



PALMARIS LONGUS INTERPOSITION GRAFT FOR POST OPERATIVE EXTENSOR POLICIS LONGUS TENDON RUPTURE.

Orthopaedics

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KEYWORDS

INTRODUCTION

Rupture of extensor pollicis longus (EPL) is an uncommon but known entity after fracture of distal end of radius. Various others causative factors exist. Mechanical causes like trauma either due to injury or iatrogenic like presence of plate or external fixator, non-union of scaphoid, subluxation of ulnar head ; Inflammatory disorders: Systemic inflammatory diseases, Rheumatoid arthritis; systemic or local steroid users.^{1,2,3}

This case being reported is a case of attrition rupture due to chronic irritation of EPL by Rush nail tip after a few years of surgery for operated case of shaft radius fracture.

CASE PRESENTATION

A 55 year-old male manual worker presented to us in the outpatient department with complaint of inability to extend his left thumb. 5 years ago he underwent closed reduction internal fixation for fracture of radial shaft with a square nail. Passive range at all joints of hand and wrist were within normal limits. It was clinically suspected that the patient might have a rupture of the Extensor pollicis longus tendon. He did not have any history of systemic disease or steroid use. Rheumatoid Factor, uric acid, ESR, CRP, blood sugar level, and TSH were within normal limits. X-ray showed the square nail protruding beyond dorsal cortex likely to cause irritation of local soft tissues. The fracture showed union. Diagnosis was confirmed by ultrasonography.



TECHNIQUE

Plan: Removal of the offending nail, exploration of EPL, excision of its degenerated part and Palmaris Longus interposition grafting were planned.

Preoperative Preparation: 16.9% people do not have palmaris longus in one limb while incidence of absence is 3.3% bilaterally.⁴ So preoperative confirmation of the presence of same was done using Ultrasonography and the location marked. Also, the retracted ends of the Extensor Pollicis longus tendons were identified and marked. Appropriate informed consent were taken regarding graft and prognosis.

Anaesthesia: General Anaesthesia and under tourniquet 220 mm of Hg pressure.

Operative steps: A 15 cm long incision was made on the dorsal aspect of forearm extending from the base of the thumb distally to the Lister's tubercle and extended proximally. Soft tissues were retracted and the Nail tip irritating the local soft tissues was identified. It was removed with the help of a plier.



Ends of the Extensor Pollicis Longus tendon were identified and the margins freshened by excision of degenerated parts.



Appropriate length of ipsilateral Palmaris longus was harvested using the marked location and mini incision technique.



Proximal tenorrhaphy was performed using Pulvertaft's weave technique. Tension of the graft was set with thumb in full extension and wrist in neutral position. The distal tenorrhaphy was performed by modified Kessler's technique. Third dorsal compartment retinaculum under which these pass was re-sutured to reform pulley.



Closure was done layer-wise and Plaster of Paris slab was applied in a slightly dorsiflexed wrist with thumb spica in extension and abduction



Fig7:

At 11th day postoperatively, stitches were removed and short arm thumb spica cast was applied in neutral position of wrist. This was removed at 6 weeks postoperatively. These provide the proper immobilization necessary for the interposed graft to incorporate.

Following removal, intermittent splinting and regular hand and wrist exercises were advised. Patient was regularly followed up monthly upto 3 months. The final result at 6 months showed full wrist movements with terminal 15 degree restriction of thumb extension and no restriction in thumb flexion. Grip and pinch strengths are roughly similar to that of normal side. As per Mayo modified wrist score criteria result is excellent.

DISCUSSION

Attrition of a tendon can either occur due to direct trauma during the initial injury or during the initial operation. After being intact initially after the operation, timing of attrition rupture is not well defined in literature.

Engkvist *O et al.* (1979) explained it for an undisplaced or minimally displaced fracture distal radius near Lister tubercle as around two months following it.⁷ The incidence of EPL tendon rupture is 0.3 percent after a distal radial fracture.^{5,6} In the present study rupture took place after 5 years. The causative factors in earlier cases used to be irritation by the fracture but here the fracture is a shaft fracture and the cause is an implant protruding which caused irritation and following rupture of the tendon.

EPL rupture can be managed in such situation by either an extensor indicis proprius (EIP) tendon transposition.^{7,8} It is less invasive procedure with predictable function of thumb. Muscle education is comparatively easier. Infrequently tendon transfer of extensor digiti minimi or extensor digitorum communis for little finger and extensor carpi radialis longus are also used. Modified technique of EPI transfer as described by Zheng *et al.* (2012) is claimed to produce better result.⁸ Tendon repair is possible in acute rupture by direct trauma. Interposition tendon grafting using PL tendon is rare in literature.⁹

The plan in this case was to explore EPL, moreover offending nail removal irrespectively because if it has not, it might cause damage subsequently. Moreover the fracture has united. Intraoperative EPL rupture was confirmed and PL graft was used as an interposition PL tendon grafting along-with reconstruction of pulley.

In contrast to tendon transfers no cortical rearrangement and adaption are needed. Moreover, the strength of isolated index finger extension is weakened in tendon transfer but not here.

Setting the tension: Appropriate tension during graft interposition is a critical point to obtain movements at the thumb. Standard tension and overtension are the options. Jung *et al.* (2014) claimed better performance with over tension which was followed this in this study.¹⁰

CONCLUSION

Complete insertion of implant is recommended in case of a square nail in operation of the shaft of radius to prevent such events. In an event that the implant backs out its removal is recommended as soon as possible.

In such a case where EPL rupture happens years after the operation, a soft tissue surgery can be done when surgeon is adequately equipped and careful.

Interposition tendon graft and tendon transfer are the options. Interposition graft is preferable to tendon transfer to avoid chance of diseased tendon transfer in some situation.

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