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Reconstruction of extensor tendon injury of hand with Autogenous Palmaris Longus Graft: A case report

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Abstract

Traumatic tendon injuries of the forearm are commonly encountered in the emergency department. Despite the frequency, few studies have examined the true incidence and outcomes of traumatic tendon injuries in the distal forearm [1].

Penetrating hand trauma is common injury encountered nowadays. We are presenting a case of a 24-year-old Indian woman with a 2 month old sharp cut injury over right distal dorsum of forearm causing rupture of Abductor Pollicis Longus (APL) and Extensor Pollicis Brevis (EPB) repaired with free Palmaris longus graft. Both tendons injured in Zone 8 were reconstructed by modified Kessler's suture technique with Prolene 3-0 followed by below elbow cast with wrist in extension and thumb in abduction and extension. Post operatively patient had excellent result at final follow up of 6 months according to Miller's criteria with no loss of flexion of thumb. Thus chronic extensor tendon injury is a rare presentation with few studies noting their treatment outcome. The method described here has given a good outcome and further more number of cases are required to further validate this study [2].

Keywords: Abductor Pollicis Longus, Extensor Pollicis Brevis, Zone 8 extensor tendon injury, Palmaris Longus graft, modified Kessler's suture technique

Introduction

Traumatic tendon injuries of the forearm are commonly encountered in the emergency department. Despite the frequency, few studies have examined the true incidence and outcomes of traumatic tendon injuries in the distal forearm [2]. Penetrating hand trauma is common injury encountered nowadays which usually present early in casualty. But sometimes these tendon injuries might go untreated or undiagnosed initially and may present at later date with significant fibrosis and retraction of proximal fragment. The fibrosis and shortening present a major impediment for treatment and favourable outcome [3]. We are presenting here a similar case of extensor tendon Zone 8 injury of APL and EPB treated with free Palmaris longus graft with excellent long term result.

Material & method

A 24-year-old right-handed Asian woman was referred to our hospital with complaint of pain and inability to extend her right thumb since past two months following a sharp cut injury over right forearm. On clinical examination patient was unable to do abduction and extension of right thumb and had a primarily healed 2 cm long transverse scar over dorso-radial aspect of right forearm. She had normal blood cell count, erythrocyte sedimentation rate, C-reactive protein and other pre-operative blood investigations. USG report was suggestive of hypo to anechoic shadow of size approximate of 2.5 cm in line with the tendons in dorsal aspect of distal forearm. MRI showed hyperintense signal with loss of continuity in Abductor Pollicis Longus (APL) and Extensor Pollicis Brevis (EPB) tendons suggestive of high grade tendon injury. Intraoperatively 4 cm of fibrosis in between the cut ends of EPB and APL was removed and tendon ends were refreshed. Around 12 cm autogenous Palmaris longus (PL) graft was taken (Figure - 2) and using it end to end tendon repair was done using Modified Kessler's technique by Prolene 3-0 (Figure - 3). The repair was strengthened by epitendinous suturing. Post operatively below elbow splint with thumb slip was given with wrist in 30 degree of dorsiflexion and thumb in abduction and extension.

Post operatively, the immobilization was continued for 6 weeks, followed by active thumb abduction and extension and guarded flexion of thumb over period of next 4 weeks. By 12 weeks patient had regained near normal thumb movements. By 6 months post op, she was able to do her pre-operative activities without any difficulties.

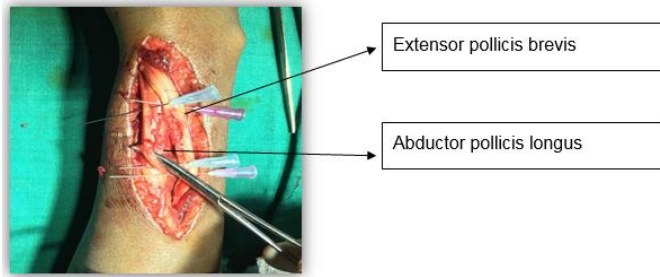


Fig 1: Needles holding the retracted ends of the Abductor pollicis longus and Extensor pollicis brevis tendons with fibrosis in between.



Fig 2: the size of the palmaris longus graft was 12cm.

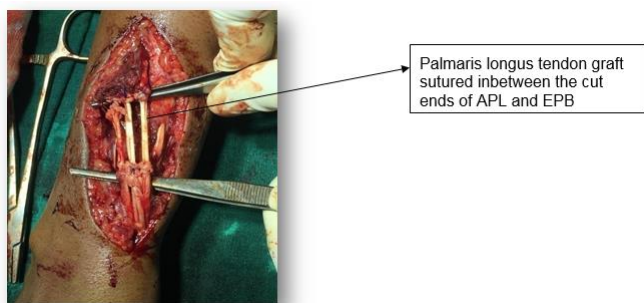


Fig 3: Tendons sutured with modified Kessler's technique.

Discussion

The spectrum of traumatic forearm injuries includes minor soft tissue injuries with fractures which required nerve, tendon, or artery repair. An accurate diagnosis and optimal treatment of Extensor Tendon Injury of the distal forearm are essential, because these lesions commonly hurdle daily routine of the person [5]. Clinical history and assessment should be accurate and it still remains the first step for the diagnosis, followed by USG and MRI to confirm a clinical suspect of Extensor tendon injury. Injury classification into anatomical zones and the evaluation of the characteristics of the lesions are considered key points to select the appropriate treatment for Extensor tendon injury [4].

Both conservative and surgical management can be indicated in Extensor tendon injury depending on the anatomical zone

and on the characteristics of the injuries. Clinical results of extensor tendon function may be assessed according to Miller's criteria based on total extension lag and total flexion loss [1]. According to criteria there is a common opinion that Extensor tendon injury in zones 1 to 4 have worse results than those in zones 5 to 8. Moreover, there are reports of 60 to 80% of favorable results in the proximal zones (5–8) compared with less than 50% of good results in the distal zones (1–4) [7].

Because of their chronic nature, injuries like these present with various amounts of tendon retraction, tendon callus lengthening, peritendinous scar adhesions, static and dynamic imbalances with the flexor apparatus and intrinsic muscles, and joint contractures. According to the few studies encountered for chronic extensor tendon injury, use of free tendon graft with mobilization of tendon is the preferred modality of management [6].

We in this study were able to reproduce similar long-term excellent clinical result for our case in digital zone 8 Extensor Tendon Injury with our technique. This modality can be used as guide for chronic tendon injury management with reproducible good results when done in a correct manner.

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