

Annular Ligament Repair Utilising A Synthetic Graft (Ortho-Tape)[®]

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INTRODUCTION:

Monteggia fracture is commonly treated with an open anatomical reduction and stable fixation of the ulna fracture. We report a case of traumatic Monteggia fracture with irreducible radial head dislocation secondary to a ruptured annular ligament which was reconstructed with a synthetic graft (Ortho-tape)[®] and an anchor suture.

MATERIALS AND METHOD:

A 45-year-old male was thrown off his motorcycle and landed on his right upper limb, which caused pain and deformity of his right forearm. Radiographs revealed a Monteggia fracture (Bado class II). Reduction and fixation of ulna fracture with DCP was achieved during surgery, but unfortunately the radial head could not be reduced. Post-operative radiographs showed a radio-capitellar dislocation with an anterior displacement of the radial head. Ultrasound confirmed an annular ligament tear. We proceeded with a second surgery. The radio-capitellar joint and radial head was exposed through the Kocher approach. The annular ligament was torn and severely ruptured. The ligament edges were irregular and interposed in the radio-capitellar and proximal radio-ulna joint. We proceeded to reconstruct the annular ligament. In order to prevent donor site morbidity, we decided to use a synthetic graft "Ortho-tape" together with a Mitek bone anchor (J&J).

After reduction of the radial head, the Ortho-tape was slung around the radial neck and then anchored using the anchor suture to the lateral border of the proximal ulnar bone. The force of the anchoring must be just adequate to overcome the anterior deforming force of the radial head. Four centimeters of ortho-tape and one anchor suture was used. Joint capsule and superficial fascial repair added stability to the reconstruction. The patient was placed in an above elbow backslab for 1 month.

RESULTS:

He was well at 2 months post-surgery with good range of motion of elbow joint as well as forearm pronation and supination. His elbow

range of motion was 0° to 110° and he was also able to pronate up to 45° and supinate up to 60°.

DISCUSSION:

Although the annular ligament is a tough tissue, it can be torn in a severe forearm injury. This produces an unstable radio-capitellar joint and subsequently leads to chronic pain and limitation of elbow motion^{1,2}. Repair or reconstruction of the ligament is necessary in order to stabilize the proximal radio-ulna joint. Ortho-tape is a polyethylene terephthalate (woven high tenacity polyester). It is non-absorbable, woven with longitudinal and transverse fibers crossing at right angles. It has an "open structure" and acts as a scaffold allowing tenocyte ingrowth³. Ortho-tape has been successfully used as a synthetic graft for tendon injuries of the hand, Achilles tendon injury and ACL reconstruction surgery¹.



Figure 1: Post-plating radiograph with a still dislocated radial head



Figure 2: Ortho-tape sling around the radial neck fixed to the lateral border of proximal ulna using an anchor suture.



Figure 3: Post-operative radiograph with a now reduced radial head

CONCLUSION:

Reconstruction with combination of synthetic graft (Ortho-tape) and anchor bone suture provide stable fixation with good clinical outcome. Additionally, it minimizes donor site morbidity, smaller scar, shorter surgical time and has fewer post-operative complication.