Abstract

Introduction: Spontaneous ruptures of extensor pollicis longus tendon predominantly occur after undisplaced or minimally displaced distal radial fracture near Lister tubercle. Systemic inflammatory diseases and systemic or local steroid, mechanical causes like bony ridges, presence of bone plate or external fixator pin may precipitate this. Repetitive uses in certain occupation like cooking, cow milking, tailoring and direct trauma in kick boxer are also identified as cause. In this study it is caused by screw tip that also after 20 years. Instead of tendon transfer, interposition tendon grafting is preferred.

Case Presentation: A 36-year-old male manual worker was plated for distal radial shaft fracture of left side. Distal most screw length was 3 mm in excess. After 20 years he developed rupture of extensor pollicis longus spontaneously. After excluding probable other causes and confirming by USG tendon ends were explored through dorsal incision. Offending slotted head screw was removed using hollow mill. Ipsilateral Palmaris longus tendon was grafted. Tension was set by extension of thumb and neutral position of the wrist. Removal of stitch after 2 weeks, short arm cast immobilization for 6 week and intermittent splinting and exercises for another 6 weeks yield excellent result.

Conclusion: Timely removal of implant when it is applied over tendon rich areas is preferable. In late situation surgeon should be equipped and careful to remove it. To avoid chance of transferring a diseased tendon interposition grafting using Palmaris longus is justified.

Keywords: EPL rupture, tendon graft, Slotted head screw removal, Palmaris longus

What to Learn from this Article?
Implant removal is a need particularly when it is applied in a tendon rich area.
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Discussion

Apart from direct injury timing of attrition rupture is not well defined in literature. As observed by Engkvist O et al. (1979) it is around two months after undisplaced or minimally displaced fracture distal radius near Lister tubercle and the incidence of EPL tendon rupture is 0.3 percent after distal radial fracture [7]. In the present study rupture took place after 20 years. Most authors managed such situation by transposition of extensor indicis proprius (EIP) tendon [6-9]. It is less invasive procedure with predictable function of thumb and undisturbed function of the index figure. Muscle education is also easy. Infrequently tendon transfer of extensor digitorum minimi or extensor digitorum communis for little finger and extensor carpi radialis longus are also used [8]. Modified technique of EPL transfer as described by Zheng et al. (2012) is claimed to produce better result [9]. Tendon repair is possible in acute rupture by direct trauma. Interposition tendon grafting using PL tendon is rare in literature [5]. In preoperative planning of the present study it was decided to explore EPL as well as tendon of second and fourth dorsal compartment as the projecting tip of the screw was about 4 cm proximal to Lister tubercle where attenuation of other adjacent tendons including EIP is not unusual. More over offending screw removal is a need because it might cause damage subsequently. Practically it is impossible to remove a screw from cortical bone after 20 years particularly when it is of slotted head. So straight forward we made hole around the screw using hollow mill and removed it finally by slot head screw driver from the volar side of the plate. Plate removal was not attempted as it may not be possible or might cause re fracture of the radius. In present case we preferred interposition PL tendon grafting and reconstruction of pulley. Setting tension during graft interposition is a critical issue to obtain balance between flexion and extension of thumb. Standard tension is obtained by full extension of the thumb with 30 degree flexion of wrist. Whereas over tension is obtainable with full extension of thumb and wrist in neutral position, Jung et al. (2014) claimed better performance with over tension [10]. We also followed this in this study. Though there is 30 degree restriction of thumb flexion the overall result is excellent.
Conclusion
Timely removal of implant when it is applied over tendon rich areas is essential. In such late situation it can be done when surgeon is adequately equipped and careful. Interposition tendon graft is preferable to tendon transfer to avoid chance of diseased tendon transfer in some situation.

Clinical Message
Appropriate size screws are to be selected particularly in tendon rich areas during fixation of fractures. Early removal in avascular situation is essential to avoid delayed rupture of tendon even at 20 years.

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