

The treatment of trigger thumb in children: conservative or surgical?

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ABSTRACT

The trigger thumb is an uncommon condition in infants and children which occurs due to pathology of flexor pollicis longus or A1 pulley. The objectives in our study were to determine the treatment outcome of trigger thumb. The study included total of 45 patients (24 males and 21 females) with trigger thumb. The mean age of onset was 28.5 months (3 months - 7 years). There was overall success rate of 72.41 % following conservative treatment and the success rate appears to be higher in the younger age group. The outcome of children who underwent surgery was 91.66% with recurrence rate of 8.33% and superficial wound infection rate of 4.16%. Our study suggests that surgery is not urgent, postponing surgery does not interfere with the result, trying conservative methods to get a higher chance of recovery is reasonable before the elective surgery. So conservative approach should be adopted in treating trigger thumb.

Keywords: Trigger thumb, Metacarpophalangeal joint, Interphalangeal joint, flexor pollicis longus and A1 Pulley.

INTRODUCTION

The trigger thumb is an uncommon condition in infants and children, with a reported incidence of 0.05%¹ to 0.3%.² It represents about 2% of the congenital anomalies in the upper limb, although certain authors²⁻⁴ suggest that it is an acquired rather than a congenital problem. Bilateral involvement is extremely rare condition,⁵⁻⁷ sometimes associated to genetic disorders.^{8,9} Frequently there is no triggering but the finger is locked in flexion. The pathology involves the flexor pollicis longus and A1 pulley over the volar aspect of the metacarpal phalangeal joint, resulting in a nodularity of tendon termed the node of Notta.¹⁰ The primary pathologic changes may be in the pulley¹¹ or the tendon itself.^{12,13}

Watanabe et al classified pediatric trigger thumb from stage 0 to 3 according to the severity of symptoms. In stage 0, only mass is palpable on the metacarpophalangeal joint without restriction of motion; in stage 1, the thumb interphalangeal joint can be actively flexed or extended with snapping; in stage 2, the locked IP joint can be passively flexed or extended with snapping; in stage 3, the locked interphalangeal joint cannot be passively flexed or extended.¹⁴ They reported worse outcomes for the advanced stages with conservative treatment, indicating that the treatment protocol might need to be adjusted according to the stage. The outline of treatments is still controversial. Many authors reported good results from observation and conservative therapy.^{15,16} Stretching is reported to be effective with a 77% to 89% of success rate,^{17,18} but other reports recommended surgical release of the A1 pulley in persistent cases¹⁸ with few complications.^{3,17,19-21} Even though many

studies showed excellent surgical results, no definite conclusion was reached on the age of the patient when the operation was indicated. It has been stated that there is an increased chance of a permanent contracture of the interphalangeal joint if surgical release is delayed until the children are more than 3-year-old^{1,16} and surgical treatment was recommended for the cases without improvement until the age of 5 years.²² However, the risk of residual flexion contracture was not higher in operations even after 3 years of age and other reports also showed that age of the patient when the surgical treatment was carried out did not affect the outcome.^{3,19} There is no consensus on whether surgical correction should be indicated first or reserved until conservative treatment proves ineffective.

In this study, aim is to establish the outcome of treatment of children with trigger thumb treated conservatively and surgically.

MATERIALS AND METHODS

The study included total of 45 patients, visited in Nepal Medical College Teaching Hospital from July 2007 to April 2012 with trigger thumb who were treated conservatively and surgically. The children comprised 24 boys and 21 girls had a mean age onset of 28.5 months (3 months - 7 years). Twenty- Eight patients had right sided and 17 patients had left sided trigger thumb, presented to us with complain of either flexion deformity or a palpable nodule at the base of the thumb. Twenty-Nine patients (Watanabe *et al* stage 0,1,2) in whom the interphalangeal joint flexion contracture can be reduced by gentle manipulation were initially treated with conservative methods with

flexion and extension stretching exercises and 16 patients (Watanabe *et al* stage 3) in whom there was irreducible trigger thumbs at the initial presentation were treated surgically by release of A1 pulley. The selection of the patients was not based on age alone. If conservative treatment was ineffective till 9 months of conservative management then surgical treatment was offered. Surgery was performed under general anaesthesia and tourniquet control. A transverse skin incision was done over the volar flexor crease of the metacarpophalangeal joint. The A1 pulley was divided longitudinally. The tendon of flexor pollicis longus was then delivered out to break down adhesions. The thumb was assessed for full extension at the interphalangeal joint. The children were allowed to mobilise the thumb freely within the dressings and were reviewed in frequent follow up after surgery.

Both groups were followed up in the outpatient department to determine the treatment outcome and recurrence, if any. The minimum follow-up period was 12 months.

RESULTS

There was an overall success rate of 72.41% (21 cases) by conservative treatment, the success rate decreased with increasing age, from 81.81% (9 cases) in under 1 year old age group to 50% (3cases) in over 3 year old age group (Table-1).

The mean period of successful conservative treatment was 6.5 months (2- 12 months). In 8 cases (27.58%) in whom conservative treatment was ineffective upto 9 months subsequently went on to surgery. A total of 24 cases (16 cases + 8 ineffective cases) underwent surgical release of A1 pulley (Fig 1-5). Out of the surgically treated cases

Table-1: Details of the conservative treatment group and treatment outcome

Age	No. of cases	Successful treatment	Failed treatment
Less than 1 year	11	9 (81.81%)	2 (18.18%)
1- 2 year	8	5 (62.5%)	3 (37.5%)
2-3 year	4	2 (50%)	2 (50%)
More than 3 year	6	3 (50%)	3 (50%)
Total	29	21 (72.41%)	8 (27.58%)

91.66 % (22 cases) had success rate with a recurrence rate of 8.33% (2case) and superficial wound infection rate of 4.16% (1case). The recurrence in 2 cases was probably due to inadequate release of A1 pulley and 1 case of superficial wound infection was resolved with oral antibiotics.

DISCUSSION

Trigger thumb is a relatively uncommon condition and treatment option is controversial. Watanabe et al classified pediatric trigger thumb according to the severity of symptoms, and suggested that the treatment might be adjusted according to the stages. The spontaneous recovery was reported as 24% to 50% of trigger thumb in children.^{3,16,19,20} The patients presenting at birth had a rate of spontaneous recovery of 50%, those who presented between 6 and 12 months had a rate of spontaneous recovery of 12%.¹⁶

Dinham and Meggitt noted spontaneous recovery of 30% for children who presented at birth, 12% for those who presented between 6 and 12 months and none for those who presented above 12 months.²³

Mulpruek and Prichasuk noted an overall spontaneous recovery rate of 24%.³



Fig. 1. Flexion contracture at IP joint



Fig. 2. Incision over volar flexor crease



Fig 4 – Fig. 4. Flexor pollicis longus



Fig. 3. A1 pulley identified and release



Fig. 5. Improved active interphalangeal joint extension immediate after surgery

Baek et al reported that pediatric trigger thumb could be resolved without treatment in over 60% of patients. The median age of their patients at the time of the first visit was 23 months and median time from the initial visit to resolution was 48 months.²⁴ In contrast, Vaes et al stated that none of the trigger thumbs recovered spontaneously²⁵ and surgical release was always advisable and many studies support efficacy of operative therapy.^{1,26} With regard to the timing of surgical treatment, there is no agreement on the age at which operation is indicated. Some studies reported residual flexion contracture of interphalangeal joint after surgery, especially in children above the age of 3 to 5 years,^{1,16} but others were against it.^{3,19,27}

Dunsmuir and Sherlock observed an overall spontaneous recovery rate of 49% with the recovery rate appeared to increase with age¹⁹ and also reported that the age of the patient when the surgical treatment is performed does not affect the outcome and there was no case of residual contracture with surgical release of 61 children above 3 years of age.¹⁹

Skov et al concluded that the risk of residual flexion deformity was not higher after operations conducted in Patients who were above 3 years of age, supporting initial conservative treatment regardless of age.²⁷

Dinham and Meggitt proposed observation for 6 to 12 months before surgical treatment.¹⁶ Surgery is not urgent, and postponing surgery even beyond the age of 3 years does not interfere with the result. Trying nonsurgical methods to get a higher chance of recovery is reasonable before the operation.^{1, 16, 27}

This study showed an overall success rate of 72.41% following conservative treatment. The success rate appears to be higher in younger children and decreases with age. Even for the children above 3 years of age, however the success rate was 50%. The higher recovery rate in our series may be explained in part by the implementation of stretching exercises, which appeared to have a high success rate, with Nemoto et al reporting in their series as 89% success rate in patients treated conservatively.¹⁸ The outcome of children who underwent surgery was 91.66% with recurrence rate of 8.33% and superficial wound infection rate was 4.16%.

There is a much higher recovery rate following conservative treatment than previously thought and therefore recommended for more conservative approach to the treatment of trigger thumb in children. The study shows that surgery is not urgent, postponing surgery does not interfere with the result. Therefore trying conservative method is reasonable options before elective surgery.

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