Current Approach to Shoulder Instability

First Time Instability and Return to Play

Lance LeClere, MD
CAPT MC USNR
Associate Professor
Vanderbilt University Medical Center

VANDERBILT Orthopaedics

Disclosures

- Ossio: General Research Support

- *The views expressed in this article are those of the author and do not necessarily reflect the official policy or position of the Department of the Navy, Department of Defense, nor the U.S. Government*.

Objectives

- Discuss outcomes of operative and non operative treatment of 1st time shoulder dislocations
- Discuss long term outcomes of shoulder instability
- Discuss return to play/return to sport considerations in shoulder instability

Anterior Shoulder Instability Part I—Diagnosis, Nonoperative Management, and Bankart Repair—An International Consensus Statement

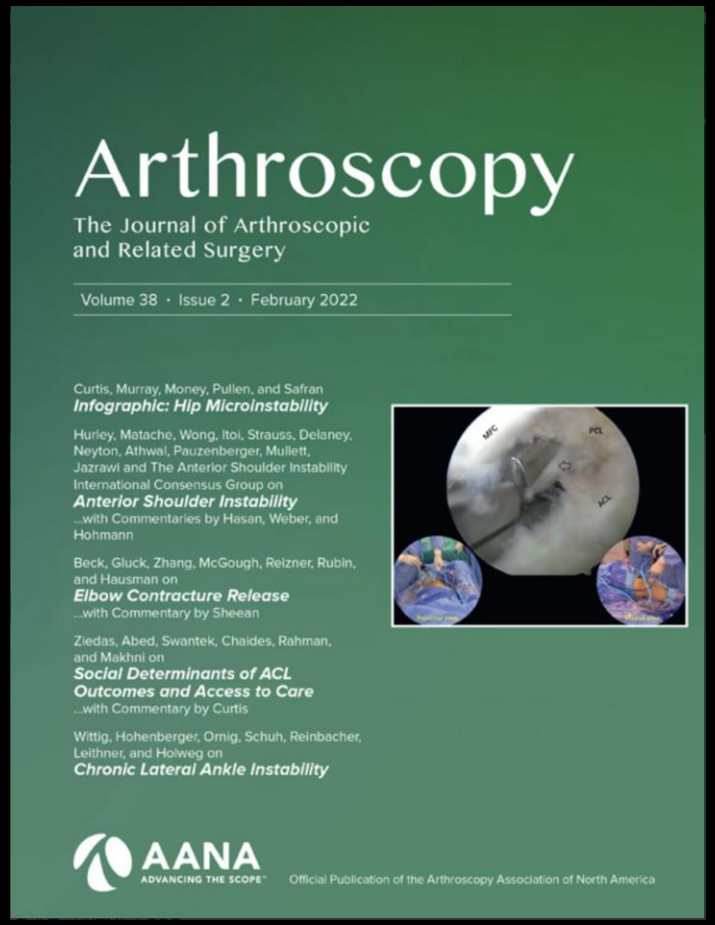
Eoghan T. Hurley, M.B., B.Ch., M.Ch., Ph.D., Bogdan A. Matache, M.D., C.M., F.R.C.S.C., Ivan Wong, M.D., F.R.C.S.C., Eiji Itoi, M.D., Ph.D., Eric J. Strauss, M.D., Ruth A. Delaney, F.R.C.S., Lionel Neyton, M.D., George S. Athwal, M.D., F.R.C.S.C., Leo Pauzenberger, M.D., Hannan Mullett, M.Ch., F.R.C.S.I. (Tr & Orth), Laith M. Jazrawi, M.D., and The Anterior Shoulder Instability International Consensus Group

Anterior Shoulder Instability Part II—Latarjet, Remplissage, and Glenoid Bone-Grafting—An International Consensus Statement

Eoghan T. Hurley, M.B., B.Ch., M.Ch., Ph.D., Bogdan A. Matache, M.D., C.M., F.R.C.S.C., Ivan Wong, M.D., F.R.C.S.C., Eiji Itoi, M.D., Ph.D., Eric J. Strauss, M.D., Ruth A. Delaney, F.R.C.S., Lionel Neyton, M.D., George S. Athwal, M.D., F.R.C.S.C., Leo Pauzenberger, M.D., Hannan Mullett, M.Ch., F.R.C.S.I. (Tr & Orth), Laith M. Jazrawi, M.D., and The Anterior Shoulder Instability International Consensus Group

Anterior Shoulder Instability Part III—Revision Surgery, Rehabilitation and Return to Play, and Clinical Follow-Up—An International Consensus Statement

Bogdan A. Matache, M.D., C.M., F.R.C.S.C., Eoghan T. Hurley, M.B., B.Ch., M.Ch., Ph.D., Ivan Wong, M.D., F.R.C.S.C., Eiji Itoi, M.D., Ph.D., Eric J. Strauss, M.D., Ruth A. Delaney, F.R.C.S., Lionel Neyton, M.D., George S. Athwal, M.D., F.R.C.S.C., Leo Pauzenberger, M.D., Hannan Mullett, M.Ch., F.R.C.S.I. (Tr & Orth), Laith M. Jazrawi, M.D., and The Anterior Shoulder Instability International Consensus Group



US Naval Academy

“The Physical Mission”

- Graduation Requirements:
  - Swimming
  - Wrestling
  - Boxing
  - Martial arts

- Obstacle Course
- Endurance Course
- Biannual Physical Testing

- 33 varsity sports
- 14 club sports
- 1500 varsity athletes

- All students must play varsity, club, or intramural sport

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Limited Predictive Value of the Instability Severity Index Score: Evaluation of 217 Consecutive Cases of Recurrent Anterior Shoulder Instability

Travis J. Dekker, M.D., Liam A. Peebles, B.A., Andrew S. Bernhardson, M.D., Petar Golijanin, B.S., Giovanni Di Giacomo, M.D., Thomas R. Hackett, M.D., and CAPT Matthew T. Provencher, M.D., MC, USNR

Arthroscopy: The Journal of Arthroscopic and Related Surgery, Vol 37, No 5 (May), 2021: pp 1381-1391

Goals

- 1st Time Dislocation
- In Season Decision Making
- Posterior Tears

1st Time Dislocation

What is the optimal management?

“My shoulder is out!”

- 19 y/o M
- Walks into clinic
- Herndon Climb
- Shoulder dislocation
- Reduced in clinic

- Now what?

Operative vs Non Operative

Richard O'Connor Award Paper

Prospective Randomized Clinical Trial Comparing the Effectiveness of Immediate Arthroscopic Stabilization Versus Immobilization and Rehabilitation in First Traumatic Anterior Dislocations of the Shoulder

Alexandra Kirkley, M.D., F.R.C.S.C., Sharon Griffin, C.S.S., Corinne Richards, B.Sc., P.T., Anthony Miniaci, M.D., F.R.C.S.C., and Nicholas Mohtadi, M.D., F.R.C.S.C.

Arthroscopy: The Journal of Arthroscopic and Related Surgery, Vol 15, No 5 (July-August), 1999: pp 507–514

- 40 patients, recreational and competitive sports
- Mean 22 years old
- Randomized
  - Non-operative: 3 weeks sling
    - Allow RTP 4 months contact
  - Arthroscopic (transglenoid) repair: w/in 4 weeks
    - Allow RTP 4 months contact

Richard O'Connor Award Paper

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Arthroscopy: The Journal of Arthroscopic and Related Surgery, Vol 15, No 5 (July-August), 1999: pp 507–514

	Return to Sport*	Recurrence*	WOSI^
Arthroscopic	**95%**	16%	86.3%
Non-operative	95%	47%	69.8%
p value:	--	**.03**	**0.03**

*RTS and Recurrence after 4 months supervised rehabilitation before contact activities

^ WOSI score at 3 yr follow up

Non-operative Recurrence

Collision athletes and military cadets:

Citation	Population	Recurrence
Wheeler Arthroscopy. 1989	Military/Cadets	82%
Arciero AJSM. 1994	Military/Cadets	80%
Bottoni AJSM. 2000	Military/Cadets	75%
Sachs JBJS. 2007	Collision	56%
LeClere Sport Health. 2013	Collision	42%

Significantly Less Recurrence with Surgery

Review article

Orthopaedics & Traumatology: Surgery & Research 101 (2015) S51–S57

Management of recent first-time anterior shoulder dislocations

F. Khiami*, A. Gérometta, P. Loriaut

Service d'orthopédie et de traumatologie du sport du Pr Pascal-Moussellard, CHU Pitié Salpêtrière, 47-83, boulevard de l'Hôpital, 75013 Paris, France

Comparison of recurrence rates after conservative treatment versus surgery.

Author	Level of evidence	Type of treatment	*n*	Age (years)	Recurrence rate (%)	Follow-up
Larrain et al. [42]	Prospective not randomises	Surgical	46	21 (17–27)	4	67 months
		Conservative			94.5	
Jakobsen et al. [43]	I	Surgical	37	15–39	3	2 years
		Conservative	39		56	
Kirkley et al. [1]	II	Surgical	40	23.3	18	79 months
		Conservative		22.7	60	
Law et al. [44]	IV	Surgical	38	21 (16–30)	5.2	28 months
Owens [45]	IV	Surgical	40		14.3	12 years
Brophy and Marx [46]	Literature review	Surgical			7	2 years
		Conservative			46	
Bottoni et al. [25]	I	Conservative	14	18–26	75	3 years
		Arthroscopic	10		11	

4 vs 95%

3 vs 56%

18 vs 60%

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ESP
THE TOTAL SPO

Review article

Management of recent first-time anterior shoulder dislocations

F. Khiami*, A. Gérometta , P. Loriaut

Service d'orthopédie et de traumatologie du sport du Pr Pascal-Moussellard, CHU Pitié Salpêtrière, 47-83, boulevard de l'Hôpital, 75013 Paris, France

Despite these results, the increasingly common use of surgery for first-time dislocations has received criticism. It is worth recalling the findings by Hovelius et al. [23]:

- 43% of patients experienced no recurrences during a 25-year follow-up;
- in 14% of patients, the shoulder became stable over time, with two recurrences within the first 15 years then no further recurrences during the next 10 years;
- among patients managed non-surgically and younger than 25 years of age, half experienced no recurrences.

Thus, surgery would have been unnecessary in 30% of patients younger than 25 years. Routine surgery in patients with first-time shoulder dislocation therefore constitutes overtreatment, and surgeons must select patients who are good candidates for early surgery.

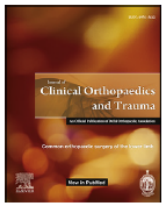
Should we make them “earn” surgery?

Journal of Clinical Orthopaedics and Trauma 10 (2019) 222–230

Contents lists available at ScienceDirect

Journal of Clinical Orthopaedics and Trauma

journal homepage: www.elsevier.com/locate/jcot



Surgical treatment outcomes after primary vs recurrent anterior shoulder instability

Jonathan D. Barlow [a, *], Timothy Grosel [b], John Higgins [b], Joshua S. Everhart [b], Robert A. Magnussen [b]

Conclusion: Further level I and level II studies to compare surgical treatment after first time and recurrent instability are needed. This study failed to find a statistically significant difference in recurrence rates in patients who had stabilization acutely after a single episode compared to patients with recurrent instability events, although results suggest there may be a small benefit in primary stabilization.

Shoulder Stabilization Versus Immobilization for First-Time Anterior Shoulder Dislocation

The American Journal of Sports Medicine
1–10
DOI: 10.1177/03635465211065403

A Systematic Review and Meta-analysis of Level 1 Randomized Controlled Trials

John W. Belk,*† BA, Benjamin R. Wharton,† BA, Darby A. Houck,† BA, Jonathan T. Bravman,† MD, Matthew J. Kraeutler,‡ MD, Braden Mayer,† MD, Thomas J. Noonan,† MD, Adam J. Seidl,† MD, Rachel M. Frank,† MD, and Eric C. McCarty,† MD
Investigation performed at University of Colorado School of Medicine, Department of Orthopaedics, Aurora, Colorado, USA

Conclusion: Patients, particularly active men in their 20s and 30s, undergoing treatment for a first-time ASD with a surgical stabilization procedure can be expected to experience significantly lower rates of recurrent instability and a significantly decreased need for a future stabilization procedure when compared with patients treated nonoperatively.

Going “LT Kaffee” style…

There is now strong evidence to operate on young, active first time dislocators.


Who's the wild man now?

Pathologic Changes Associated with Shoulder Dislocations

Arthroscopic and Physical Examination Findings in First-Time, Traumatic Anterior Dislocations*

Dean C. Taylor,† MAJ, MC, USA, and Robert A. Arciero, LTC, MC, USA

THE AMERICAN JOURNAL OF SPORTS MEDICINE, Vol. 25, No. 3

From the Orthopaedic Surgery Service, Keller Army Community Hospital, West Point, New York, and The Uniformed Services University of the Health Sciences, Bethesda, Maryland

- 63 surgical patients
  - 97% Bankart
  - 22% bony Bankart
  - 89% Hill Sachs
  - 10% SLAP
- 53 non op patients
  - 90% with recurrent instability

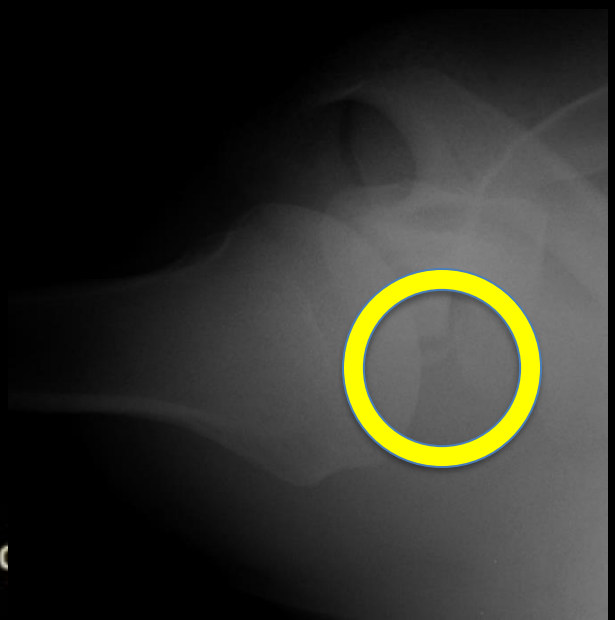
Pathoanatomy of First-Time, Traumatic, Anterior Glenohumeral Subluxation Events

By Lieutenant Colonel Brett D. Owens, MD, Bradley J. Nelson, MD, Michele L. Duffey, MS, Sally B. Mountcastle, PhD, Colonel (Ret) Dean C. Taylor, MD, Kenneth L. Cameron, PhD, ATC, Scot Campbell, MD, and Colonel (Ret) Thomas M. DeBerardino, MD

Investigation performed at Keller Army Hospital, United States Military Academy, West Point, New York

THE JOURNAL OF BONE & JOINT SURGERY · JBJS.ORG
VOLUME 92-A · NUMBER 7 · JULY 7, 2010

- Prospectively followed a class of cadets at West Point
- 27 first time dislocations



- Bankart: 96%
- Hill Sachs: 93%
- Bony Bankart 11%

Circumferential Labral Tears Resulting From a Single Anterior Glenohumeral Instability Event

A Report of 3 Cases in Young Athletes

CPT Jonathan F. Dickens,* MD, CPT Kelly G. Kilcoyne,* MD,
MAJ Jeffrey Giuliani,† MD, and LTC Brett D. Owens,†‡ MD
Investigation performed at Keller Army Hospital, West Point, New York

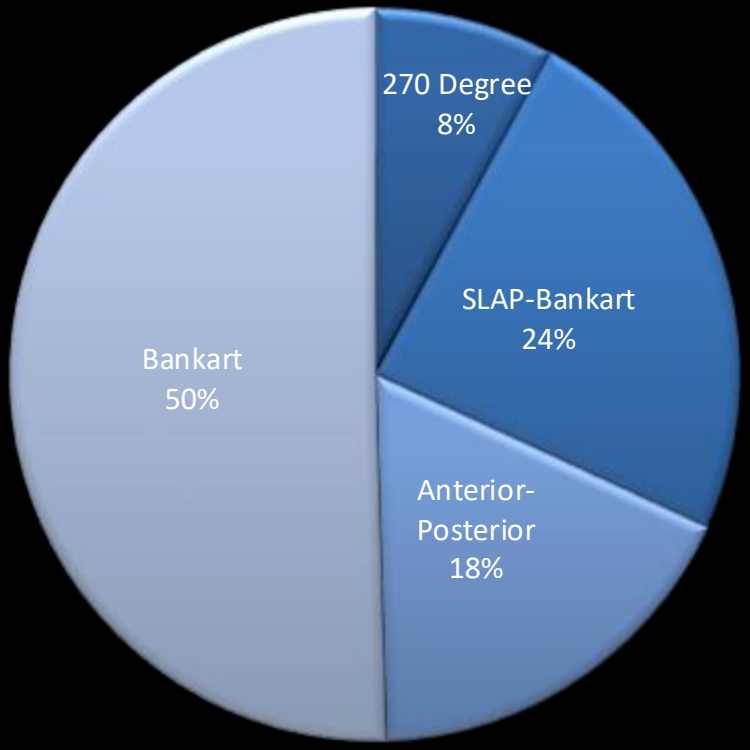
The American Journal of Sports Medicine, Vol. 40, No. 1

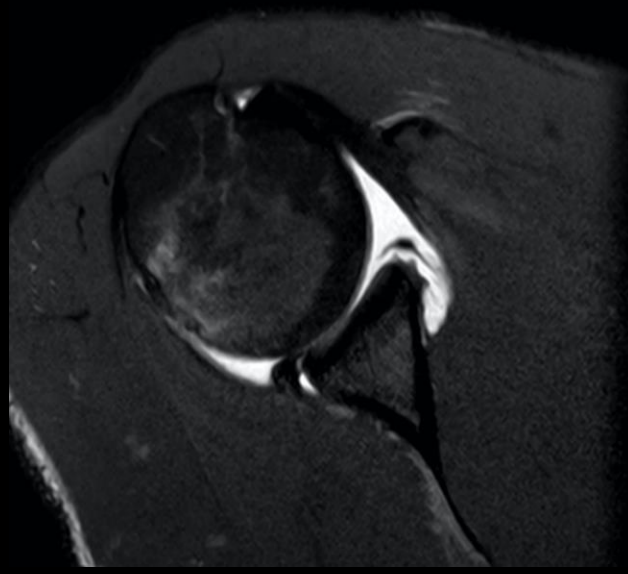
- Pathology not limited to Bankart and Hill-Sachs
  - Combined labral tears
  - Panlabral tears
  - RCT

- Underscores needs for aggressive evaluation of 1st time subluxation & dislocation events…

Recurrent Instability Associated Pathology

USMA 2003-2009





- USMA cadet population
- 50% (171/338) Anterior instability events were isolated Bankart tears

-Dickens et al. *Phys Sports Med*. 2012

The Incidence of Posterior and Combined AP Shoulder Instability Treatment with Surgical Stabilization Is Higher in an Active Military Population than in the General Population: Findings from the US Naval Academy

Clinical Orthopaedics and Related Research®
A Publication of The Association of Bone and Joint Surgeons®

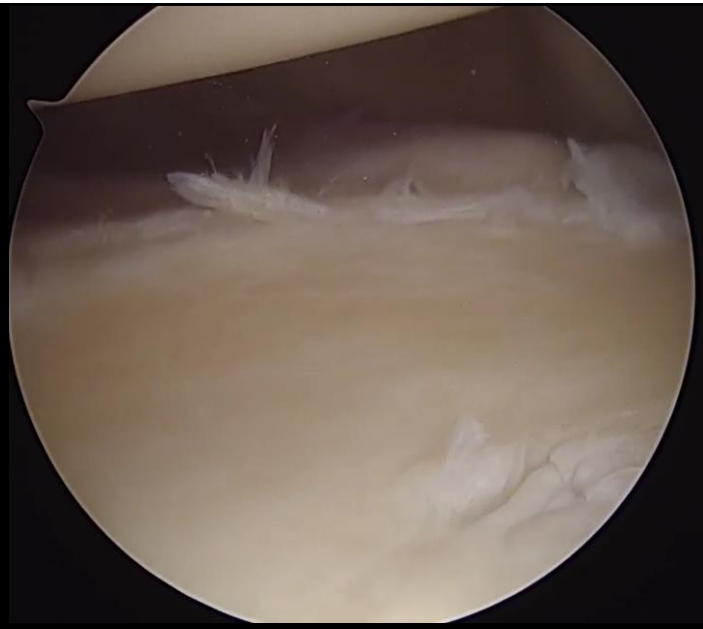
Bobby G. Yow MD, Sean M. Wade MD, Michael D. Bedrin MD, John-Paul H. Rue MD, Lance E. LeClere MD

Table 1. Patient demographics based on the type of instability (n = 443)

Factor	Anterior	Posterior	Combined	Total
Percentage who underwent stabilization, % (n)	47 (210)	18 (80)	35 (153)	433
Mean age in years ± SD	22 ± 3	22 ± 4	23 ± 5	22 ± 4
Men, % (n)	85 (178)	93 (74)	92 (140)	88 (392)

433 surgical patients over 8 year period with 2 year follow up

35% have combined lesions



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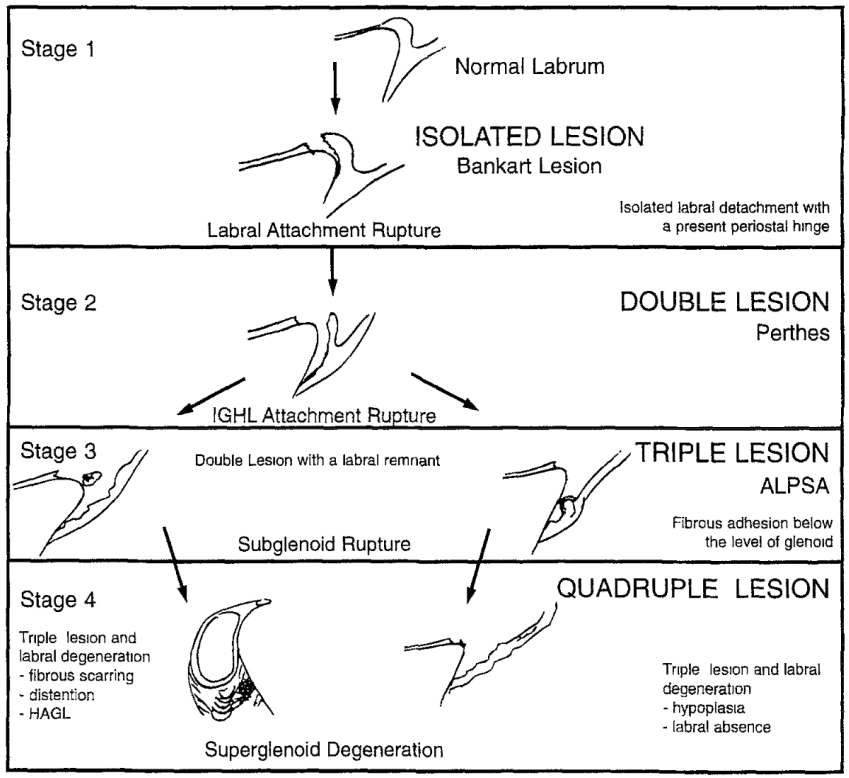
Evolution of lesions of the labrum-ligament complex in posttraumatic anterior shoulder instability: A prospective study

J Shoulder Elbow Surg
January/February 1999

Peter Habermeyer, MD, Pascal Gleyze, MD, and Markus Rickert, MD, *Heidelberg, Germany, and Colmar, France*



Prospective evaluation of 91 surgical patients

4 categories → increasing # of instability events

Stepwise progression of labrum-ligament injury

1. Bankart
2. Bankart-Perthes extending to IGHL
3. ALPSA
4. Labral and capsular degeneration

Prevalence Comparison of Accompanying Lesions Between Primary and Recurrent Anterior Dislocation in the Shoulder

Doo-Sup Kim,* MD, Yeo-Seung Yoon, MD, PhD, and Chang Ho Yi, MD
From the Department of Orthopaedic Surgery, Wonju College of Medicine, Yonsei University, Wonju Christian Hospital, Wonju, Korea

- MRA Study of 144 patients
  - 33 primary
  - 111 recurrent
- Sig higher % Bankarts and ALPSAs in recurrent
  - 2x Bankarts
  - 5x ALPSA

Prevalence Comparison of Accompanying Lesions Between Primary and Recurrent Anterior Dislocation in the Shoulder

Doo-Sup Kim,* MD, Yeo-Seung Yoon, MD, PhD, and Chang Ho Yi, MD
From the Department of Orthopaedic Surgery, Wonju College of Medicine, Yonsei University, Wonju Christian Hospital, Wonju, Korea

TABLE 4
Prevalence of Bony Abnormalities

	Primary	Recurrent	*P* Value
Hill-Sachs lesion	19 (57.5%)	105 (94.5%)	.008
Inverted-pear glenoid (not included in the bony Bankart category)	0	15 (13.5%)	.047
Greater tuberosity fracture	4 (12.1%)	0	.054
Loose bodies	4 (12.1%)	15 (13.5%)	.897

BECAUSE I WAS INVERTED

MOVIECLIPS.com

MakeAGIF.com

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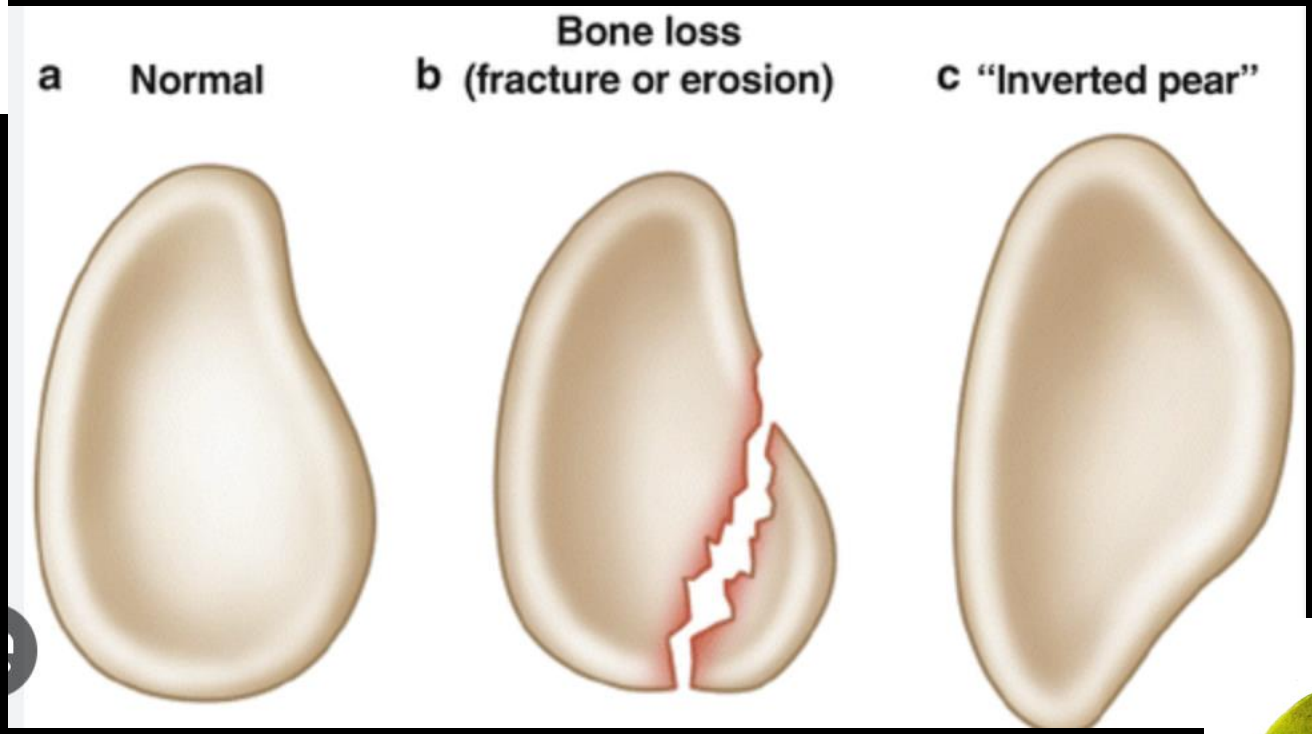

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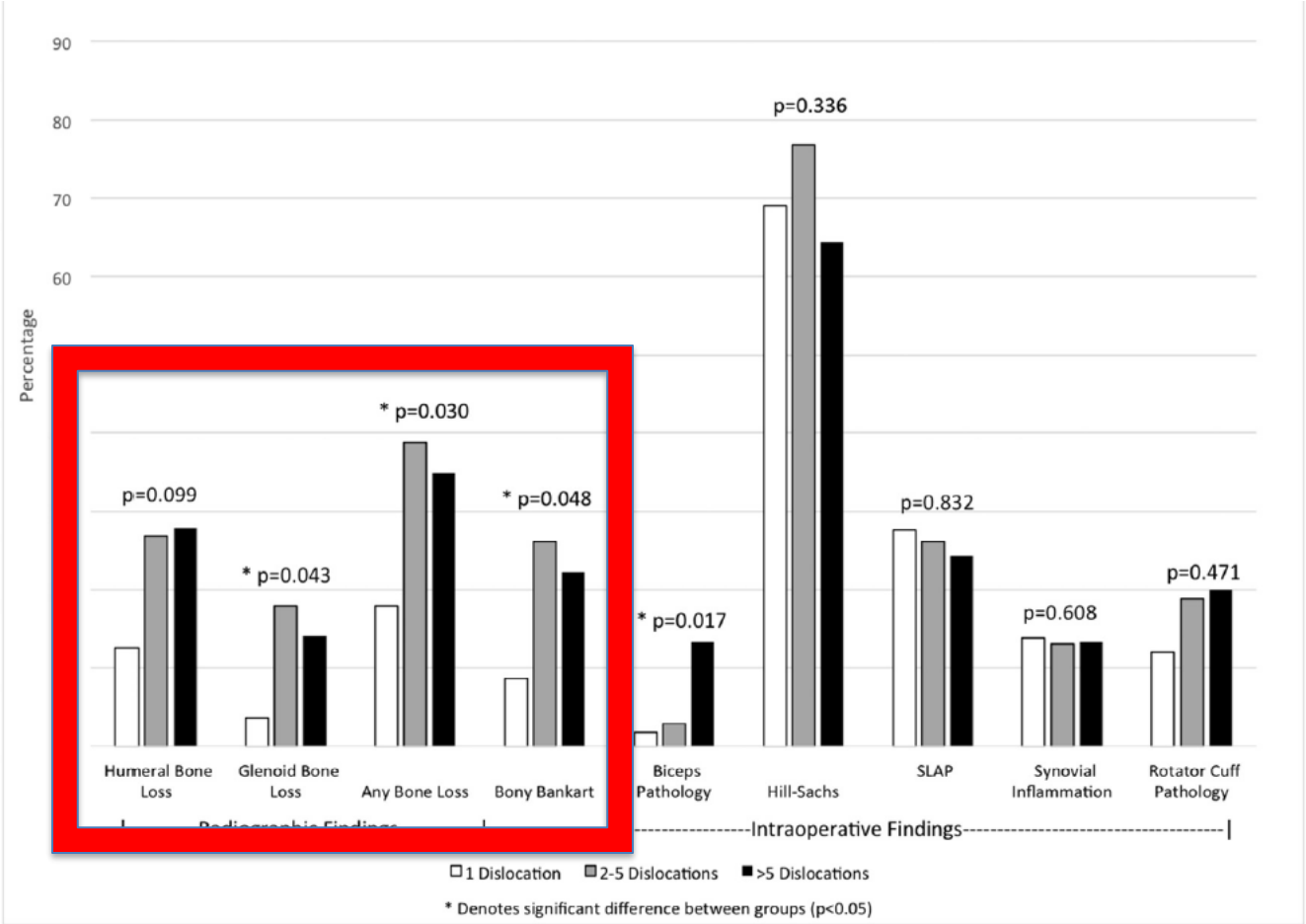
Surgical stabilization for first-time shoulder dislocators: a multicenter analysis

J Shoulder Elbow Surg (2018) 27, 674–685

Caitlin M. Rugg, MD[a], Carolyn M. Hettrich, MD[b], Shannon Ortiz, MPH[c], Brian R. Wolf, MD[c], MOON Shoulder Instability Group, Alan L. Zhang, MD[a,*]



Surgical stabilization for first-time shoulder dislocators: a multicenter analysis

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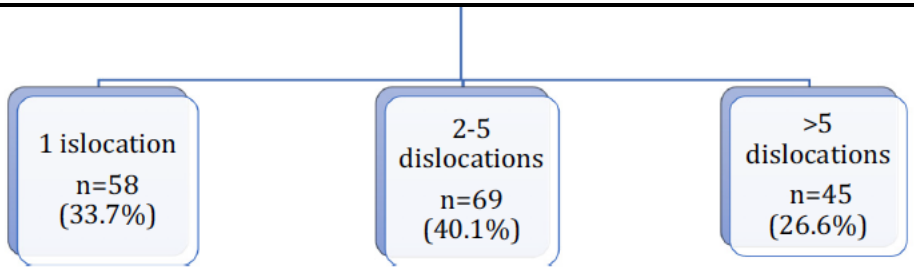


Conclusion

First-time shoulder dislocators who undergo stabilization surgery are more likely to undergo an arthroscopic procedure and less likely to have bone loss or biceps pathology compared with recurrent dislocators, who are more likely to need open stabilization. Future studies are needed to ascertain long-term outcomes of surgical stabilization based on number of dislocations before surgery.

VANDE

Stay with me…

Increasing evidence…

Intra-articular lesions and their relation to arthroscopic stabilization failure in young patients with first-time and recurrent shoulder dislocations

Sang-Jin Shin, MD*, Young Won Ko, MD, Juyeob Lee, MD

J Shoulder Elbow Surg (2016) 25, 1756–1763

Table III Comparison of clinical outcomes and satisfaction for operation between patients with first-time dislocation and those with recurrent shoulder dislocation

Variable	First-time dislocation (N = 33)	Recurrent dislocation (N = 89)	*P* value
VAS score for pain			
Preoperative	3.9 ± 2.8	4.4 ± 2.9	.542
Last follow-up	0.5 ± 0.3	0.8 ± 0.7	.620
VAS score for satisfaction in daily activities	93.0 ± 5.2	82.7 ± 7.2	<.001*
Failure rates	1 (3%)	16 (18%)	.039*
Recurrence of dislocation	1 (3%)	6 (7%)	
Subjective instability	0	10 (11%)	

VAS, visual analog scale.
* Statistically significant difference.

- 122 patients
  - 33 fist time dislocators
  - 89 matched recurrent
- Worse in Recurrent
  - Higher failure rate
  - Higher apprehension rate
  - More bone loss
  - Lower satisfaction with ADLs

Predisposing Factors for Recurrent Shoulder Dislocation After Arthroscopic Treatment

By Giuseppe Porcellini, MD, Fabrizio Campi, MD, Francesco Pegreffi, MD, Alessandro Castagna, MD, and Paolo Paladini, MD

Investigation performed at the Unit of Shoulder and Elbow Surgery, D. Cervesi Hospital, Cattolica, Italy

THE JOURNAL OF BONE & JOINT SURGERY · JBJS.ORG
VOLUME 91-A · NUMBER 11 · NOVEMBER 2009

Time from first dislocation to surgery is a SIGNIFICANT RISK FACTOR FOR FAILURE OF SURGERY!

Time to surgery (>6 months)		0.01
Absent (n = 209)	10 (4.8%)	
Present (n = 176)	21 (11.9%)	

TABLE II Variables Entered into the Logistic Regression Model, Adjusted Odds Ratios, and 95% Confidence Intervals

Variable	Adjusted Odds Ratio	95% Confidence Interval
Age (>22 years)	0.46	0.21 to 0.99
Male sex	3.65	1.08 to 12.39
Time from first dislocation to surgery (>6 months)	2.62	1.19 to 5.79

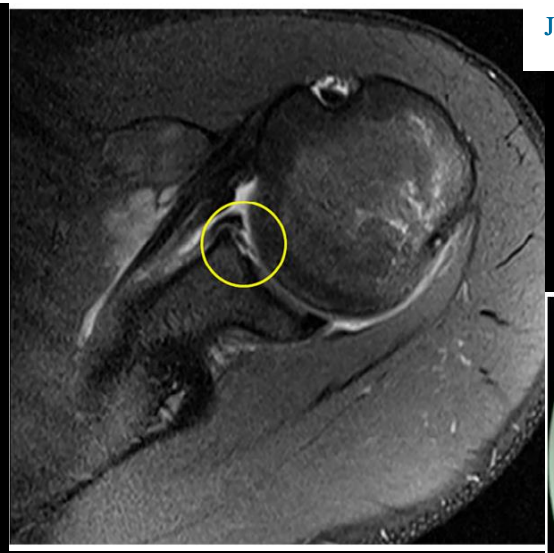
Shoulder Alphabet Soup

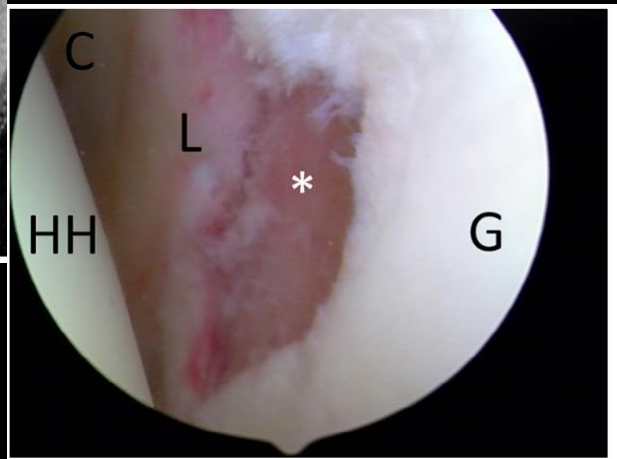
Failure following arthroscopic Bankart repair for traumatic anteroinferior instability of the shoulder: is a glenoid labral articular disruption (GLAD) lesion a risk factor for recurrent instability?

Jonas Pogorzelski, MD, MHBA[a,c], Erik M. Fritz, MD[a], Marilee P. Horan, MPH[a], J. Christoph Katthagen, MD[a,d], Matthew T. Provencher, MD, CAPT, MC, USNR[a,b], Peter J. Millett, MD, MSc[a,b,*]

J Shoulder Elbow Surg (2018) 27, e235–e242

- 77 surgical pts
- Median f/u 3 years
- Significantly higher failure rate with GLAD lesions





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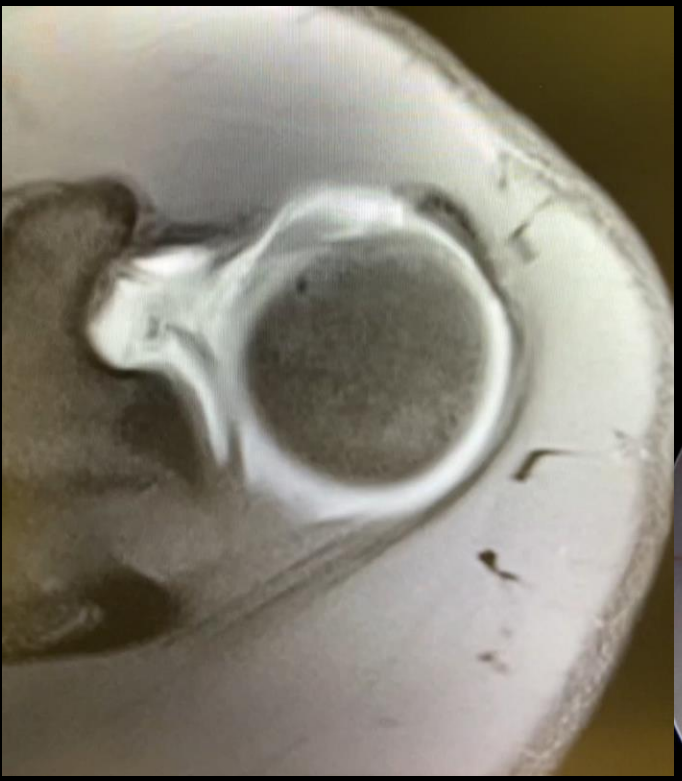

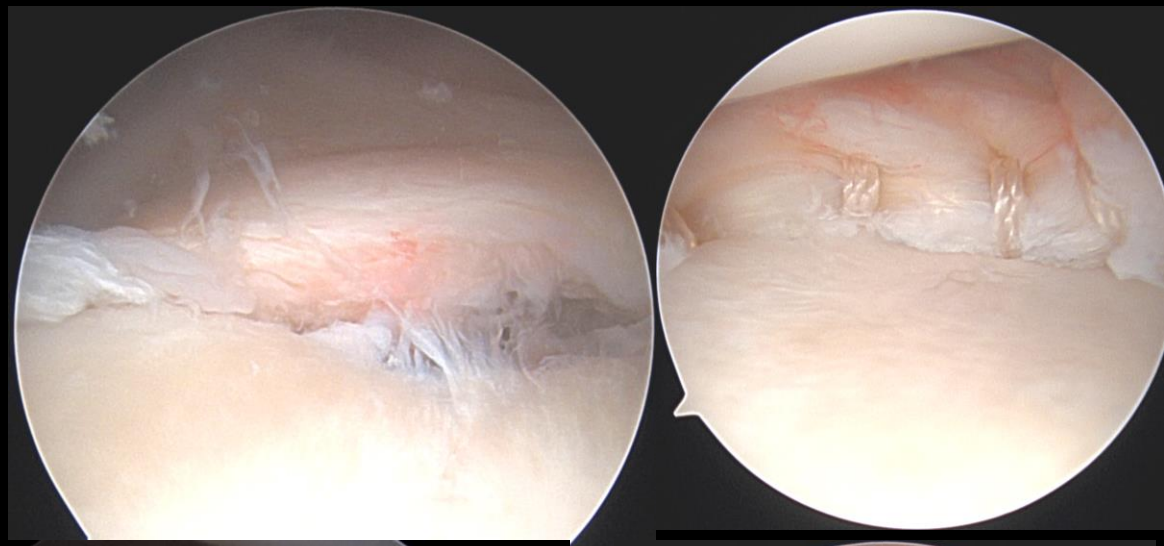

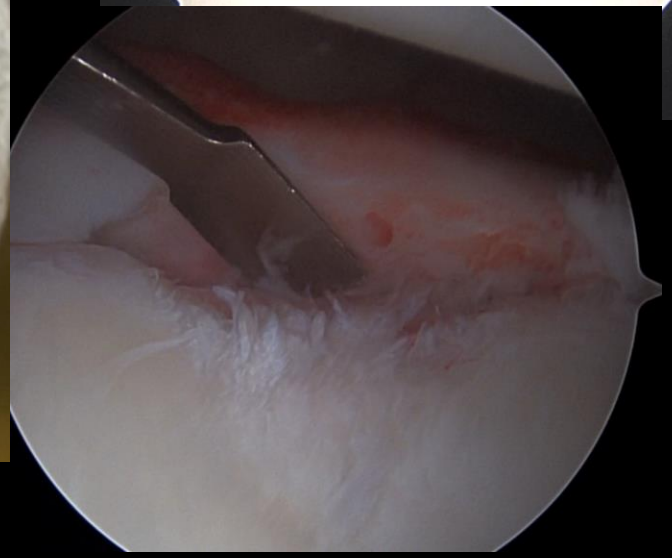

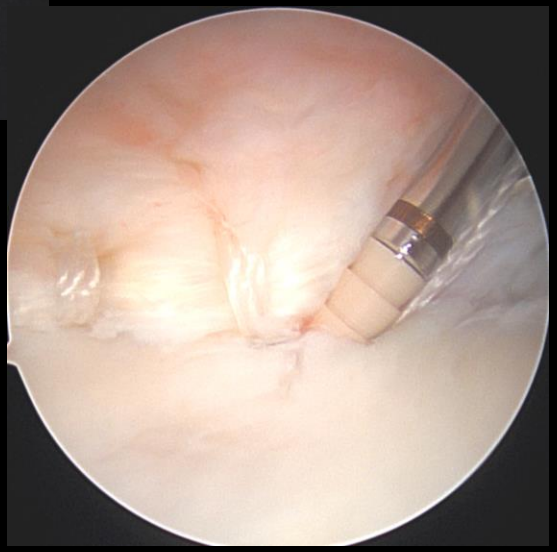

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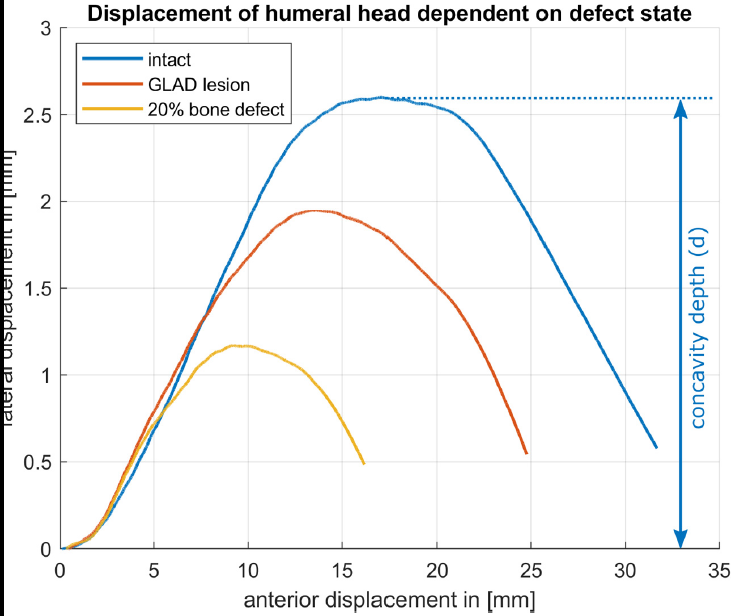
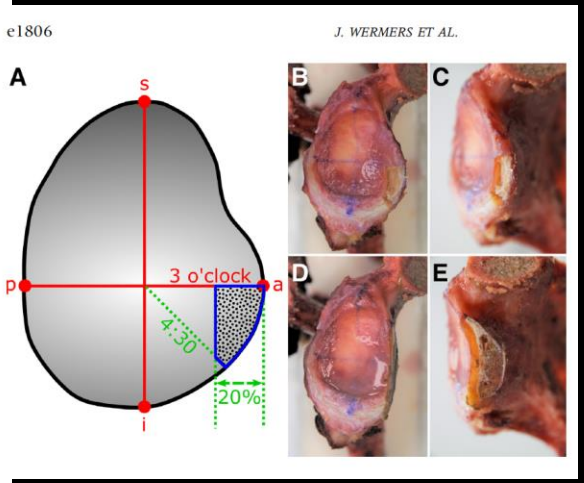
The Glenolabral Articular Disruption Lesion Is a Biomechanical Risk Factor for Recurrent Shoulder Instability

Jens Wermers, M.Sc., Benedikt Schliemann, M.D., Michael J. Raschke, M.D., Felix Dyrna, M.D., Lukas F. Heilmann, M.D., Philipp A. Michel, M.D., and J. Christoph Katthagen, M.D.

Arthroscopy, Sports Medicine, and Rehabilitation, Vol 3, No 6 (December), 2021: pp e1803-e1810

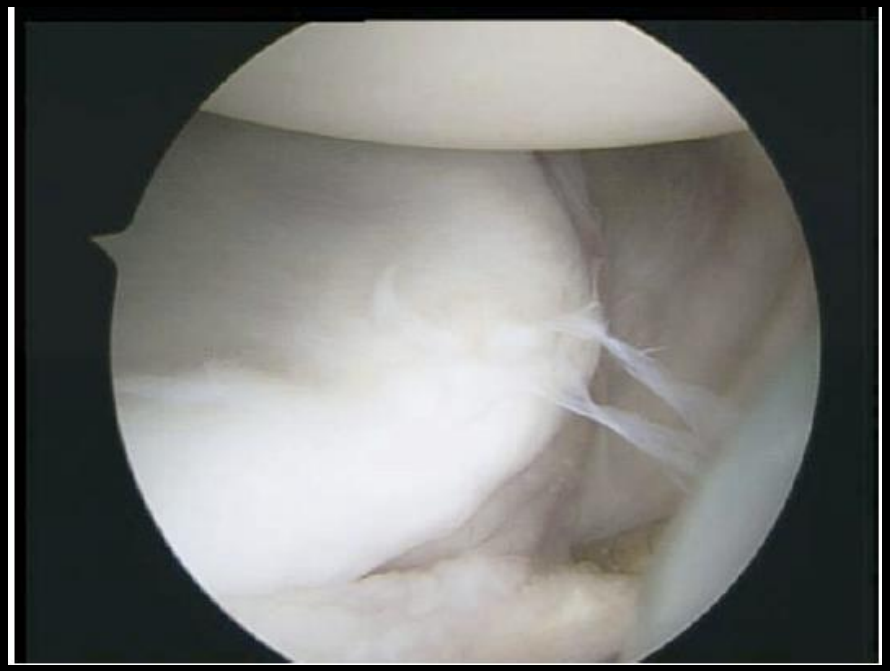




Results of Arthroscopic Capsulolabral Repair: Bankart Lesion Versus Anterior Labroligamentous Periosteal Sleeve Avulsion Lesion

Mehmet Ozbaydar, M.D., Bassem Elhassan, M.D., David Diller, B.A., Daniel Massimini, B.S., Laurence D. Higgins, M.D., and Jon J. P. Warner, M.D.

Arthroscopy: The Journal of Arthroscopic and Related Surgery, Vol 24, No 11 (November), 2008: pp 1277-1283

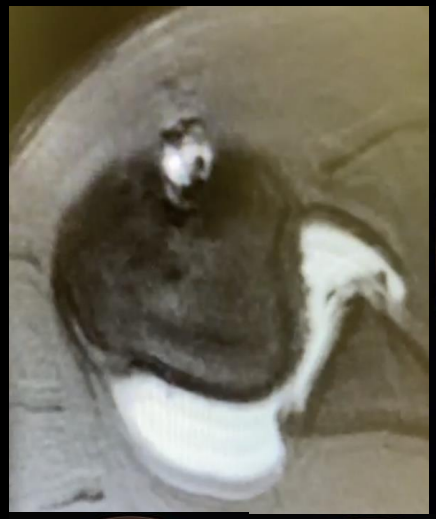


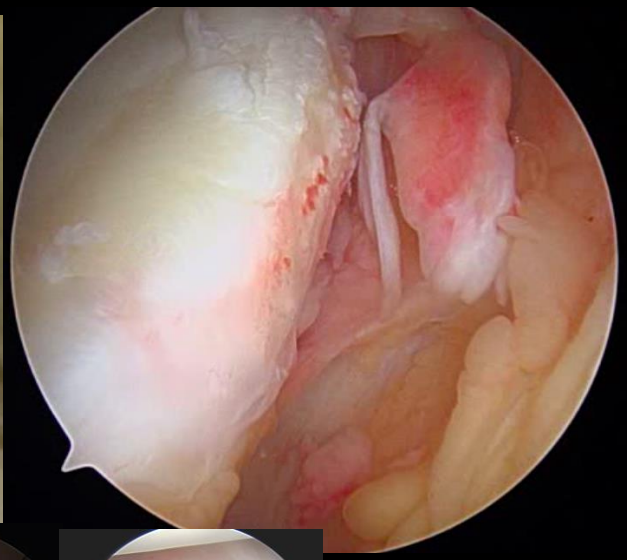
- 26 ALPSA repairs compared to 67 Bankarts
- ALPSA = 3x number of dislocations (12.3 vs 4.9)
- ALPSA with significantly higher failure rate
  - (19.2 vs 7.4%)

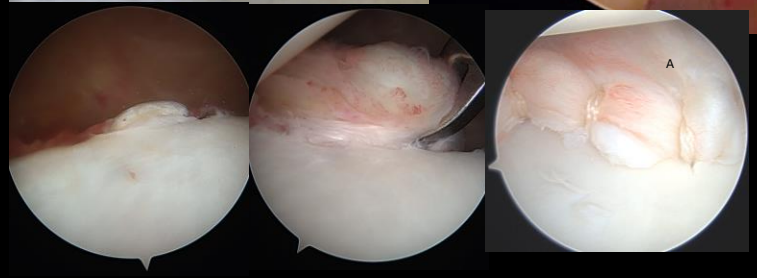
ALPSA Lesions Are Associated with High Rate of Early Repair Failure

Benjamin W Hoyt MD, Buddy G Yow MD, Cory A Riccio MD, Zachary J Bloom MD, John-Paul Rue MD, Jon F Dickens MD, Lance E LeClere MD

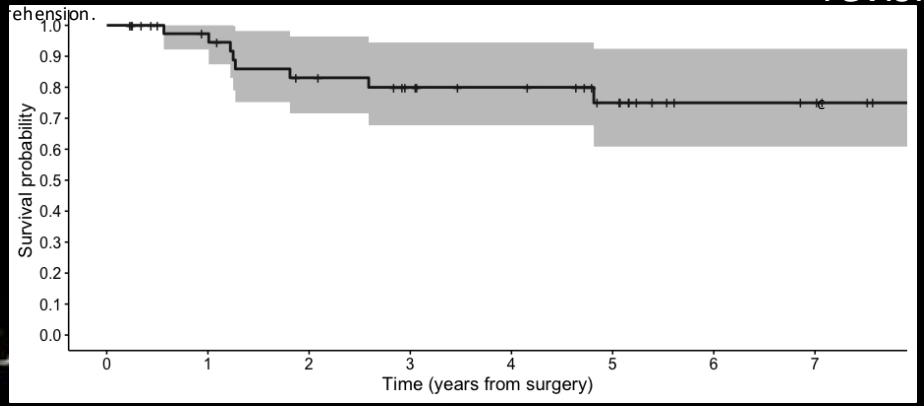
Duke Orthopaedic Surgery
Duke University School of Medicine





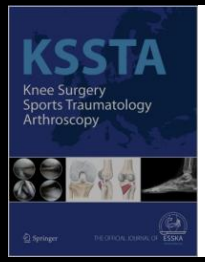


- Overall 17% failure rate at 5 yr f/u
- High rate of associated lesions
- Eight failures at median 15 months post-index procedure
- 75% of failures occurring before two years
- High rate of failure after revision repair (3/8, 37.5%)



VANDERBIL

Keys to success—Keep it from happening in the first place!

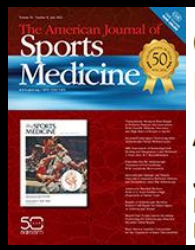


Age, participation in competitive sports, bony lesions, ALPSA lesions, > 1 preoperative dislocations, surgical delay and ISIS score > 3 are risk factors for recurrence following arthroscopic Bankart repair: a systematic review and meta-analysis of 4584 shoulders

Lukas P. E. Verweij[1,2,3] · Sanne H. van Spanning[4] · Adriano Grillo[4] · Gino M. M. J. Kerkhoffs[1,2,3] · Simone Priester-Vink[5] · Derek F. P. van Deurzen[4] · Michel P. J. van den Bekerom[4,6]

Knee Surgery, Sports Traumatology, Arthroscopy (2021) 29:4004–4014
https://doi.org/10.1007/s00167-021-06704-7

Predictors of failure:
- ALPSA
- >1 dislocation
- >6 months of instability

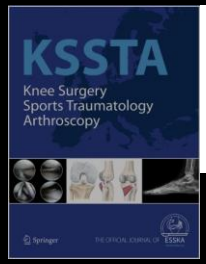


Outcomes of Arthroscopic Anterior Labroligamentous Periosteal Sleeve Avulsion Lesions

AJSM Vol. 50, No. 6, 2022

Justin W. Arner,* MD, Joseph D. Cooper,* MD, Bryant P. Elrick,* MD, MSc, Dylan R. Rakowski,* BS, Joseph J. Ruzbarsky,*† MD, Marilee P. Horan,* MPH, and Peter J. Millett,*†‡ MD, MSc

32% Failure rate in ALPSA
20% Revision rate
ALPSA avg preop dislocations: 3
* Avg for Bankart: 1



Anterior labroligamentous periosteal sleeve avulsion lesion in arthroscopic capsulolabral repair for anterior shoulder instability

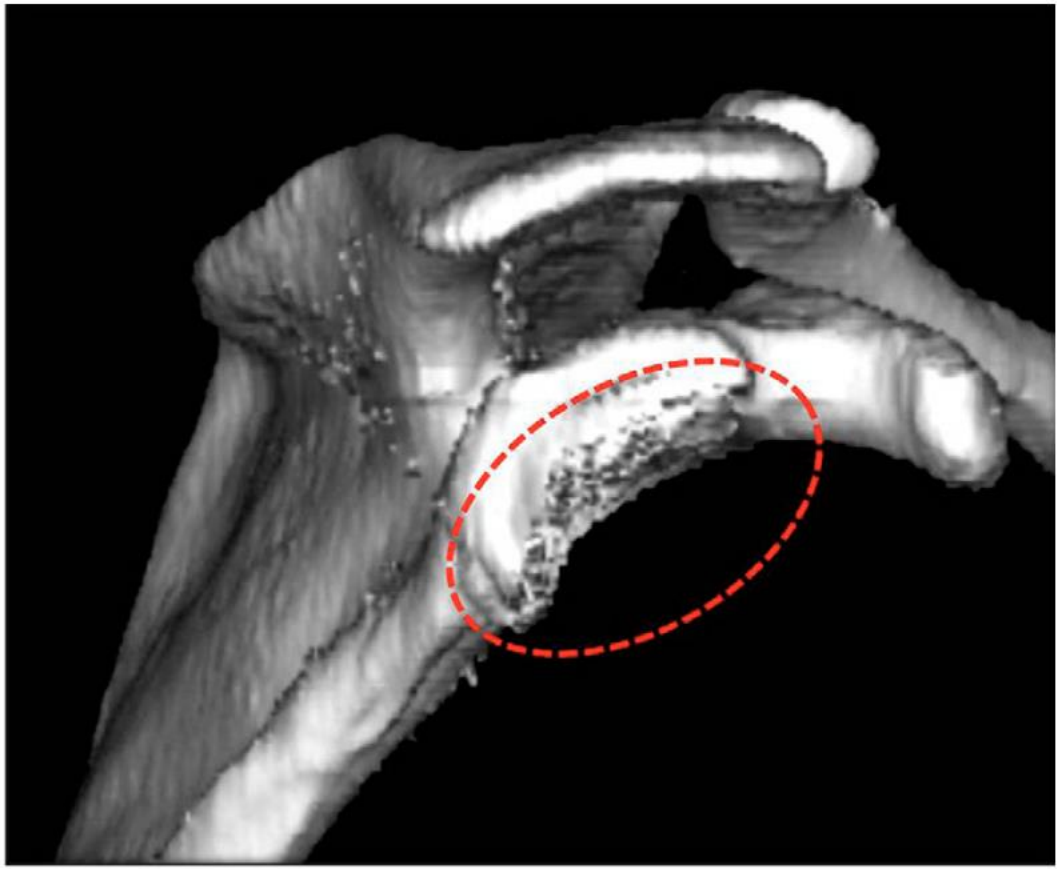
Knee Surg Sports Traumatol Arthrosc (2011) 19:1563–1569

Bong Gun Lee · Nam Su Cho · Yong Girl Rhee

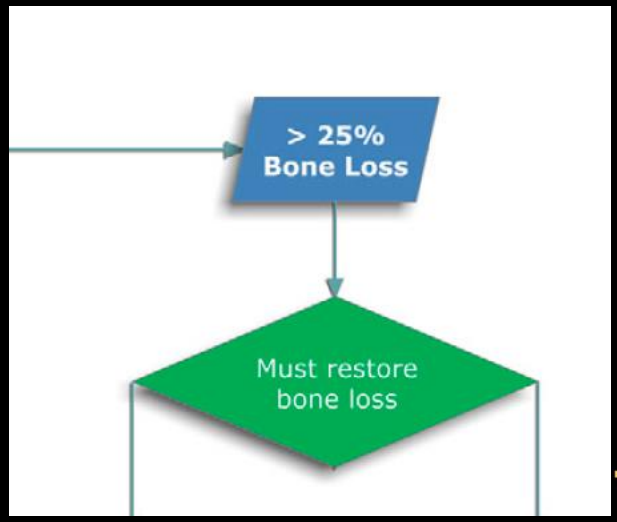
1 year follow up
15% Failure rate in ALPSA
ALPSA avg preop dislocations: 12.3

Recurrent Shoulder Instability: Current Concepts for Evaluation and Management of Glenoid Bone Loss

By CDR Matthew T. Provencher, MD, MC, USN, Sanjeev Bhatia, MD, Neil S. Ghodadra, MD, Robert C. Grumet, MD, Bernard R. Bach Jr., MD, LCDR Christopher B. Dewing, MD, MC, USN, LT Lance LeClere, MD, MC, USN, and Anthony A. Romeo, MD



THE JOURNAL OF BONE & JOINT SURGERY · JBJS.ORG
VOLUME 92-A · SUPPLEMENT 2 · 2010



Game Changer

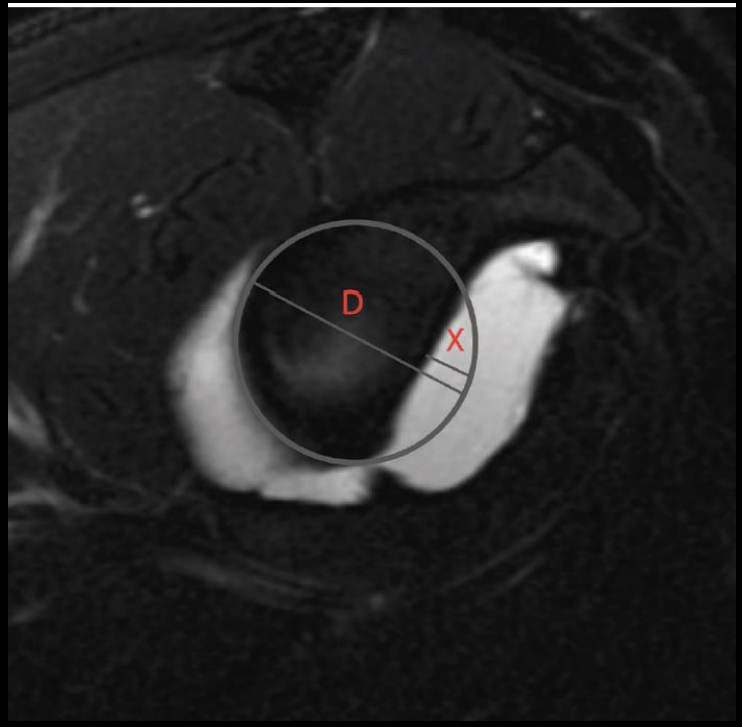
Redefining "Critical" Bone Loss in Shoulder Instability

The American Journal of Sports Medicine, Vol. 43, No. 7
DOI: 10.1177/0363546515578250

Functional Outcomes Worsen With "Subcritical" Bone Loss

CPT James S. Shaha,*† MD, CPT Jay B. Cook,† MD, MAJ Daniel J. Song,† MD,
CDR Douglas J. Rowles,† MD, Craig R. Bottoni,† MD,
Steven H. Shaha,‡ PhD, DBA, and COL John M. Tokish,† MD
Investigation performed at Tripler Army Medical Center, Honolulu, Hawaii, USA

- 73 shoulders
- "Quartiles" of bone loss
- 13.5% bone loss or more = CLINICAL FAILURE WOSI SCORE!!!
- Even if no recurrent instability!

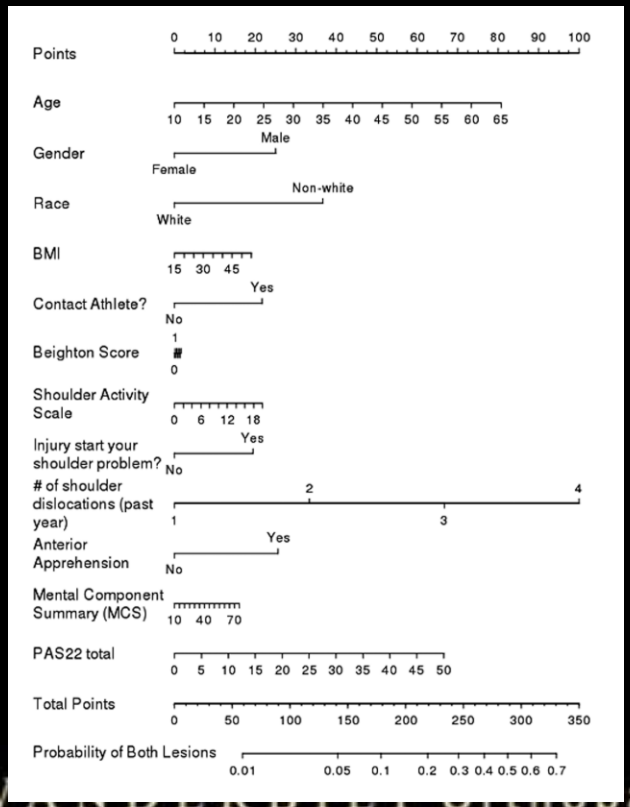


Predictors of Bone Loss in Anterior Glenohumeral Instability

The American Journal of Sports Medicine
2023;51(5):1286–1294

Carolyn M. Hettrich,* MD, MPH, Justin A. Magnuson, MD, Keith M. Baumgarten, MD, Robert H. Brophy, MD, Michael Kattan, PhD, MOON Shoulder Group, Kevin J. Cronin, MD, MS, and Brian R. Wolf, MD, MS

Investigation performed at multicenter facilities and the primary site is at University of Iowa, Iowa City, Iowa, USA

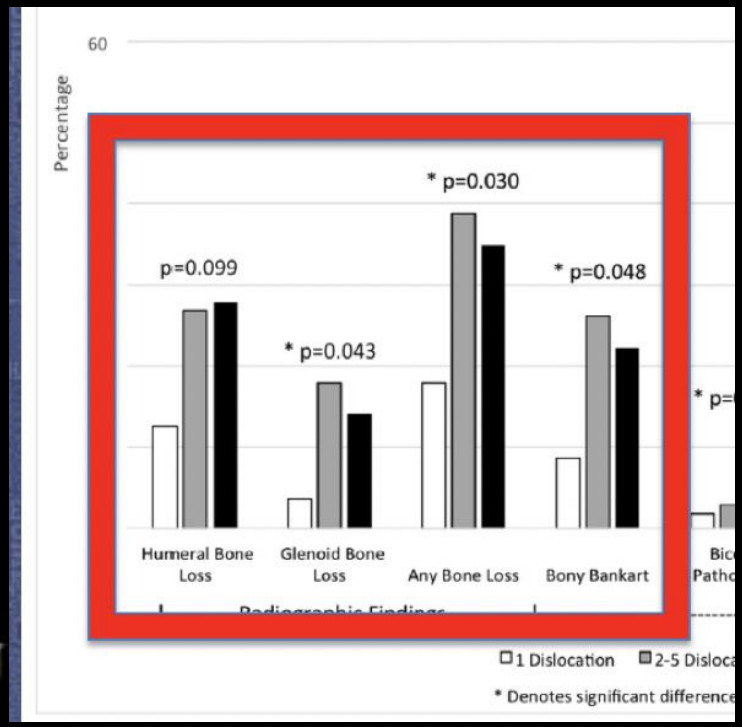


"Each additional dislocation increased the odds of developing any glenoid bone loss by 81%, and those of developing a lesion >10% by 157%"

"Increased frequency of dislocations is the strongest factor leading to glenoid bone defects"

Do you really want to leave it alone?

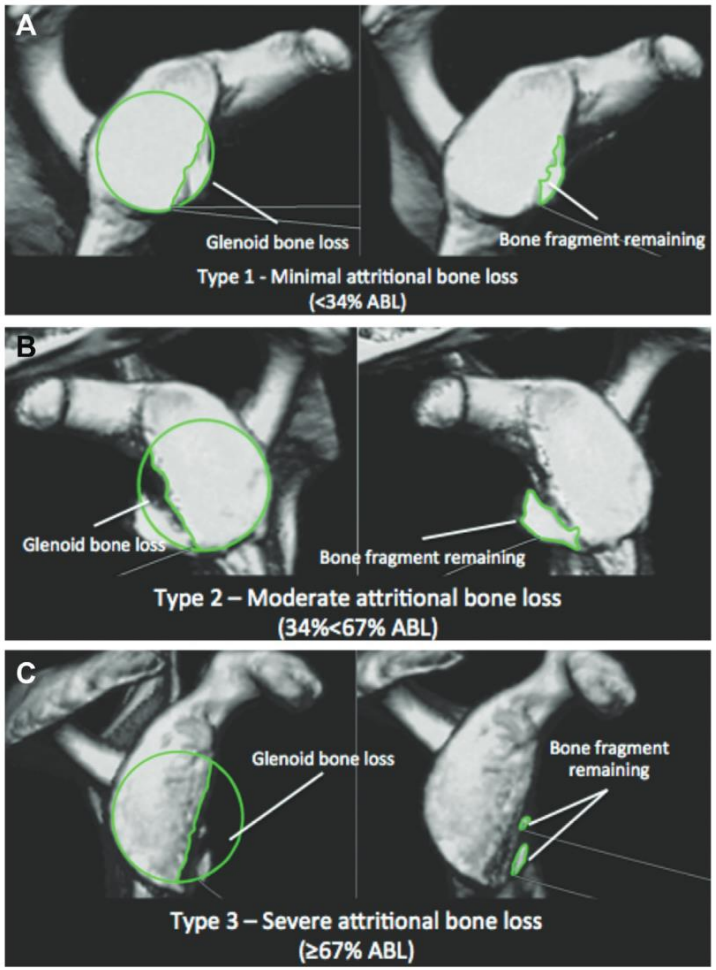
- Taylor
  - 22% bony Bankart in 1st time dislocation
- Rugg



Classification and Analysis of Attritional Glenoid Bone Loss in Recurrent Anterior Shoulder Instability

John W. McNeil,* MD, Brendin R. Beaulieu-Jones,† BA, Andrew S. Bernhardson,‡ MD, LCDR Lance E. LeClere,§ MD, MC USN, Christopher B. Dewing,‖ MD, Joseph R. Lynch,‡ MD, Petar Golijanin,† BS, George Sanchez,¶ BS, and CAPT Matthew T. Provencher,¶#** MD, MC USNR
Investigation performed at Naval Medical Center San Diego, San Diego, California, USA

The American Journal of Sports Medicine, Vol. 45, No. 4
DOI: 10.1177/0363546516677736



- 139 patients
- Most common bone loss is attritional
- Cannot “key in” and reconstitute
- More attritional loss with longer symptom duration

Bone Fragment Union and Remodeling After Arthroscopic Bony Bankart Repair fo houlder Instabilit t

Influence o Instability

Shigeto Nakagaw ,§ MD, PhD,
Tatsuo Mae,§ MD

Investigation perfo ledicine,
Yukioka Hospital,
e, Vol. 43, No. 6

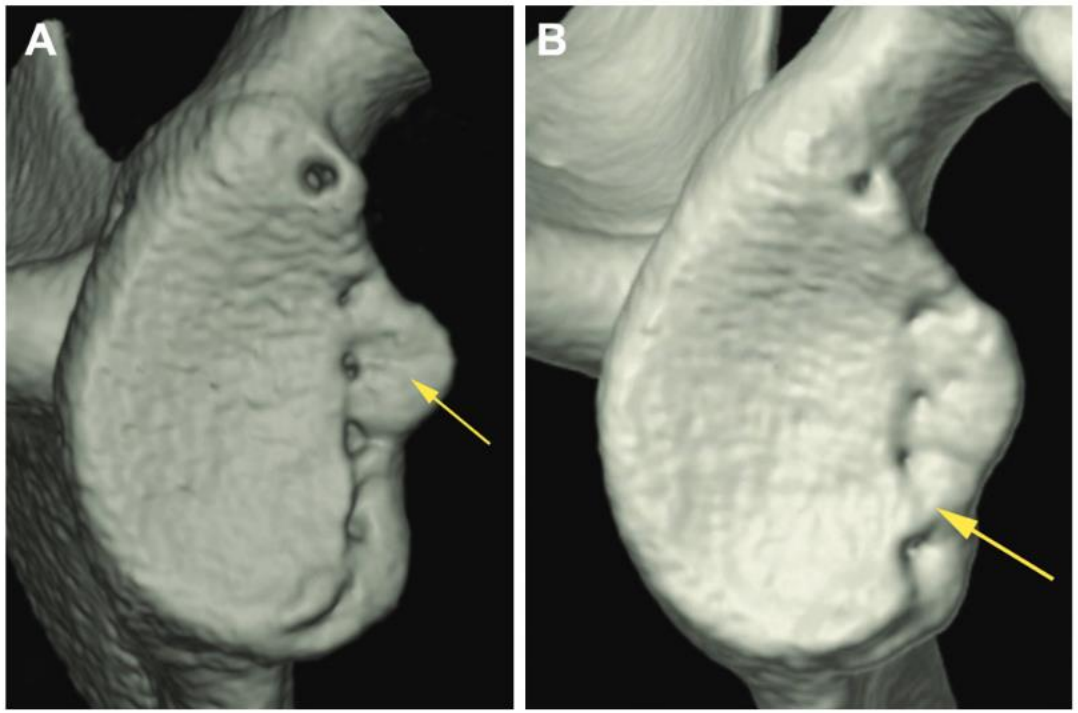


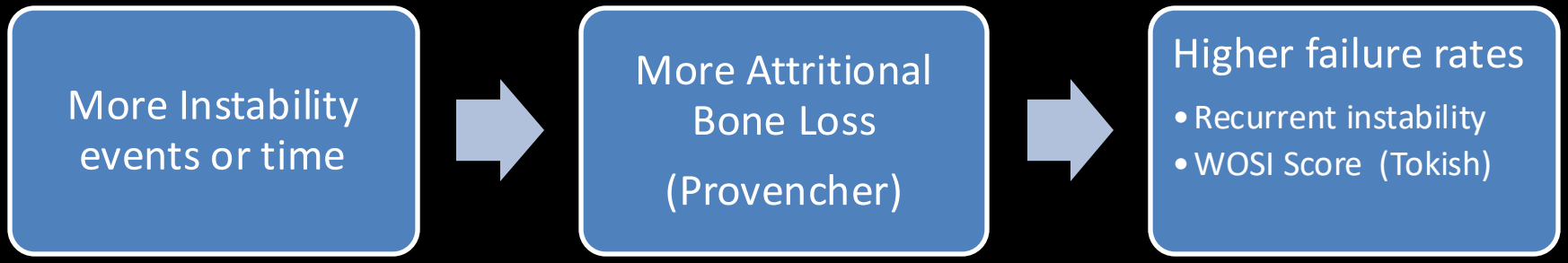
Figure 5. Enlarged bone fragment after bone union. (A) First assessment: a small bone fragment united completely at 4 months postoperatively (arrow). (B) Second assessment: a united bone fragment enlarged at 25 months postoperatively (arrow).

failure rate

ailure rate

ics

Reasonable conclusion



Outcome of the Open Bankart Procedure for Shoulder Instability and Development of Osteoarthritis

The American Journal of Sports Medicine, Vol. 38, No. 8
DOI: 10.1177/0363546510363464

A 5- to 20-Year Follow-up Study

Kiyohisa Ogawa,*† MD, Atsushi Yoshida,‡ MD, Hideo Matsumoto,† MD, and Tsuyoshi Takeda,† MD
From the †Sports Clinic, and the ‡Department of Orthopedic Surgery, School of Medicine, Keio University, Tokyo, Japan

- 167 open Bankarts
- Onset of OA correlates with number of instability events pre-op

Glenohumeral Arthrosis in Anterior Instability Before and After Surgical Treatment

Incidence and Contributing Factors

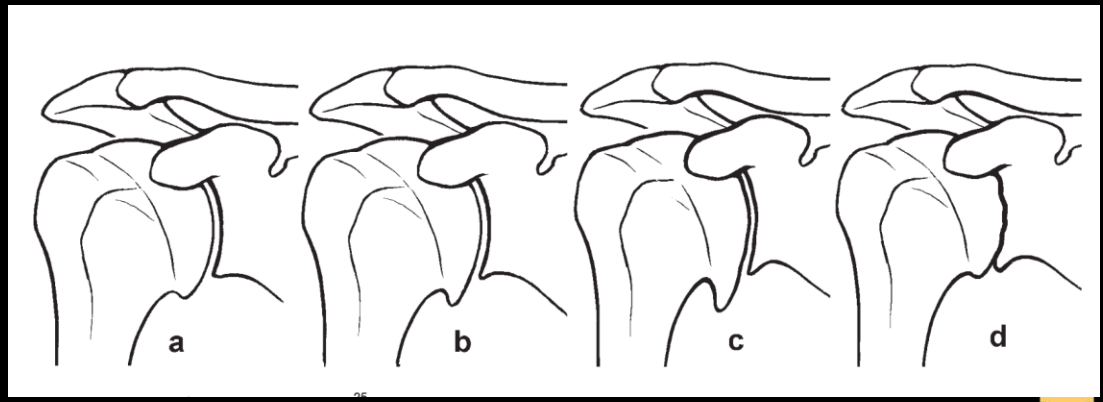
Florent Buscayret,* MD, Thomas Bradley Edwards,[†‡] MD, Istvan Szabo,* MD, Patrice Adeleine,* PhD, Henri Coudane,* MD, and Gilles Walch,* MD
*From the *Clinique Ste. Anne Lumiere, Lyon, France, and [‡]Fondren Orthopedic Group, Houston, Texas*

The American Journal of Sports Medicine, Vol. 32, No. 5
DOI: 10.1177/0363546503262686

570 surgically treated shoulders

Rate of post op OA = 19.7%

Increased # of dislocations = Increased rate of OA



Arthroscopic Bankart Repair Versus Immobilization for First Episode of Anterior Shoulder Dislocation Before the Age of 25

A Randomized Controlled Trial

Cécile Pougès,[*†‡] MD, Alexandre Hardy,[†‡] MD, Thomas Vervoort,[†‡§] MD, Thomas Amouyel,[†‡] MD, Pauline Duriez,[†‡] MD, Clément Lalanne,[†‡] MD, Christophe Szymanski,[†‡] MD, Valérie Deken,[†‖] Christophe Chantelot,[†‡] PhD, Peter Upex,[¶] MD, and Carlos Maynou,[†‡] PhD

Investigation performed at Department of Orthopaedic Surgery, Lille University Hospital Salengro, France

Conclusion: In patients with first-time shoulder dislocations, arthroscopic labral repair (Bankart procedure) reduced the risk of secondary shoulder dislocation and improved functional outcome versus nonoperative treatment after a 2-year follow-up. Surgical treatment after a first episode of shoulder dislocation could be offered as a primary treatment option in a younger population if these results are confirmed by larger studies with a longer follow-up.

Arthroscopic Bankart Repair Versus Conservative Management for First-Time Traumatic Anterior Shoulder Instability: A Systematic Review and Meta-analysis

Eoghan T. Hurley, M.B., B.Ch., M.Ch., Amit K. Manjunath, B.S., David A. Bloom, B.A., Leo Pauzenberger, M.D., Hannan Mullett, M.Ch., F.R.C.S.I. (Tr & Orth), Michael J. Alaia, M.D., and Eric J. Strauss, M.D.

Arthroscopy: The Journal of Arthroscopic and Related Surgery, Vol 36, No 9 (September), 2020: pp 2526-2532

Conclusions

Arthroscopic Bankart repair resulted in a 7-fold lower recurrence rate and a higher rate of return to play than conservative management. Thus, arthroscopic Bankart repair may be advisable to perform routinely in patients with first-time dislocation who participate in sports.

Recap…

- More dislocations
  - More ALPSAs
  - More glenoid bone loss
  - More Hill-Sachs lesions
  - Bigger labral tears
  - More cartilage injuries
  - Worse WOSI scores
  - Higher failure rates
  - More OA

Do It…?

No Surgery

- % Recurrence
- No proven difference in outcomes (…yet)
- Loss of time/$$$$ in pro athletes

SURGERY

More ALPSAs
More glenoid bone loss
More Hill-Sachs lesions
Bigger labral tears
More cartilage injuries
More OA
Worse WOSI scores
Higher failure rates

“Can I play?”

- 21 y/o slotback
- 1st dislocation
  - Reduced in locker room
- 3 weeks before Army Navy

Nonoperative Management for In-Season Athletes With Anterior Shoulder Instability

Daniel D. Buss,*† MD, Gregory P. Lynch,‡ MD, Christopher P. Meyer,§ MD, Shane M. Huber,† ATC, and Michael Q. Freehill,† MD
From †Sports and Orthopaedic Specialists, Minneapolis, Minnesota, ‡Johnson County Orthopaedics, Olathe, Kansas, and the §University of Minnesota Department of Orthopedics, Minneapolis, Minnesota

The American Journal of Sports Medicine, Vol. 32, No. 6 © 2004

- 30 patients, contact and noncontact sports
- Mean 16 years old
- 90% return to sport
  - Subjective: all athletes a “same or near same level”
- Mean time lost from sport: 10 days

Winner of the 2014 Aircast Award

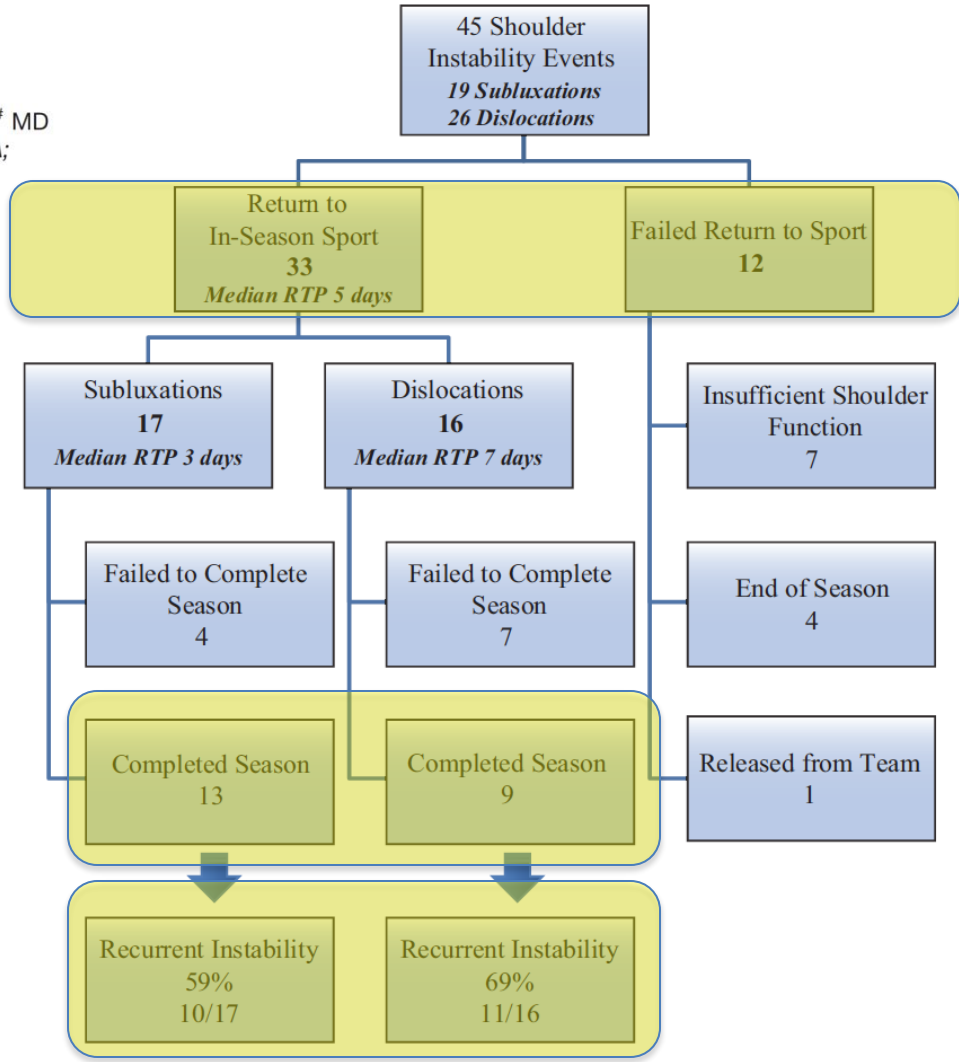
Return to Play and Recurrent Instability After In-Season Anterior Shoulder Instability

The American Journal of Sports Medicine, Vol. 42, No. 12
DOI: 10.1177/0363546514553181

A Prospective Multicenter Study

MAJ Jonathan F. Dickens,*†‡ MD, LTC Brett D. Owens,†‡ MD, Kenneth L. Cameron,‡ PhD, MPH, ATC, MAJ Kelly Kilcoyne,†§ MD, LTC C. Dain Allred,‖ MD, COL Steven J. Svoboda,†‡ MD, LTC Robert Sullivan,‖ MD, Col (Ret) John M. Tokish,†¶ MD, Karen Y. Peck,‡ MEd, ATC, and CDR John-Paul Rue,# MD
Investigation performed at the United States Naval Academy, Annapolis, Maryland, USA; the United States Military Academy, West Point, New York, USA; and the United States Air Force Academy, Colorado Springs, Colorado, USA

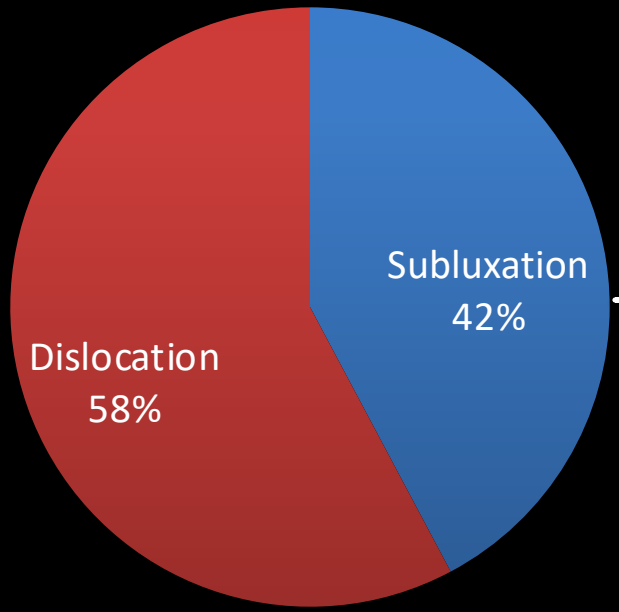
- 45 patients
  - 38 first time instability
- 75% return to sport
  - Average RTP 5 days
- 66% completed season
- 63% of those that returned had another event



VANDERBILT Orthopaedics

Subluxation Vs. Dislocation

Dislocation
- Median RTP 7 days
- 56% completed the Season



Subluxation
- Median RTP 3 days
- 76% completed the season p=0.282

Subluxation 5.3x more likely to return to sport compared to dislocations (95%CI 1.00. 28.07; p=0.049)

Predictors of Return to Sport

TABLE 1
Univariate Logistic Regression Models Evaluating the Association Between Return to Play and Patient-Reported Outcomes at the Time of Injury[a]

Outcome Measure	Odds Ratio (95% CI)	*P* Value
WOSI	1.05 (1.00-1.09)	.037
SST	1.03 (1.00-1.05)	.044
ASES	1.03 (0.99-1.06)	.086
SANE	1.03 (0.99-1.08)	.092

For every 10 points higher on WOSI at the time of injury, returned 1.5 days faster

For every 1 point higher the WOSI at the time of injury, 5% more likely to RTP

1 point on SST = 3% more likely to RTP

Successful Return to Sport After Arthroscopic Shoulder Stabilization Versus Nonoperative Management in Contact Athletes With Anterior Shoulder Instability

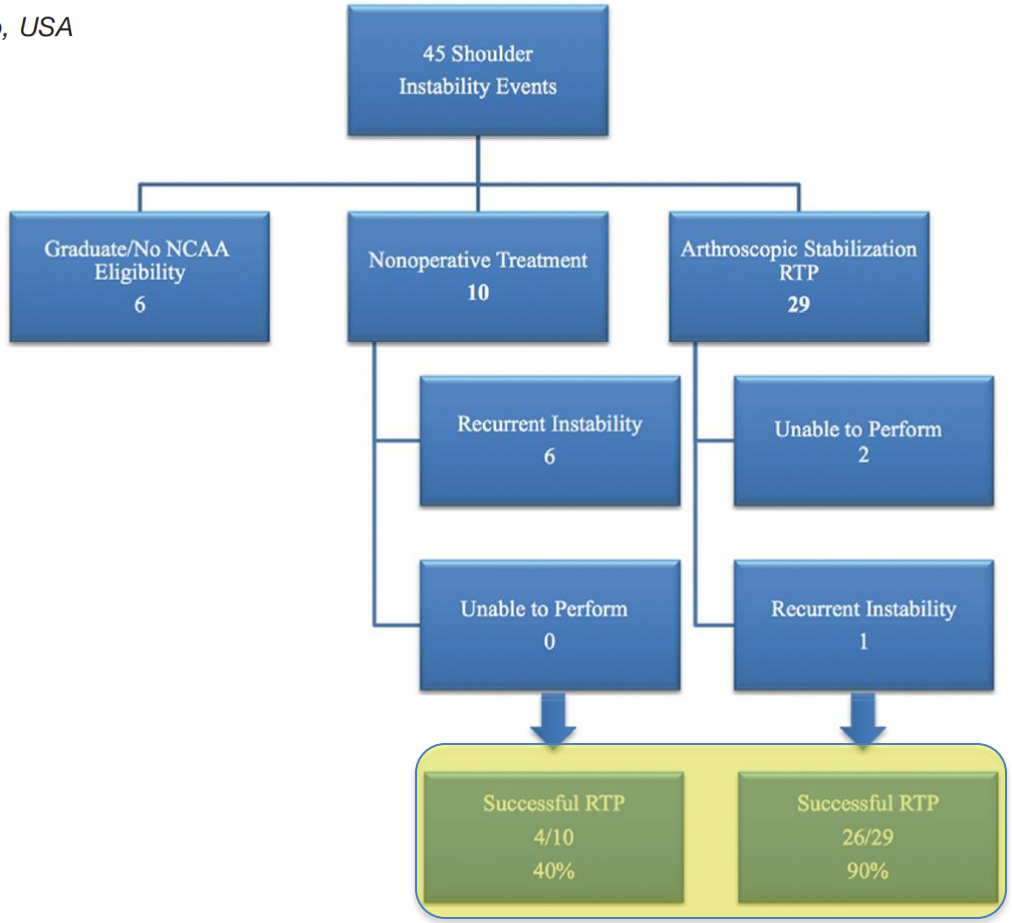
A Prospective Multicenter Study

Jonathan F. Dickens,*†‡ MD, John-Paul Rue,‡§ MD, Kenneth L. Cameron,‖ PhD, MPH, ATC, John M. Tokish,‡¶ MD, Karen Y. Peck,‖ MEd, ATC, C. Dain Allred,# MD, Steven J. Svoboda,‡‖ MD, Robert Sullivan,‡# MD, Kelly G. Kilcoyne,‡** MD, and Brett D. Owens,‡†† MD
Investigation performed at the United States Naval Academy, Annapolis, Maryland, USA, the United States Military Academy, West Point, New York, USA, and the United States Air Force Academy, Colorado Springs, Colorado, USA

The American Journal of Sports Medicine, Vol. 45, No. 11
DOI: 10.1177/0363546517712505

- Followed same cohort in subsequent season
- Sig better results in patients treated with surgery

VANDERBILT Orthopaedi



Shoulder Instability in Professional Football Players

SPORTS HEALTH Sep • Oct 2013

Lance E. LeClere, MD,† Peter D. Asnis, MD,† Matthew H. Griffith, MD,‡ David Granito, ATC,§ Eric M. Berkson, MD,† and Thomas J. Gill, MD†

- 1 NFL Team
- 1980-2008
- 328 players (2 yr min)
- 13.1% incidence
- Compared:
  - 1st time
  - Non Op Tx
  - Op Tx

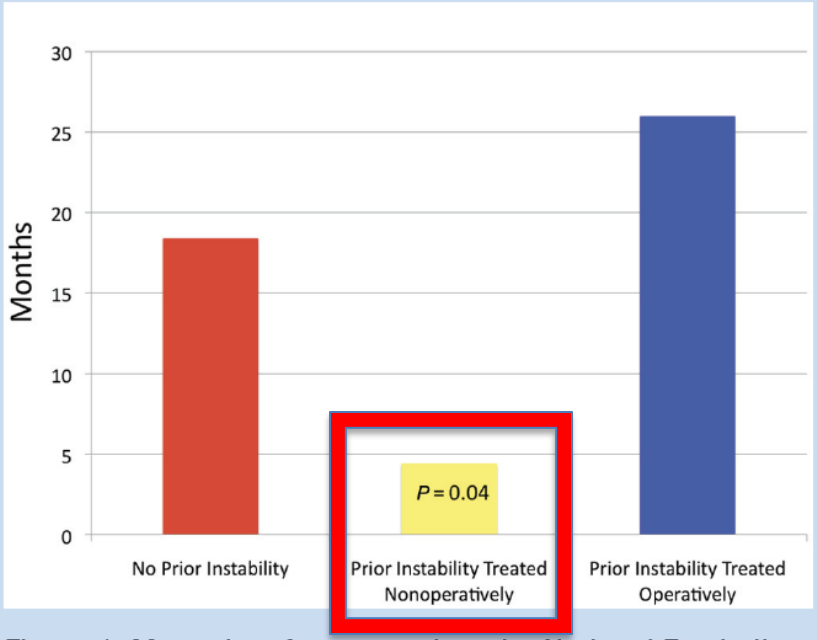


Figure 1. Mean time from entry into the National Football League until recurrent instability. Players with a history of instability prior to entry into the league who were treated nonoperatively had a significantly shorter time until recurrent instability.

VANDERBILT Orthopaedics

Shoulder Instability in Professional Football Players

SPORTS HEALTH Sep • Oct 2013

Lance E. LeClere, MD,† Peter D. Asnis, MD,† Matthew H. Griffith, MD,‡ David Granito, ATC,§ Eric M. Berkson, MD,† and Thomas J. Gill, MD†

Table 1. Instability rates and timing in National Football League players

Group	Instability Rate in the NFL (%)	Months to Instability Episode in the NFL
No instability prior to the National Football League	13.1	18.4
Prior instability treated nonoperatively	41.7	4.4
Prior instability treated with surgical stabilization	10.5	26.0

What about bone loss?

The Effect of Subcritical Bone Loss and Exposure on Recurrent Instability After Arthroscopic Bankart Repair in Intercollegiate American Football

MAJ Jonathan F. Dickens,*†‡ MD, COL (USANG) Brett D. Owens,†§ MD, Kenneth L. Cameron,‖ PhD, MPH, ATC, COL (Ret) Thomas M. DeBerardino,¶ MD, MAJ Brendan D. Masini,†# MD, Karen Y. Peck,‖ MEd, ATC, and COL Steven J. Svoboda,†‖ MD
Investigation performed at Keller Army Community Hospital, United States Military Academy, West Point, New York, USA

The American Journal of Sports Medicine, Vol. 45, No. 8
DOI: 10.1177/0363546517704184

- 50 division one football players
- <13.5% bone loss = no recurrence
- >13.5% bone loss = 100% recurrence
- More instability events
  - More bone loss
  - Bigger tears
  - More anchors

- 21 y/o slotback
- 1st dislocation
  - Reduced in locker room
- 3 weeks before Army Navy

“Can I play?”

Medical Supervision of High School Athletics in Chicago

A Follow-up Study

The Orthopaedic Journal of Sports Medicine,

Nathaniel S. Jones,*† MD, Kyle Wieschhaus,‡ MS, Brendan Martin,§ PhD, and Pietro M. Tonino,† MD

Investigation performed at Loyola University Medical Center, Maywood, Illinois, USA

TABLE 1
Who Is Available for Medical Problems at Home Games and Sideline Coverage?[a]

	2003	2017	*P*
Athletic trainer			**<.001**
Yes	4 (8.5)	25 (37.9)	
No	43 (91.5)	41 (62.1)	
Orthopaedic surgeon			.42[b]
Yes	1 (2.1)	0 (0.0)	
No	46 (97.9)	66 (100.0)	
Family physician			**.03**[b]
Yes	4 (8.5)	0 (0.0)	
No	43 (91.5)	66 (100.0)	

Don’t Forget About Posterior…

Clinical Scenario

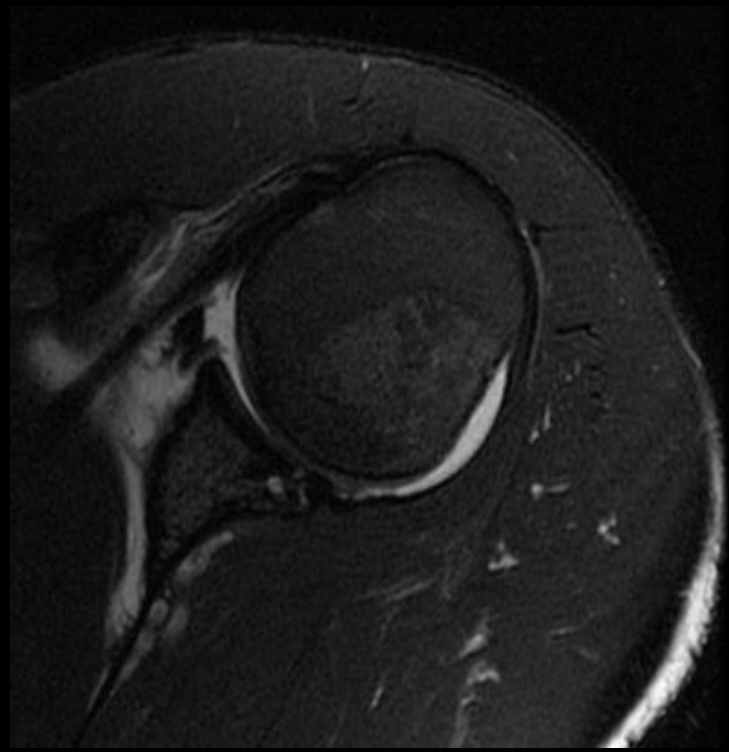
- Starting Left Tackle, Senior
- Dominant UE
- H/o posterior pain
- Strongest on Team
  - Decreased bench press
- + Kim/+Jerk
- Normal Cuff Strength

Risk Factors for Failure of Nonoperative Treatment of Posterior Shoulder Labral Tears on Magnetic Resonance Imaging

LCDR Daniel L. Christensen, MD, MC USN ; MAJ Michael J. Elsenbeck, MD, MC USA* ; MAJ Jared A. Wolfe, MD, MC USA* ; LT Walter N. Nickel, DO, MC USN* ; LT William Roach, MD, MC USN* ; CDR Robert A. Waltz, MD, MC USN† ; LTC Jonathan F. Dickens, MD, MC USA* ; CDR Lance E. LeClere, MD, MC USN†*

MILITARY MEDICINE, 185, 9/10:e1556, 2020

- Retrospective review
  - USNA, Walter Reed
- 2013-2015 MRIs
  - <40 y/o
  - Isolated posterior tear
  - MRA confirmed
- Minimum 2 year f/u



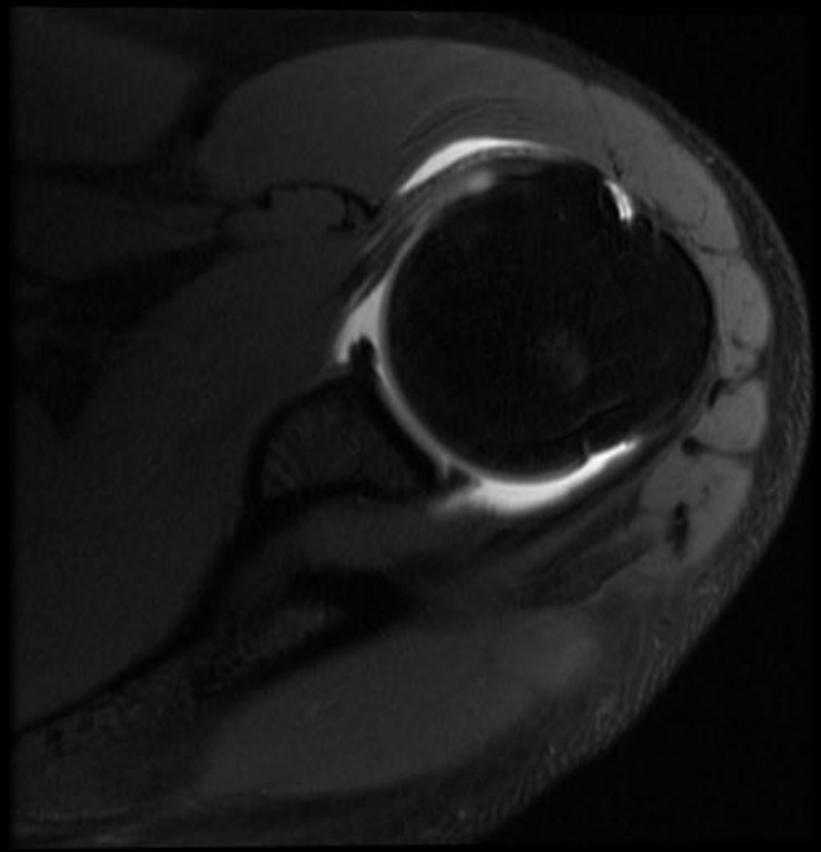
Variables

- Injury vs insidious
- Instability vs pain
- Hx dislocation?
- Strength changes?
- Kim
- Jerk
- Load and Shift
- Apprehension
- Glenoid Version
- Chondrolabral version
- HH subluxation ratio
- Size of tear
- Labral Height
- Glenoid Depth
- Glenoid Dysplasia
- Bone Loss

Results

- 159 shoulders
- Min 2 year follow up

- 48.4% Rate of Surgical Tx
  - 77 surgery
  - 82 non operative



Examination Findings: INSTABILITY!

Does Not Predict Surgery

- Kim and Jerk Tests
- Rotator cuff strength

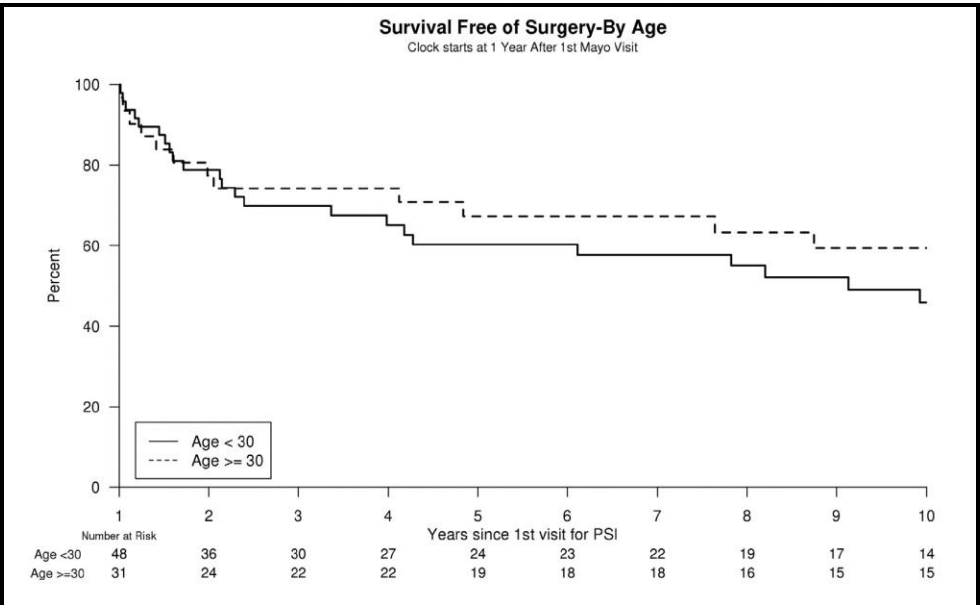
Predicts Surgery

- + Load Shift
- + Apprehension

Arthroscopy: The Journal of Arthroscopic and Related Surgery, Vol 35, No 7 (July), 2019: pp 1964-1970

Nonoperative Management of Posterior Shoulder Instability: An Assessment of Survival and Predictors for Conversion to Surgery at 1 to 10 Years After Diagnosis

Jarret M. Woodmass, M.D., F.R.C.S.C., Julia Lee, M.D., Nick R. Johnson, M.D., Isabella T. Wu, B.A., Christopher L. Camp, M.D., Diane L. Dahm, M.D., and Aaron J. Krych, M.D.



VANDERBILT Orthopaedics

Do it…?

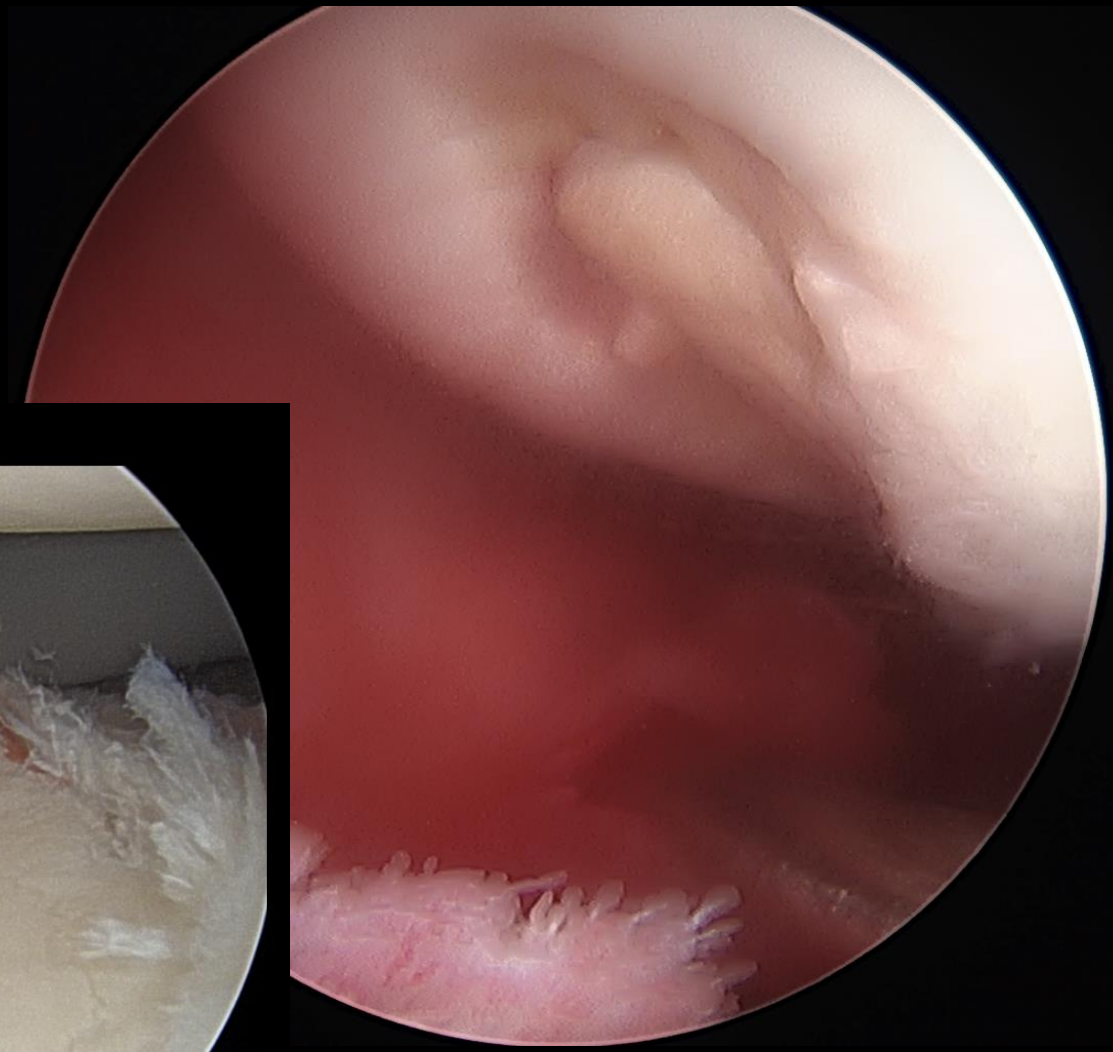
No Surgery

- % Recurrence
- No proven difference in outcomes (…yet)
- Loss of time/$$$$ in pro athletes

SURGERY

More ALPSAs
More glenoid bone loss
More Hill-Sachs lesions
Bigger labral tears
More cartilage injuries
More OA
Worse WOSI scores
Higher failure rates

Glenoid Bone Loss and Hill Sachs

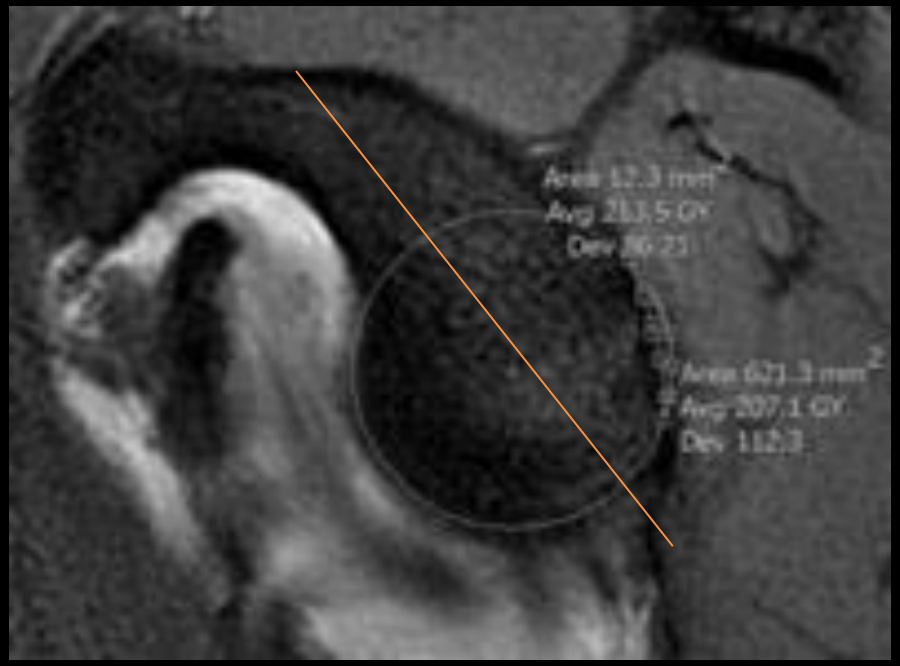


Beware of Bone Loss!

Effect of Posterior Glenoid Bone Loss and Retroversion on Arthroscopic Posterior Glenohumeral Stabilization

Jared A. Wolfe,*† MD, Michael Elsenbeck,*† MD, Kyle Nappo,*† MD, Daniel Christensen,*† MD, Robert Waltz,‡ MD, Lance LeClere,‡ MD, and Jonathan F. Dickens,*§‖ MD
Investigation performed at Walter Reed National Military Medical Center, Bethesda, Maryland, USA

The American Journal of Sports Medicine
2020;48(11):2621–2627



- USNA and Walter Reed
- 66 shoulders
  - Isolated posterior tear
- F/u 26mos
- 2 groups based on bone loss
  - Minimal: <13.5%
  - Moderate: >13.5%

Moderate Bone Loss=BAD!!

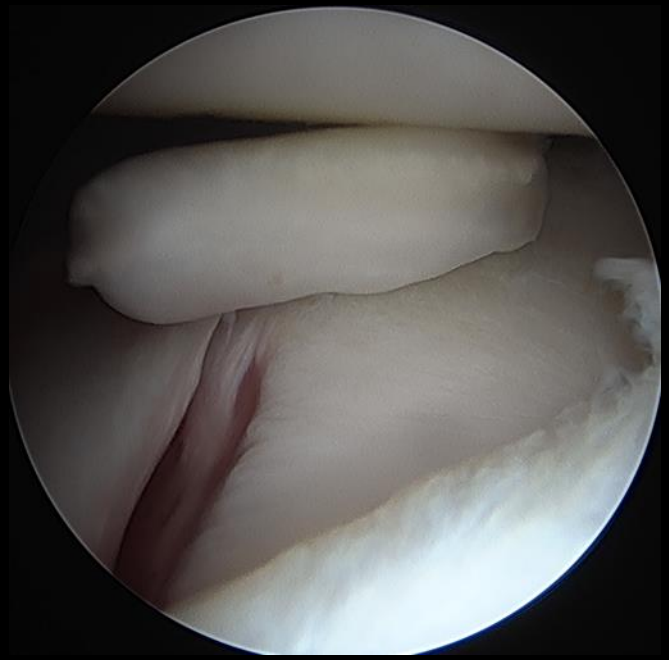
	Minimal Bone Loss (n=57)	Moderate Bone Loss (n=9)	P-Value
1^0 Complaint: Pain vs. Instability	80.7% (46/57)	22.2% (2/9)	<0.001
Glenoid Retroversion	-4.30	-11.5	0.01
Pain at last follow up	31.6% (18/57)	88.9% (8/9)	0.0017
Revision Posterior Stabilization	7% (4/57)	33% (3/9)	.0017

Conclusions

- 14% of posterior instability patients had moderate bone loss

- With bone Loss
  - More instability
  - Higher re-op risk
  - More pain at final f/u

- Bone loss associated with increased retroversion and higher failure rates!



Clinical Scenario

- Starting Left Tackle, Senior
- H/o vague posterior pain
- + Kim/+Jerk
- Normal Cuff Strength
- What to do????

Recurrent Instability and Surgery Are Common After Nonoperative Treatment of Posterior Glenohumeral Instability in NCAA Division I FBS Football Players

Clin Orthop Relat Res (2021) 479:694-700

David J. Tennent MD, Sean E. Slaven MD, Mark A. Slabaugh MD, Kenneth L. Cameron PhD, MPH, ATC, Matthew A. Posner MD, Brett D. Owens MD, Lance E. LeClere MD, John-Paul H. Rue MD, John M. Tokish MD, Jonathan F. Dickens MD

- 10 football players in season
- 7 returned to play same season
- RTP 1-7 days
- 5/7 had repeat instability
- 7/10 had surgery in post season

Table 1. In-season injury characteristics and return to sport after posterior instability in collegiate football players

Athlete injury characteristics	Proportion of athletes
Dominant extremity	9 of 10
Previous instability	3 of 10
Completed season	7 of 10
Days missed[a]	1 (0 to 14)
Number of subluxations[a]	4 (0 to 8)
Proportion of recurrent in-season subluxations	5 of 7

[a]Data are shown as the median (range).

Posterior In Season: Ongoing…

- 2018 Varsity football season at USNA/USAFA
  - 13 new onset posterior labral tears
    - 4.3% of roster
  - 84% returned to play (11/13)
  - 69% completed season (9/13)
  - 46% surgery (6/13)
  - 54% non op treatment (7/13)

https://www.trbimg.com/img-5a26c393/turbine/ac-cs-navy-evan-martin-20171204

My opinion…

USNA Treatment Approach

- Anterior, 1st time dislocation, under 25
  - Arthroscopic Bankart
- Anterior, with minimal bone loss (<10%)
  - Arthroscopic Bankart
- Anterior, with moderate bone loss (10-20%)
  - Open Bankart with capsular shift for contact athletes
  - Arthroscopy with remplissage
- Anterior revision, with less than 20% bone loss
  - Open capsular shift, with Bankart repair
- Anterior with >20% bone loss
  - Latarjet

USNA Treatment Approach

- Posterior, new onset, no bone loss
  - Attempt rehab
  - +/- SAI
- Posterior, minimal bone loss
  - Arthroscopic labral repair and capsulorrhaphy
- Revision posterior
  - Arthroscopic revision
- Posterior with bone loss
  - Scope distal tibia allograft

Summary

- CAN attempt non-operative treatment
  - Should we?
- Non-operative treatment CAN work in-season
  - Should we?
- Evidence is starting to show that we shouldn't wait

Thank You