



 THE SHOULDER CLINIC OF SOUTH FLORIDA

Replace worn out joints



 THE SHOULDER CLINIC OF SOUTH FLORIDA

Remove tumors



 THE SHOULDER CLINIC OF SOUTH FLORIDA

What we cannot do

We cannot ...

“Cut out pain”

However, we can treat it ...

- If it has a mechanical etiology



Types of shoulder problems

Treatable

- Underlying condition is diagnosable
- Dependable treatment is available

Untreatable

Undiagnosable



Types of shoulder problems

Treatable

- Underlying condition is diagnosable
- Dependable treatment is available

Untreatable

- Underlying condition is diagnosable
- Dependable treatment is not available

Undiagnosable



Types of shoulder problems

Treatable

- Underlying condition is diagnosable
- Dependable treatment is available

Untreatable

- Underlying condition is diagnosable
- Dependable treatment is not available

Undiagnosable

- Shoulder complaints are not diagnosable
- Risk involved with diagnostic testing

 **Types of shoulder problems**

Treatable

- Full thickness rotator cuff tear
- Traumatic anterior glenohumeral instability
- Shoulder arthritis
- Acromioclavicular separation
- Proximal humerus fracture

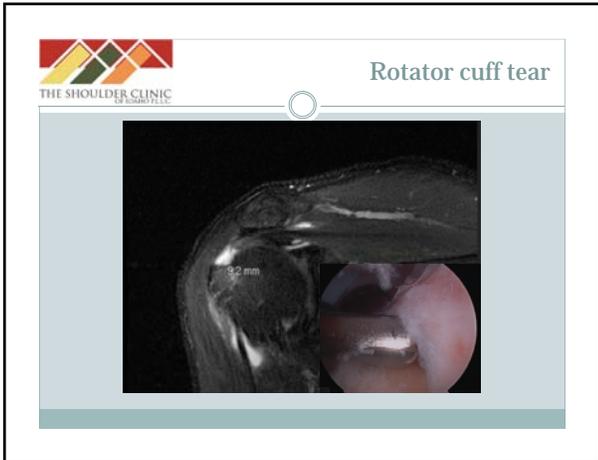
 **Acromioclavicular separation**



 **Acromioclavicular separation**









 **Types of shoulder problems**

Untreatable

- Brachial neuritis
- Habitual dislocations
- Mid-substance muscle tears
- Anterior sternoclavicular dislocations/subluxations
- Generalized ligamentous laxity

 **Multidirectional instability**



 **Types of shoulder problems**

Undiagnosable

- Pain as a result of dissatisfaction with one's job
- Disability conviction
- Misperception of medical findings (MRI reports)
- "Shoulder pain without identifiable pathology"



Orthopedic Axioms

Shoulder mechanics

If a problem can be understood in mechanical terms an effective surgical treatment can usually be identified

If a mechanical problem cannot be identified, surgical treatment will typically be unreliable



Normal shoulder mechanics

- Motion
- Strength
- Smoothness
- Stability



Abnormal shoulder mechanics

- Stiffness
- Weakness
- Roughness
- Instability



Shoulder pain

To be treatable a disorder must be defined in terms of disturbed mechanics

- Motion à stiffness
- Strength à weakness
- Smoothness à roughness
- Stability à instability



Shoulder pain

This can often be identified by a thorough and accurate patient history

- Motion à stiffness
- Strength à weakness
- Smoothness à roughness
- Stability à instability



Shoulder pain

This can often be identified by a thorough and accurate patient history

- Chief complaint
- Mechanism of injury
- Age



Shoulder pain: History

This can often be identified by a thorough and accurate patient history

“What bothers you about your shoulder”

“Show me what your shoulder does”

“Show me the activities that cause or provoke your symptoms”



Shoulder pain: History

Chief complaint

- | My shoulder hurts

Chief complaint

- | My shoulder is stiff
- | My shoulder is weak
- | My shoulder is rough, it makes noise, it pops
- | My shoulder is unstable



Shoulder pain: History

Mechanism of injury

- | Was there a mechanism
- | Describe and demonstrate the mechanism
- | Can you reproduce the problem now

THE SHOULDER CLINIC
OF SEASIDE, CA

Shoulder pain: History

NEW PATIENT
 DATE OF BIRTH: 10/10/10
 DATE OF VISIT: 10/10/10
 REASON FOR VISIT: Pain over left shoulder - started in 2010
 HISTORY: "Ran over by a crowd elk" - 9/10/10
 landed on @ shoulder - went to ER in 10/10/10

THE SHOULDER CLINIC
OF SEASIDE, CA

Shoulder pain: History

Age

Age at Presentation for Nine Major Diagnoses

| Diagnosis | Typical Age Range |
|--------------------------------|-------------------|
| Traumatic Instability | 20-40 |
| Traumatic Anterior Instability | 20-40 |
| Avascular Necrosis | 40-60 |
| Capsulohaghy Arthropathy | 40-60 |
| Incomplete Cuff Lesions | 40-60 |
| Rheumatoid Arthritis | 40-60 |
| Frozen Shoulder | 40-60 |
| Degenerative Joint Disease | 40-60 |
| Full Thickness Cuff Tears | 40-60 |

THE SHOULDER CLINIC
OF SEASIDE, CA

United States Navy

Bremerton, Washington
 Oak Harbor, Washington
 San Diego, California
 Landstuhl, Germany

United States Navy

Primary Casualty Support O.E.F.

Mentor 9 Ortho Surgeons




United States Navy

Active duty (Soldiers, Sailors, Airmen, Marines)

All Work Related Injuries ...

Health care: Most advance, expeditious, & ethical

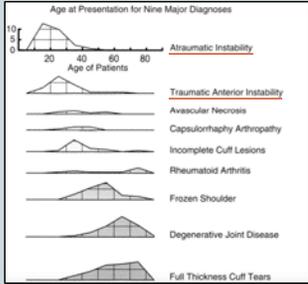
- Administrative care

Return to work or medical separation

- Active duty member & family

Shoulder Pain

Age



 **Shoulder instability**



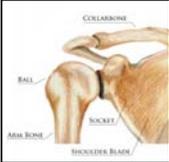
 **Shoulder instability**



 **Stability**

What is stability?

- | One of the four mechanical properties of the shoulder
- | The ability to keep the ball centered in the socket through a full range of motion



THE SHOULDER CLINIC
OF SUDBURY, ILL.

Basic shoulder anatomy

Ball and socket joint

- Bones
- Tendons
- Ligaments

THE SHOULDER CLINIC
OF SUDBURY, ILL.

Shoulder stability

What contributes to shoulder stability?

- Static structures:
 - The socket (glenoid)
 - The ligaments – Bankart lesion (AIGHL)
- Dynamic structures:
 - Rotatorcuff/deltoid
- Combination: Concavity-compression

THE SHOULDER CLINIC
OF SUDBURY, ILL.

Shoulder stability: The socket

What contributes to the socket (glenoid)?

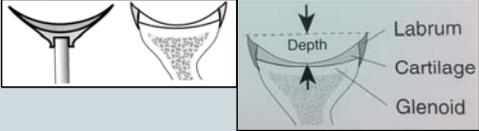
- Bone
- Cartilage
- Labrum

What is the labrum?

- Fibrocartilagenous ring
- Provides compliance

 **Shoulder stability: The socket**

What contributes to the socket (glenoid)?



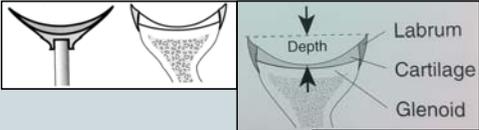
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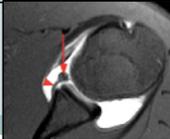
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What contributes to the socket (glenoid)?

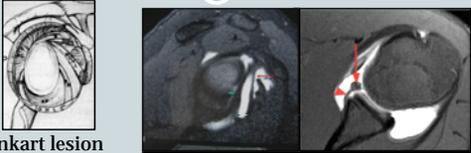


What is the labrum?

- Fibrocartilagenous ring
- Provides compliance



 **Shoulder stability: The socket**



Bankart lesion

- Arthur Sydney Bankart (1879 – 1951)
- The “Essential lesion” of shoulder instability – Anterior Band inferior glenohumeral ligament (ABIGHL)

THE SHOULDER CLINIC

Shoulder stability: Rotator cuff

Rotator cuff: Dynamic stability

- Supraspinatus
- Infraspinatus
- Subscapularis
- Teres minor

THE SHOULDER CLINIC

Shoulder stability: Combination

Concavity-compression?

- Combination of static and dynamic "stabilizers"
- Deeper the socket é stability
- Larger compressive force é stability

THE SHOULDER CLINIC

Shoulder instability

What is instability?

- An abnormal mechanical property of the shoulder
- It represents a pathological condition of the shoulder
 - Not the same as joint laxity
- When the shoulder cannot maintain the normal relationship of the humeral head (ball) and glenoid (socket) during normal use of the shoulder

 **Shoulder laxity**

What is laxity?

- It is a normal characteristic of shoulder function
- A physiological property of normal joints which allows the shoulder to attain its full range of functional positions
- Not the same as joint instability

Can instability and laxity co-exist?



 **Can instability & laxity co-exist?**



 **Shoulder instability**

Not all the same

- Anterior / posterior / multidirectional
- Traumatic / atraumatic / volitional



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OF SOUTH FLA.

Shoulder instability

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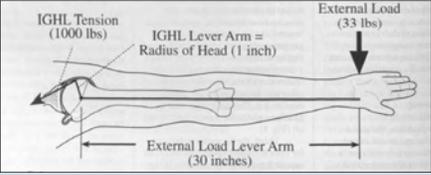


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OF SOUTH FLA.

Shoulder instability

How does traumatic instability occur?

$M = Fd$



THE SHOULDER CLINIC

Shoulder instability

2 000 N 1 000 N

1M 2M

$2,000 \times 1 = 1,000 \times 2$

IGHL Tension (1000 lbs)

IGHL Lever Arm = Radius of Head (1 inch)

External Load (33 lbs)

External Load Lever Arm (30 inches)

THE SHOULDER CLINIC

Shoulder instability: Examination

- If the diagnosis of instability is made by history then why is an examination and imaging needed?
 - Confirm diagnosis
 - Assess severity
 - Used to help guide treatment & prognosis
 - Drawer test
 - Load and shift test
 - Apprehension, relocation, surprise testing
 - Mid-range instability

THE SHOULDER CLINIC

Shoulder instability: Examination

What is the drawer test?

- A measure of glenohumeral translation
- An assessment of the ligaments and capsule

| Grade | Diagrammatic |
|---------------|--------------|
| 0 None | |
| 1 Mild | |
| 2 Moderate | |
| 3 Severe | |

 **Shoulder instability: Examination**

What is the load & shift test?

- An assessment of the glenoid concavity

 **Shoulder instability: Examination**

- Apprehension
- Relocation
- Surprise

 **Shoulder instability: Treatment**

Make the correct diagnosis

- Anterior vs posterior vs MDI
- Traumatic vs atraumatic

Non-operative treatment

Surgical treatment

- Open
- Arthroscopic

 **Shoulder instability: Treatment**



Normal

 **Shoulder instability: Treatment**

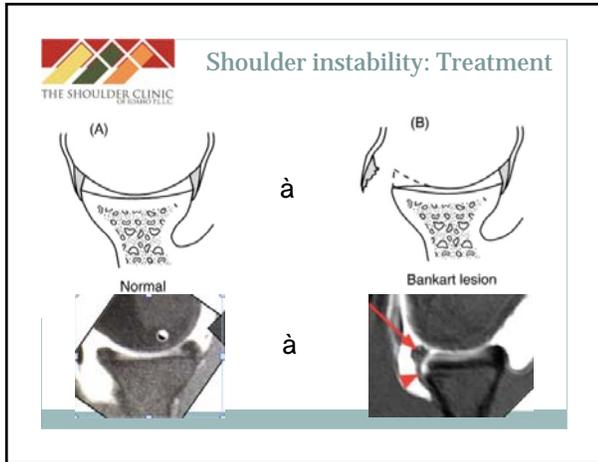


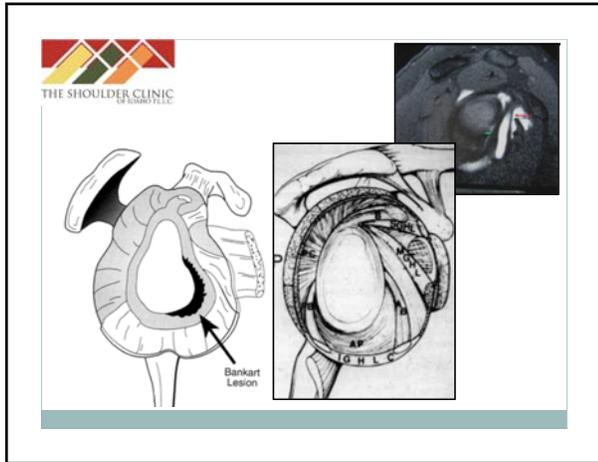
Bankart lesion

 **Shoulder instability: Treatment**



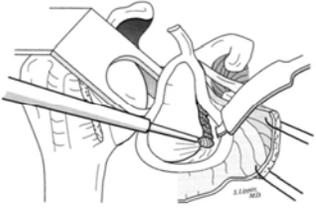
Anatomic repair





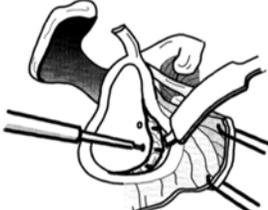


 **Shoulder instability: Treatment**



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 **Shoulder instability: Treatment**



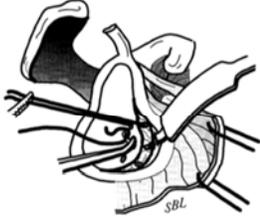
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 **Shoulder instability: Treatment**



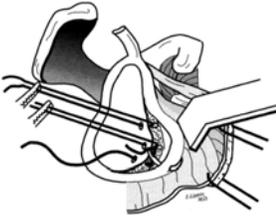
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 **Shoulder instability: Treatment**



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 **Shoulder instability: Treatment**



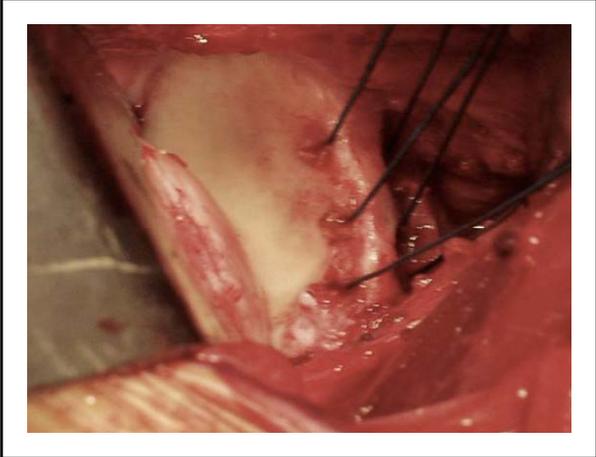
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 **Shoulder instability: Treatment**

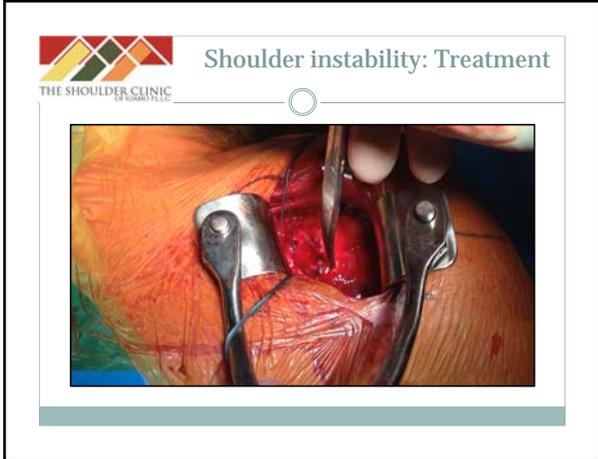


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 **Shoulder instability: Treatment**



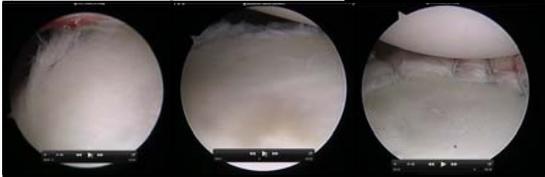




 **Shoulder instability: Treatment**

Can we be less invasive?

 **Shoulder arthroscopy**



A powerful tool – and minimally invasive!

 **Open vs. Arthroscopic**

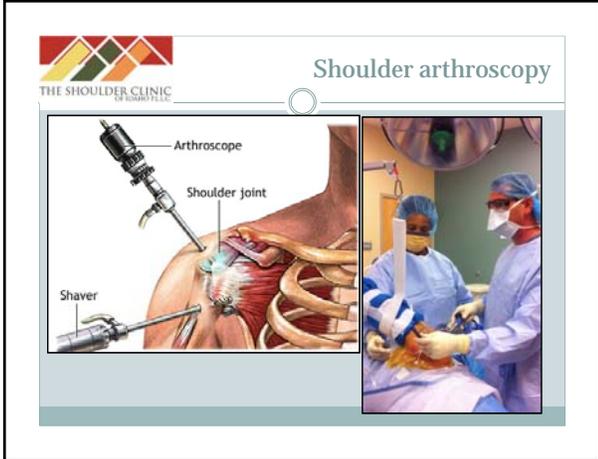
- Minimally invasive?
- Less painful?
- More technically advanced?
- Faster return to work or sport?
- Outcomes better?
- Cost?
- Time?
- Rehab?



 **Open vs. Arthroscopic**

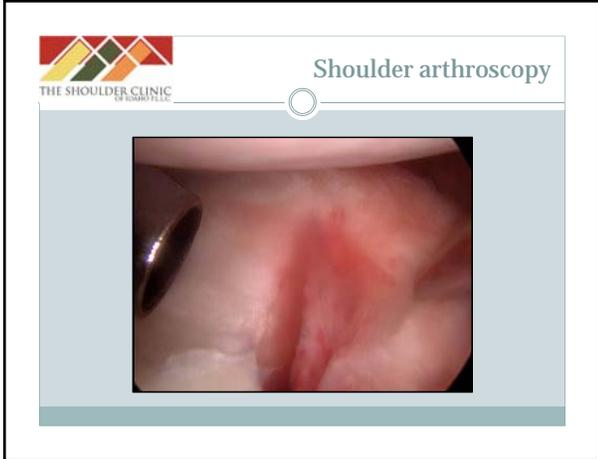
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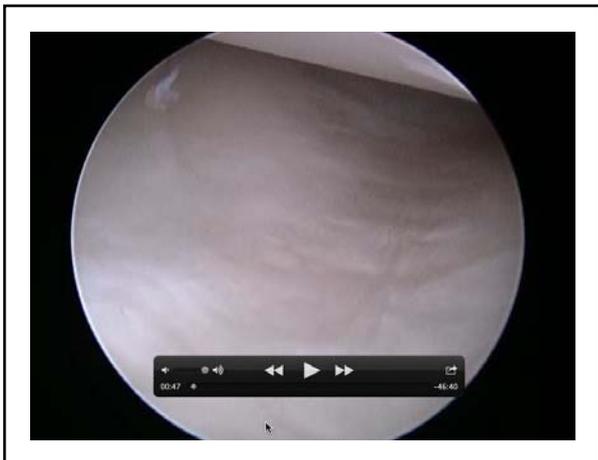


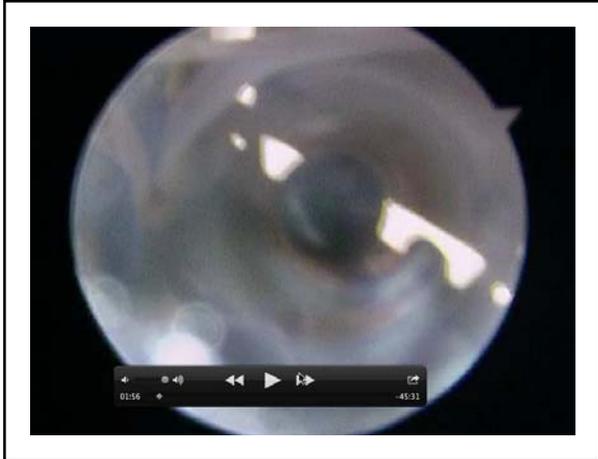












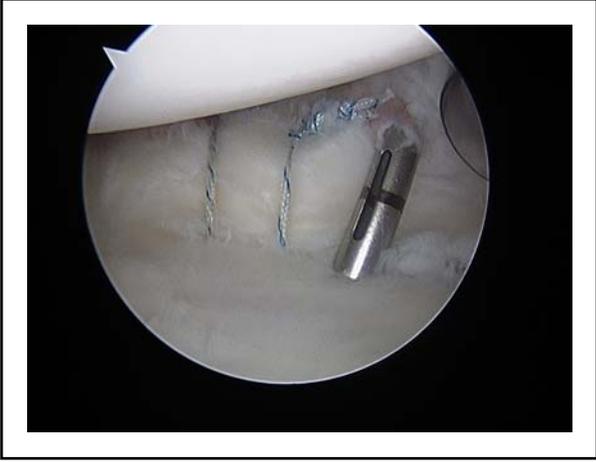


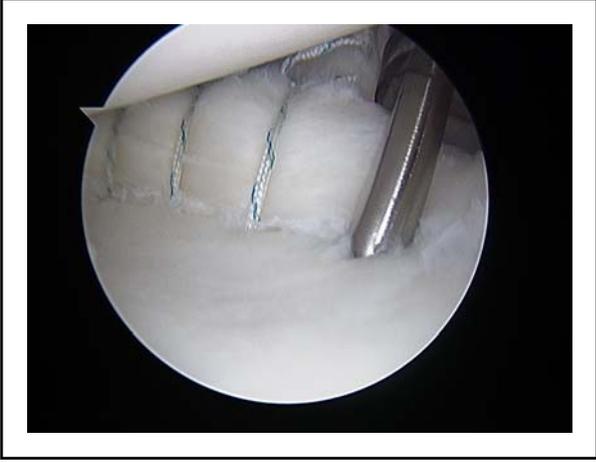


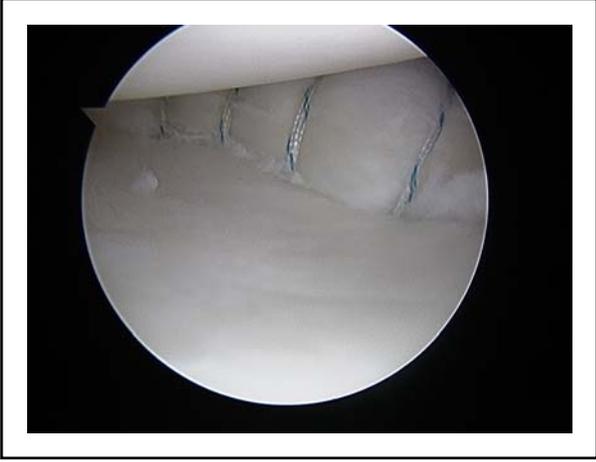






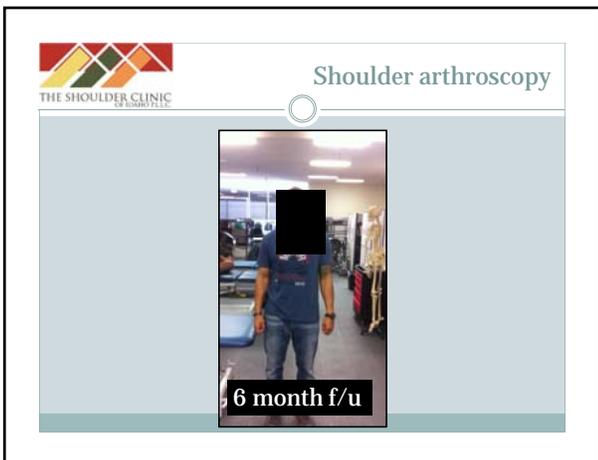












 **THE SHOULDER CLINIC**
OF SOUTH FLORIDA

It is not always that easy



 **THE SHOULDER CLINIC**
OF SOUTH FLORIDA

It is not always that easy



 **THE SHOULDER CLINIC**
OF SOUTH FLORIDA

It can be a challenging problem

- Combined labral lesions (180, 270, 360)
- Capsular injury (laxity, plastic def., HAGL)
- Chondral injuries
- Bone injuries (humerus and glenoid)
- Rotator cuff tears (>40 yrs, full and partial)
- Neurological injury
- Patient factors (expectations, work or sports, & co-morbid conditions)

TABLE IV Summary of Recent Published Literature on Results of Arthroscopic Bankart Repair and Capsular Shift with Use of Suture Anchors To Treat Recurrent Anterior Shoulder Instability*

| Author | Year | Sample Size | Duration of Follow-up (mo) | Recurrences | | Predictors of Recurrence |
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| | | | | No. | Rate (%) | |
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| Overall | | 1134 | — | 124 | 10.9 | |

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Ahmed et al. JBJS 2012;94:1308

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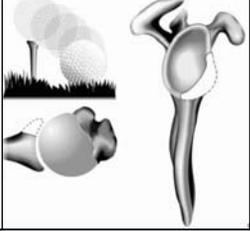
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 **Shoulder instability: Examination**

The Shoulder Joint is like a golf ball on a tee



 **Shoulder instability: Examination**

Mid-range instability

- | Active range of motion
- | Scapular dyskinesis



 **Shoulder instability: Examination**

Mid-range instability

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- | Scapular dyskinesis



 **Shoulder instability: Examination**

Mid-range instability

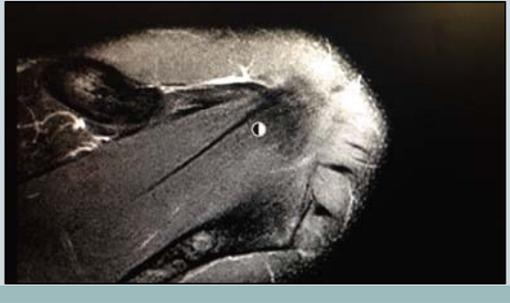
- | Active range of motion
- | Scapular dyskinesis

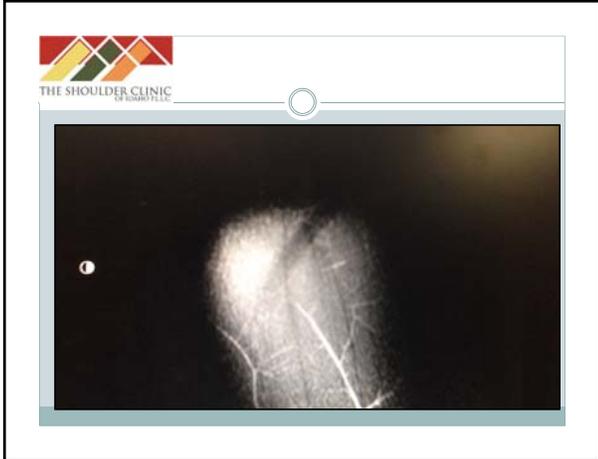


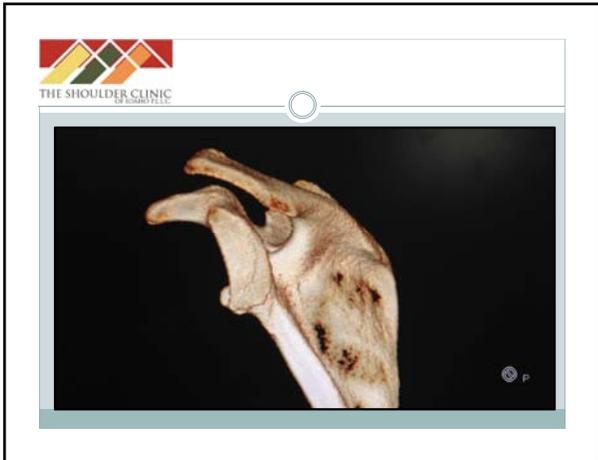












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OF UMDM LLC

Bone injury

Significant bone injury (humerus and glenoid)

Arthroscopic, open, bone augmentation (glenoid, humerus)?

The bottom section of the slide contains two images. On the left is a 3D CT reconstruction of a shoulder joint, similar to the one in the middle slide, showing a fracture of the humeral head. On the right is an arthroscopic view of the shoulder joint, showing the glenoid and surrounding structures.

**Types of bone injury**

Number 1 reason for failure of primary instability surgery
Not all bone loss is the same
Treatment & outcomes can be different

Fracture *Partial attritional* *Attritional*



**Types of bone injury**

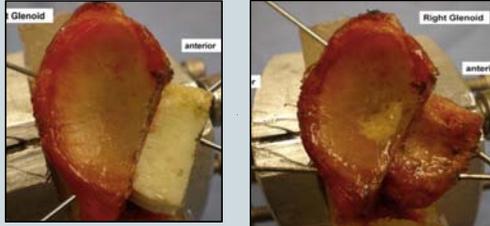
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Fracture *Partial attritional* *Attritional*



**How do we fix?**

Crest **Coracoid**



- Ghodadra et al. JBJS 2010

THE SHOULDER CLINIC

How do we fix?

Tibia?

Courtesy of MTP

THE SHOULDER CLINIC

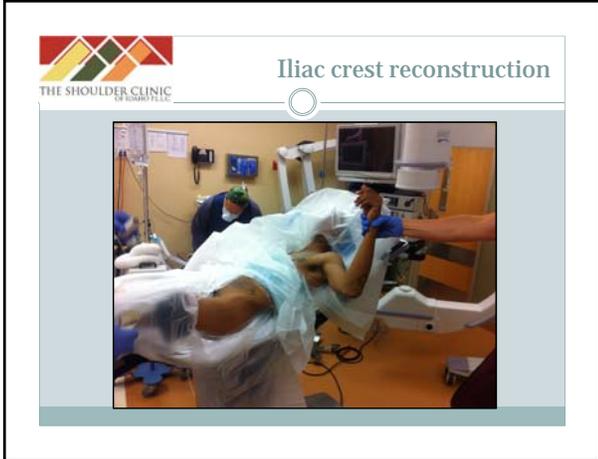
Glenoid reconstruction

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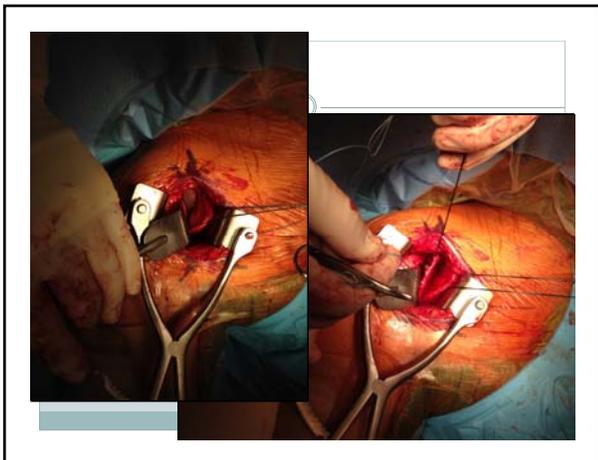
Short-Term Complications of the Latarjet Procedure

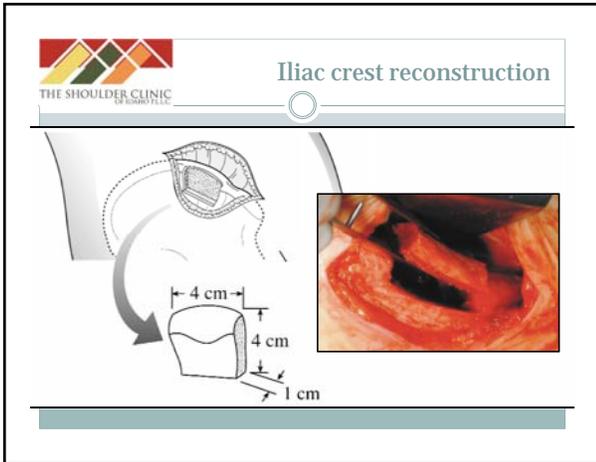
Amay A. Shah, MD, R. Bryan Butler, MD, James Horvathowski, MD, Cherry Good, MD, Dimitrios Karadakis, FRCS, and Jon J.E. Warner, MD
Investigation performed at Massachusetts General Hospital/Harvard Medical School, Boston, Massachusetts

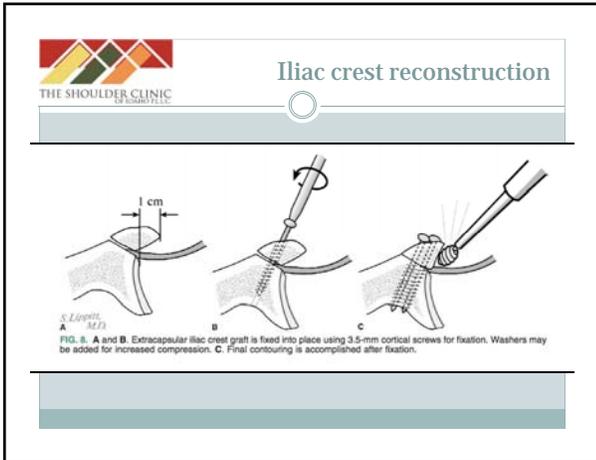
48 procedures; 5 year period; experienced surgeon
25% prevalence of early complications
 Infection = 6%
 Recurrent instability = 8%
 Canulated screws, smoking, workers compensation
 Neurological injury = 10%

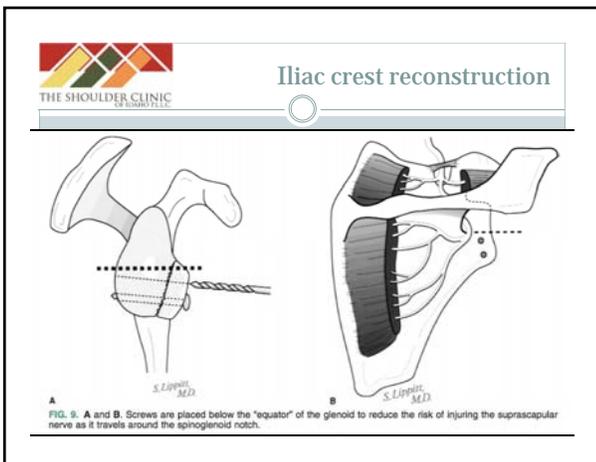


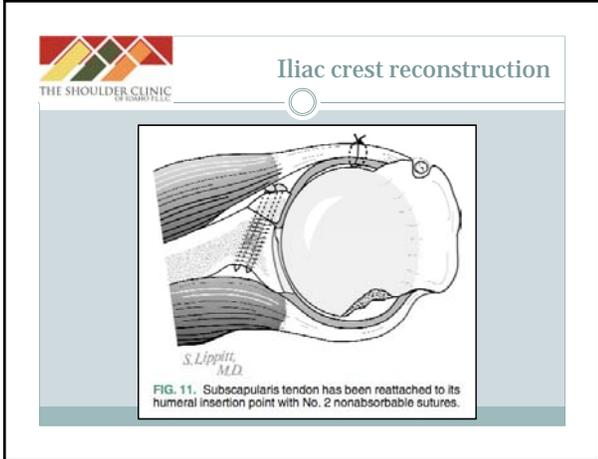






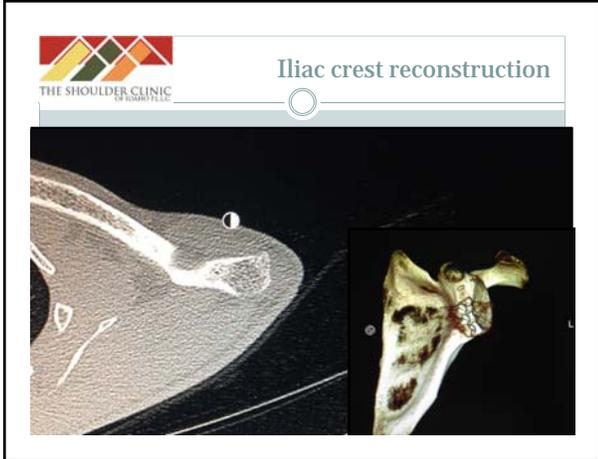


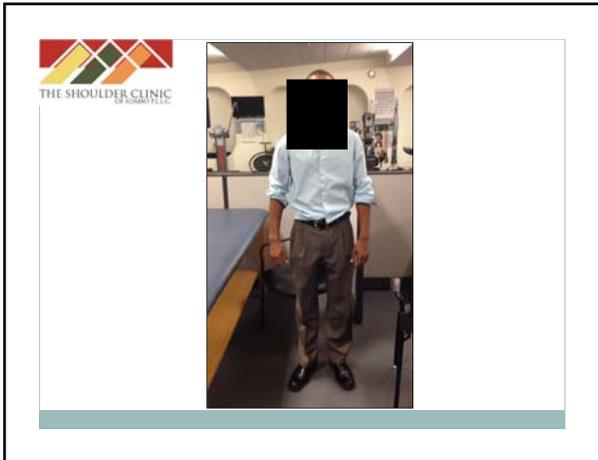


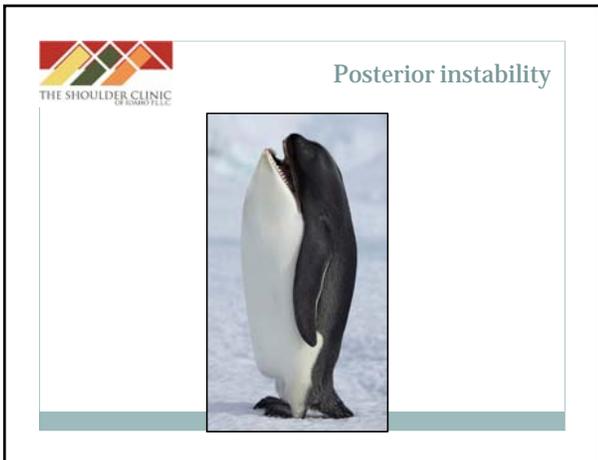












 **Posterior instability**



 **Posterior instability**

Patients present with complaints of **PAIN** not instability

Impingement in young patient – think instability

Repetitive subluxation >> actual dislocation

Rehabilitation is mainstay of treatment

Surgical treatment can be beneficial if a mechanical abnormality can be identified

- Glenoid fracture/injury
- Labral tear
- Capsular injury

 **Posterior instability**

23 yo RHD male

- | Felt a sudden "pop" during training
- | Progressive shoulder pain since and difficulty with overhead activities
- | Can now make his shoulder pop and shift on his own
- | PMH/PSH/MED/ALL/SOCH/ROS – benign



 Voluntary posterior instability



 Voluntary posterior instability

Thoughts

Treatment options

? Inpatient psychiatric care ?



**The Journal of
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VOLUME 55-A, No. 3 APRIL 1973

Voluntary Dislocation of the Shoulder

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PSYCHIATRIC STUDY OF TWENTY-SIX PATIENTS

BY CARTER R. ROWE, M.D.*, DONALD S. FIERCE, M.D.*, AND JOHN G. CLARK, M.D.†,
BOSTON, MASSACHUSETTS

From the Massachusetts General Hospital, Boston

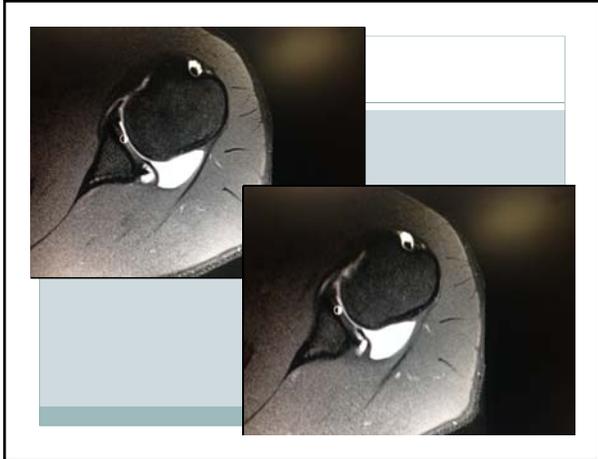
Psychiatric & emotional factors
Conventional surgical procedures likely fail

 **Voluntary posterior instability**



 **Voluntary posterior instability**







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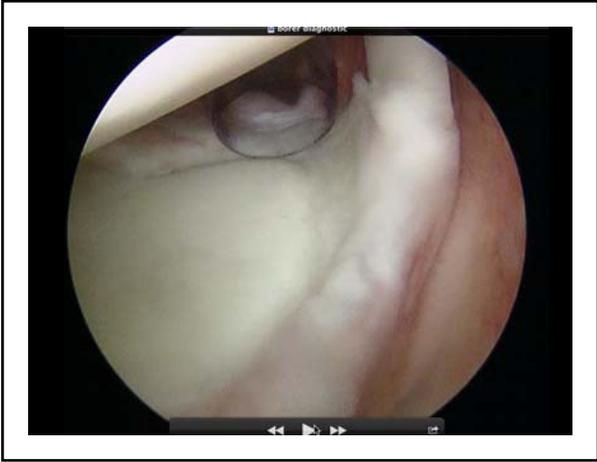
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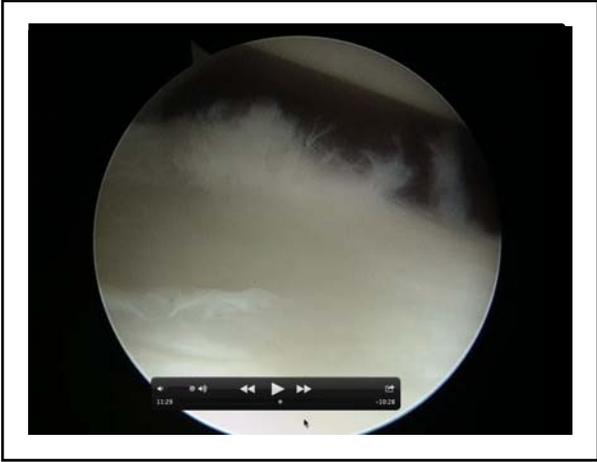
- Group I: Psychiatric features
- Group II: No psychiatric features
Surgical treatment may be considered in cooperative patients without psychiatric conditions



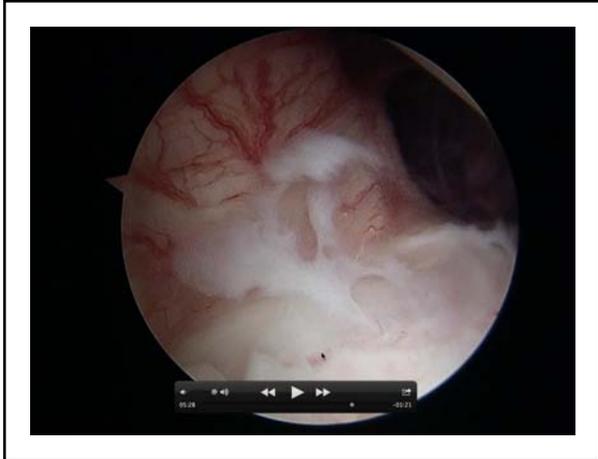
Voluntary posterior instability

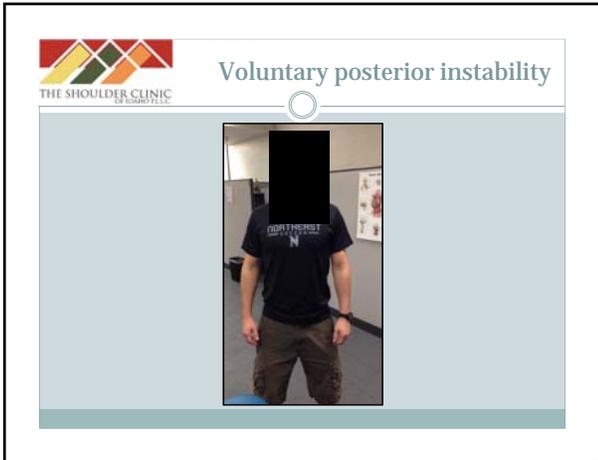












THE SHOULDER CLINIC
OF SOUTH FLA.

Posterior instability

Traumatic

No bone injury

- Arthroscopy alone unless large reverse Hill-Sachs

Significant bone injury (20% - 40%)

- SSc tenodesis
- LT xnsfer
- Allograft vs arthroplasty

Two arthroscopic images showing different views of a traumatic posterior shoulder injury. The top image shows a large, deep defect in the posterior labrum and capsule. The bottom image shows a similar view from a slightly different angle, highlighting the extent of the damage to the joint's stability structures.

 **Posterior instability**

Traumatic

| | |
|--|--|
| No bone injury <ul style="list-style-type: none">- Arthroscopy alone unless large reverse Hill-Sachs | Allograft reconstruction Humeral osteotomy Arthroplasty Non-operative |
| Significant bone injury (20% - 40%) <ul style="list-style-type: none">- SSC tenodesis- LT xnsfer- Allograft vs arthroplasty | |

 **Posterior instability**

Traumatic

| | |
|--|--|
|  | Allograft reconstruction Humeral osteotomy Arthroplasty Non-operative |
|--|--|

 **Posterior instability**

Traumatic

| | |
|---|---|
|  |  |
|---|---|

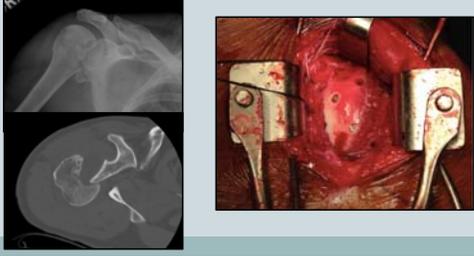






**Posterior instability**

Traumatic



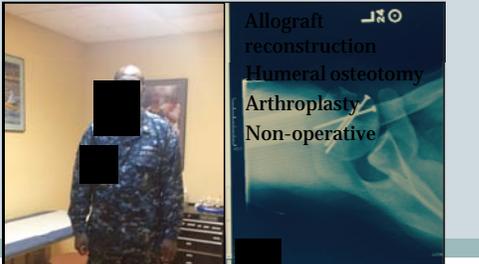
**Posterior instability**

Traumatic



**Posterior instability**

Traumatic





Rehabilitation & return to work

Self-directed program augmented/monitored by a therapist

- | Active assist range of motion
- | Avoid positions at risk
- | Protect the subscapularis if open
- | Slower if revision surgery

Time-line for return to work

- | 6 months
- | Individualized to the patient
- | Medical separation



Take home points

Instability is a common problem in the young active worker

- | More common than rotator cuff/impingement

Diagnosis is made by an accurate history

- | Exam and imaging used to assess severity
- | Help guide proper treatment (avoid recurrence)

Not all instability patients are the same

- | Require different forms of treatment
- | Require different forms of rehabilitation



Thank you

JOSEPH R. LYNCH, MD

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