

- 1  Comprehensive Orthopaedic Review
Hand and Wrist Tendinopathies
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- 2  de Quervain Disorder
 - Fritz de Quervain, Swiss surgeon, 1895
 - Stenosing tendinosis, 1st dorsal compartment
 - Attritional, degenerative tendon changes and retinacular thickening
 - Finkelstein test, physical exam maneuver, 1930
 - Eichhoff test is another provocative maneuver
 - Affects women 6 times more often than men
 - Middle age, dominant side, repetitive lifting
- 3  Injection is effective treatment for de Quervain disease
 - Accuracy of injection is important
 - Post-injection casting improves outcome
- 4  de Quervain Tendinopathy: Survivorship and Prognostic Indicators of Recurrence Following A Single Corticosteroid Injection
Earp et al., JHS 2015; 40A: 1161-65
 - 50 patients (mean 49 years), 50 wrists
 - 82% were symptom-free at 6 weeks after injection
 - 24 patients had recurrence, all within 6 months of injection
 - Past trigger digit predicted need for surgery
 - Prognostic Level IV study (Boston, MA)
- 5  Thumb Interphalangeal Joint Extension by the EPB: Association With Subcompartment & de Quervain's Disease
Alemohammad et al., JHS 2009; 34A: 719-23
 - 90 cadaver wrists, 143 patients w/de Quervain's disease
 - EPB separate subcompartment found in 20% cadavers, but 71% patients
 - EPB could extend thumb IPJ (through distal phalanx or extensor hood insertion) in 21% cadavers, but 39% patients
 - When EPB can extend thumb IPJ, it usually resides in a separate subcompartment
- 6  Limited Surgical Treatment of de Quervain's Disease: Decompression of Only the EPB Subcompartment
Yuasa et al., JHS 1998; 23A: 840-43
 - 22 patients w/de Quervain's disease had release EPB only
 - 16 of 22 (73%) had EPB in a separate subcompartment
 - All patients had symptomatic relief
 - de Quervain's disease is EPB entrapment and it is sufficient to release the EPB only
 - Therapeutic Level IV (Japan)
- 7  Extensor Triggering in de Quervain's Stenosing Tenosynovitis
Alberton et al., JHS 1999; 24A: 1311-14
 - Retrospective review 827 patients w/de Quervain's disease over 5 years, 11 patients (13 wrists) had triggering (1.3% prevalence)
 - 7 of 12 (58%) wrists failed nonoperative treatment
 - All wrists had tenosynovitis, separate EPB subcompartment, no tendon nodules

- Triggering or locking in extension predicts recalcitrant course if treated nonoperatively

8 Intersection Syndrome

- APL, EPB muscle bellies cross ECRL, ECRB
- “Cross-over tendinitis” or “APL bursitis”
- “Intersection syndrome” coined by Dobyns
- Tendinosis of 2nd dorsal compartment
- Repetitive wrist motion (rowing, weight-lifting)
- Majority improve with 2nd dorsal compartment injection
- Injection failures require 2nd dorsal compartment release

9 ECU Synergy Test

- Clinical test for diagnosis of ECU tendinosis
- ECU contracts on resisted thumb abduction with wrist in neutral, forearm supinated
- Distinguishes ECU tendinosis from intra-articular process such as TFC tear

10 Morphometric Analysis of Lister’s Tubercle and Its Consequences on Volar Plate Fixation of Distal Radius Fractures

Clement et al., JHS 2008; 33A: 1716–19

- 100 cadavers were dissected to define anatomy of Lister’s tubercle, EPL groove
- Height of Lister’s varied 2–6 mm
- Depth of EPL groove varied 1–5 mm
- Height difference ranged 4–10 mm
- Difficult to determine past pointing of distal screws when volar plating DRFx
- Cadaver study (Austria)

11 Volar Locking Plate (VLP) position on distal radius is crucial to avoid flexor tendon compromise

- Plates positioned within 2 mm of the volar critical line (VCL) or within 3 mm of the volar rim of distal radius increase the probability of flexor tendon rupture
- Remove prominent plates after 6 months, especially if flexors are symptomatic

12 Linburg–Comstock Syndrome

- Young patients with vague forearm pain
- Anomalous FPL tendinous slip to index FDP
- Present in 31% extremities, 14% bilateral
- Onset – spontaneous, trauma, repetitive use
- Provocative test – Restricting index DIPJ flexion during thumb IPJ flexion
- Resection of anomalous FPL slip is curative

13 Intrinsic muscles of the fingers: function, dysfunction and surgical reconstruction

Richard J. Smith (Harvard)

- Transverse fibers (intrinsic apparatus) are distal to sagittal bands and flex the MCPJs
- Oblique fibers (intrinsic apparatus) are distal to the transverse fibers and assist the central slip in extension of middle phalanx
- Medial tendon of dorsal interosseous inserts at lateral tubercle of proximal phalanx and is finger abductor
- Sagittal bands (extrinsic system) lift proximal phalanx into extension through volar plate and proximal phalanx

- Transverse retinacular ligaments prevent lateral bands from dislocating dorsally at PIPJ

14 Sagittal Band Rupture

- Sagittal bands centralize EDC over the metacarpal head
- Sagittal bands function to extend the proximal phalanx
- Attenuation or rupture of sagittal bands may occur
- Most often radial sagittal band, traumatic, middle finger
- Cause may be trivial such as flicking finger
- Painful EDC snapping w/MCPJ flexion, weak extension, ulnar deviation of affected digit

15 Rayan–Murray Classification

- Type 1 – Mild – No EDC subluxation
- Type 2 – Moderate – EDC subluxation
- Type 3 – Severe – EDC dislocation

16 Non–Operative Treatment Acute Sagittal Band Rupture

- Acute (within 2 weeks) flexion–block splint
- Can use slip of the EDC to stabilize

17 Elson Test

- Must have high index of suspicion for central slip rupture in any PIPJ injury
- Mechanism of injury is forced PIPJ flexion on the extended finger
- If central slip and triangular ligament are ruptured, then the lateral bands will sublux volarly
- With the PIPJ held in flexion, there is increased tone in lateral bands, resulting in DIPJ extension

18 FCR Tendinosis

- Rare entity – 1994 Mayo report of ten cases
- Average age 44 years of age, symptomatic an average of 16 months
- Causes include strenuous work, scaphoid fracture or cyst, TMCJ or STT or pantrapezial arthrosis
- Radial–sided wrist pain aggravated by volar flexion and radial deviation
- Diagnosis confirmed by lidocaine injection into FCR sheath

19 FCR Anatomy

- Narrow fibro–osseous tunnel
- Inserts on index and middle metacarpal bases and trapezial crest
- Close proximity to carpal canal, superficial arch and PCB median nerve

20 Treatment of FCR Tendinosis

- Release of FCR sheath, debridement
- 4/10 patients had attritional FCR wear
- Results were 5/10 residual pain, 7/10 tenderness, one had + Tinel's over PCB median nerve
- Risk–reward analysis is not favorable
- If FCU intact, then simple FCR tenotomy is suggested, since FCR is expendable (often used as autograft)

21 Trigger Finger: Prognostic Indicators of Recurrence After Injection Rozenal et al., JBJS 2008; 90A: 1665–72

- 124 trigger digits injected w/triamcinolone

- 56% recurrence rate one year post-injection
 - Young age, IDDM, multiple digits, other tendinopathies – predictive of recurrence
 - Duration, severity symptoms – not predictive
 - Prognostic Level I study (Harvard Univ)
- 22 **Effect of Corticosteroid Injection for Trigger Finger on Blood Glucose Level in Diabetic Patients**
Wang et al., JHS 2006; 31A: 979–81
- 18 diabetic patients received methylprednisolone injection for single trigger digit
 - Blood glucose measured for 5 days post-injection
 - Mean increase in blood glucose was 73% on day 1, 26% on day 5
 - 7 of 16 patients required surgery 1 year later
 - Steroid injection in diabetics causes hyperglycemia
- 23 **Corticosteroid Injection in Diabetic Patients with Trigger Finger**
Baumgarten et al., JBSJ 2007; 89A: 2604–11
- Prospective, randomized, controlled, blinded
 - 30 diabetic patients, 29 non-diabetic patients
 - In diabetics, injection did not relieve symptoms or decrease surgery rate vs placebo
 - Diabetics w/systemic pathology needed surgery
 - Therapeutic Level I study (Washington Univ)
- 24 **Trigger digit with flexion contracture of PIPJ**
- Quinnell Grade 4 trigger digit lesion
 - Attritional wear of FDS
 - Sheath stenosis at both A1 & A2 pulleys
 - Proper treatment is to resect ulnar slip FDS or entire FDS
 - Remove at A3 window
- 25 **Calcific Peritendinitis**
- Any tendon, but often FCU
 - Acute pain, swelling near tendon
 - Rapid onset, like infection
 - Calcium deposition near the tendon, not intratendinous
 - Treat with immobilization, NSAIDs, injection
- 26 **Flexor Pulley System: Anatomy, Injury and Treatment**
Zafonte et al., JHS 2014; 39A: 2525–32
- Thumb flexor sheath – some patients may have Av pulley distal to A1
 - Finger flexor sheath – may vent A2 and/or A4
 - 30–50% rock climbers will injure flexor pulley in the crimp position (PIPJ flexed, DIPJ extended)
 - Grade IV injuries (multiple pulley ruptures) should be reconstructed with circumferential free tendon graft
 - Avoid multiple flexor tendon sheath injections
- 27 **Post-Injection Flare Reaction**
- Increase in pain, inflammation within hours of injection
 - Occurs in 25% of patients injected
 - All patients should be advised of this possibility at time of injection
 - Inflammation due to steroid ester crystals
 - Symptoms resolve in 48 hours

- NSAIDs and ice are recommended

28 Injection Complications

- Post-injection flare reaction
- Subcutaneous atrophy
- Skin hypopigmentation
- Tendon or pulley rupture
- Hyperglycemia in diabetics
- Articular cartilage damage