

CASE REPORT

# Tendon Transfer in Congenital Deficiency of Flexor Pollicis Longus Without other Associated Anomalies of Thumb

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**Keywords:** Flexor Pollicis Longus, Tendon Transfer, Congenital Aplasia

## ABSTRACT

A three-year-old girl, with congenital aplasia of the flexor pollicis longus, without other associated anomalies of thumb is reported. A two-stage procedure was done using a silicone rubber rod and pulley reconstruction, followed by transfer of the

flexor digitorum superficialis tendon from the ring finger to the distal phalanx of the thumb three months after the first surgery.

This resulted in 0.50 degree active flexion at the interphalangeal joint. *JOURNAL OF IRANIAN CLINICAL RESEARCH* 2016;2(1):158-160

## INTRODUCTION

Congenital absence of flexor pollicis longus without associated anomalies of thumb is a rare cause of inability to flex the interphalangeal (IP) joint of the thumb.

Other causes are anomalous insertion of FPL, congenital tenovaginitis of the flexor tendon sheath, partial anterior interosseous nerve paralysis, traumatic rupture of FPL and anomalous bands connecting tendons.

## MATERIALS AND METHODS

### Case report

A three-year-old right-handed girl was first observed by her parents to be unable to flex IP joint of her right thumb. The family history was negative for congenital anomalies. She had been operated for hypertrophic pyloric stenosis when she was three weeks old. IP joint was hyperextended and active flexion was 0 degree and passive flexion was 30 degrees.

No thenar muscle atrophy was noted. The patient was candidate for surgery with primary

diagnosis of congenital trigger thumb. The thumb was explored from base of the distal phalanx to distal of thenar muscles. The FPL was absent and a fibrous band was present instead. No pulley was present. Intra operative diagnosis was made and two stage re construction was planned. At first stage, a silicon rubber rod was inserted from zone one to zone five. Then the fibrous band was cut proximally and formed as oblique pulley. The second stage of surgery was carried out three months later by transferring the flexor digitorum superficialis of ring finger to thumb. The IP joint was tensioned to 15 degree of flexion.

Thumb spica cast was applied at the end of surgery. One month later, the cast was removed and rehabilitation by occupational therapist started.

Fifty degree of flexion was gained after three months (Fig. 1, 2).

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**Fig. 1:** Thumb position at rest after surgery.



**Fig. 2:** Thumb position actively flexed after surgery.

## DISCUSSION

The absence of FPL associated with aplasia of the thenar muscles was first described by Froment in 1895 [1]. Uchida proposed a classification of absence of FPL with associated anomalies [1]. They are divided into four groups:

a: Absence [1-5]

b: Abnormal [6, 7]

c: Abnormal course [1]

d: Abnormal connection

Our case was type (a) which is a rare type [1]. Clinically the affected thumb is smaller than others with a faint or absent flexion crease and restricted flexion at IP joint.

Ultrasound scans, routine X-rays and MRI have been mentioned in various reports and investigations. Sonography is reported as an initial imaging modality and MRI to be considered as a complementary technique [8, 9]. Treatment options are one or two stage tendon transfer or fusion of IP joint, in functional position, in case of weakness or painful movements of the thumb. For example, in congenital absence of flexor pollicis longus

without hypoplasia of thenar muscles, Uchida et al. , the flexor digitorum superficialis of the ring finger transferred to the inserting portion of the flexor pollicis longus tendon with good results [1]. In another study of congenital absence of flexor pollicis longus without hypoplasia of the thenar muscles was treated by transfer of flexor digitorum superficialis of the ring finger to the thumb to achieve active flexion at the interphalangeal joint of the thumb [2]. For a case with congenital absence of flexor pollicis longus tendon without associated anomalies of thumb hypoplasia, preferred surgical technique has been tendon transfer using the flexor digitorum superficialis tendon of the ring finger in one- or two-staged operations [9].

In our case, two-stage tendon transfer was done and the result was good according to 'white' criteria.

List of cases with congenital absence of the FPL tendon without the associated anomalies of thumb hypoplasia with treatment is shown in Table 1.

**Table 1:** List of cases with congenital absence of the FPL tendon without the associated anomalies of thumb hypoplasia reported in the literature.

Case No.	Gender	Age (Year)	Diagnosis	Treatment	Reference
1	F	1	Physical examination	Tendon transfer	Miura (1977)
2	F	6	Physical examination	Two-staged tendon transfer	Arminio JA (1979)
3	F	13	Physical examination,	Two-staged tendon transfer	Koster (1984)

## electromyography

4	F	7	Physical examination, electromyography	Tendon transfer	Uchida et al. (1985)
5	M	5	Physical examination	Two-staged tendon transfer	Dehaan et al. (1987)
6	F	11	Physical examination	Tendon transfer (flexor digitorum superficialis to the ring finger)	Thomas and mathivanan (1999)
7	M	10	Ultrasonography, magnetic resonance imaging	None	Alicioglu (2007)
8	F	14	Direct radiography, magnetic resonance imaging	None	ME Demirseren (2007)

**Conclusion**

Tendon transfer can be done at three years of age without fearing of adhesion or co-operation of the child.

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**REFERENCES**

1. Uchida M, Kojima T, Sakurai N. Congenital absence of flexor pollicis longus without hypoplasia of thenar muscles. *Plast Reconstr Surg.* 1985;75(3):413-6.
2. Thomas C, Mathivanan T. Congenital absence of flexor pollicis longus without hypoplasia of the thenar muscles. *J Hand Surg Br.* 1999; 24(3):385-6.
3. DeHaan MR, Wong LB, Petersen DP. Congenital anomaly of the thumb: aplasia of the flexor pollicis longus. *J Hand Surg.* 1987; 12(1):108-9.
4. Köster G. Isolated aplasia of the flexor pollicis longus: a case report. *J Hand Surg Am.* 1984; 9(6):870-1.
5. Usami F. Bilateral congenital absence of the flexor pollicis longus with craniofacial abnormalities. *J Hand Surg Am.* 1987;12(4): 603-4.
6. Hagan H, Idler R. Limitation of thumb flexion due to an unusual insertion of the flexor pollicis longus. *J Hand Surg Br.* 1988;13(4) :474-6.
7. Nakamura J, Kubo E. Bilateral anomalous insertion of flexor pollicis longus. *J Hand Surg Br.* 1993;18(3):312-5.
8. Alicioglu B. Radiologic findings of the flexor pollicis longus hypoplasia. *Skeletal Radiol.* 2007;36(1):120-3.
9. Demirseren ME, Afandiyev K, Durgun M, Kilicarslan K, Yorubulut M. Congenital absence of flexor pollicis longus tendon without associated anomalies of thumb hypoplasia: a case report and review of the literature. *Hand.* 2007;2(4):184-7.