

SLAP LESIONS

Management Of Glenoid Labrum Injuries

INTRODUCTION

- ◆ First described by Andrews AJSM '85 Throwers 60%
- ◆ Normal Variants
 - ❖ Sublabral Foramen
 - ❖ Buford Complex
 - ❖ Meniscoid
- ◆ Snyder *Arth.* 1990 termed SLAP at 3.9% incidence

INTRODUCTION

- ◆ TO UNDERSTAND THE APPROPRIATE REHABILITATION, THE ANATOMY INCLUDING THE BLOOD SUPPLY AND THE BIOMECHANICS AND PATHOMECHANICS MUST BE CONSIDERED

INTRODUCTION

- ◆ IT'S IMPORTANT THAT THE STRENGTHENING AND STRETCHING AS WELL AS THE RETURN TO ACTIVITIES PROGRAM DOES NOT DISRUPT THE HEALING PROCESS NOR THE BIOMECHANICS OF THE JOINT

ANATOMY

- ◆ Histology
 - ❖ Fibrous with fibrocartilaginous transitional zone into the glenoid
- ◆ VASCULARITY
 - ❖ LESS IN SUPERIOR AND ANTERIOR SUPERIOR PORTIONS
 - ❖ LIMITED TO PERIPHERAL AREA
 - ❖ DIFFICULTY FOR HEALING IN AVASCULAR AREA

ANATOMY / BIOMECHANICS

- ◆ LONG HEAD OF BICEPS ATTACHES AT THE SUPERIOR GLENOIDAL TUBERCLE WITH THE LABRUM
- ◆ FIBROCARILAGINOUS TISSUE
- ◆ IF THERE IS A TORN SUPERIOR LABRUM, THE ANTERIOR INFERIOR LABRUM WILL TAKE MORE STRESS
- ◆ ARM POSITION AND STRESS

Pathology

- ◆ Hemorrhage/
granulation
- ◆ Labrum pulls away from anchor
- ◆ Pull of bicep 3-4 mm separation-Synder
- ◆ Positive "Peel back" - Burkhart '98

Etiology

Injury Classification

- ◆ TYPE I
 - ❖ FRAYED AND DEGENERATED

I

njury Classification

- ◆ TYPE II
 - ❖ LABRUM AND BICEPS TENDON IS AVULSED FROM LABRUM

Injury Classification

- ◆ TYPE III
 - ❖ VERTICAL TEAR IN CENTRAL AREA

Injury Classification

- ◆ TYPE IV
 - ❖ VERTICAL TEAR INTO BICEPS

Injury Classification

- ◆ TYPE V
 - ❖ SLAP extends to anterior inferior glenoid
 - ❖ Bankart/stabilize biceps anchor
- ◆ TYPE VI
 - ❖ SLAP with a unstable anterior flap
 - ❖ Debride flap/stabilize biceps anchor
- ◆ TYPE VII
 - ❖ SLAP extends into MGHL
 - ❖ Repair MGHL/stabilize biceps anchor

◆ Maffet, Gartsman, Moseley, *AJSM* '95

Injury Classification

- ◆ Associated Pathology
 - ❖ Partial Supraspinatus tear-45%
 - ❖ Partial biceps tear-20%
 - ❖ Ganglion cysts spinoglenoid>suprascapular notch
 - ❖ Subacromial bursitis
 - ❖ AC arthrosis

Diagnosis

- ❖ Difficult
- ❖ Mimics other pathology
- ❖ History
 - ◆ Vague/non-specific
 - ◆ Pain-overhead activities but not at rest
 - ◆ Catching, locking, popping, or grinding
 - ◆ Reduction in speed or intensity of activity

Diagnosis: No one specific test!

- ◆ Impingement sign
- ◆ Impingement test
- ◆ Hawkins sign
- ◆ Empty Can
- ◆ Drop Arm
- ◆ Abduction sign
- ◆ Jerk test
- ◆ Posterior Stress sign
- ◆ Yergason's test
- ◆ Feagin's test
- ◆ Biceps Load test I&II
- ◆ Jahnke test
- ◆ Ludington's test
- ◆ DeAquin's test
- ◆ Lippmann's test
- ◆ Heuter's sign
- ◆ Norwood stress test
- ◆ Anterior Release test
- ◆ Apprehension test

- ◆ Fulcrum test
- ◆ Fulcrum maneuver
- ◆ Crank test
- ◆ Anterior & Posterior drawer test
- ◆ Relocation test
- ◆ Apprehension Suppression test
- ◆ Posterior Impingement sign
- ◆ Compression-rotation test
- ◆ Active compression test
- ◆ Clunk test
- ◆ Biceps Tension test/Speeds test
- ◆ Napoleon sign
- ◆ Whipple test
- ◆ Anterior slide test/Kibler's test
- ◆ Fukuda test
- ◆ SLAP test of Field
- ◆ Protzman test
- ◆ Sulcus sign

Diagnosis

- ◆ Imaging
 - ❖ Plain films: Look for other problems
 - ❖ CT
 - ❖ MRI
 - ❖ MR arthrography: 89% accurate
 - ◆ Oblique coronal

- ◆ Oblique coronal
- ◆ Axial
- ❖ Arthroscopy

SURGICAL CONSIDERATIONS

- ◆ TYPE I
 - ❖ DEBRIDMENT
 - ❖ REHAB: NO RESTRICTION
- ◆ TYPE II
 - ❖ TORN LABRUM / BICEPS ANCHOR
 - ❖ DEBRIDE AND ABRASE GLENOID
 - ❖ REHAB
 - ◆ SLING / INTERNAL ROTATION
 - ◆ 3 WEEKS
 - ◆ LIMITED EARLY MOTION

SURGICAL CONSIDERATIONS

- ◆ TYPE II
 - ❖ FIXATION
 - ◆ DEBRID AND ABRASE
 - ◆ MITEK SUTURE/REVO SCREW
 - ◆ 2 OR MORE SUTURES IF A LARGE TEAR
 - ❖ REHAB
 - ◆ 1 WEEK SLING
 - ◆ 2-5 WEEKS AVOID EXTERNAL ROTATION AND HORIZONTAL ABDUCTION
 - ◆ ATHLETICS AT 12 TO 14 WEEKS

SURGICAL CONSIDERATIONS

- ◆ TYPE III
 - ❖ OCCURS WITH MENISCOID TYPE
 - ❖ MAY HAVE AN ANTERIOR AND POSTERIOR SPLIT
 - ❖ DEBRIDE BUCKET HANDLE
 - ❖ REHAB
 - ◆ NO RESTRICTIONS

SURGICAL CONSIDERATIONS

◆ TYPE IV

- ❖ AGE
- ❖ FUNCTIONAL DEMANDS
- ❖ BICEPS PATHOLOGY
 - ◆ LESS THAN 50%--DEBRIDMENT
 - ◆ MORE THAN 50%--BICEPS TENODESIS
 - ◆ MORE THAN 50%--RE-ANCHOR BICEPS
 - ◆ MORE THAN 50%--RE-ATTACH LABRUM

EXERCISE SELECTION

◆ CONSIDERATIONS

- ❖ "PLANE OF SCAPULA"
- ❖ WATCH LOAD ON BICEPS
- ❖ WATCH EXTERNAL ROTATION STRESS
- ❖ MUST BUILD STABILITY

EXERCISE SELECTION

◆ CONSIDERATIONS

- ❖ HIGH REPETITIONS
- ❖ LOW WEIGHTS
- ❖ 2 TIMES PER DAY
- ❖ EMPHASIS ON
 - ◆ ROTATOR CUFF
 - ◆ SCAPULAR STABILIZATION
 - ◆ RETURN TO ACTIVITY

EXERCISE SELECTION

◆ SCAPULAR EXERCISES

- ❖ PUSHUP WITH A PLUS
- ❖ SITTING DIP
- ❖ BENT ROW
- ❖ SCAPTION

◆ SHOULDER SHRUGS WITH SCAPULAR ADDUCTION

EXERCISE SELECTION

- ◆ ROTATOR CUFF
 - ❖ PRONE HORIZONTAL ABDUCTION
 - ❖ PRONE 90 / 90
- ◆ TRICEPS
- ◆ BICEPS
 - ❖ USE CARE
- ◆ ACCELERATORS

EXERCISE SELECTION

- ◆ MODE
 - ❖ ISOMETRICS
 - ❖ ISOTONICS
 - ◆ TUBING
 - ❖ ISOKINETICS

EXERCISE SELECTION

- ◆ STRETCHING
 - ❖ PROTECT ANTERIOR CAPSULE
 - ❖ EXTERNAL ROTATION X'S 3
 - ❖ ANTERIOR CHEST
 - ❖ INTERNAL ROTATION

SUGGESTED PROTOCOL FOR DEBRIDMENT

- ◆ POD 1
 - ❖ AGGRESSIVE ROM
 - ❖ SHOULDER SHRUGS
 - ❖ SCAPULA ROUTINE

- ❖ ROTATOR CUFF ROUTINE
- ❖ PROPRIOCEPTION
- ❖ STABILIZATION
- ❖ PROGRESS PRE AS TOLERATED
- ❖ ISOKINETICS AS TOLERATED

SUGGESTED PROTOCOL FOR DEBRIDMENT

- ◆ FREE WEIGHTS / WEIGHT MACHINES
 - ❖ ONCE 4/5 MMT REACHED
 - ❖ PAIN FREE ROM / IMPINGEMENT TEST
- ◆ RETURN TO THROW (2 WEEKS)
 - ❖ 5/5 MMT
 - ❖ PAIN FREE / PROPRIOCEPTION
 - ❖ SUCCESSFUL RETURN TO THROWING PROGRAM

SUGGESTED PROTOCOL FOR REATTACHMENT

- ◆ POD 1
 - ❖ SLING
 - ❖ ELBOW, WRIST , HAND AROM
 - ❖ SCAPULAR ROUTINE
 - ❖ ISOMETRIC PROGRAM FOR ALL BUT BICEPS

SUGGESTED PROTOCOL FOR REATTACHMENT

- ◆ POD 7
 - ❖ D/C SLING. MAY USE ARE IN FRONT OF BODY. AVOID STRESSING BICEPS
 - ❖ ROM: ACTIVE ASSIST
 - ◆ AVOID: ER, EXT, HOR ABD

- ❖ STRENGTH: PLANE OF SCAPULA
 - ◆ CONTINUE SCAPULAR ROUTINE
 - ◆ LIFT AGAINST GRAVITY FOR ROT. CUFF
 - ◆ LIMITED ISOKINETICS

SUGGESTED PROTOCOL FOR REATTACHMENT

- ◆ POW 5-6
 - ❖ FULL ROM
 - ❖ CONTINUE STRENGTHENING PROGRAM INTO RESTRICTED ROM
 - ❖ PROGRESS TO FREE WEIGHTS AND WEIGHT MACHINES
 - ◆ PAIN FREE/NEG IMPINGEMENT
 - ◆ 4/5 MMT

SUGGESTED PROTOCOL FOR REATTACHMENT

- ◆ POM 3
 - ❖ CONTINUE STRENGTHENING, FLEXIBILITY, PROPRIOCEPTION
 - ❖ RETURN TO THROW
 - ◆ 5/5 MMT
 - ◆ NORMAL PROPRIOCEPTION
 - ◆ SUCCESSFUL RETURN TO THROWING PROGRAM
- ◆ POM 4
 - ❖ FULL SPORTS

Results

- ◆ Unstable SLAP
 - ❖ Debridement
 - ◆ 2 yr f/u 45% still in activity, 63% reduced pain
 - ◆ 1/10 returned , 30% mild, 70% moderate pain
 - ❖ Repair
 - ◆ Stapes

- ◆ Sutures
- ◆ Screws
- ◆ Bioabsorbable tacks
- ◆ Suture anchors
- ◆ Open