

Shoulder Debates 2017.11.04  
Frontiers in upper extremity surgery

### RSA for massive cuff tear

- don't need a shotgun to kill a mouse
- can't kill a bear with a mouse trap

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FOI PALM HARBOR



FLORIDA ORTHOPAEDIC SOCIETY

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## Disclosure

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## Objective

- ▶ Discuss role of RSA in MRCT
- ▶ Pathology
- ▶ What does RSA Do?
- ▶ Case examples
- ▶ What does the literature say?



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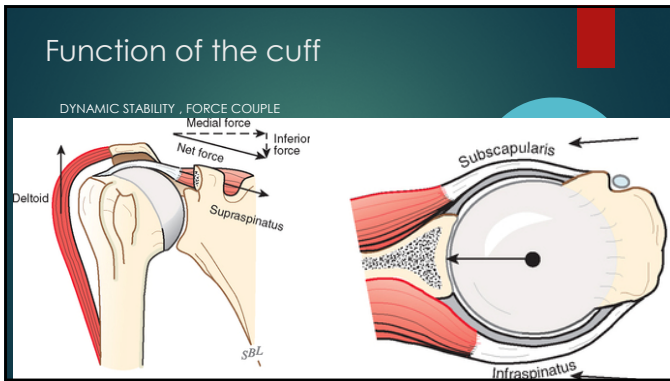
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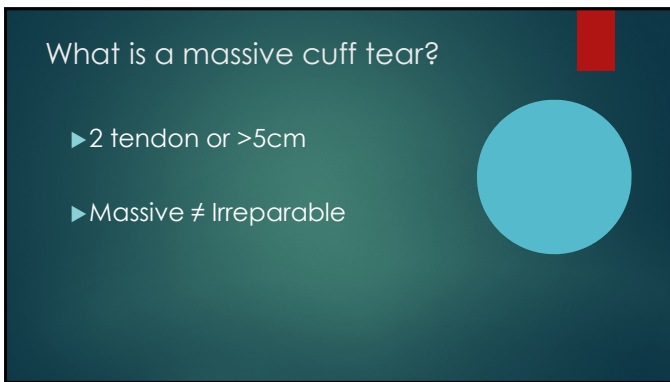
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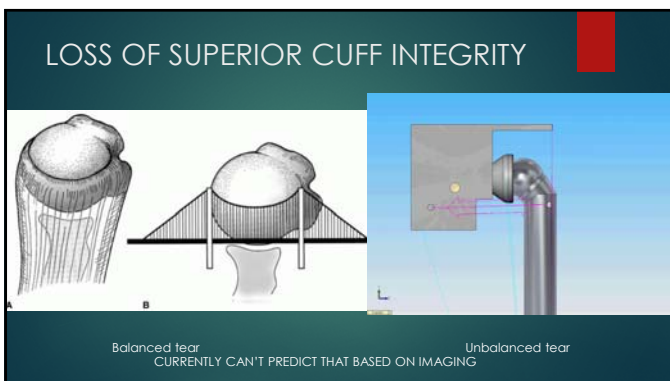
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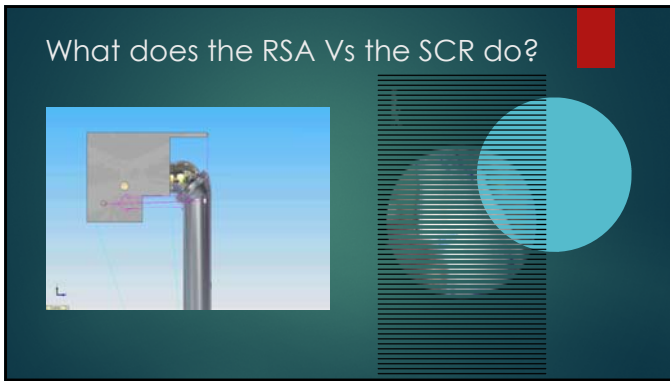
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### What does the RSA Vs the SCR do?



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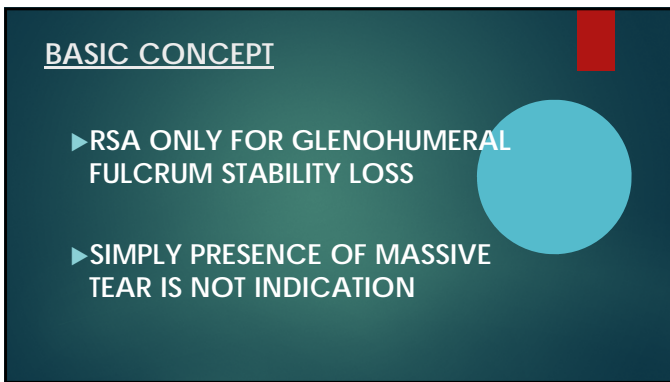
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### BASIC CONCEPT

- ▶ RSA ONLY FOR GLENOHUMERAL FULCRUM STABILITY LOSS
- ▶ SIMPLY PRESENCE OF MASSIVE TEAR IS NOT INDICATION



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### So what has all been tried for MRCT?

- ▶ Debridement with acromioplasty
- ▶ biceps tenotomy
- ▶ Tenotomy with tuberooplasty
- ▶ partial repair
- ▶ complete arthroscopic repair
- ▶ Minilopen repair
- ▶ tissue augmentation
- ▶ tendon transfer
- ▶ deltoid flap
- ▶ Hemiarthroplasty
- ▶ SCR
- ▶ RSA
- ▶ Old orthopaedic adage: many surgeries, none works 100% of the time



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### OK so when do I pick RSA vs SCR?

- ▶ **Decision is complex**
- ▶ Age
- ▶ Ability to heal the cuff
  - patient factors, i.e. smoking, diabetes, compliance, age, RA or other catabolic disease
  - size of tear , more so chronicity and atrophy
- ▶ Prior surgery attempt , failed RCR
- ▶ Easier when LOSS OF GLENOHUMERAL FULCRUM STABILITY i.e. pseudoparalysis/escape on exam or X RAY.
- ▶ What's worse complication?

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### Loss of glenohumeral fulcrum



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### Does RCR work for large massive tears, including pseudoparalysis

- ▶ Yes....
- ▶ In carefully picked patients and good hands



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## So what does the literature tell us about RSA in MRCT?

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## RSA in massive cuff

- ▶ 42 RSA in 70 year olds, massive cuff, failed RCR
- ▶ Able to raise >90° vs <90°
- ▶ **Patients without pseudoparalysis high rate of poor outcomes and even lose motion**
- ▶ In PP: FF 56 -> to 123, 93% satisfied
- ▶ In preserved motion: FF 146-> 122 and 27% were disappointed or dissatisfied
- ▶ Good surgeon, 9% complication

▶ Boileau, JSES 2009

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**Table IV** Comparison of results between patients with pseudoparalysis shoulders (PPS) and painful shoulders (PFS)

Functional Results	PPS (N = 30)		PFS (N = 12)		P Value	
	Score	Change	Score	Change	Score	Change
Pain (15 points)	11.4	+ 8.1	10.3	+ 7.2	NS	NS
Activity (20 points)	14.9	+ 9.8	13.3	+ 4.8	NS	0.01
Mobility (40 points)	24.7	+ 13.7	24.1	- 0.7	NS	0.0003
Strength (25 points)	5.7	+ 5.3	6.7	+ 3.2	NS	NS
Constant score (100 points)	55.8	+ 37.1	56.7	+ 34.5	NS	0.002
Adjusted Constant score (%)	79.3	+ 52.6	77.8	+ 20.8	NS	0.002
Anterior Active Elevation (deg)	123°	+ 67°	122°	- 24°	NS	<0.0001

NS, nonsignificant.

**Table II** Postoperative complications and their treatment

Complications	Number	treatment
Glenosphere disassembly	1	Partial revision (glenosphere and poly)
Axillary granuloma	1	Reoperation without prosthesis revision
Aseptic humeral loosening	1	-
Postoperative humeral fracture	1	Brace immobilization

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## RSA in older with pseudoparalysis

- ▶ Only 4 had preserved FF and they did OK in Frankle's series
- ▶ Rest had pseudoparalysis ,
- ▶ 73 shoulders
- ▶ ASES 33 to 75, FF 53 to 134
- ▶ Survivorship >90% at 52m
- ▶ Complications: 20% (12/73)
  
- ▶ Experienced surgeon, older implant, some complications now non issue (dissociation and baseplate loosening)

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TABLE II Overview of Data for Patients with >90° of Elevative Preoperatively\*

Case	Sex, Age at Surgery (yr)	Side	Anteroposterior Cuffing Extent	Diagnosis	Duration of Follow-up (mo)	ASES Total		Forward Flexion (deg)	
						Preop.	Postop.	Preop.	Postop.
9	M, 80	R	—	Primary rotator cuff deficiency	37	50	58	120	180
21	M, 52	R	—	Failed rotator cuff surgery	75	23	32	148	170
38	M, 65	R	—	Failed rotator cuff surgery	56	25	92	140	190
51	M, 63	R	—	Failed rotator cuff surgery	34	43	77	95	90

\*FM = not available, N = neutral, and GT = greater than neutral.

TABLE IV Complications, Treatment, and Final Outcomes

Case	Time from Surgery to Complication (mo)	Complication	Treatment	ASES Score at Last Follow-up*	Satisfaction
2	3	Proximal humeral fracture resulting from a fall	Nonoperative	47	Unsatisfactory
3	38	Failed baseplate	Revision surgery	86	Excellent
7	32	Shoulder-neck nerve	Nonoperative	62	Excellent
20	40	Failed baseplate	Revision surgery	48	Excellent
23	32	Failed baseplate	Revision surgery	47	Good
23	41	Hemolysis	Nonoperative	47	Good
25	24	Failed baseplate	Revision surgery	67	Excellent
28	41	Deep infection	Irrigation and debridement	63	Excellent
32	43	Acromioclavicular joint secondary to metastatic bone cancer	Nonoperative	85	Excellent
38	28	Dislocation	Closed reduction	62	Excellent
46	47	Preop. pathological acromioclavicular joint fracture	Nonoperative	38	Satisfactory
52	31	Acromioclavicular joint after lifting a gallon of milk	Nonoperative	25	Unsatisfactory

\*ASES = American Shoulder and Elbow Surgeons.

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## RSA in young <65 with massive cuff, 10yr

- ▶ 46 RSA in mean 60yo
- ▶ 15/46 (37.5)
- ▶ 6 failures (15%) resulting in removal or conversion to hemiarthroplasty (3 with infection, 3 with glenoid loosening).
- ▶ Ten shoulders (25%) underwent partial or total component exchange, conversion to hemiarthroplasty, or removal.
- ▶ 9/15 complications that did not require revision did well (their issues were dislocation and acromial fx)
- ▶ Gerber, JSES 2013 0 Good surgeon, SCARY COMPLICATIONS

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## TAKE HOME MESSAGE

- ▶ PERSONALITY OF THE TEAR (PAPPOU)
- ▶ ARE THERE ENOUGH **SYMPTOMS** THAT WILL BE RELIEVED WITH RSA???
- ▶ CAN I FIX **THIS** CUFF TEAR
- ▶ WHAT IS THE CHANCE IT WILL **HEAL IN THIS PATIENT**
  
- ▶ RSA IN
  - ▶ **IRREPARABLE** CUFF WITH PSEUDOPARALYSIS (fix them if fixable)
  - ▶ Older patient with less healing capacity
  - ▶ Failed prior repair
  
- ▶ Beware of RSA in massive irreparable cuff that is simply painful
- ▶ I will try RCR or SCR in younger patient with pseudoparalysis and IMRCT

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## Case examples

- ▶ Following 3 courtesy dr Allert and Frankie

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## RCR or rTSA?



75 y/o F (Previous failed RCR)

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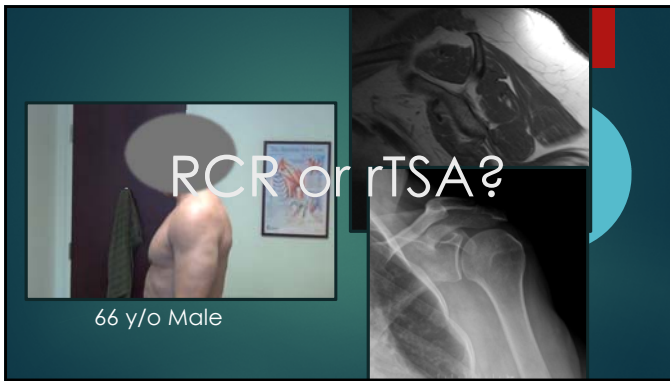
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RCR or rTSA?



66 y/o Male

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Referral to office "for rTSA"

RCR or rTSA?



76 y/o female

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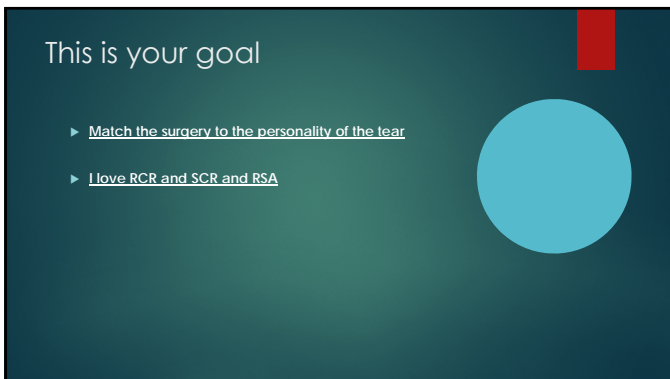
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This is your goal

- ▶ Match the surgery to the personality of the tear
- ▶ I love RCR and SCR and RSA



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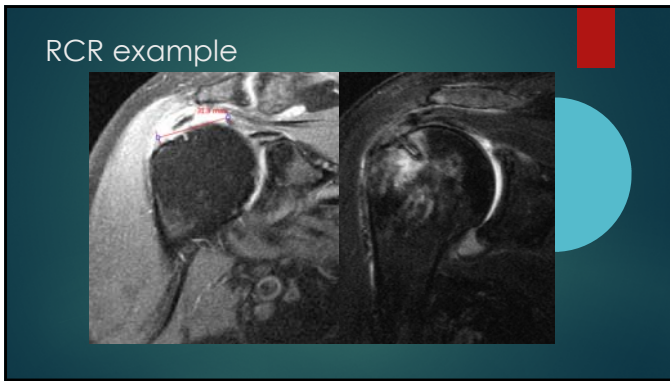
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## References

Anatomy and relationships of the suprascapular nerve: anatomical constraints to mobilization of the supraspinatus and infraspinatus muscles in the management of massive rotator-cuff tears.  
Warner JP, Krushell RJ, Masquelet A, Gerber C.  
J Bone Joint Surg Am. 1992 Jan;74(1):36-45.

The clinical and structural long-term results of open repair of massive tears of the rotator cuff.  
Zumstein MA, Jost B, Hempel J, Hodler J, Gerber C.  
J Bone Joint Surg Am. 2006 Nov;90(11):2423-31. doi: 10.2106/JBJS.G.00677.

Arthroscopic treatment of massive rotator cuff tears. Clinical results and biomechanical analysis.  
Burkhart SS.  
Clin Orthop Relat Res. 1991 Jun;(267):45-56.

Results of a second attempt at surgical repair of a failed initial rotator-cuff repair.  
DeOno JK, Colfield RH.  
J Bone Joint Surg Am. 1984 Apr;66(4):563-7.

Arthroscopic rotator cuff repair.  
Burkhart SS, Lo IK.  
J Am Acad Orthop Surg. 2006 Jun;14(6):333-46. Review.

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## References

Reverse total shoulder arthroplasty after failed rotator cuff surgery.  
Boileau P, Gonzalez JF, Chuinard C, Bicknell R, Walch G.  
J Shoulder Elbow Surg. 2009 Jul-Aug;18(4):600-6. doi: 10.1016/j.jse.2009.03.011. Epub 2009 May 29.

Reverse total shoulder arthroplasty for massive irreparable rotator cuff tears in patients older than 65 years old: results after five to fifteen years.  
Eli EI, Naikom L, Getanzaro S, Gerber C.  
J Shoulder Elbow Surg. 2013 Sep;22(9):1199-208. doi: 10.1016/j.jse.2012.11.016. Epub 2013 Feb 4.

Reverse shoulder arthroplasty for the treatment of irreparable rotator cuff tear without glenohumeral arthritis.  
Mulieri P, Dunning P, Klein S, Pupello D, Frankle M.  
J Bone Joint Surg Am. 2010 Nov 3;92(15):2544-56. doi: 10.2106/JBJS.I.00912.

Massive rotator cuff tears without arthropathy: when to consider reverse shoulder arthroplasty.  
Harreld KL, Puskas BL, Frankle M.  
J Bone Joint Surg Am. 2011 May 18;93(10):973-84. No abstract available.

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- ▶ Thank you for your attention
- ▶ Questions?

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