

## Effectiveness of Non-operative Treatment of Symptomatic Accessory Navicular in Pediatric Patients

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**Introduction/Purpose:** Initial management of symptomatic accessory navicular in pediatric patients is nonoperative. Common first line treatments include casting, shoe wear modification, limiting strenuous activities, and nonsteroidal anti-inflammatories. When nonoperative treatments fail to mitigate symptoms, surgery is indicated. Surgical treatment of symptomatic accessory navicular bones has been extensively studied. However, the efficacy of nonoperative treatment for alleviating pain or preventing surgery in effected patients has not been established. We believe that nonoperative treatment is frequently unsuccessful or does not give lasting pain relief, thus questioning whether surgery could be offered as first line treatment. Our study retrospectively reviews outcomes of adolescents treated non-operatively for symptomatic accessory navicular in an effort to provide clinicians success rates for their discussion of treatment options with patients and their families.

**Methods:** This is an IRB approved, retrospective study of adolescent patients diagnosed and treated non-operatively for symptomatic accessory navicular bones at Cincinnati Children's Hospital Medical Center between the dates 8/1/2006 and 8/24/2016. Medical records were used to identify demographic information, type, duration, and total trials of conservative treatment, additional foot comorbidities, response to conservative management, and surgery if non-operative management failed. Included patients were under 18 years of age with medial sided foot pain, radiographic evidence of an accessory navicular, and had undergone at least 1 course of non-operative treatment. Patients with previously operated on accessory naviculars or other diagnosed painful foot conditions were excluded. Outcome measures consisted of pain relief, no surgical intervention, or need for surgical intervention. Available radiographic imaging for each patient was also used to identify type of accessory navicular and determine pes planus incidence. Statistical analysis using measures of central tendency was then performed.

**Results:** 169 patients were included, with 226 symptomatic accessory navicularae. Average age at diagnosis was 11.8 years, with 78.2% females, and 22% males. 53 (32%) were left symptomatic accessory navicularae, 56 (33%) right, and 60 (36%) bilateral. Type II accessory navicularae were most frequent (72.7%), with Type I and Type III in 9.7% and 17.4%, respectively. 56% were chronic in nature, with 31% due to acute injury. Average number of non-operative trials was 2.08, with 28% experiencing complete pain relief, 30% requiring surgical intervention, and 41% that did not require surgical intervention, but were without documented pain relief. Of those that achieved complete pain relief, average length of non-operative treatment was 8.03 months.

**Conclusion:** Results of this study can be used by clinicians to frame discussions surrounding treatment options for symptomatic accessory navicular bones with both patients and their families. Further research is warranted to determine the necessary duration and type of non-operative treatment, among those most commonly used, that is most successful in providing pain relief.

Table 1. Type of non-operative treatment and associated treatment outcome.

<b>Non-operative treatment</b>	<b>Pain relief</b>	<b>No surgical intervention<sup>f</sup></b>	<b>Surgery</b>	<b>Total Patients</b>
Immobilization <sup>†</sup>	19 (37%)	12 (17%)	16 (35%)	<b>47</b>
Shoe inserts <sup>**</sup>	7 (14%)	31 (43%)	2 (4%)	<b>40</b>
Immobilization <sup>†</sup> and shoe inserts <sup>**</sup>	25 (49%)	29 (40%)	28 (61%)	<b>82</b>
<b>Total Patients</b>	<b>51 (100%)</b>	<b>46 (100%)</b>	<b>72 (100%)</b>	

<sup>f</sup>No surgical intervention patients did not receive surgery, but were without documented pain relief.

<sup>†</sup>Immobilization defined as patient treated with CAM walker and/or cast. <sup>\*\*</sup>Shoe inserts defined as patient treated with orthotics and/or cushion inserts.