COMMON KNEE AND SHOULDER INJURIES IN THE YOUNG ATHLETE

IRVING RAPHAEL MD
Syracuse Orthopedic Specialists
Former S.U. Head Team Physician
May 19, 2017

Outline

• Meniscal Injuries
  – anatomy
  – Exam
  – Treatment
• ACL Injuries
  – Etiology
  – Physical Exam
  – Treatment
  – Prevention
• Overuse Injuries
Anatomy/Function

- Shock Absorber
- 2 “C” shaped structures
  - Medial (inside)
  - Lateral (outside)
- Very poor blood supply, limits healing potential
- Functions:
  - Load sharing
  - Distribute knee fluid
  - Secondary restraint for knee stability

TYPES OF TEARS

- Radial Tears
- Flap / Parrot Beak Tears
- Peripheral Longitudinal Tears
- Bucket Handle Tears
- Horizontal Cleavage Tears
- Complex Degenerative Tears
Diagnosis of Torn Meniscus

- History usually involves trauma
- Medial or lateral pain, worse with activity, better with rest
- Possible swelling
- Locking / catching
- Giving way
- Consider concomitant ACL injury if a “pop” is felt at the time of injury

Imaging and Evaluation

- Plain x-rays: little benefit for meniscal evaluation however help rule out OCD, loose body, fracture, or tumor.
- MRI: key imaging procedure
  - Sensitivity and specificity rise with patient’s age
  - Can identify other injuries in the joint
- Arthroscopy: provides direct visualization and treatment
MRI – TORN MENISCUS

Treatment Options

Repair

• Indications:
  – Peripheral tears of outer 3-5mm (red-red)
  – No complex or degenerative component
• Most meniscal tears in young patients are peripheral and longitudinal → opportunity for repair, especially with ACL tears
• Even perfect repair can still fail!!!
Treatment Options

Partial Meniscectomy

- Most tears
- Long-term results unknown, however, studies suggest better than total meniscectomy
- Better than a painful “broken” meniscus
- Better to remove shock absorber than to have a broken shock absorber

ACL INJURY

- Prevalence: 1 per 3000 Americans
- History:
  - Noncontact injury
    » Changing direction, landing from jump
  - “Pop”
  - Hemarthrosis
  - May have difficulty bearing weight/continuing play

What is the ACL?

- ACL (Anterior cruciate ligament)
- When athletes “blow” out their knee, this is the most common ligament injured
- Not normally stressed during day to day activities
- Crucial for cutting activities performed during many sports.
CLINICAL SIGNS & SYMPTOMS

• Physical Exam:
  – Loss of motion
    » Effusion
    » Pain
    » Muscle spasm
    » ACL stump impingement
    » Meniscal pathology
IMAGING

- X-ray:
  - Not as helpful
  - Avulsion fx’s

- MRI:
  - Overall accuracy 95%
  - Increased signal in ACL
  - Irregular contour, loss of tautness
  - 60% have accompanying “bone bruise”
  - Assess for other lesions
    - Meniscal, Ligamentous, Chondral
TREATMENT OPTIONS

• Operative vs. Nonoperative intervention
• Consider:
  • Presence or absence of other lesions
  • Patient age and activity level
  • Degree of instability, functional disability
  • Potential risk of future meniscal damage
  • Type of sports in which patient wishes to participate
  • Ability to comply with operative rehabilitation

Why do we fix?

• Instability
• Need to get back to high level sport/activity
• Protect the meniscus (shock absorber) and articular cartilage (smooth bone coating) from future damage

Who’s At Risk?

• Soccer
• Basketball
• Football
• Lacrosse
• Volleyball
• Skiers
• Cheerleaders
Female ACL Injury Rate

- NCAA Soccer: 2.4 X higher
- Basketball: 4-5 X higher
- Volleyball: 4 X higher

THEORIES

-- ANATOMIC DIFFERENCES
   Pelvis Width, Q Angle, Size of ACL
   Size of Intercondylar Notch
-- HORMONAL DIFFERENCES
   Estrogen + Progesterone Receptors
-- BIOMECHANICAL DIFFERENCES
   Static and Dynamic Stabilizers

Consequences of ACL Injury

- Loss of season
- Academic performance
- Scholarship funding
- Mental health
- Arthritis
ACL INJURY PREVENTION PROGRAM

- WARM UP
- STRETCHING
- STRENGTHENING
- PLYOMETRICS
- AGILITY DRILLS
- COOL DOWN

Shoulder Anatomy

- Acromion is the top part of your shoulder.
- Rotator cuff muscles and tendons hold the acromion.
- The humeral head is the rounded top of your arm bone.
- The capsule is a pocket that provides mobility.
- The humerus is a bone that attaches to the shoulder.
- The clavicle is a bone that attaches to the body.
SHOULDER INJURIES

• SHOULDER SEPARATION
• SHOULDER DISLOCATION
• LABRAL TEARS
• FRACTURE CLAVICLE
• BURSITIS – TENDONITIS

SHOULDER SEPARATION

• FALL ON SHOULDER
• INJURY TO A-C, C-C LIGAMENTS
• PAIN, SWELLING AT A-C JOINT
• PROMINENCE TIP OF CLAVICLE?
  GRADING I - III

SHOULDER SEPARATION

[Image: Acromioclavicular Separation]
SHOULDER SEPARATION

SHOULDER SEPARATION TREATMENT

• REST -- SLING
• ICE, ?? STEROID INJECTION
• MEDICATION -- NSAID, ANALGESIC -- ORAL AND SKIN PATCH
• PHYSICAL THERAPY
• RARELY REQUIRES SURGERY -- LIGAMENT REPAIR/RECONSTRUCT, RESECT CLAVICLE
RETURN TO PLAY

• PAIN CONTROLLED, ROM NORMAL
• MEDICATION – ANALGESIC, NSAID
• PROTECT A-C JOINT – SHELL, PAD
• ?? INJECTION – STEROID, ANESTHETIC
• PHYSICAL THERAPY

SHOULDER DISLOCATION

• HUMERAL HEAD OUT OF GLENOID
• TRAUMA VS LAXITY/INSTABILITY
• SEVERE PAIN, IMMOBILITY
• DEFORMITY OF SHOULDER

Fig 1d

HUMERAL HEAD
GLENOID - SOCKET
SHOULDER DISLOCATION TREATMENT

- EARLY REDUCTION (ON SITE OR E.R.)
- CHECK FOR NERVE INJURY
- IMAGING – XRAY, MRI – OTHER LESION
- IMMOBILIZE, MEDICATION, P.T.
- RECURRENCE? SURGERY?
- ? LABRAL TEAR
RETURN TO PLAY

- STABILITY, STRENGTH, MOTION
- SPORT AND POSITION
- PROTECTIVE DEVICE, (STRAP – HARNESS) NON-THROWING/OVERHEAD ATHLETE
- CONTINUED THERAPY
- ADVISE OF RISK OF RECURRENCE AND SURGERY

LABRAL TEARS

Shoulder Anatomy
LABRAL TEARS

- PAIN - OVERHEAD ACTIVITY
- OCCASIONAL NIGHT PAIN
- FEELING OF GIVING OUT
- CATCHING, POPPING, GRINDING
- LOSS OF MOTION
- DECREASE IN STRENGTH

LABRAL TEARS

- PAIN - OVERHEAD ACTIVITY
- OCCASIONAL NIGHT PAIN
- FEELING OF GIVING OUT
- CATCHING, POPPING, GRINDING
- LOSS OF MOTION
- DECREASE IN STRENGTH

LABRAL TEARS

- IMAGING – MRI
  - ARTHROGRAM
- PHYSICAL THERAPY
- ARTHROSCOPIC REPAIR
- 4-6 MONTHS RECOVERY / REHAB
Thank You

Questions?

CLAVICLE FRACTURE
CLAVICLE FRACTURE

- FALL ON SIDE OF SHOULDER, ARM
- PAIN, PALPABLE DEFORMITY, CREPITUS
- LOCAL SWELLING, BLEEDING
- X-RAY, R/O OTHER INJURY

CLAVICLE FRACTURE TREATMENT

- IMMOBILIZE (SLING OR FIGURE-OF-8 STRAP), UPPER BACK ROLL?
- MEDICATION – VERY PAINFUL
- MONTHS TO HEAL, FOLLOW X-RAY
- USUALLY SEASON ENDING
- NON-UNION ?? SURGERY ??

BURSITIS -- TENDONITIS

- OVERUSE, REPETITIVE MOTION
- SUBACROMIAL BURSA, ROTATOR CUFF
- PAIN (RADIATION ?), SWELLING, INFLAMMATION, LIMITED USE OF ARM
- CALCIFICATION ?
- Rx- REST, ICE-HEAT, MEDICATION, STEROID INJECTION, THERAPY
SUBACROMIAL INJECTION