

**MDI and Posterior Instability:  
Arthroscopic Labroplasty and Capsular Shift**

Seung-Ho Kim, MD

Associate Professor of Orthopaedic Surgery  
Sungkyunkwan University

Chief, Division of Shoulder & Sports Medicine  
Samsung Medical Center  
Seoul, Korea

**Posterior Instability**

**Treatment**

Difficult



**Why?**

Uncommon  
Pathology, Not well known

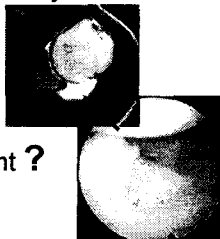
**Posterior Instability**

2-4% of shoulder instability

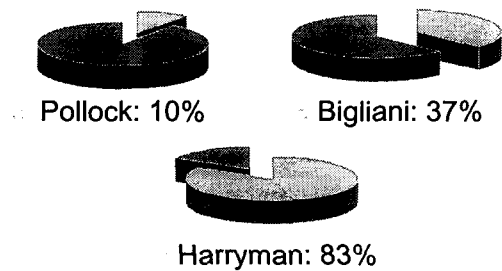
❖ Surgery, once a year  
→ Difficult forever

**Pathoanatomy**

Anterior superior capsule: Warren RF  
Posterior inferior capsule: Schwartz E  
Rotator interval capsule: Harryman DT II,  
Nobuhara K  
Excessive joint volume:  
Gibb TD  
Posterior labrum: Innocent ?




**Labral Lesion**



**Labral Lesion**  
**Why different ?**

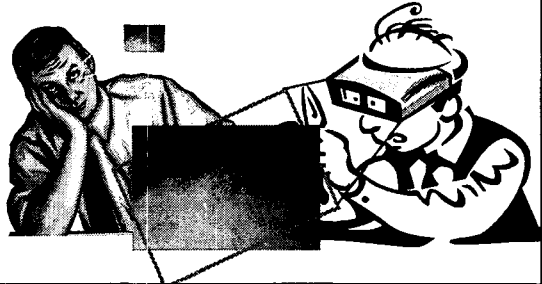
**Different Eyes**

- Natural eyes
- Instrumented eyes



**Why Arthroscopy?**

"You can see what you need to do"




**Treatment**  
**Indication for Surgery**

Symptomatic patients after at least 4-6 months of rehabilitation

Exercise does not eliminate instability but improves symptoms

**Jerk Test**

"Is this your problem?"



**Jerk Test Revisited**

- 89 shoulders
  - Painless jerk (Clunk without pain): 54
  - Painful jerk (Clunk with pain): 35

**Nonoperative treatments (Rehab.)**

Nonop. Tx \ Pain	Painless Jerk Group (54)	Painful Jerk Group (35)
Successful	50 (90%)	5 (16%)
Failure	4 (7%)	30 (84%)

**Jerk Test Revisited**

- **Painless Jerk (Asymptomatic Clunk)**
  - Rehab, successful
- **Painful Jerk (Symptomatic Clunk)**
  - Failure to nonoperative Treatment
  - Invariably has labral lesion
  - Early surgery, recommended

**Hallmark of Posterior Labral Lesion**

### Treatment

#### Open

Posterior capsular infraspinatus tenodesis (reverse Putti-Platt)  
 Posterior glenoid osteotomy  
 Posterior inferior capsular shift

#### Arthroscopic

Capsular suture plication (Wolf, Snyder)  
 Labroplasty and capsular shift (Kim)

### Surgical Goal

Restore Labral height  
 Tighten joint capsule  
 Balance loose ligament

### Arthroscopic Treatment

#### Lesion-specific Treatment

Unidirectional posterior  
 Posteroinferior instability / MDI

With the Same Approach

### Lesion-specific Treatment

#### Unidirectional Posterior

Posterior capsulolabral lesions  
 Posterior labroplasty  
 Posterior capsular shift (minimal)

#### MDI / Posteroinferior Instability

▣ Posterior capsulolabral lesions  
 ▣ Global looseness  
 → Labroplasty  
 → Inferior capsular shift  
 → Rotator interval closure



### Traumatic Unidirectional Posterior

#### Misamore and Facibene

14 cases, open posterior capsulorrhaphy  
 13 (93%) stable  
 No activity limitation

### Posteroinferior Instability / MDI

#### Success Rate

Open: 50–96% (Hawkins RJ, Bigliani LU ...)  
 Arthroscopic: 59% (Harryman DT)  
                   75% (McIntyre LF)  
                   75% (Wolf EM)  
                   87% (Snyder SJ)

### Capsular Plication

Does not address labral lesion  
Does not restore labral height  
Higher failure rate in MDI


### Posterior Labral Lesion

MR Classification: 3 types (Kim)

- Type I: Separation without displacement
- Type II: Incomplete avulsion (cystic lesion)
- Type III: Loss of contour

Normal appearance < positive Jerk

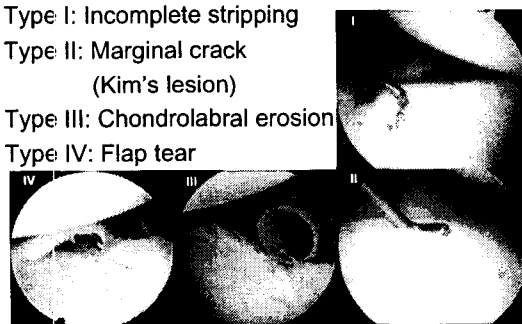
*JBJS (Am) 2003*



### Posterior Labral Lesion

Arthroscopic Classification


- Type I: Incomplete stripping
- Type II: Marginal crack (Kim's lesion)
- Type III: Chondrolabral erosion
- Type IV: Flap tear



### Posterior Labral Lesion

Kim's Arthroscopic Classification

- Type I: Incomplete stripping
- Type II: Marginal crack (Kim's lesion)
- Type III: Chondrolabral erosion
- Type IV: Flap tear




### Posterior Labral Lesion

Kim's Arthroscopic Classification

- Type I: Incomplete stripping
- Type II: Marginal crack (Kim's Lesion)
- Type III: Chondrolabral erosion
- Type IV: Flap tear


Labrum-Press Test



### Posterior Labral Lesion

Kim's Arthroscopic Classification

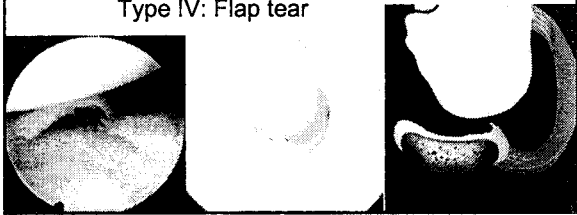
- Type I: Incomplete stripping
- Type II: Marginal crack (Kim's lesion)
- Type III: Chondrolabral erosion
- Type IV: Flap tear



### Posterior Labral Lesion

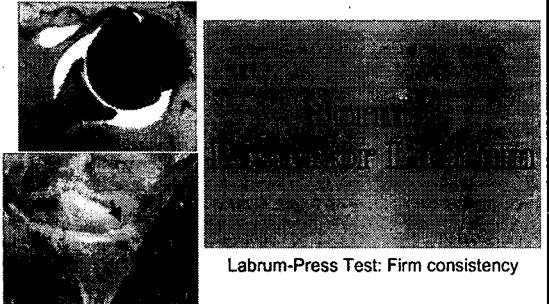
**Kim's Arthroscopic Classification**

Type I: Partial thickness tear  
 Type II: Superior labrum anterior-posterior (SLAP) tear  
 Type III: Bankart lesion  
 Type IV: Flap tear



### MR vs Arthroscopic Findings

**Normal Posterior Labrum**

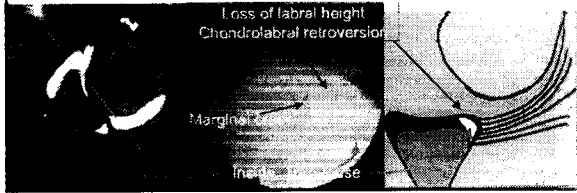


Labrum-Press Test: Firm consistency

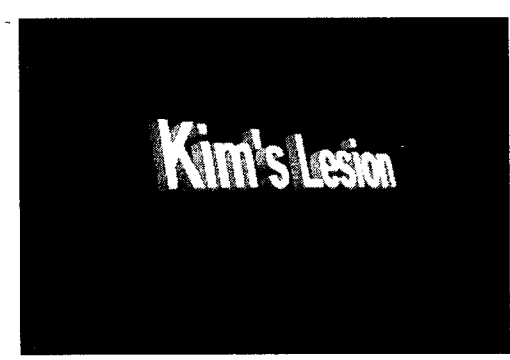
### MR vs Arthroscopic Findings

MR Type II: Incomplete avulsion (Cystic lesion)  
 III: Loss of contour

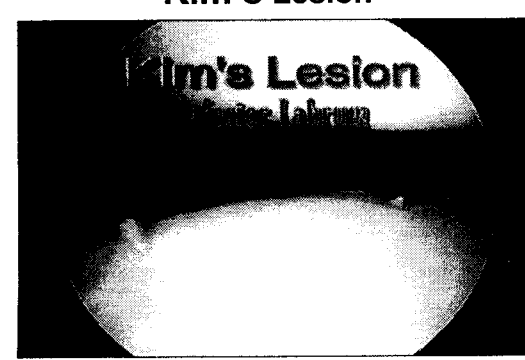
AS Type II: Marginal crack  
**Kim's lesion:** Incomplete & Concealed Avulsion of Posteroinferior Labrum



### Kim's Lesion



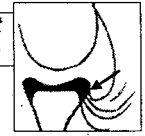
### Kim's Lesion



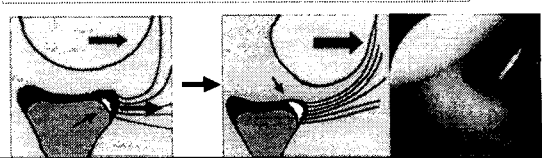
### Kim's Lesion: Hypothesis

Caused by Incomplete Force & Excessive Rim-Loading

Normal Capsular Attachment: Inferior wall of labral triangle

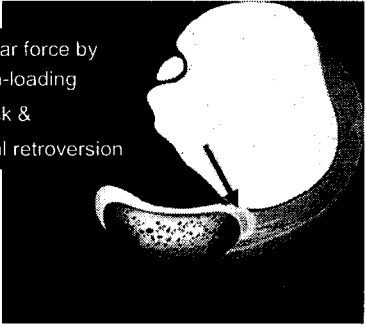


- Less severe posterior force
  - Stretch posterior band of IGHL
  - Detach inner portion of posterior labrum
  - Incomplete detachment of labrum, flat labrum



**Kim's Lesion: Hypothesis**  
*Caused by Incomplete Force & Excessive Rim-Loading*

- Posterior shear force by excessive rim-loading
- Marginal crack &
- Chondrolabral retroversion



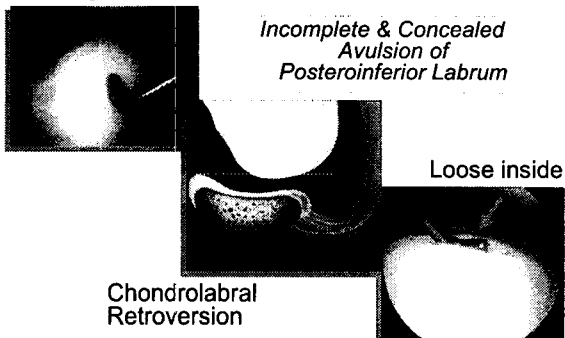
**Kim's Lesion**

Marginal crack

*Incomplete & Concealed Avulsion of Posteroinferior Labrum*

Loose inside

Chondrolabral Retroversion



**Kim's Lesion**

**Clinical Significance**  
*Do not miss concealed labral tear*

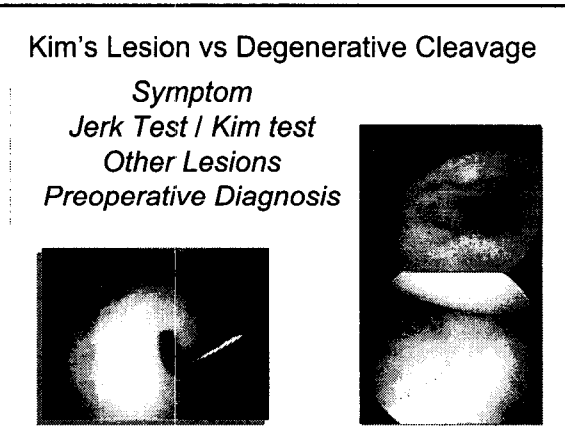
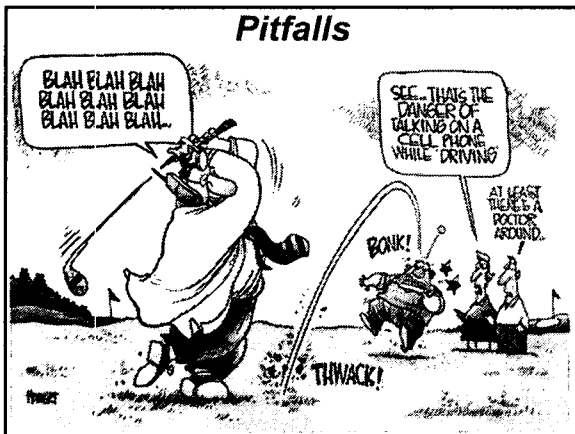
- Probe & palpate
- Make a complete tear
- Suture anchor repair with posterior band of IGHL

↳ **Labroplasty**



**Kim's Lesion vs Degenerative Cleavage**

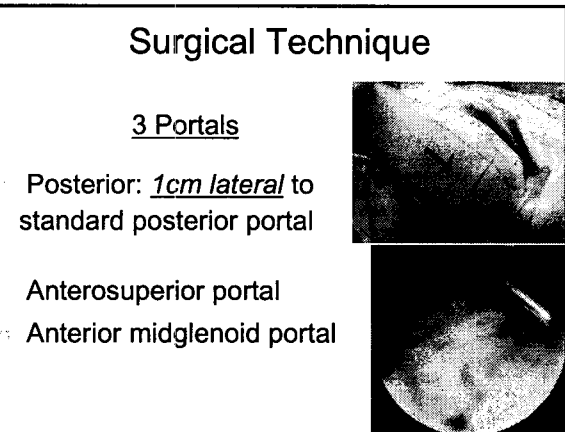
Symptom  
 Jerk Test / Kim test  
 Other Lesions  
 Preoperative Diagnosis

**Surgical Technique**


3 Portals

- Posterior: 1cm lateral to standard posterior portal
- Anterosuperior portal
- Anterior midglenoid portal

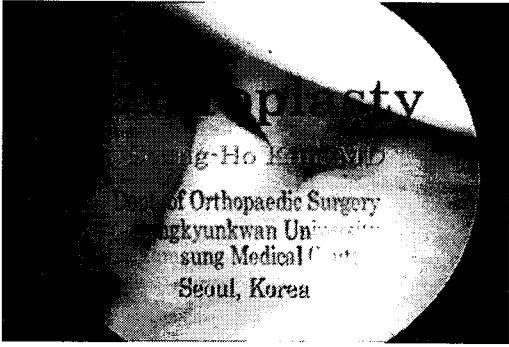


**Surgical Technique**

- Include posterior band of IGHL
- South-North direction shift
- Re-establish labral bump
- Capsular shift up to biceps root
- Close posterior portal

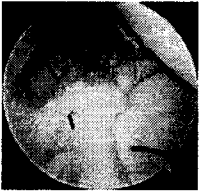


**Type II Kim's Lesion: Labroplasty**



**SMC Results**

- Traumatic Unidirectional Posterior Recurrent Subluxation
- Atraumatic Multidirectional Posteroinferior Instability



**Traumatic Unidirectional Posterior**

- 27 shoulders (25M / 2F) / Age: 21 years (14-33)
- Dominant arm: 70%
- All in sports activity / Trauma: All patients
- Symptoms: instability 22 (82%), pain 3 (11%), both 2 (7%)
- Jerk test: All +
- Grade 2+ or less posterior translation
- Sulcus: 0 / No generalized laxity
- Normal contralateral shoulder

**Traumatic Unidirectional Posterior**

Outcome

- 26/27 stable, 1 recurrence
- Shoulder scores
  - UCLA Excellent 21, Good 5, Fair 1
- 24 (89%) > 90% of activity return
- Pain VAS improved (5 to below zero)
- IR loss < 1 vertebral level
- No intra-op. complication

**MDI / Posteroinferior Instability**

General Consensus

- Capsular redundancy
- Minimal or no labral lesion
- Inferior capsular shift / pancapsular plication

### MDI / Posteroinferior Instability

New Thoughts

Capsular redundancy + Labral lesion ( $\cong 100\%$ )

Chondrolabral retroversion by

- Incomplete Tear
- Kim's lesion
- Erosion

Kim procedure: AS Capsulolabroplasty =  
Posteroinferior labroplasty + Balanced superior shift of the inferior capsule + RI closure

*(Am J Sports Med. In-press)*

### Multidirectional Instability

SMC Results

31 patients  
Kim procedure:  
Arthroscopic Capsulolabroplasty

- Labroplasty
- Balanced capsular shift
- RI closure

FU: 51 months (34-68 months)  
Age: 23 years (19-28 years)

*(Am J Sports Med. In-press)*

### Multidirectional Instability

SMC Results

17 patients: minor trauma  
All had posteroinferior labral lesion

Type	Count	Percentage
I	11	65%
II	12	40%
III	2	6%
IV	6	19%

### Loss of Containment by Chondrolabral Retroversion

Chondrolabral glenoid version  
Labral height  
Glenoid depth

### Chondrolabral Retroversion

Type II and IV lesions

MDI	7.1°
Normal control	2.3°

in inferior one-third of glenoid

### Multidirectional Instability

Rowe Score

All stable except one recurrence  
28 patients (90%) > 90% of activity  
ROM deficit: ER: 2°, IR: 1 vertebral level



**PI / MDI**



*New Concept*

**PLASS Lesion**

*Posteroinferior Labrum Avulsion in Stable Shoulder*

- Trauma
- No gross instability
- No anterior apprehension
- No sulcus
- No clunk on Jerk
- No posterior translation > opposite side
- ±MRI (Unreliable)



**PLASS Lesion**

*Posteroinferior Labrum Avulsion in Stable Shoulder*

- Positive painful click on
  - Jerk test or
  - Kim test
- Posteroinferior labral lesion
- No capsular laxity
- Arthroscopic repair, successful

**Kim Test**

- ALIS: Axial Load Inferior Shear
- More reliable for posteroinferior labral Lesion with a predominant inferior component



**Kim Test**




**PLASS Lesion**

*Posteroinferior Labrum Avulsion in Stable Shoulder*

- Internal Derangement of Shoulder
  - No other physical sign
  - Normal MRI
  - Undiagnosed
  - Chronic mysteriously painful shoulder


PLASS Lesion  
*Posteroinferior Labrum Avulsion in Stable Shoulder*

All 4 types of lesion, possible



PLASS Lesion  
*Treatment*

Arthroscopic labral repair  
**without** capsular shift



Summary

Unidirectional Posterior

Very successful with arthroscopic posterior capsular shift and labral repair

Summary

MDI / Posterior inferior

Less successful with previous AS capsular plication

Address all lesions: Capsulolabroplasty

- Labroplasty
- Inferior capsular shift
- Rotator interval closure

Summary

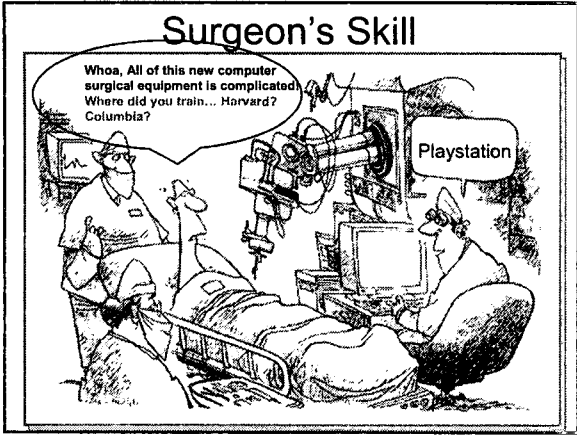
Labral Lesion

- More common than was reported
- Do not neglect the Kim's lesion
- Recreate labral bump / height

Summary

PLASS Lesion

- Do not forget to include Jerk & Kim tests in painful shoulder with nothing seems abnormal
- Arthroscopic labral repair successful
- Do not fooled by degenerative tear in other diagnosis



<p><b>The 8th SMC Shoulder Symposium</b></p> <p>Date: June 10-12, 2004 Venue: Samsung Medical Center, Seoul, Korea</p> <p><b>Comprehensive Review on Shoulder Surgery</b></p> <p><b>Arthroscopic Techniques</b> (Seminars &amp; Workshops)</p> <p><b>Live Surgeries</b></p> <p><b>Seminars &amp; Workshops</b></p> <p><b>Official Language</b></p> <p>Registration: <a href="http://www.shoulderscope.com">www.shoulderscope.com</a></p> <p>Program Director: Sung-Ho Kim, MD</p>	<p><b>How To Learn</b></p> <p><b>The 8th SMC Shoulder Symposium</b></p> <p>June 10 -12, 2004</p> <p>Samsung Medical Center Seoul, Korea</p>
---	---

**How To Learn**  
**SMC Arthroscopy Learning Center**

Your best step after that is...

