Case #1

History

- 69 year old man
- ESRD, dialysis, DM II
- Fell in his backyard onto his bilateral wrists
- Bilateral distal radius ORIF at another hospital
- Presentation: pain and deformity 6 mos later
- Left side healed uneventfully
- Right side resulted in nonunion
- Hardware removal

Physical Exam

- Good finger motion
- Supple fracture motion, with moderate pain
- No sign of carpal tunnel syndrome
- Normal vascular exam
- No tendonitis (trigger fingers, de quervain's etc)
Wrist Deformity

Initial Films

Initial Closed Treatment

ORIF: Hardware Failure
Distal Radius Nonunion

• Traditionally, nonunion has been a rare complication of treatment of distal radius fractures
• Reported incidence 0.02% in reviews of thousands of cases, historically
• Recent trend toward open treatment may be increasing the incidence
• Most literature pre-dates modern methods of internal fixation

CT Scan

Plan

- To repeat the same thing and expect a different result would be unwise
- Would need to address ulnar positivity
- Articular surface is spared, so revision open reduction and internal fixation might be rewarding, with ICBG
- Ulnar shortening performed at the same time as revision ORIF

Initial Post-Op

2 year follow up

- Functional
- Painless
- Stable wrist
- Flex/Ext Arc 120deg
- Pron 75 deg
- Sup 70 deg
- DRUJ stable
- Right side has better
- Motion than left
Case #2

Case Presentation
- 37-year-old woman s/p R elbow fracture 24 years ago.
- Status-post excision of radial head
  - Subsequent arthrosis of radial head
  - Proximal migration of the radius
    - DRUJ dysfunction and ulnocarpal abutment
    - Loss of supination

- C/O Chronic right elbow pain.
- C/O Chronic wrist pain as well
- Limited ROM:
  - Good pronation to 90 degrees
  - But, supination approximately 60 degrees.
- Tenderness over the ulnar side of the wrist when the wrist was in full extension and ulnar deviation.
Diagnosis?: Essex-Lopresti

Treatment?:
- Ulna Shortening
- Radial Lengthening
- One Bone Forearm
- Other
Proximal Migration

- The principal deformity after proximal translation is at the wrist:
  - The distal ulna sits dorsal and distal to the carpus, blocking supination and extension of the wrist.

  *“the optimal solution to acute forearm dissociation would be internal fixation of the radial head.”*
Final Result

- Elbow room: 0/140°
- Pronation: 90°
- Supination: 90°
- Pain is significantly diminished

Case #3

G.B.

- 81 yo male, elite golfer
- Severe OA on Right Elbow
- Has a leg prosthesis
- Golfs 18 holes daily
**Choices**

1. TEA
2. Fascial Interposition Arthroplasty
3. Fusion
4. ???

**OR: 2/11/2009**

- Scope R elbow
- Complete loss of articular cartilage
- Open Kocher approach, radial head excision
- Push-pull test negative for radius migration
- Annular ligament reconstruction
F/U: 11/10/2010
(1 ½ yr P/O)

- Recovery took 6 months
- Plays 18 holes every other day
- No swelling
Case #4

V.B. - DOB: 1962

- College basketball player – Forward
- Right wrist scaphoid injury 30 years ago
- Now a 51 y.o. recreational athlete, still 6’8” and FIT
- He can’t shoot the basketball without pain
- He is having increasing trouble as an adult…can’t shoot the basketball anymore

FU: 1/11/12
(3 yrs P/O)
Diagnosis?: SNAC Wrist

Treatment?:
- Wrist Fusion
- Scaphoid Excision/Four Corner Fusion
- Anything more conservative?

V.B. OR 9/14/2009
- Arthroscopic synovectomy, TFCC debridement
- Proximal row radiolunate and radioscapoid joints preserved
- Scaphoid partial excision distal radial portion (gross degeneration)
- Radial styloideectomy
- Scapholunate ligament degeneration noted
- Chronic scaphoid nonunion pseudoarthrosis noted

Post-op 9.23.09

V.B. Follow-up 5 ½ yrs
V.B. Follow-up 5 ½ yrs

- No symptoms…I saw him when he brought his son in
- Playing basketball, doing push ups, no pain
- ROM is good 80% of normal
- Fluoroscans did not show progression of disease

Case #5

C.G.

- 32 yo male, R hand dominant.
- R chronic scaphoid non-union.
- OR #1: Volar approach + bone graft in distant past,
- OR #2: 12/16/2009 – ORIF dorsal approach screw.
- OR #3: 5/17/2010 – Revision with screw removal + Bone graft substitute
OV: 5/6/2010
Post ORIF OR #2 – screw backed out

OV: 5/17/2010
More Deformity!

OV: 10/18/2010
Post OR #3

Judgement Call

- Screw
- Screw plus bone graft
- Vascularized bone graft +/- fixation
- Salvage procedure

S/P 2 operations with conventional fixations with bone substitutes.

?Now what should be done?
Vascular Anatomy of the dorsal distal radius

A. Shin & A. Bishop; JAAOS 2002

The arc of reach of various distal radius pedicled bone grafts

1,2 ICSRA  Fourth ECA

A. Shin & A. Bishop; JAAOS 2002

Vascularized bone graft mobilization and insertion into scaphoid nonunion

A. Shin & A. Bishop; JAAOS 2002

A. Vascularized bone graft donor site. 1,2 ICSRA is identified
B. Dashed lines = incisions of the first and second extensor compartments
PRE-OP #4: 10/18/2010

OR #4 (10/18/2010)

Post-Op OR #4: 2/1/11
1, 2, IMA Vascularized Bone Graft

Scaphoid Fx - Advancements

- Better implants – cannulated compression headless screws
- Better surgical techniques – dorsal and volar approaches
- Local vascularized pedicled bone grafts for malunions and nonunions
- Faster rehab, reduced immobilization, better results
Case #6

O.L. – OR #1 2.3.10

- Severe rheumatoid arthritis of R thumb
- Complete synovectomy of T thumb IP
- Complete release of medial and ulnar collateral ligaments
- Osteectomy
- Arthrodesis

O.L. – 2.3.10

3.17.10
O.L. – OR #2 6.29.11

- Rheumatoid arthritis/CREST syndrome w/ MCP jt arthritis, deformity and contracture
- Tenolysis of flexor tendons x2
- Volar plate release MCP joint
- Collateral ligament release MCP joint
- Intrinsic release of 3rd finger
- MCP joint arthroplasty with implant

Pre-Op 2.69.11

Intra-Op 6.29.11
Post-op 2.12.13

- Right hand Rheumatoid arthritis and scleroderma with PIP 2nd and 3rd joint severe arthropathies status post prior reconstructive surgery
- 2nd PIP joint resection arthroplasty and implant arthroplasty
- 3rd PIP joint resection arthroplasty and implant arthroplasty
- Rebalancing of Boutonniere/swan neck deformity, 2nd and 3rd fingers
- Reconstruction radial collateral ligament, 2nd and 3rd finger with local tissue

O.L. – OR #3 2.22.13

Post-op 3.5.13

Post-op 4.9.13
Thank you!