Abstract:
We present a case of abnormal congenital communication between flexor pollicis longus (FPL) and flexor digitorum profundus (FDP) of index finger, which was found incidentally while exploring this case of Zone II flexor tendon injury of right thumb. FPL has many anatomical variations. Although many variations exist, abnormal tendinous communication between FPL and FDP is called Linburg-Comstock anomaly. Excision of this abnormal tendinous slip facilitated FPL repair.

Keyword: FPL, FDP, Anatomical variations, Linburg-Comstock anomaly

Introduction:
Flexor pollicis longus (FPL) is a unipennate muscle situated in the deep compartment of forearm. It has its origin from volar and ulnar side of shaft of radius extending just below radial tuberosity to origin of pronator quadratus, from adjacent radial third of interosseous membrane. It descends into wrist radial to flexor digitorum profundus (FDP); enters carpal tunnel and runs between flexor pollicis brevis (FPB) and oblique head of adductor pollicis to get inserted into base of distal phalanx of thumb. It is innervated by anterior interosseous branch of median nerve – C8 T1(1). Variations of FPL are not uncommon. We present a case of abnormal communication between FPL & FDP tendon found incidentally while exploring this case of Zone II flexor tendon injury of right thumb.

Case report:
A 20 year old man presented with inability to flex thumb interphalangial (IP) joint following history of assault with knife. He reported to us 3 hours after injury. Clinical examination showed, deep cut injury without skin loss over metacarpophalangeal (MCP) joint crease of thumb (figure1). Active flexion of IP joint of thumb was absent. MCP joint, carpometacarpal joint movements were normal. Loss of sensation present in volar aspect of thumb distal to cut injury.
Capillary filling was found to be adequate.

- Xray – hand – AP/oblique showed no skeletal injuries.

**figure1. preoperative**
Pt. was informed and prepared for surgery.

Under axillary block, tourniquet control, thorough wound wash given.
Distal cut ends of FPL and digital nerve identified. Since proximal cut end of FPL could not be traced, another incision made in wrist crease inverted “L” shaped along radial aspect of forearm. The proximal position of FPL tendon was identified by its location, roundedness, colour, and unipennate nature. But the proximal end could not be completely mobilised in the proximal wound. But incidentally, while pulling the proximal end, the DIP joint of index finger started flexing (figure2).

**figure2. Proximal cut end of FPL pull causes index DIPJ flexion**

We thought of congenital anomalies of FPL and decided for further dissection. On careful dissection, we found to our surprise, an abnormal communication between FPL tendon and FDP tendon of Index finger. This tendinous slip was dissected carefully and excised without damaging both FPL and FDP (figure3).

**figure3. Abnormal tendinous slip from FPL to FDP of index**

Then FPL tunneled distally and approximated with distal cut end with 3/0 prolene by modified kessler technique and reinforced with coaptation suture with 6/o prolene. Digital nerve repaired with 8/0 prolene. Tourniquet released. Hemostasis achieved. Skin closed with 3/0 prolene (figure4). Dressing was done and dorsal plaster of paris (POP) slab with wrist in neutral position, MCP and IP joints in flexion, dorsal thumb POP slab with MCP and IP joints in flexion was applied.
Suture removal was done on 10th day, followed by immobilization for 3 weeks and POP removal followed by active physiotherapy after 3 weeks. On follow-up, thumb and index finger function was normal. Also on contra lateral side, no anomalous communication between FPL and FDP of index finger was detected clinically.

**Discussion**: Variations of FPL are not uncommon and they include(2)

1. The muscle of FPL may be fused with the whole FDP to become a common flexor profundus (fig5.A).

2. Muscle belly may unite with that of FDP of index finger (fig5.B).

3. Tendinous slip from FPL to FDP of index finger at forearm level or with that of FDS or transverse carpal ligament (fig5.C).

4. Tendinous slip from FPL to extensor tendon of thumb. This may be associated with pollex abductus (fig5.D).

5. Muscle slip from FPL to FDP or FDS or pronator teres in proximal forearm (fig5.E).

In our case, we found an abnormal communication between FPL & FDP of index finger (fig5.C). This is called as Linburg-Comstock anomaly(3). Although prevalence varies between 13-31%, it is mainly asymptomatic(4). But it can disrupt certain fine motor movements: this may be troublesome for musicians or of potentially grave concern when holding a pistol and cocking the hammer by flexing the thumb – flexion at index DIPJ pulls the trigger. The anomaly is also implicated as a cause of chronic tenosynovitis with resultant wrist pain (Linburg–Comstock syndrome) (5). Traumatic rupture of this communication is reported(6). Ultrasound, MRI are useful diagnostic tools (7). In our case, this anomalous tendinous slip prevented proximal cut end of FPL to be tunneled to injury site. After excision of this anomalous tendinous slip, FPL repair was possible.

**Conclusion**: In difficult repair of FPL, anatomical variations should be considered and explored. In our case, excision of tendinous slip from FPL to FDP of index finger facilitated FPL repair.
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