ROTHMAN ORTHOPAEDIC INSTITUTE

Sidney Kimmel Medical College at Thomas Jefferson University

55 Year-Old Orthopaedic Surgeon & Weightlifter w/ a B2 Glenoid

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Disclosures

- Consultant
  - Aevumed
  - DJO
- Royalties
  - DJO
  - Depuy
  - Wolters Kluwer
- Intellectual Properties/Ownership
  - Aevumed
  - Parvizi Surgical Innovations
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  - Mainline Health System– Co- Chair, Division of Orthopaedic Surgery
  - Rothman Orthopaedics Board of Directors

Disclosures

- Research Support

  - **3M**
  - **Aesculap**
  - **AO Spine**
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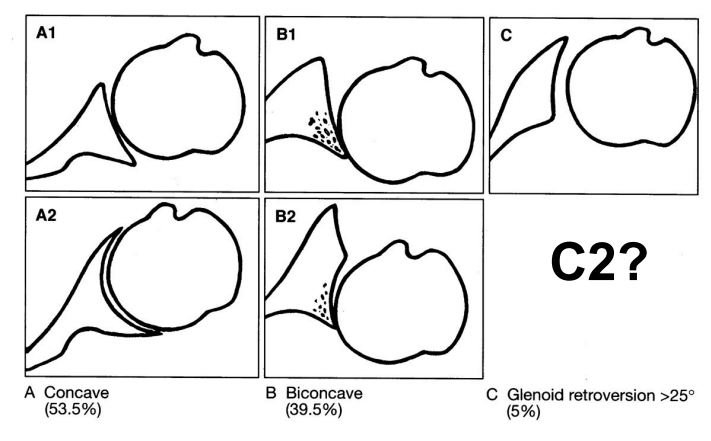
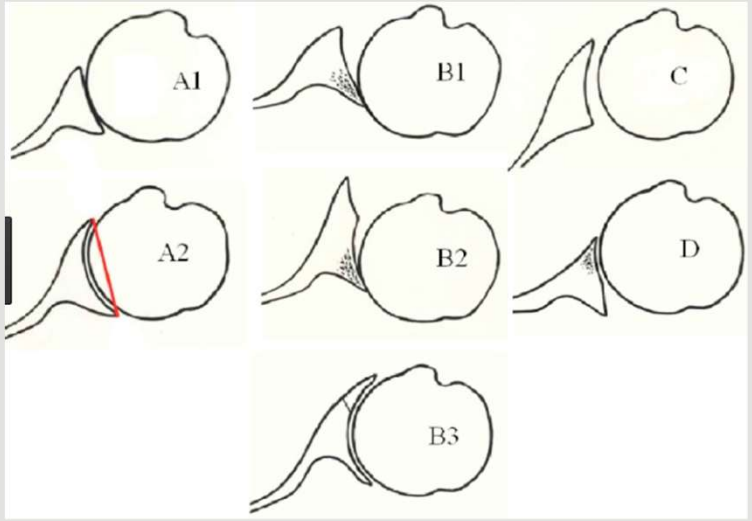
  - **Tornier**
  - **Orthospace**
  - **Zimmer Biomet**

Primary Osteoarthritis
Bone loss Patterns



Walch, et. al., J Arthroplasty, 1999



Bercik MJ, Kruse K, 2nd, Yalizis M, Gauci MO, Chaoui J, Walch G. J Shoulder Elbow Surg 2016;25:1601-6.

B2 Glenoid Options

- Hemiarthroplasty with concentric glenoid reaming (Ream and Run)
- Total shoulder arthroplasty with concentric reaming and inlay glenoid
- Total shoulder arthroplasty with posteriorly augmented component
- Total shoulder arthroplasty with posterior bone graft and standard glenoid component
- Reverse total shoulder arthroplasty
  - Asymmetric reaming, standard baseplate
  - Bone graft, standard baseplate
  - Augmented baseplate

Results- Ream and Run
55 and under

- 65 shoulders in patients 55 and under
- Minimum 2 yr f/u
- 22 with radiographic f/u
- Avg. medial erosion of 1.1 mm at 44 months
- 14% revision rate at 2 years or less

Saltzman MD, Chamberlain AM, Mercer DM, Warme WJ, Bertelsen AL, Matsen FA, 3rd. Shoulder hemiarthroplasty with concentric glenoid reaming in patients 55 years old or less. Journal of shoulder and elbow surgery / American Shoulder and Elbow Surgeons [et al] 2011;20:609-15.

Results- Ream and Run

- 24 shoulders- 21 were 55 or younger
- Reamers inconsistent, excised labrum
- Minumum 2 yr f/u
- 6 (25%) required revision within 2 yrs
- The remaining 15 shoulders followed 3.7 yrs (2.3-4.9)
  - SANE=74.5%; PSS=82.9; SST 10.4
  - Correlated with motion and age

Getz CL, Kearns KA, Padegimas EM, Johnston PS, Lazarus MD, Williams GR, Jr. Survivorship of Hemiarthroplasty With Concentric Glenoid Reaming for Glenohumeral Arthritis in Young, Active Patients With a Biconcave Glenoid. The Journal of the American Academy of Orthopaedic Surgeons 2017;25:715-23.

Acceptable Clinical Results Higher Complications

J Shoulder Elbow Surg (2012) 21, 1526-1533

ELSEVIER

Journal of Shoulder and Elbow Surgery

www.elsevier.com/locate/ymse

Results of anatomic nonconstrained prosthesis in primary osteoarthritis with biconcave glenoid

Gilles Walch, MD[a,*], Claudio Moraga, MD[b], Allan Young, MD[a], Juan Castellanos-Rosas, MD[a]

Table III Glenoid loosening and prosthesis dislocations: correlations with preoperative computed tomography arthrogram measurements

Variable*	Glenoid loosening			Prosthesis dislocation		
	Loose (n = 19)	Not loose (n = 66)	*P*	Dislocated (n = 5)	Not dislocated (n = 87)	*P*
Retroversion 1, °	9.6 ± 9.6	7 ± 7.1	.3	8.6 ± 9.9	7.9 ± 8.2	.98
Retroversion 2, °	24 ± 7.9	17.4 ± 7.2	.001	24 ± 9.7	19 ± 7.9	.16
Retroversion 3, °	29.7 ± 8	23.1 ± 8.6	.002	33 ± 7.8	24.5 ± 8.7	.01
Post wear, mm	9.6 ± 4.9	6.4 ± 4.2	.005	8.3 ± 2.5	7 ± 4.5	.13
Wear ratio, %	28.2 ± 14.5	20.7 ± 13.2	.02	24.9 ± 10.5	22.2 ± 13.3	.33
Sublux/scapula, %	80.0 ± 12.9	70.7 ± 15	.01	82.7 ± 11.9	72.1 ± 14.5	.06
Sublux/glenoid, %	61.7 ± 10.3	60.7 ± 10.6	.7	63.6 ± 18.3	60.6 ± 10.3	.97

* Data are presented as mean ± standard deviation.

Augmented Glenoid

J Bone Joint Surg Am. 2018;100:1934-48

Clinical and Radiographic Outcomes of a Posteriorly Augmented Glenoid Component in Anatomic Total Shoulder Arthroplasty for Primary Osteoarthritis with Posterior Glenoid Bone Loss

Jason C. Ho, MD, Michael H. Amini, MD, Vahid Entezari, MD, Bong Jae Jun, PhD, Bashar Alolabi, MD, Eric T. Ricchetti, MD, and Joseph P. Iannotti, MD, PhD

- 71 shoulders, B2 or B3
- Mean age 65.7 (range:51-80)
- Median F/U 2.4 years (range 1.9-5.7)
- Results correlated with degree of posterior subluxation
- Greater post-op subluxation
  - Teres minor atrophy
  - Increased component retroversion
- Central peg osteolysis– increased posterior bone loss and joint line medialization

Journal of Shoulder and Elbow Surgery
ELSEVIER Volume 22, Issue 9, September 2013, Pages 1199-1208

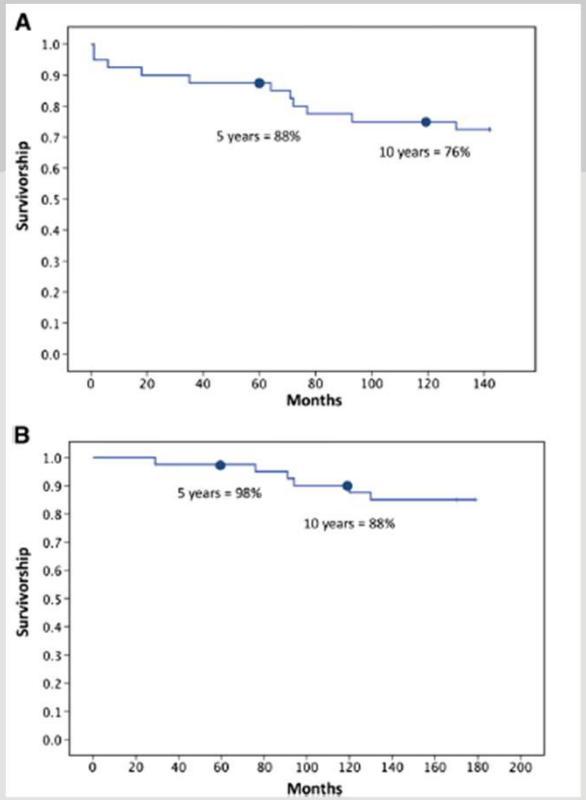
Shoulder

Reverse total shoulder arthroplasty for massive irreparable rotator cuff tears in patients younger than 65 years old: results after five to fifteen years

Eugene T.H. Ek MBBS, PhD, FRACS [a, b], Lisa Neukom MD [a], Sabrina Catanzaro RN [a], Christian Gerber MD, FRCSEd (Hon) [a]

Conclusion

RTSA in younger patients provides significant subjective improvement and substantial gain in overall function, which is maintained up to 10 years. Although the complication rate is high, most can be treated successfully without compromise to clinical outcome. However, it is imperative that the high complication rate is explained to patients, with the risks and benefits carefully considered.



JSES Open Access
Volume 3, Issue 3, October 2019, Pages 162-167

Reverse shoulder arthroplasty in patients aged 65 years or younger: a systematic review of the literature

Mikaël Chelli MD, MSc [a], Lucas Lo Cunsolo MD [a], Marc-Olivier Gauci MD, MSc [a], Jean-François Gonzalez MD, MSc [a], Peter Domos MD, FRCS [b], Nicolas Bronsard MD, PhD [a], Pascal Boileau MD, PhD [a]

Table II
Detailed complication and reintervention rates

	Year	N	FU, mo	Complication, %	Revision, %	Reoperation, %
Authors						
Black et al[2]: primary	2014	33	55	18	6	3
Black et al: revision	2014	32	56	28	3	9
Ek et al[7]	2013	40	93	38	23	28
Leathers et al[16]	2018	32	41	9	0	0
Matthews et al[18]	2019	43	50	2	0	0
Muh et al[21]	2013	67	37	13	7	4
Otto et al[22]: primary	2017	32	60	19	13	3
Otto et al: revision	2017	35	65	26	9	3
Samuelsen et al[2,8]	2017	67	36	7	3	1
Sershon et al[29]	2014	36	34	17	11	3
Weighted mean	2016	417	50	16.5	7.2	5.3
Minimum mean	2013	32	34	2	0	0
Maximum mean	2019	67	93	38	23	28

FU, follow-up duration.

Journal of Shoulder and Elbow Surgery
Volume 26, Issue 5, May 2017, Pages 792-797

Reverse shoulder arthroplasty in patients younger than 55 years: 2- to 12-year follow-up

Randall J. Otto MD [a], Rachel E. Clark BA, CCRC [b], Mark A. Frankle MD [c]

- Complications 22.4%
- Total reoperation rate–13.4%
- Revision rate 8.9%
- Survivorship 91%

Table I Demographic data

	Group 1 (revision)	Group 2 (primary)
Number	35	32
Male:female	14:21	19:13
Age, years (range)	45.6 (21-54)	48.9 (22-54)
Follow-up, months (range)	64.6 (25-143)	59.8 (24-141)
Right:left	21:14	20:12
Diagnosis	23 failed hemi 11 failed TSA 1 failed RSA	11 failed RC surgery 10 cuff tear arthropathy 5 fracture 4 osteoarthritis 2 rheumatoid arthritis

Hemi, hemiarthroplasty; *TSA*, total shoulder arthroplasty; *RSA*, reverse shoulder arthroplasty; *RC*, rotator cuff.

Table III Group 2 (primary) functional results

	Before surgery	Final follow-up	*P* value
Forward elevation*	64.8°	113.2°	.001
Abduction*	51.8°	107.8°	<.001
External rotation*	11.3°	30°	.142
Internal rotation*	Greater Trochanter	L3-L4	.019
ASES score	28.1	58.6	<.001
SST score	1.3	4.5	.004

ASES, American Shoulder and Elbow Surgeons; *SST*, Simple Shoulder Test.
* Range of motion is listed as the average.

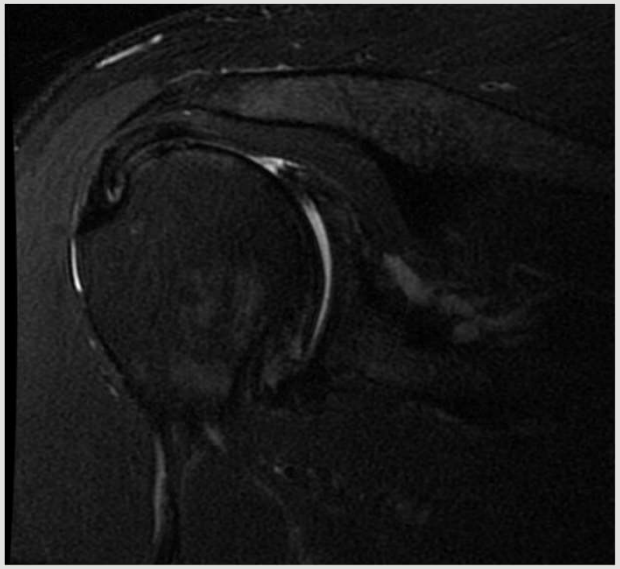
What would you do?

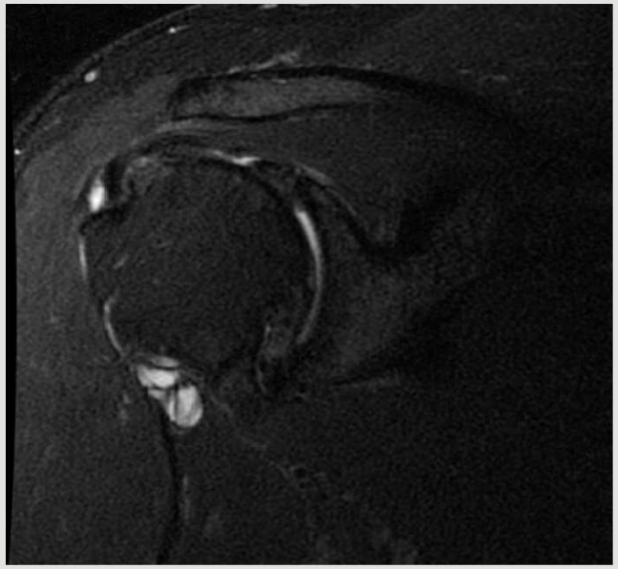
- 55 y/o retired state trooper
- Active with heavy weightlifting 5 days a week until last 6 months
- Bilateral pain and dysfunction, both shoulders (R>L)
  - R– SSV 50%; pain 1.5-10/10; night pain
  - L– SSV 60%; pain 0-5/10; night pain
- Bilateral injections– help for a week
- NSAIDs minimally helpful
- Would like to get back to lifting weights
- Wants right side treated first

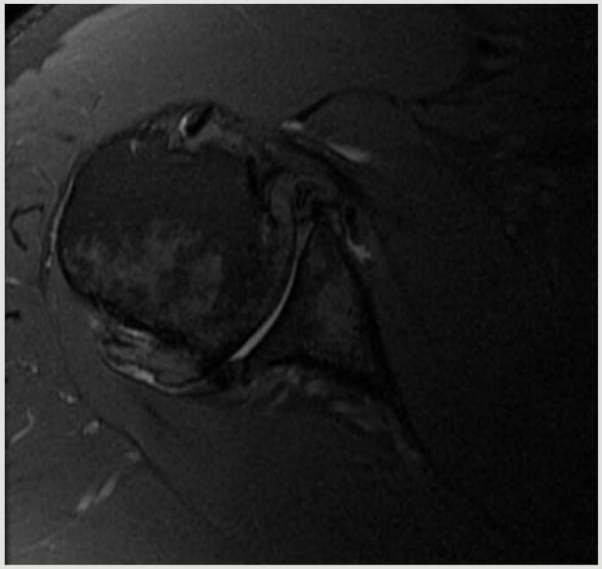
Examination

- 6’ 1’’, 280 lbs
- Right
  - FE 95; ER 20; IR SI joint
  - No lag signs, 5/5 strength
- AC joints nontender

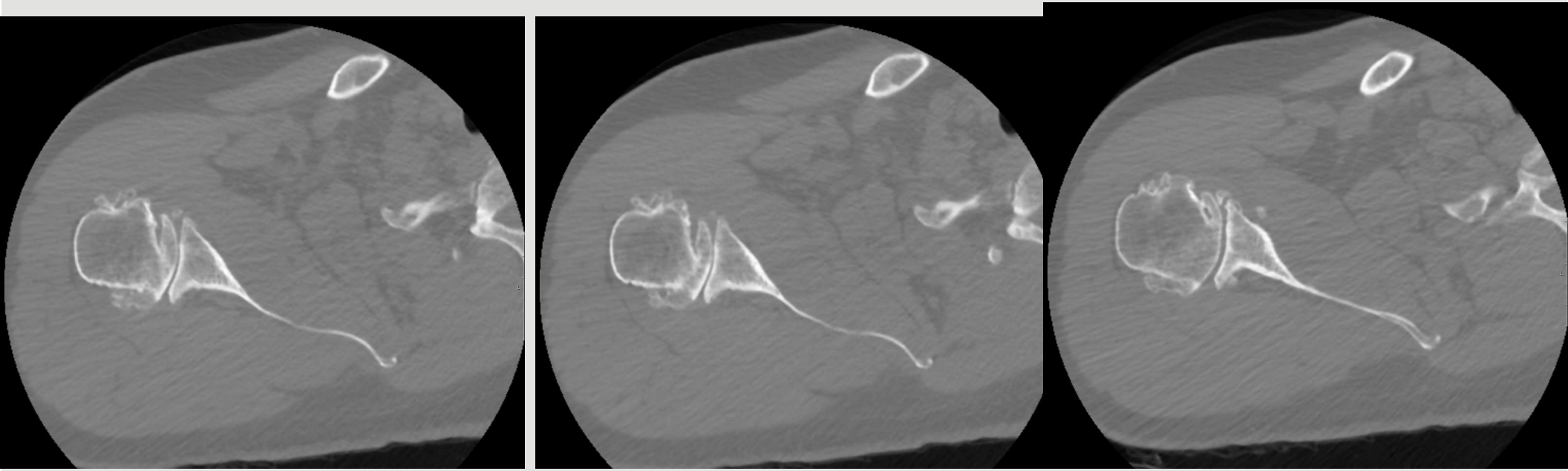
Came with MRI







CT Scan



Discussion

Surgery

- Anatomic Hemiarthroplasty with concentric glenoid reaming
- Lesser tuberosity osteotomy
- Biceps tenodesis
- 12 short stem, 50X20 mm head, native retroversion
- Excised anteroinferior capsule, did not release posterior capsule
- Excised the labrum, used reamers 2mm larger than humeral head

1 year Post op

- SSV 90%
- Pain 0-1.5/10– 1.5 is after a full workout in the gym

THANK YOU.

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