

No Pain Relief for Ankle Fracture With Aspiration

Written by Phil Vinall

Although aspiration of fracture hemarthrosis has been shown to decrease pain when used for fractures of the radial head and femoral neck, Stephen A. Sems, MD, Mayo Clinic, Rochester, Minnesota, USA, presented data demonstrating that aspiration for acute ankle fractures does not result in decreased patient-reported pain scores or opioid use.

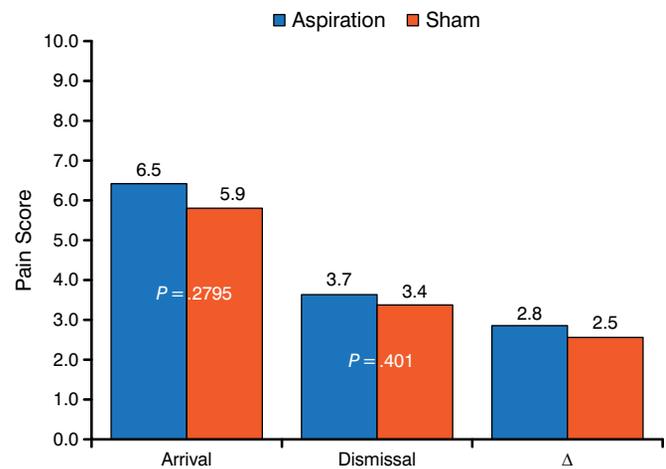
Ankle fractures are common injuries that result in pain, swelling, and, often, the need to take narcotic pain medication. The prospective randomized Aspiration for Pain Relief Following Ankle Fracture trial [NCT01484535] was conducted to assess the impact of aspiration of ankle fracture hemarthrosis on pain relief and need for pain medication.

In this double-blind, placebo-controlled trial, patients with AO-Müller/OTA fracture classification 44 and fractures presenting within 24 hours of injury were eligible to participate, provided they were skeletally mature and able to provide consent. Patients with other injuries, including soft tissue wounds that precluded aspiration, were excluded. Ankle aspiration was accomplished through either the anterolateral or anteromedial portal and was continued until no more fluid could be removed. Control was achieved through a sham aspiration procedure in which a needle was advanced to the level of the subcutaneous tissue, held in place for a count of 10, and then removed; that is, no fluid was removed.

The primary outcome was pain (measured via a self-reported Numeric Rating Scale Pain Scale based on a score of 0 to 10) and narcotic use (self-recorded in a custom diary, then converted to oral morphine equivalents [OMEs]) for the first 72 hours). Secondary outcomes included limb volume (as measured by fluid displacement), 6-month Olerud-Molander Ankle Score, Short Musculoskeletal Function Assessment (SMFA), and complications.

Patients were enrolled October 2011 to January 2014 and included 124 patients (61 randomized to aspiration; 63 to control). Participants had a mean age of 52 years and were mostly women (79 of 124). Similar proportions of patients went on to surgical treatment (72.1% of the aspiration group; 69.8% of controls). Pain scores on arrival in the emergency department (ED) and at discharge were the same for both groups, as was the change in pain score (Figure 1). Patient-reported pain scores over the next 96 hours were also evaluated and were found to be similar at all time points.

Figure 1. Pain Scores in the Emergency Department



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Patients were discharged from the ED with a prescription for pain medication and asked to record their medication use over the next 96 hours. The total amount of pain medication used was similar (89 OMEs for the aspiration group; 103 OMEs for controls; $P = .43$). No differences were seen in secondary outcomes—including limb volume, 6-month SMFA score, and Olerud-Molander Ankle Score—or complications. Complications were rare (2 infections in the aspiration group) and not significantly different between the 2 groups ($P = .5$).

Strengths of this study include its design and size. Weaknesses include the fact that many otherwise eligible patients ($n = 108$) declined enrollment, which may indicate a selection bias, and the fact that pain scores were self-reported.

NPWT Does Not Reduce Fracture Surgery Infections

Written by Brian Hoyle

Brett D. Crist, MD, University of Missouri, Columbia, Missouri, USA, discussed a prospective randomized trial [NCT00829621] that compared negative-pressure wound therapy (NPWT) and standard gauze dressings over primarily closed surgical incisions in outcomes of hip, pelvis, and acetabular fracture surgery.

Orthopaedic surgical site infections exact huge treatment costs, can double the rehospitalization rate, and extend hospital stays [Whitehouse JD et al. *Infect Control Hosp Epidemiol.* 2002]. Debridement is not effective in about 30% of cases of infected fractures after open



Table 1. Fracture Types

Fracture Type	NPWT (n = 49)	Gauze (n = 41)
Acetabular fracture	33 (67.3)	33 (80.5)
Pelvic ring	10 (20.4)	4 (9.8)
Displaced femoral neck fracture	5 (10.2)	3 (7.3)
Femoral head fracture	1 (2)	1 (2.4)

Data are presented as no. (%). NPWT, negative-pressure wound therapy. Reproduced with permission from BD Crist, MD.

reduction and internal fixation [Rightmire E et al. *Clin Orthop Relat Res.* 2008]. Letournel found that infection following acetabular fracture surgery occurs in $\leq 5\%$ of cases for the most common approaches; obese individuals are at heightened risk [Porter SE et al. *J Orthop Trauma.* 2008].

NPWT, which reportedly decreases wound-related complication in high-risk [Stannard JP et al. *J Trauma.* 2006] and acetabular fractures [Reddix RN Jr et al. *J Surg Orthop Adv.* 2010], applies a vacuum through a specialized dressing to the wound to accelerate healing.

The aim of the present study was a prospective comparison of NPWT and standard gauze dressings over primarily closed surgical incisions—a popular surgical option for hip, pelvis, and acetabular fractures. The techniques were compared in terms of postoperative surgical wound drainage, infections, and cost-effective hospitalization. A multitude of secondary characteristics were compared.

Reflecting the anatomic similarity of the affected bones and the similar surgical approach typically used, patients with fractures of the hip, pelvis, and acetabulum were grouped. The 115 patients were randomized to receive NPWT for at least 2 days (n = 55) or standard gauze (n = 60). They were followed up for 12 months; 49 NPWT-treated patients and 41 standard gauze-treated patients completed the follow-up, meaning that the study was underpowered. The types of injuries treated in each group are shown in Table 1.

At 12 months postoperatively, deep infection had occurred in 5 of 49 NPWT-treated patients (10.2%) and 2 of 41 gauze-treated patients (4.9%; $P = .44$); while the difference was not significant, NPWT-treated patients were 2.3 times more likely to develop a deep infection. All deep infections occurred in patients with acetabular fractures involving the posterior wall or column requiring a Kocher-Langenbeck surgical exposure; of these 7 patients, 6 had medical comorbidities.

Deep infections were not associated with body mass index ($P = .54$), contrary to a study of morbidly obese

patients [Porter SE et al. *J Orthop Trauma.* 2008] but consistent with a study of obese patients treated with NPWT [Reddix RN Jr et al. *Am J Orthop (Belle Mead NJ).* 2009]. Those patients that ended up with infections spent significantly more time in the intensive care unit ($P = .015$) and had significantly prolonged hospitalization ($P \leq .001$). A cost comparison proved impossible.

Acknowledging the limitations of sample size and grouping of patients with different fractures, Dr Crist concluded that NPWT may not reduce the risk of infection, especially in patients with acetabular fractures involving the posterior wall or column who have other comorbidities.

Cast Immobilization as Good as Surgery for Intra-Articular Distal Radial Fracture in Elderly Patients

Written by Wayne Kuznar

Closed reduction and cast immobilization appear to be just as effective as surgery on health-related quality of life and functional measures in older patients with displaced intra-articular distal radial fractures. This was the main finding of a randomized controlled trial [ISRCTN76120052] presented by Christoph Bartl, MD, Ulm University, Ulm, Germany.

Fractures of the distal radius are the most common fracture in older patients and may be an indicator of the onset of osteoporosis. Treatment options include (1) closed reduction and plaster casting and (2) open reduction and internal fixation with volar locking plate fixation.

Angle-stable volar locking plates have been especially advocated for use in the surgical fixation of distal radial fractures in osteoporotic bone, with the proposed rationale being that threaded screws in the screw hole of the plate reduce shear forces to prevent loosening of the surgical construct, although the benefits have not been proven. Closed reduction and cast stabilization for 6 weeks is simple, convenient, and readily available, whereas surgical management requires hospitalization but allows for early mobilization and functional rehabilitation. The superior strategy remains controversial, said Prof Bartl.

In this multicenter clinical trial, 185 patients aged ≥ 65 years with an intra-articular distal radius fracture agreed to participate: 94 were assigned to surgical management with volar locking plate fixation and 91 were assigned to closed reduction and cast immobilization for 6 weeks. The primary outcome was the Short Form-36 (SF-36) Physical Component Summary score 1 year after