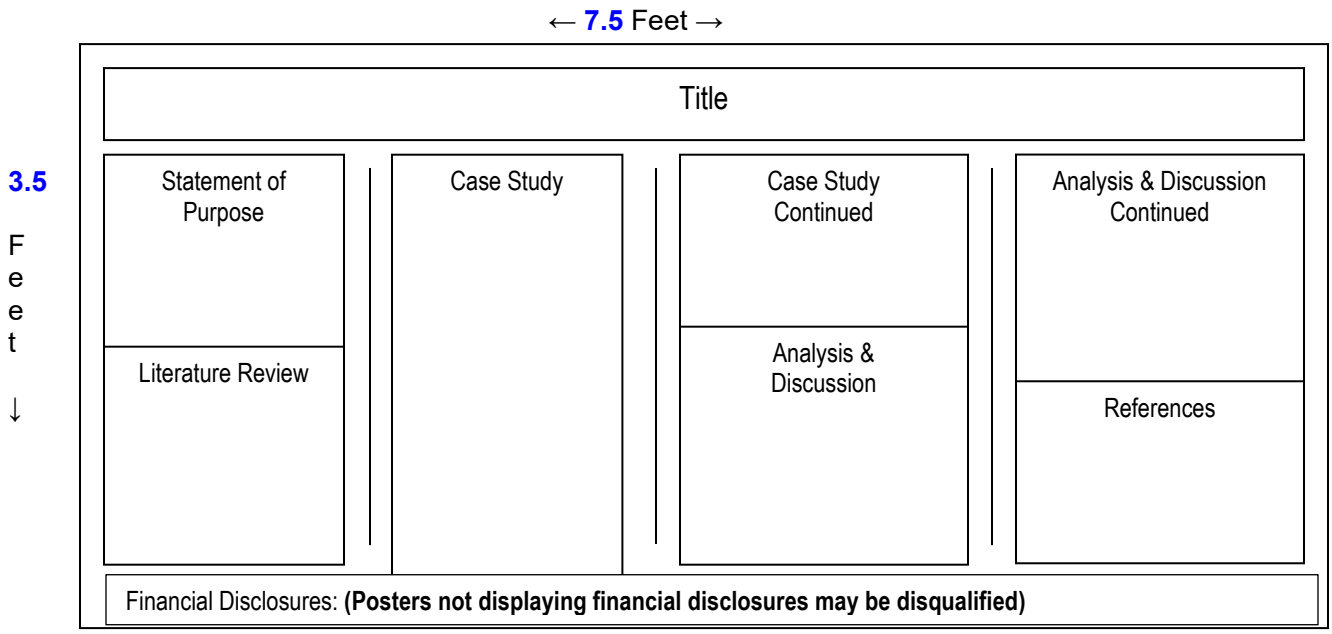
Results: 30 isolated fibular fractures accompanied with syndesmotic injuries.

Analysis & Discussions: The most common type of rotational ankle fracture is an isolated fibular fracture. These injuries usually are amendable to conservative treatment with good long term functional outcomes. There exists a percentage of seemingly isolated fibular fractures with accompanying syndesmotic ligament injuries. Patients with fibular fractures in the presence of syndesmotic injuries likely require open reduction internal fixation of the fracture with repair of the syndesmosis. Classification systems should not be used to predict ligamentous injuries. Clinicians must be suspicious of syndesmotic ligament ruptures regardless of the type of ankle fracture.

Disclosures: None

EXAMPLE OF POSTER – CASE STUDY FORMAT

Please remember, that the overall visual appearance will be assessed by the judges. Position each section sequentially beginning with the Purpose, Literature Review, Case Study, Analysis and Discussion, and References (references should be noted numerically in the order used in text). Use generic names instead of proprietary/commercial names. **Maximum poster size: 3.5 feet high x 7.5 feet wide. Maximum number of words: 850 (excluding sub-titles and reference section)**



Key questions Poster Judges will consider:

Case Study Posters (51 Total Points)

1. **Title** (+1 point)
   How well does the title capture the essence of the poster?
2. **Statement of Purpose & Study Relevance** (+10 points)
   Is the statement of purpose clearly defined? (3 pts)
   How well does the literature review provide adequate rationale for the presented case study? (3 pts)
   Is the literature review presented in an organized manner? (2 pts)
   Is the literature review current and up to date with the most recent data presented? (2 pts)
3. **Case Study** (+16 points)
   Is the case study presented in an organized, chronological manner? (3 pts)
   Is the past medical history and history of present illness clearly explained? (2 pts)
   Are the physical findings fully explained? (2 pts)
   Is there adequate information provided regarding test/lab results? (2 pts)
   Are appropriate imaging studies presented? (2 pts)
   Are the relevant positive and pertinent negative results reported? (2 pts)
   Is the clinical decision-making process well defined? (3 pts)
4. **Analysis & Discussion** (+10 points)
   How well does the discussion tie to the literature review? (5 pts)
   How well does the discussion tie to the case study? (5 pts)
5. **Overall Educational Value** (+10 points)
   How well does the poster exhibit provide an education value to the reader? (5 pts)
   Is the case study interesting and does it present a novel pathology or treatment? (5 pts)
6. **Aesthetics** (+4 points)
   Is the text free of grammatical and spelling errors? (1 pt)
   Are the photos appropriate and do they visually complement the study? (1 pt)
   Are all of the elements of the poster exhibited easy to follow? (Balance of design—layout, use of colors, lettering) (2 pts)
7. **Commercialism** (-10 points)
   Is there any obvious product advertisement, including but not limited to, a company name, product name or logos? If yes, take 10 points off the total score.

Subtle syndesmotic injuries: High incidence in isolated, minimally-displaced fibular fractures

Mark Bullock, DPM, AACFAS, Raymond Delpak, DPM, AACFAS, Ted Lai, DPM, AACFAS Mark Hofbauer, DPM, FACFAS,

Mon Valley Foot and Ankle Fellowship

Statement of Purpose

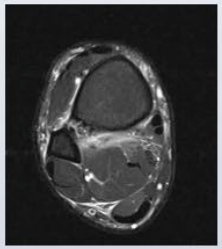
The most prevalent type of ankle fracture is an oblique isolated fibular fracture. This injury is most often relatively benign and treated conservatively in a cast or fracture boot. With the absence of a medial malleolar fracture or equivalent, these injuries should be isolated to the fibula with no other concomitant injuries according to the Lauge-Hansen(1942) classification system. This case series documents several cases of syndesmotic ligament ruptures with instability in the presence of isolated, minimally-displaced fibular fractures

Methodology and Hypothesis

30 patients undergoing open reduction internal fixation of seemingly isolated oblique fibular ankle fractures with syndesmotic repair are included in this study. Isolated fibular fractures with a spiral oblique pattern and less than 4mm of displacement were included. Clinical suspicion of syndesmotic tears were documented in all 30 patients with pain on palpation over the anterior aspect of the ankle. Preoperative standard radiography was reviewed in each case including AP, Mortise, and Lateral ankle views. Medial clear space, tibiofibular overlap, and tibiofibular clearspace were measured preoperatively. Cases in which the preoperative measured values were within normal limits(medial clear space <4mm, tibiofibular overlap on AP view >6mm, tibiofibular clear space<6mm)[1] and confirmed syndesmotic ligament instability either via MRI or intraoperative stress test were included in this study.

Methodology and Hypothesis

The most common rotational ankle fracture has historically been described as a spiral oblique isolated fibular fracture. Using current classification systems, this is most accurately described as a Supination-External Rotation 2 ankle fracture. There is a lack of research detailing the risk of concomitant syndesmotic ruptures in the presence of no discernable preoperative radiographic evidence of rupture. The current study aims to demonstrate 30 cases of seemingly isolated fibular fractures with no radiographic evidence of syndesmotic instability which have confirmed syndesmotic injuries via MRI or Intraoperative Stress test.



Procedure

30 patients undergoing ORIF of fibular ankle fracture with syndesmotic repair were reviewed. All cases were performed by a single surgeon over a 3 year period. All fractures were fixated with a standard anatomical fibular plate and syndesmotic repair was performed utilizing one tricortical syndesmotic screw.

Literature Review

Ankle fractures represent 9% of all traumatic injuries[2], only surpassed by proximal femur fractures in the lower extremity. The most common mechanism of injury is a low energy rotational force of the tibia on a planted foot.

Ashhurst and Bromer first described a classification in 1922 describing ankle fractures based on genesis. Lauge-Hansen went on to further refine this system and in 1942 published his landmark article[3].

Lauge-Hansen's system was developed utilizing freshly amputated limbs which were fixed at the tibia and foot and subjected to manually applied force, by hand, to the hindfoot[4]. Examination of these limbs was documented in his work entitled: "The combined experimental-surgical and experimental-roentgenologic investigation". The classification was based on foot position and the direction of the injuring force, and the results were detailed in his work entitled "The genetic roentgenologic diagnosis of fractures of the ankle [5]". The supination-eversion injury pattern is widely regarded as the most common fracture mechanism with unimalleolar fibular fractures representing between 60-70% of all ankle fractures[6]. A supination-eversion injury with a unimalleolar fibular fracture is classified under Lauge-Hansen's nomenclature as a SE stage 2 and is accompanied with concomitant ATFL ligament tear.

Literature Review

Several authors have questioned the reliability and reproducibility of Lauge-Hansen's results and classification[7,8]. One major pitfall of his original work is the results were obtained from cadaveric specimens undergoing manual traumatic manipulation. The inability of the system to classify certain fracture patterns as well as accurately correlate the fracture patterns to ligamentous injuries/instability has come under scrutiny recently. MRI studies performed by Gardner et.al found 53% of ankle fractures reviewed has a ligamentous injury or fracture that did not fit into the Lauge-Hansen classification criteria.

Syndesmotic ligament damage represents a complex and controversial injury associated with ankle fractures. Some authors estimate that 10% of all ankle fracture have additional syndesmotic injuries with this number doubling in patients requiring repair [6,10]. MRI imaging of these injuries offer a highly specific and sensitive evaluation in pre-therapeutic assessment of ligamentous damage[9]. Controversy exits to whether the level of the fibular fracture correlates with syndesmotic injury. Van den Bekerom et al. concluded that there was no indication for transsyndesmotic fixation in low fibular fractures(<5cm above the ankle joint) if the malleoli are reduced and the deltoid is intact[11]. While other such as Nielson et al. found that fibular fracture level did not correlate to syndesmotic interosseous disruption and further evaluate is required[12].

Results

30 patients with seemingly isolated fibular fractures were reviewed. The average age was 55.6 with a range of 24 to 78 years old. Of these patients, 18 were female and 12 being male. The mean medial clear space was noted to be 3.4mm (2.8 to 3.8), the mean tibiofibular clear space was 5.6mm (4.8 to 6), and the mean tibiofibular overlap was 7.4 (6 to 9.5).

Analysis and Discussion

The inability of the Lauge-Hansen classification to accurately determine ligamentous injury and ankle instability has potentially devastating consequences. In this case study, 30 unimalleolar ankle fractures without discernable syndesmotic instability on plain radiography were presented. There exists a sub-group of ankle fractures with syndesmotic instability in the presence of normal syndesmotic radiographic values. A combination of inconsistent radiographic positioning as well as inter-observational variability decrease the sensitivity of plain-film radiography in determining these injuries. This series looks to illustrate the importance of clinical suspicion for syndesmotic damage in all ankle fractures. The mean medial clear space, tibiofibular overlap, and tibiofibular clear space in all 30 cases were within normal limits in the presence of confirmed syndesmotic instability. Reviewing the injury mechanism combined with clinical evaluation of the syndesmosis is crucial in a complete ankle fracture work-up. Fibular fracture level is not always a consistent means of determining syndesmotic disruption.

Reference

1. W.J. van Zinsen et al. Acute Syndesmotic Instability in Ankle Fractures: A Review. Foot and Ankle Surgery 23 (2017) 135–141
2. Court-Brown CM, Caesar B. Epidemiology of adult fractures: a review. *Injury* 2006;37:691-7.
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9. Stiehl JB, Skrade DA, Johnson KP. Experimentally produced ankle fractures in autopsy specimens. Clin Orthop Relat Res 1992 Dec;285:244-249
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11. V an den Bekerom MP, Lamme B, Hogervorst M, Bollmin HW. Which ankle fractures require syndesmotic stabilization? J Foot Ankle Surg 2007;46(6 (November–December)):456–63.
12. Nielson JH, Sallis JG, Potter HG, Helfet DL, Lorich DG. Correlation of inter- osseous membrane tears to the level of the fibular fracture. J Orthop Trauma 2004;18(2 (February):68–74.

American College of Foot and Ankle Surgeons®
Proven leaders. Lifelong learners. Changing lives.

Example of a Scientific Abstract (250 word maximum)

Title: Long Term Functional Outcomes of Permanent Cement Spacers in the Infected Foot

Authors: Tammer Elmarsafi, DPM, John S. Steinberg, DPM, FACFAS, Karen K. Evans, MD, Christopher E. Attinger, MD, Paul Kim, DPM, MS, FACFAS

Format: Scientific

Length of follow-up: (N/A)

Level of Evidence: III

Classification: Diabetic Foot

Purpose: Foot infections that result in soft tissue and osseous resection have negative effects on function and increase amputation risk. The aim of this study is to assess the long-term outcomes in patients who have undergone resection of bone and placement of permanent antibiotic cement spacers in the foot.

Methodology & Procedure: 41 feet with placement of a permanent antibiotic cement spacer in the foot were identified. The minimum follow-up time for inclusion was 1 year. Body mass index, Diabetes, renal disease, peripheral vascular disease, previous ipsilateral amputations, Charcot, removal, exchange, retention, amputations, ambulatory status, follow up time, and time to spacer failures were evaluated.

Results: 66.7% of successful spacers were retained (n=12), or exchanged (n=6). 33.3% (n=10) required removal; 4 removals with arthrodesis and 6 removals with pseudoarthrosis. 26.7% (n=8) required amputations of the ipsilateral foot. Average time to removal/ amputation was 20.9 months (range= 0.2-60.1). The longest retained spacer was 76 months. Average overall follow up was 52 months (range=12-111). All patients were ambulatory at time of last follow up.

Analysis & Discussion: Long term functional outcomes in patients who required permanent spacers are promising. The use of permanent antibiotic eluting cement spacers in the foot offers patients with a safe, durable, effective and predictably reliable limb salvage tool, barring any complications requiring removal or amputation.

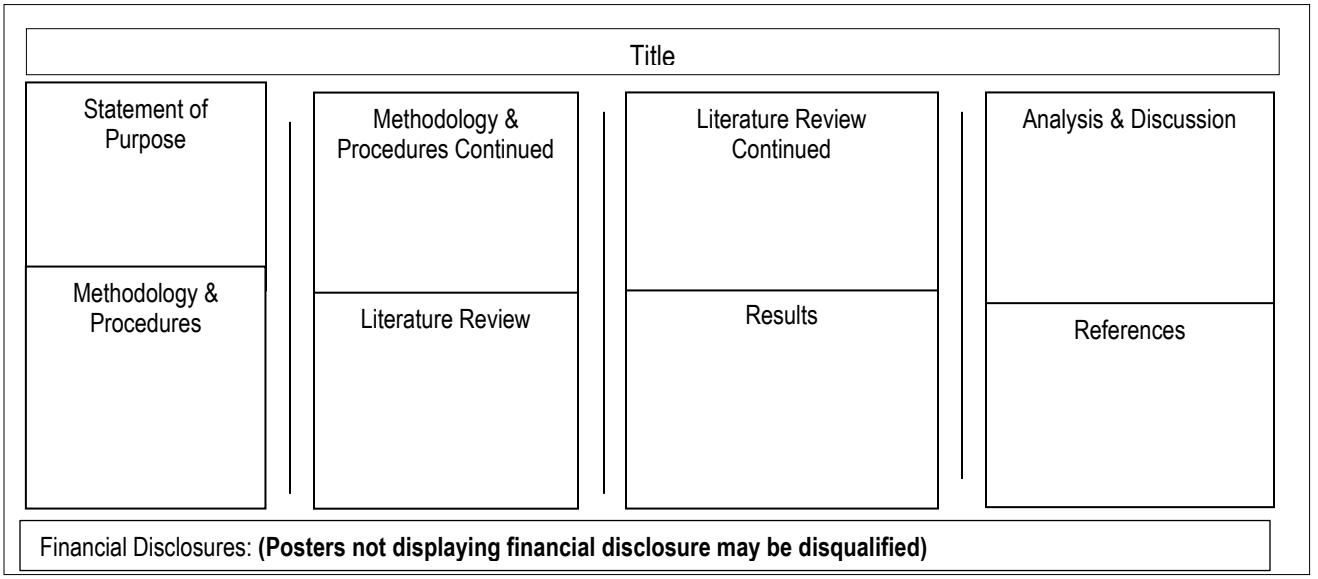
Disclosures: None

EXAMPLE OF POSTER – SCIENTIFIC FORMAT

Please remember that the overall visual appearance will be assessed by the judges. Position each section sequentially beginning with the Purpose, Methods/Procedures, Literature Review, Results, Analysis & Discussion, and References (references should be noted numerically in the order used in text). Use generic names instead of proprietary/commercial names. **Maximum poster size: 3.5 feet high x 7.5 feet wide. Maximum number of words: 850 (excluding sub-titles and reference section)**

← **7.5** Feet →

3.5 Feet ↓



Key questions Poster Judges will consider:

Scientific Posters (52 Total Points)

1. **Title** (+1 point)
   How well does the title capture the essence of the poster?
2. **Statement of Purpose & Study Relevance** (+6 points)
   Is the purpose of the study concise and clearly stated? (2 pts)
   Are the study measures well defined (i.e. what is the study examining)? (2 pts)
   Does the review of the literature provide sufficient rationale for the study? (2 pts)
3. **Methodology & Procedures** (+17 points)
   Is the population of the study's interest well defined? (2 pts)
   Is there a selection bias for patients in the study? (choose one)
   - Subjects were randomized (8 pts)
   - Subjects were controlled via matching (4 pts)
   - The cohort was stratified or covariates were adjusted (for example by age or diagnosis) (4 pts)
   - Subjects were not controlled (0 pts)

   Are the study methods clear and concise? (4 pts)
   Is the statistical methodology well defined and appropriate? (3 pts)
4. **Results** (+9 points)
   Is the data for the results clearly reported? (3 pts)
   Is the statistical-data analysis clearly explained? (3 pts)
   Do the tables and figures complement the statistical data properly? (3 pts)
5. **Analysis & Discussion** (+12 points)
   Do the data support the conclusions made in this study? (4 pts)
   Are the interpretations unbiased? (4 pts)
   Are the discussion and conclusion of the study consistent with results, interpretation of the data, and answers the research question? (4 pts)
6. **Overall Educational Value** (+4 points)
   Overall, does the poster exhibit provide meaningful education value? (2 pts)
   Is the study novel and does it provide new data to the body of scientific literature? (2 pts)
7. **Aesthetics** (+3 points)
   Is the text free of grammatical and spelling errors? (1 pt)
   Are the photos appropriate and do they visually complement the study? (1 pt)
   Are all of the elements of the poster exhibited easy to follow? (Balance of design—layout, use of colors, lettering) (1 pt)
8. **Commercialism** (-10 points)
   Is there any obvious product advertisement, including but not limited to, a company name, product name or logos? If yes, take 10 points off the total score.

MedStar Georgetown University Hospital

Long Term Functional Outcomes of Permanent Cement Spacers in the Infected Foot

[1]Tammer Elmarsafi, DPM, MBBCh; [1]John S. Steinberg, DPM; [1]Karen K. Evans, MD; [1]Christopher E. Attinger, MD; and [1]Paul J. Kim, DPM, MS.

1: Department of Plastic Surgery, MedStar Georgetown University Hospital: Center for Wound Healing and Hyperbaric Medicine

GEORGETOWN UNIVERSITY

Abstract

When osteomyelitis occurs in the infected foot, cement spacers have been used as a limb salvage tool. A retrospective review case series of 30 patients who had placement of a permanent antibiotic eluting cement spacer in the foot were evaluated for retention, spacer exchange, removal, amputation and functional status. The minimum follow up time for inclusion was 12 months.

Literature

The advent of acrylic bone cement dates to 1901 with the first clinical orthopedic applications in 1940's. PMMA is a dense monolithic minimally porous material. In the infected foot, use of antibiotic PMMA spacers provide joint stability and increase local bacterial eradication when used as a temporary spacer. Generally, antibiotic PMMA spacers in the infected foot have been used as a temporary means; employed intermittently between débridements and definitive closure. The inclusion as a permanent implant in the lower extremity has grown progressively popular.

Statement of Purpose

The primary aim of this study was to examine the longevity and viability of permanent PMMA cement spacers in the infected foot.

Level of Evidence

Level III, Therapeutic

Methods

* 30 patients with infections of the foot and a minimum of 12 month follow up were identified.
* Serial debridement with resection of infected bone was filled with temporary antibiotic PMMA spacer.
* Antibiotics were given based on Infectious Disease recommendations.
* Vascular intervention was provided when recommended by Vascular Surgery.
* On the date of closure a permanent spacer was molded and the wound primarily closed.

Figure 1. Radiographs of Successful PMMA Spacers

Figure 1. Demographics

n= 30		n (%)
Age	Mean	56.4
	Range	38–87
Sex	Male	22 (73.3)
	Female	8 (26.7)
Follow Up	Mean	52
	Range	12–111
BMI	Mean	30.7
	Range	19–45.4
DM		27 (90)
Renal		4 (13.3)
PVD		13 (43.3)
Hx Amp		5 (16.7)
Charcot		9 (32.3)

Table 1. Spacer Locations

	n (%)
Hallux	4 (13.3)
1st MPJ	23 (76.7)
Medial Cuneiform	1 (3.3)
TN Joint	1 (3.3)
4/5th TMTJ	1 (3.3)

Table 2: Spacer Failures

	n (%)
Partial 1st Ray Amp.	5 (12.2)
Transmetatarsal Amp.	2 (4.9)
Lisfranc Amp.	1(2.3)
Removal + Arthrodesis	4 (9.8)
Removal + Pseudoarthrosis	6 (14.6)
Ipsilateral Major Amp.	0 (0)
Contralateral Major Amp.	3 (7.3)
Time to Failure	20.9(0.2–60.1)

Table 3. Successful Spacers

	n (%)
Retained	14 (46.7)
Exchanged	6 (14.6)
Longest Retention	76 mo
Longest Exchange	111 mo
Follow Up (mo)	52 (12-111)

Table 4. Logistic Regression on Spacer Failure

	Estimate	Lower CL	Upper CL	P-value
BMI	1.02	0.99	1.05	0.19
DM	1.34	0.74	2.43	0.34
Renal	0.50	0.31	0.80	0.01
PVD	1.03	0.71	1.48	0.89
Hx Amp	1.00	0.61	1.63	1.00
Charcot	1.10	0.74	1.63	0.64
Hallux	1.05	0.56	1.96	0.88
MTPJ	0.89	0.42	1.90	0.76

Conclusions

Permanent Cement Spacers in the infected foot are reliable, durable, and are an important Limb Salvage Tool.

Spacer failures occurred on average 21 months after the index procedure. Removals or amputations, thus are not likely a direct result of the cement spacer.

Patients should be counseled on the possible need for removals and exchanges.

Results

- 66.7% (20) successful spacers: retained (14), exchanged (6)
- 33.3% (10) failed spacers: either removal+ arthrodesis (4) pseudoarthroses (6)
- 26.7% (8) required ipsilateral partial foot amputations
- Mean time to removal/amputation= 20.9 months (range=0.2-60.1)
- Longest retained spacer= 76 mo
- Longest exchanged spacer=111 mo
- All patients were ambulatory at follow up

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Poster ID: 05-00320

PRISMA 2020 for Abstracts Checklist

Section and Topic	Item #	Checklist item	Reported (Yes/No)
TITLE			
Title	1	Identify the report as a systematic review.	
BACKGROUND			
Objectives	2	Provide an explicit statement of the main objective(s) or question(s) the review addresses.	
METHODS			
Eligibility criteria	3	Specify the inclusion and exclusion criteria for the review.	
Information sources	4	Specify the information sources (e.g. databases, registers) used to identify studies and the date when each was last searched.	
Risk of bias	5	Specify the methods used to assess risk of bias in the included studies.	
Synthesis of results	6	Specify the methods used to present and synthesise results.	
RESULTS			
Included studies	7	Give the total number of included studies and participants and summarise relevant characteristics of studies.	
Synthesis of results	8	Present results for main outcomes, preferably indicating the number of included studies and participants for each. If meta-analysis was done, report the summary estimate and confidence/credible interval. If comparing groups, indicate the direction of the effect (i.e. which group is favoured).	
DISCUSSION			
Limitations of evidence	9	Provide a brief summary of the limitations of the evidence included in the review (e.g. study risk of bias, inconsistency and imprecision).	
Interpretation	10	Provide a general interpretation of the results and important implications.	
OTHER			
Funding	11	Specify the primary source of funding for the review.	
Registration	12	Provide the register name and registration number.	

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71

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Example of a Systematic Review with Meta-analysis Abstract (250 word maximum)

Title: Treatment of Lesser Metatarsophalangeal Joint Instability with Plantar Plate Repair: A Systematic Review and Meta-Analysis

Authors: Adam E. Fleischer, DPM, MPH, FACFAS, Ryan Jameson, BA, Rachel H. Albright, DPM, MPH, AACFAS, Manali Chingre, BS, BA, Erin E. Klein, DPM, MS, FACFAS, Lowell Weil, Jr., DPM, MBA, FACFAS

Format: Systematic Review with Meta-analysis

Length of follow-up: (N/A)

Level of Evidence: III

Classification: ForeFoot Reconstruction

Purpose: Primary plantar plate repair has become an increasingly common practice among foot and ankle surgeons around the world, but it is unclear how successful the procedure really is.

Introduction: The plantar plate is a rectangular, fibrocartilage structure, residing on the inferior surfaces of the lesser MTP joints (1, 2). Fiber orientation of the plantar plate suggests that it withstands tensile loads in line with the plantar fascia, as well as compressive loads from the metatarsal head (2). Repetitive overloading of the lesser MTP joints leads to plantar plate attenuation or rupture resulting in MTP joint instability (2).

Methodology & Procedure: A systematic review of studies published in Medline and CINAHL databases through June 2020 was conducted to identify articles that evaluated the effects of direct operative repair of plantar plate injuries. We followed standard methodology for performing a systematic review using PRISMA guidelines. Studies using cadaver or animal models, focusing on indirect repair or radiofrequency shrinkage, and case studies (where $n \leq 2$) were excluded. Summary estimates for mean visual analog scale (VAS) for pain, and mean AOFAS scores were generated from included studies.

Results: 2686 unique articles were initially identified, and eleven studies were included, representing 521 plantar plates. Most studies were clinical level of evidence 4 (i.e., case series, n=9), while two studies had a comparison group (i.e., level 3 evidence). Most studies (9/11, 82%) examined direct repair from a dorsal incisional approach. The pooled mean change in VAS pain from pre- to postoperatively was -5.16 (95% CI -3.96, -6.35) among articles that examined plantar plate repair from a dorsal approach (n=270 joints), and the weighted mean final post-op VAS was 1.28 cm (7 studies, 248 feet). The pooled postoperative mean AOFAS score was 87.4 [95% CI 84.3 to 90.5], 6 studies [n=228 patients, 332 joints] at 1-2 years out for articles examining a dorsal approach.

Analysis & Discussion: There is a predictable improvement in VAS and AOFAS scores in patients undergoing primary plantar plate repair via a dorsal incisional approach.

Conclusion: There is considerably more published data in existence on dorsal approach, compared to plantar approach, plantar plate repair. There is a predictable level of improvement in pain and function in patients undergoing dorsal approach direct plantar plate repair.

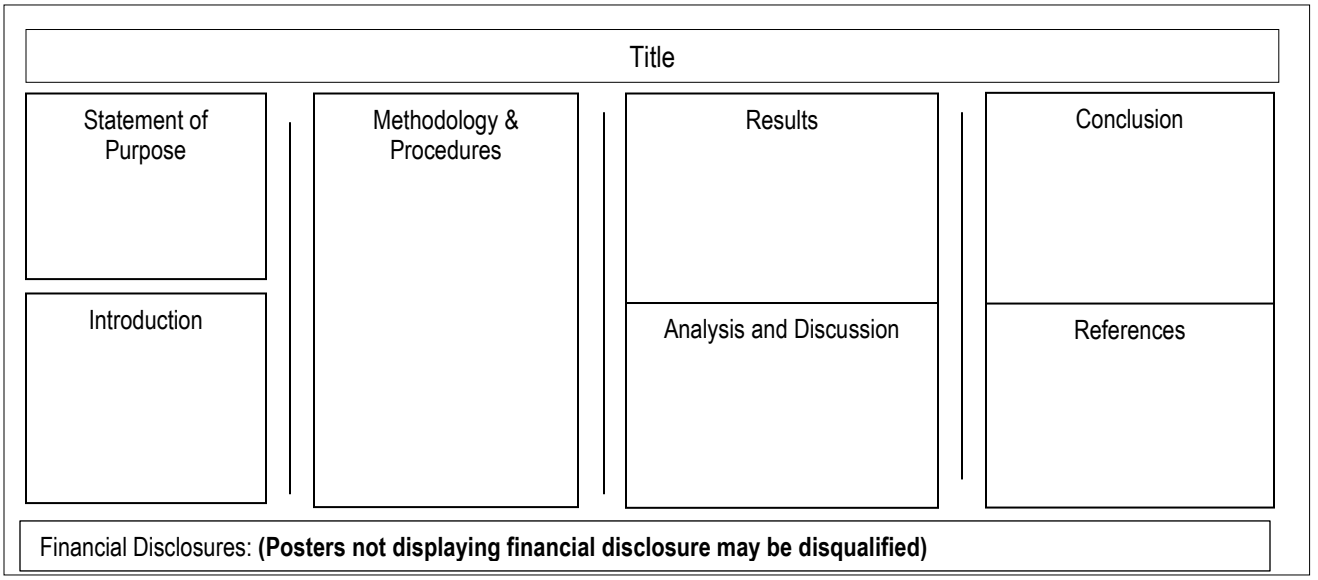
Disclosures: None

EXAMPLE OF POSTER – SYSTEMATIC REVIEW WITH META-ANALYSIS

Please remember that the overall visual appearance will be assessed by the judges. Position each section sequentially beginning with the Purpose, Introduction, Methods/Procedures, Results, Analysis & Discussion, Conclusion and References (references should be noted numerically in the order used in text). Use generic names instead of proprietary/commercial names. **Maximum poster size: 3.5 feet high x 7.5 feet wide. Maximum number of words: 850 (excluding sub-titles and reference section)**

← **7.5** Feet →

3.5 Feet ↓



Key questions Poster Judges will consider:

Systematic Review with Meta-analysis Posters (52 Total Points)

1. **Title** (+1 point)
   How well does the title capture the essence of the poster?
2. **Statement of Purpose / Introduction (Study Relevance)** (+6 points)
   Is the purpose of the study/systematic review concise and clearly stated? (2 pts)
   Are the study measures well defined (i.e. what is the study examining)? (2 pts)
   Does the review of the literature provide sufficient rationale for the study? (2 pts)
3. **Methodology & Procedures** (+17 points)
   Is the population of the study's interest well defined? (2 pts)
   Inclusion and exclusion criteria for studies included in review were clearly stated (3 pts)
   Information sources specified (search engines, databases, etc) (3 pts)
   Specify the methods used to analyze the results (3 pts)
   Are the study methods clear and concise? (3 pts)
   Is the statistical methodology well defined and appropriate? (3 pts)
4. **Results** (+9 points)
   Is the data for the results clearly reported? (3 pts)
   Is the statistical-data analysis clearly explained? (3 pts)
   Do the tables and figures complement the statistical data properly? (3 pts)
5. **Analysis & Discussion** (+12 points)
   Do the data support the conclusions made in this study? (4 pts)
   Are the interpretations unbiased? (4 pts)
   Are the discussion and conclusion of the study consistent with results, interpretation of the data, and answers the research question? (4 pts)
6. **Overall Educational Value** (+4 points)
   Overall, does the poster exhibit provide meaningful education value? (2 pts)
   Is the study novel and does it provide new data to the body of scientific literature? (2 pts)
7. **Aesthetics** (+3 points)
   Is the text free of grammatical and spelling errors? (1 pt)
   Are the photos appropriate and do they visually complement the study? (1 pt)
   Are all of the elements of the poster exhibited easy to follow? (Balance of design—layout, use of colors, lettering) (1 pt)
8. **Commercialism** (-10 points)
   Is there any obvious product advertisement, including but not limited to, a company name, product name or logos? If yes, take 10 points off the total score.

Treatment of Lesser Metatarsophalangeal Joint Instability with Plantar Plate Repair: A Systematic Review and Meta-Analysis

Adam Fleischer, DPM, MPH, FACFAS; Ryan Jameson, BA; Rachel Albright, DPM, MPH, AACFAS; Manali Chingre, BS, BA;
Erin E. Klein, DPM, MS, FACFAS; Lowell Weil, Jr., DPM, MBA, FACFAS

Statement of Purpose

The purpose of this study was to assemble all existing peer reviewed literature on direct surgical repair of plantar plate injuries, and to better understand what is the expected mean improvement in VAS pain and AOFAS scores when undergoing direct repair of the plantar plate.

Introduction

The plantar plate is a rectangular, fibrocartilage structure, residing on the inferior surfaces of the lesser MTP joints (1, 2). Fiber orientation of the plantar plate suggests that it withstands tensile loads in line with the plantar fascia, as well as compressive loads from the metatarsal head (2). Repetitive overloading of the lesser MTP joints leads to plantar plate attenuation or rupture resulting in MTP joint instability (2).

Plantar plate injuries have been studied for more than 20 years. Multiple methods of direct repair of plantar plate injuries have bee described over the years including: dorsal approach w/ osteotomy, dorsal approach w/o osteotomy, plantar approach, combined dorsal plantar approach, suture button technique, and purely arthroscopic techniques. However, to date, there have been only a select number of clinically-based outcomes studies published on the topic, and most have been grossly underpowered.

Methodology

A systematic review of studies published in Medline and CINAHL databases through June 2020 was conducted. Articles evaluating the effects of direct operative repair of plantar plate injuries were identified. Standardized methodology (PRISMA guidelines) were utilized.

The inclusion criteria was as follows:

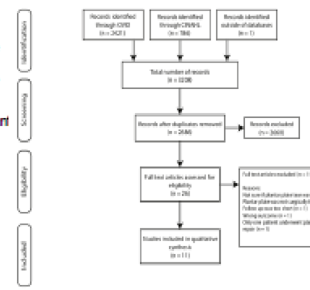
- Publication in a peer reviewed journal
  - Prospective and retrospective studies were included
  - Non-English articles were included
  - Case studies with n<2 were excluded
  - Cadaver or animal model studies were excluded
- Study evaluated a direct repair of lesser MTP joint plantar plate
  - Diagnosis by ultrasound, MRI or intra-operative repair
  - Clear description of the technique
- Follow up of at least 6 months

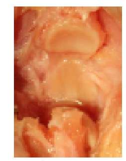
Study quality was assessed using the CARE case report guidelines. Summary estimates for mean visual analog scale (VAS) for pain and mean AOFAS scores were generated from included studies.

Results

521 plantar plate tears were included in our analysis. The PRISMA flow diagram, to the right, explains the process utilized to identify the studies while the table below lists the defining characteristics of the included studies. Level 4 evidence, case series, was the frequent study design, but two studies had a comparison group (CLOE 3) (4, 6). Studies were generally well conducted in the context of case series, with transparent reporting and only low/medium risk of bias. Direct repair from a dorsal approach was the dominant procedure reported in the literature (9 versus 2 articles).

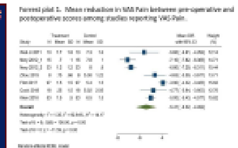
Title	Country, setting	Procedure Type	# of PP	# of subjects	Age (mean +/- SD)	Gender (M, F)	Risk of Bias (Modified CARE statement)
Weil (2011)	Weil Foot and Ankle Institute, Des Plaines, Illinois	WMO w/ PPR - dorsal approach	15 feet (2nd MTPJ)	13	57 ± 7.0 (50-69)	3, 10	Medium
Cook (2016)	Department of Surgery, Mount Auburn Hospital, Cambridge, MA	Anatomic plantar plate and collateral ligament reconstruction - dorsal approach	18 (2nd, 3rd)	18	58.16 +/- 12.1	4, 14	Medium
Bouché (2008)	Seattle, WA	Combined PP and hammertoe repair w/ FDL tendon transfer - Plantar Approach	17 feet (2nd, 3rd, 4th MTPJ)	15	53.7 (44-68) (From original 18)	4, 14 (From original 18)	Low
Fleischer (2020)	Weil Foot and Ankle Institute, Mount Prospect, IL	WMO w/ PPR - dorsal approach	65 feet (2nd MTPJ)	65	60.0 +/- 10.2	13, 52	Low
Nery (2012)	Sao Paulo, Brazil	WMO w/ PPR - dorsal approach + lateral soft tissue roofing	68 (2nd, 3rd, 4th)	22	61	6, 28 (From original 28)	Medium
Kindred (2020)	Podiatric Surgical Residency, Podiatry, Community Health Network, Indianapolis, IN	WMO - w/ PPR using low cost materials - dorsal approach	9 (2nd, 3rd, 4th)	6	63 (44 - 79)	0, 6	Medium
Flint (2017)	St. Alphonsus Medical Group, Boise, ID	WMO w/ PPR - dorsal approach	97 feet, 138 PP repairs (2nd, 3rd, 4th)	91	59 (32 - 82)	10, 81	Low
Prissel (2017)	Orthopedic Foot and Ankle Center, Westerville, OH	PPR - plantar approach w/ or w/o concomitant WMO	144 (2nd or 3rd MTPJ)	133	58.6 +/- 10.2	26, 107	Medium
Guangrong (2013)	Department of Orthopaedics, Tongji Hospital of Tongji University, Shanhai, China	WMO w/ PPR - dorsal approach	14 (2nd MTPJ)	14	55.9 (31 - 82)	4, 10	Medium
Hai-bo (2015)	Department of Orthopaedics, the First Hospital affiliated to Wen-zhou Medical University, Zhejiang, China	WMO - dorsal approach	8 (2nd MTPJ)	5	52	0, 5	Medium
Klein (2018)	Weil Foot and Ankle Institute, Des Plaines, IL	WMO - w/ PPR dorsal approach	53 (2nd MTPJ)	53	54.5 ± 11.2 (30 - 77)	3, 50	Medium



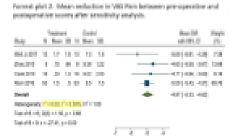


The pooled mean change in VAS Pain from pre- to postoperative was -4.97 (95% CI-5.33 to -4.62) among articles that examined plantar plate repair from a dorsal approach (n=92 plates). The pooled postoperative mean improvement in AOFAS score was 41.92 (95% CI 39.87 to 43.96).

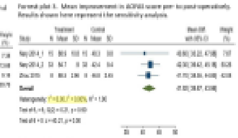
Forest plot 1. Mean reduction in VAS Pain between pre-operative and postoperative scores among studies reporting VAS Pain.



Forest plot 2. Mean reduction in VAS Pain between pre-operative and postoperative scores after sensitivity analysis.



Forest plot 3. Mean improvement in AOFAS score pre- to post-operatively. Results shown here represent the sensitivity analysis.



Discussion

This study is a clear improvement on the prior systematic review on plantar plate repair performed by Elmajee and colleagues (14), as we performed a meta-analysis and derived pooled estimates regarding the expected improvement in VAS pain and AOFAS scores postoperatively. In our work, the studies that reported on patients who underwent plantar plate repair from a dorsal approach had low heterogeneity after sensitivity analysis (0.00% for both AOFAS and VAS pain) and similar VAS pain and AOFAS values in all analyses, suggesting our estimates appear to be robust to change. We conclude then that there is a predictable level of improvement in pain and function in patients undergoing direct dorsal repair at 1 year follow up.

That said, there remains a paucity of literature on the long-term outcomes of plantar plate repair. Despite the generally favorable outcomes reported in the short and intermediate term with direct repair of the plantar plate, there is little long-term data with follow up greater than 2 years. It is therefore important to recognize that there is uncertainty at this time as to what kind of longevity or long-term sequela may occur.

Conclusions

There is considerably more published data in existence on dorsal approach, compared to plantar approach, plantar plate repair. There is a predictable level of improvement in pain and function in patients undergoing dorsal approach direct plantar plate repair.

References

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