

# TREATMENT COMPLICATIONS OF ANKLE SPRAINS AND SALTER-HARRIS 1 DISTAL FIBULA FRACTURES: A POSNA SURVEY

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## OBJECTIVES

Isolated lateral ankle injuries, ankle sprains (AS) and non-displaced Salter-Harris 1 distal fibula fractures (SH1), are common non-operative pediatric orthopaedic diagnoses. Treatment related and rare post-injury complications have not been reported. This study sought to define these complications amongst members of the Pediatric Orthopaedic Society of North American (POSNA) in pediatric, low-energy, lateral ankle injuries.

## METHODS

A unique, voluntary, and anonymous survey was distributed to POSNA membership (approximately 1400 members) via email. Survey questions, specific to both grade I/II AS and non- or minimally displaced SH injuries in the skeletally immature, regarding initial evaluation, immobilization, and return to sports were included. All answers were multi-select, allowing participants to choose more than one option for the described injury. The survey was also created to identify treatment complications and rare complications of AS and SH1 injuries in skeletally immature patients. This study excluded injury recurrence as a complication. Data analysis focused on treatment variability based on years in practice, respondent's gender, region, institution type, and practice volume.

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**Table 1: Summary of Complications**

n=229	
Total	
<b>Complications seen when treating an isolated, non-displaced Salter-Harris I distal fibula fracture in a skeletally immature patient (%)</b>	
No complications reported	81.2%
Other*	8.7%
Cast Complication, Other Complication	4.8%
Cast Complication	2.6%
Cast Complication, Brace Complication, Other Complication	1.8%
Cast Complication, Brace Complication	0.4%
Brace Complication	0.4%
<b>Complications seen when treating a grade 1/2 ankle sprain in a skeletally immature patient (%)</b>	
No complications reported	87.8%
Other complication	6.6%
Cast complication, Brace complication, Other complication	1.7%
Cast complication	1.3%
Cast complication, Other complication	1.3%
Cast complication, Brace complication	0.9%
Brace complication	0.4%

**Table 2: Rare Complications of SH1 Injuries**

<b>During Treatment of isolated, non-displaced Salter-Harris I distal fibula fracture</b>	
<b>"Other Complications" noted:</b>	<b>N=32</b>
Pain	16
Growth Disturbance	12
Prolonged Healing/Recurrent Injury	3
Infection	1

## RESULTS

- A response rate of 16.4% (229 surveys) was attained
- SH injuries were more likely to undergo primary immobilization when compared to AS (90.83% versus 69.43%)
- A CAM/Walking boot was the most common immobilization technique for both AS (45.85%) and SH (54.59%), with bracing in AS (33.19%) and casting in SH (34.06%) were second
- When treating SH1, 9.6% have seen a cast complication while 0.4% have seen a brace complication (Table 1).
- When treating AS, 5.2% have seen a cast complication while 0.4% have seen a brace complication (Table 1).
- Continued pain/ RSD (N=12, 5.2%) was the main reported AS complication
- Rare SH1 complications included persistent pain/ Reflex Sympathetic Dystrophy (RSD) (N=16, 7%), distal fibula growth arrest (N=12, 5.2%), infection (N=1, 0.4%), nonunion (N=2, 0.8%), and recurrent fracture (N=1, 0.4%) (Table 2)

## CONCLUSIONS

- Increased complications with cast treatment were noted in both groups.
- Continued pain/RSD was a common complication in both AS and SH1.
- Distal fibula growth arrest, infection, and nonunion after SH1 have not been previously reported.