Novel surgical technique of Trapeziometacarpal Joint Stabilisation - TRAMS

Background
- Medical texts describe the Eaton and Littler procedure for stabilisation of the trapeziometacarpal joint (TMJ) by reconstructing the anterior oblique (beak) ligament (AOL) using a strip of flexor carpi radialis (FCR) tendon passed from volar to dorsal through the base of the first metacarpal
- Recent TMJ dissection studies have shown that the AOL is not the most important ligament in TMJ congruency and stability
- Studies showed that the wider, thicker and stronger dorsal radial ligament complex (DRLC) is the prime stabiliser of the TMJ
- The TRAMS procedure uses a slip of abductor pollicis longus (APL) to reconstruct the DRLC, involving much less dissection and a shorter operative time compared to the Eaton and Littler procedure

Discussion
The TRAMS surgical technique designed was initially used in patients with hypermobility to stabilise subluxation or recurrent dislocations at the TMJ, but has been used in two cases of traumatic dislocation of the TMJ, and one case of early osteoarthritis of the thumb. All patients reported decreased or no pain after the operation by 8 weeks of follow up. Pinch and grip strength improved in all except one patient. However, these results are subjective measures on only 8 patients, and a prospective study is currently in development.

Surgical technique

Step 1:
- 5cm length of APL tendon, proximal to its insertion on 1st metacarpal base, retrieved through standard trapeziectomy type incision

Step 2:
- APL tendon stump is divided into two equal sized slips

Step 3:
- Ulnar dissection until the IML is exposed (see clip passed under IML)
- Ulnar APL slip passed under IML, pulled taut (relocating TMJ) and transfixed to IML with ethibond

Step 4:
- Radial APL slip passed through radial strip of TMJ capsule (see clip passing under), pulled taut and transfixed with ethibond

Step 5:
- The APL slips are pulled across each other at the level of the dorsal TMJ capsule & DRLC, pushing the base of the 1st MC volarly, further preventing dorsal subluxation

Step 6:
- The 2 slips are spiralled around each other (behind EPB as shown), pulled taut and sutured together and to the dorsal TMJ capsule reconstruction the DRLC

References

KEY:
- TMJ= Trapeziometacarpal Joint
- APL= Abductor Pollicis Longus
- U= Ulnar Slip
- R= Radial Slip
- IML= Inter-Metacarpal Ligament
- DRLC= Dorsal Radial Ligament Complex
- EPB= Extensor Pollicis Brevis