

# Surgical Release of the Pediatric Trigger Thumb

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**Purpose** The spontaneous recovery rate for locked pediatric trigger thumb (PTT) has recently been reported at between 24% and 66%; these studies concluded that a conservative approach for this condition could be adopted. The aims of this study were to review our results of surgical release of the PTT and to survey pediatric hand surgeons regarding their practice patterns for treatment of the PTT.

**Methods** After institutional review board approval, we retrospectively reviewed 173 consecutive patients with 217 thumbs treated surgically at our institution. An e-mail survey of 27 pediatric hand surgeons questioned treatment of a 2-year-old child with a 6-month history of a locked trigger thumb and of an intermittently triggering thumb.

**Results** The retrospective review demonstrated that preoperative range of motion averaged 36° loss of extension (range, 0° to 90°; SD, 22°); postoperative range of motion averaged 1° loss of extension (range, 0° to 30°; SD, 7°) at 27-day follow-up. Using a parent questionnaire at an average follow-up of 4.2 years, there were no major complications or recurrences identified. Five thumbs developed minor skin complications that healed with conservative management. There were no secondary surgeries. The practice pattern survey demonstrated that 85% of pediatric hand surgeons would treat a locked PTT in a 2-year-old with surgical release and 52% would treat an intermittently triggering thumb in a 2-year-old with continued observation if the triggering thumb was not painful.

**Conclusions** The surgical results reported in this study, along with the practice pattern survey, confirm that surgical release is a short, safe, and effective procedure when performed by specialty trained hand surgeons, and it is the treatment of choice for a locked PTT. (*J Hand Surg* 2011;36A:647–652. Copyright © 2011 by the American Society for Surgery of the Hand. All rights reserved.)

**Type of study/level of evidence** Therapeutic IV.

**Key words** Trigger thumb, pediatric.



**P**EDIATRIC TRIGGER THUMB (PTT) represents about 2% of all upper extremity abnormalities in children.<sup>1,2</sup> The incidence has been reported to be between 0.5 and 3 per 1,000 children.<sup>1,2</sup>

Controversy exists regarding the role of surgery versus conservative management. Recently, several authors found splint, therapy, or both to be effective.<sup>3–7</sup> In

these series, the overall success rate was 78% for a mean period of treatment of 15 months. According to these authors, conservative management with splinting and stretching is an alternative to surgery. However, several drawbacks exist for conservative management. Because PTT most commonly occurs during the toddler years, treatment at up to 30 months<sup>4</sup> and the compliance

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of the child can be extremely difficult. In addition, successful results in these articles may include children with incomplete thumb interphalangeal range of motion and residual metacarpophalangeal joint hyperextension. Although recent studies<sup>5,8-11</sup> suggest nonoperative treatment for this condition, other studies state that surgery is the recommended treatment for PTT.<sup>1,12-20</sup> Considerable controversy continues to exist regarding the role of surgery in the treatment of PTT.

The aim of this study was to assess the role of surgery in the treatment of PTT, and to question parents of a large group of patients using a survey technique to determine long-term follow-up. To analyze the role of surgery in the treatment of PTT, we performed a 2-part study: (1) a review of 173 consecutive pediatric patients with 217 thumbs treated with surgical release of a trigger thumb in our institution, including a chart review and with a questionnaire interview follow-up of a mean of over 4 years; and (2) a practice pattern survey of North American pediatric hand surgeons of recommended treatment of 2 clinical scenarios: a 2-year-old child with a 6-month history of a locked PTT and a 2-year-old child with a 6-month history of an intermittently triggering PTT.

## MATERIALS AND METHODS

### Clinical data

We performed a retrospective study of 173 consecutive children with 217 trigger thumbs treated at our institution. After receiving institutional review board approval, we identified patients via a Current Procedural Terminology code search for trigger finger release from 1996 to 2008 at Gillette Children's Specialtycare (St. Paul, MN). Only patients with surgical treatment of a trigger thumb were included in the study. The indication for surgery was a locked trigger thumb for at least 6 months. Two fellowship-trained hand surgeons performed surgery. Data collection included gender, age of onset, side of involvement, preoperative symptoms, age at time of surgical release, complications, resolution of symptoms, recurrence, both preoperative and postoperative thumb interphalangeal (IP) range of motion, and time to final follow-up.

Seventy-two patients were girls and 101 were boys. There were 43 patients with bilateral thumb involvement, 66 with unilateral left trigger thumbs, and 65 with unilateral right trigger thumbs. Age of onset of symptoms was 25 months (range, 0-78 mo; SD, 14.5 mo). The time from onset of symptoms to surgery averaged 11 months (range, 2-90 mo; SD, 12.6 mo). The most common history at the time of presentation was intermittent triggering with the thumb eventually becoming

locked in flexion. At the time of surgery, 205 thumbs were locked in flexion; 2 were locked in extension and 10 thumbs were triggering. The 10 thumbs triggering were in patients treated with bilateral disease and a locked thumb on the contralateral side.

### Patient questionnaire

We mailed a 12-point questionnaire to each patient's family in the study (Appendix 1; this appendix is available on the *Journal's* Website at [www.jhandsurg.org](http://www.jhandsurg.org)). The survey included questions involving final thumb ROM of both the surgical and nonsurgical sides; postoperative complications; recommendations for surgery to another patient with a similar PTT; other family members with PTT; and a visual analog scale grading the final appearance of the scar, pain from surgery, satisfaction with surgery, and difficulty with postoperative care of the child. For all patients whose parents responded to the survey, the minimum time since surgery was 1 year, with an average length of follow-up of 4 years (range, 1-13 y).

### Survey

We surveyed via e-mail 34 pediatric hand surgeons who meet annually in North America. All hand surgeons surveyed devote a major portion of their practice to pediatric hand surgery and would be considered experienced pediatric hand surgeons with specific expertise in the treatment of PTT. The first question was: "If a 2-year-old child with a trigger thumb locked in flexion for 6 months presents to your office, how would you treat him/her?" Choices for responses were surgery, splint, observation, or other. The second question was: "If a 2-year-old child with a thumb that intermittently triggers for 6 months presents to your office, how would you treat him/her?" Choices for responses were surgery, splint, observation, or other.

### Surgical technique

All patients underwent surgical release of the trigger thumb. Surgery was performed under general anesthesia with a tourniquet. A transverse or a Bruner incision was used. After the neurovascular bundle was identified, the A1 pulley was released by a longitudinal division. The thumb was then assessed for full extension at the IP joint; if necessary, any proximal bands of tissue (an A0 pulley), the proximal part of the oblique pulley, or both were released. The skin was closed with an absorbable suture and a soft dressing was applied. The children were allowed to mobilize the thumb freely within the dressing and parents were instructed to follow up 1 to 2 weeks after surgery.

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