Wrist Pain in a Postpartum CrossFitter
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Objectives
1. Case presentation
2. Background
3. Treatment options
4. Return to play
5. Future research

CC:
A 40 year old right-handed female physician with right wrist pain for 10 months

HPI:
- First noticed pain performing handstand front flips
- Worsened with CrossFit handstand pushups
- Intermittent, worse dorsally with wrist extension
- Ibuprofen, Tylenol & exercise modification
- One month later underwent plain radiography demonstrating ulnar deviation & shortening
- Discovered pregnancy and held workup

Case Presentation

4/1/14
HPI (con’t):
- One month postpartum presented with occasional right wrist swelling & ↓AROM in all planes
- Worse with lifting & twisting
- Only previous injury right radial head fx 1998

ROS:
- Denied numbness, tingling, fatigue, fever, night sweats, palpitations or rash

PMH: Factor V Leiden, homozygous
Meds: Lovenox
Allergies: NKA
FH: Brother with Greenfield filter
SH: Nonsmoker
PSH:
- C-section, July 2013
- ORIF for right femoral neck stress fx

Vitals: BP 102/60, RR 16, BMI 25
- General: Pleasant, cooperative, NAD
- Skin: No ecchymoses, erythema or rash
- CV: Radial & ulnar pulses 2/4
- Neuro: Sensation intact
- Musculoskeletal
  - Right wrist: Fullness dorsally w/o gross swelling or muscle wasting; ↓AROM; pain w/ all resisted motions; distal ulna hypermobile; mild dorsal radiocarpal TTP; nontender over 1st dorsal compartment, snuffbox, scaphoid or DRUJ; 4/5 grip strength & resisted supination; TFCC grind uncomfortable
  - Bilateral elbow, left hand & wrist exam wnl
Plain radiographs 11/12

Dorsal wrist impingement
Lunate subluxation or dislocation
Carpal stress fracture
Triangular fibrocartilage complex tear
Avascular necrosis
Ulnar impaction
Scapholunate or radiocarpal sprain
Flexor carpi radialis strain
Tenosynovitis

Differential Diagnosis

Case – Treatment

Cockup wrist splint at night & PRN
Repetitive wrist hyperextension & loading
Taping & functional bracing
Home exercise program
Voltaren gel, Tylenol, ice, massage, elevation
Oral anti-inflammatory after Lovenox course
Follow up in 6wks

Phone conversations: failure of conservative management → patient underwent MRI

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Definition: Lunatomalacia described by radiologist Robert Kienböck in 1910

Etiology: unknown

Risk fx: Age 15–40; male

Mechanical:
- 78% ulnar variant

Trauma: repetitive

Vascular:
- Proximal pole
- Palmar > dorsal
- Hypercoagulable?

In Pregnancy:
- ↑ R to activated protein C (2nd & 3rd)
- ↓ Activity protein S
- ↑ fibrinogen, factor II, VII, VIII & X
- ↑ level & activity TAFI, PAI-1 & PAI-2

In Factor V Leiden (“APC R”):
- ↓ anticoagulant role V
- ↑ procoagulant role Va
Kienböck’s Disease

- Clinical Presentation
  - Decreased ROM
  - Loss of grip strength
  - Swelling & dorsal wrist TTP
    (2° synovitis)

- Diagnosis
  - Avascular \( \Delta \)s on X-ray or MRI → fracture → collapse

Lichtman’s Classification

Case - Follow up

- S: Worsening dorsal central wrist & DRUJ pain w/ occasional swelling
- O: Exam
  - ↑TTP dorsally & pain w/ resisted AROM
  - ↓ROM overall
- A/P: Kienböck’s Disease predisposed by ulnar variant wrist &/or hypercoagulable state
  - 6wk short arm cast w/ bone stimulator applied
  - Referred to orthopedic hand surgeon – stage IIIA
Kienböck’s Disease – Treatment

- **Stages I-IIIA:**
  - Immobilization, NSAIDs
  - Joint-leveling (radial shortening > ulnar lengthening) for (−) ulnar variance v. radial wedge osteotomy if neutral
  - Intercarpal fusions
  - Distal radial core decompression
  - Capitate shortening
  - Vascularized bone grafts
- **Stage IIIB: prox. row carpectomy or STT fusion**
- **Stage IV disease:**
  - Proximal row carpectomy
  - Radial carpal arthrodesis
  - Silicon arthroplasty
Follow up

- Continued conservative management w/ bracing for comfort
- Avoidance of right wrist extension & loading
- Patient would like to delay surgical repair; however, may require proximal row carpectomy or wrist fusion in the future
- Currently active in triathlons, Spinning®, swimming & playing piano

Outlook/Future Research

- Bone marrow transfusion, ultrasound & external fixation
- Vascularized bone grafts
- Osteopathic techniques
- Balloon kyphoplasty
- Distraction osteogenesis for ulnar lengthening

Summary

- Kienböck’s disease is uncommon & clinically difficult to diagnose
- Multiple risk factors have been identified but pathogenesis often remains elusive
- Treatment depends on stage
- Significant morbidity can occur
- Current treatment options are lacking in proven efficacy & further research is needed
References


Credits

› Thank you to Lara Quinlan, MD for allowing me to present this case

Questions?