### Introduction

Dorsal and volar instability of the distal ulna is a common problem after distal radius fracture and other soft tissue trauma involving the ulnar wrist. We present a new anatomic technique to stabilize the distal ulna with tendon graft augmented with Mersilene tape.

### Hypothesis

Tendon graft augmented with Mersilene tape is an effective treatment for distal radioulnar joint (DRUJ) instability and can be combined with other commonly used reconstructive techniques such as distal radial osteotomy (DRO) and ulnar shortening osteotomy (USO).

### Surgical Method

1. Anchoring tunnels were created in the dorsal or volar ulnar corners of the radius, depending on the direction of instability
2. Interference screws were used to secure the Mersilene/tendon graft construct in the radius.
3. Both the Mersilene and the tendon graft were passed through a tunnel in the ulnar fovea and anchored to the distal ulna with interference screws or suture anchors per surgeon's preference.
4. For dorsal DRUJ instability, the VRUL graft is tensioned and anchored in mid supination with volarly directed pressure on the ulnar head. For volar DRUJ instability, the DRUL graft is tensioned and anchored in mid pronation with dorsally directed pressure on the ulnar head.

### Mersilene

- A non-distensible polyester polymer tape
- Augments the tendon graft and stabilizes the ulna while the tendon graft heals and regains its biomechanical properties

### Direction of Instability

- 7 with volar and 5 dorsal instability
- 5 with volar instability had prior distal radius fracture (DRF)
- No patients with dorsal instability had prior DRF
- Our conclusion is that volar DRUJ instability is more commonly associated with DRF and dorsal DRUJ instability is associated with soft tissue trauma (two-tailed P-value = 0.0278 with Fischer exact test)

### Associated Conditions

- LT Instability
- Ulnar Abutment
- Distal Radial Malunion

### Results

- All 12 patients had assessment postoperatively by the treating surgeon
- Follow up time range: 2-11 months (7 months average)
- 9 patients had no DRUJ instability after the surgery and the remaining 3 had only mild instability

### Results (continued)

- The average pain score was 2 out of 10 and all the patients had a pain score of less than 3 with the exception of 1 patient.
- Volar Instability was significantly associated with distal radius fracture, while dorsal instability was not.
- Many of patients returned to their pre-injury occupations which required forceful hand use despite worker's compenstation status.

### Conclusions

- DRUJ instability, more often than not, is unidirectional and not global.
- Reconstruction of the relevant dorsal or volar RUL is sufficient to restore stability.
- The addition of Mersilene to the tendon graft construct not only adds strength, but also prevents stretching of the repair while the tendon graft undergoes collagen replacement and remodeling, thus maintaining the structural integrity of the biological component of the reconstruction.
- Volar DRUJ instability almost exclusively occurs after DRF (two-tailed P-value 2 tailed Fisher exact = 0.0278), and dorsal instability occurs more frequently after soft tissue trauma involving the ulnar wrist.
- Reconstructing only either the dorsal or volar RUL requires less tendon graft than previously described methods and therefore permits additional reconstructive options not previously available.
- It is imperative to correct the radial translocation and shortening of the radial column with a malunion after DRF, as reconstruction of the DRUL may not be necessary if tensioning the lax interosseous membrane restores volar stability.

### References