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## Management Of An Open Triceps Rupture Associated With Comminuted Fracture Of Distal Humerus With Biological Material. Fifth Such Case Report in Literature.

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### ABSTRACT

Ruptures of triceps tendon are rare. There can occur due to a fall on an outstretched hand or direct contact injuries. Among muscle and tendon injuries triceps injury and that too open injuries are rare and hence there is no fixed treatment protocol. A case of an open triceps rupture associated with comminuted fracture of humerus is presented with emphasis on the material for reconstruction of the ruptured triceps is presented.

**Keywords:** Fascia-lata, Reconstruction, open triceps rupture, biological

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## INTRODUCTION

Ruptures of triceps tendon are rare. It can occur due to a fall on an outstretched hand or from direct contact injuries [1]. Among muscle and tendon injuries, triceps injury and that too open injuries are rare [2]. So, only a fixed protocol is not devised [2]. We present a case of an open triceps rupture associated with comminuted fracture of humerus.

A 55 year old post menopausal lady fell into an unprotected (without a protective wall) well near her house while walking in dark. She presented with an open injury with exposing the lacerated triceps and comminuted fracture of distal humerus. Since she presented late after 6 hours and there was contamination of the wound primary reconstruction procedures were not done. She was treated with wound debridement and olecanon pin traction applied through a K- wire and an Ilizarov half ring. (Figure 1). Patient also sustained a trochanteric fracture during the fall which was treated conservatively.



Figure 1: Position of the fracture in olecanon pin traction



Figure 2a

Figure 2b

Figure 2a: After 8 weeks of injury the posterior wound in the elbow has healed.

Figure 2b: Radiographs of the elbow showed no union of the supra condylar fracture



Figure 3: Patient's right side trochanteric fracture developed during the fall which was treated conservatively united.

With eight weeks of this treatment the triceps site wound healed, as seen from figure 2a. The distal humerus fracture was ununited as seen from radiographs in figure 2b. However her trochanteric fracture united by this time as seen from figure 3. Hence she was taken up for open reduction and internal fixation of the lower humerus fracture, along with reconstruction of the ruptured triceps mechanism with biological material like fascia lata strip.

With the patient on right lateral position by transverse incision in the upper lateral aspect of the thigh the fascia lata was exposed and a small strip of fascia lata was made as a flap and this was introduced into the stripper as seen from figure 4a. The free end of the flap was held firmly with a Kocher's forceps. The strip was pushed distally in the subcutaneous plane. The distal tip of the fascia lata was brought out through another small incision in the lower lateral thigh. The distal tip of the fascia lata was disconnected from the lower part of

the main fascia lata by a 11 blade knife. The free graft was preserved in saline as seen from figure 4c. The length of the graft was 25 cms.



Figure 4a



Figure 4b



Figure 4c

Figure 4a: Patient in right lateral position. The stripper being introduced with a small flap of fascia lata in the upper wound in the left side thigh.

Figure 4b: The stripper being exposed in the lower wound

Figure 4c: The fascia lata strip was harvested is preserved in saline.



Figure 5: The ulnar nerve was isolated and protected.

With the patient still in the lateral position, by an incision like the Campbell approach, the skin was cut. There was lot of scar formation. The triceps was exposed through the previous triceps laceration site defect. The ulnar nerve was isolated with soft dissection and protected with a feeding tube. Figure 5. The fracture fixation was done using a reconstruction plate. Figure 6.a and 6b. The fixation was confirmed with image intensifier pictures. Figures 7 a and b.



a



b

Figure 6a and 6b: through the previous the triceps defect, the lower humerus fracture was reduced and fixed with reconstruction plate and screws.



**Figures 7a and b: Intra operative, image intensifier views.**

A transverse tunnel was drilled into the olecranon. The harvested fascia lata strip was passed through this tunnel. Figure 8 and figure 9. The free ends of the harvested fascia lata strip were brought above and sutured to the proximal triceps muscle and aponeurosis part of the triceps and the reconstruction completed with the elbow in maximum extension (figure 10). The patient's elbow was immobilised in anterior slab in maximum possible extension i.e. maximum possible extension was only upto 30 degree fixed flexion. The post operative radiographs are seen in figures 11 and 12.



**Figures 8 and 9: The harvested fascia lata strip is passed through a tunnel drilled into the olecranon,**



**Figure 10: The free ends were sutured to the upper triceps muscle and aponeurosis and the reconstruction completed.**



**Figures 11: The patients elbow immobilised in anterior slab in 30 degree flexion.**

**and  
Figure 12: The olecranon tunnel is visible in a closer view.**

Six weeks post operatively, the plaster was discarded and splint of the elbow was removed periodically and elbow was mobilized. The post operative status was seen in Figures 13,14 and 15.



Figure 13: Post-operative status after the triceps reconstruction- the scar is seen.



Figure 14: Post operative status after the triceps reconstruction- the patient is able to flex the elbow.



Figure 15: Post operative status after the triceps reconstruction, the patient had residual stiffness of the elbow but was able to do over head extension of 130 degree to fixed flexion deformity of 30 degrees.

#### DISCUSSION

Triceps tendon rupture is rare. It usually happens by a fall on an outstretched hand. Sometimes direct contact injuries have also been reported. <sup>1</sup> Radiographs of the elbow will show the clinical 'gap' and 'flake'

Signs. One must be aware to pick this lesion by doing a thorough clinical examination even when the patient presents first otherwise one will miss this injury if it is closed as the signs are usually subtle [1]. Even in a large series of 1014 cases of muscle and tendon injuries there was only eight involving the triceps; four of these from open lacerations as in our case [4].

Rupture of the triceps tendon is a rare injury comprising of only 2% of all tendon injuries and less than 1% of all tendon ruptures when considering the upper limb injuries. It commonly avulses from the osseous tendon insertion, while intramuscular injury at the myo-tendinous junction occurs less often. It is only this small piece of avulsed osseous material from the olecranon is seen in the radiograph as a 'flake' sign which is pathognomonic [1]. With less number of patients the protocol is not devised [1]. Most of the injuries are either primarily repaired with non-absorbable trans-osseous sutures or with suture anchors for reattachment providing a good surgical outcome [1].

In a series, primary surgical repair of the triceps tendon rupture was done with Two GII Quick anchor Plus suture anchorages with Ethibond polyester sutures were inserted over the olecranon. Triceps tendon was then repaired, while still maintaining the excursion length of the tendon and the suture knots secured with the elbow in full extension. The elbow was protected by a hinge brace for 6 weeks. Isometric exercises were started 2 weeks after the operation. The patient's elbow had returned to the preoperative level of function by 3 months [1].

Similar synthetic augmented suture anchor reconstruction for a complete triceps tendon rupture of his right dominant elbow was done for a closed rupture of triceps in a young bodybuilder [3]. Treatment of rupture of all the three heads of triceps in an ice hockey player, with a palpable gap in the substance of the triceps muscle substance and inability to hold the arm in an extended position is described [4]. Sometimes a non-operative treatment is effective and can be advised if the patient do not need staying power in elbow extension [4].

Open triceps rupture is rare. We have presented a case associated with a supracondylar fracture managed with fixation and repair of the tendon with a biological material. This is only the fifth such case report in literature.

#### REFERENCES

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