Clinical Results and Retear Rates after Arthroscopic Rotator Cuff Repair with Manipulation Under Anesthesia

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COI Disclosure Information

Presenter : Yoshitsugu Takeda MD.PhD.

I have no financial conflicts to disclose.

Shoulder stiffness associated with Rotator Cuff Tear (RCT)

- **Favorable results in Arthroscopic Rotator Cuff Repair (ARCR)** with Manipulation Under Anesthesia (MUA)+Arthroscopic Capsular Release(ACR) **have been reported** [1-3]
- **However, several studies**[1,4] **indicated that** severe and global loss of passive motion, **which is highly associated with the primary frozen shoulders (PFS), is** not found in the shoulders with full-thickness RCTs
- **We presume that** ACR, **a standard surgical procedure for PFS,** is not always necessary to resolve the shoulder stiffness associated with RCTs

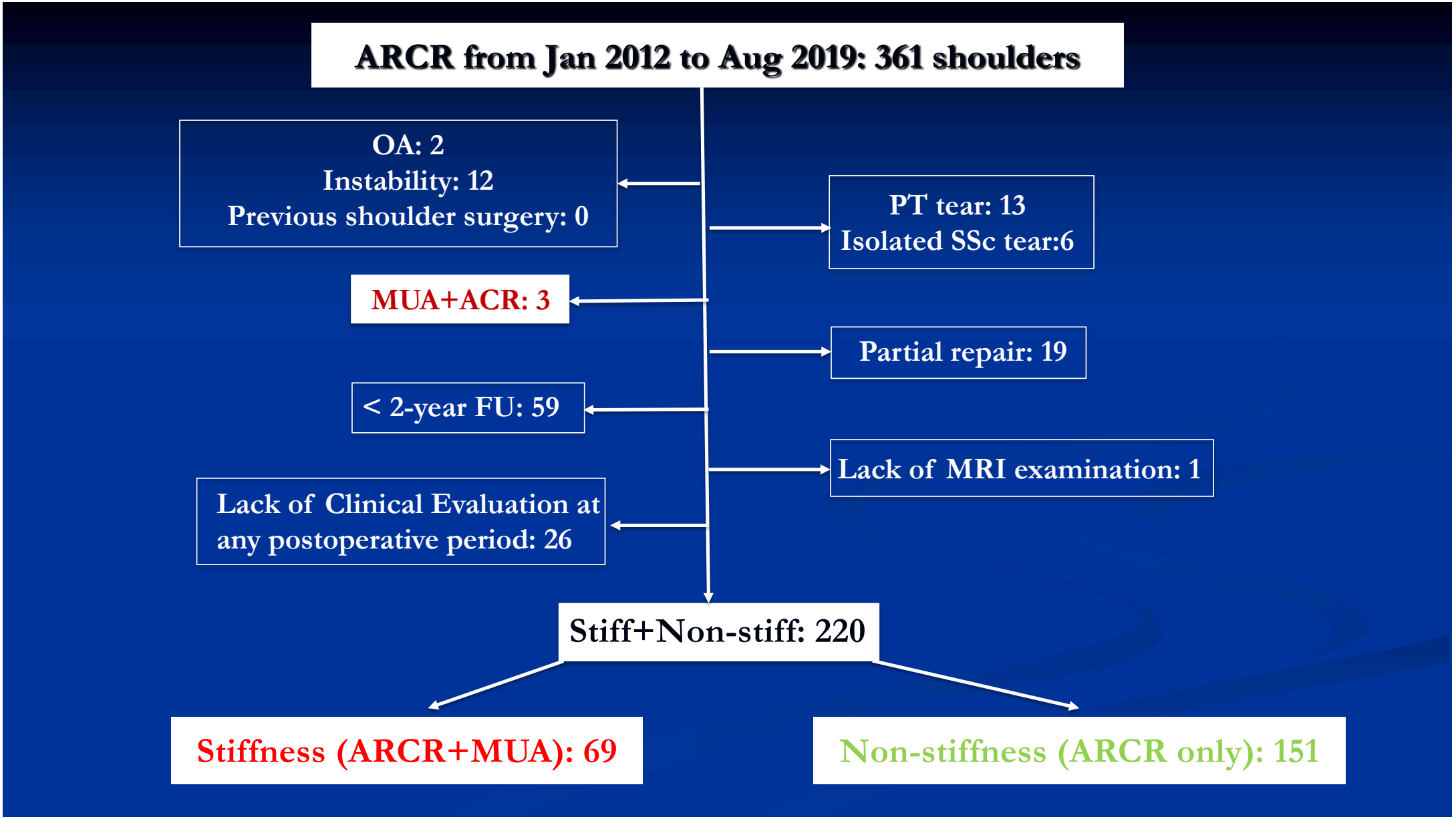
- Whether preoperative stiffness affects the rotator cuff healing after ARCR is another debating issue.
- Recently, several studies[2,3,5] indicated that stiff shoulders are more likely to heal after ARCR than non-stiff shoulders.

Purpose

- To examine whether patients with shoulder stiffness who underwent ARCR combined with MUA alone can achieve comparable clinical results with patients without shoulder stiffness.
- To compare the tendon healing after ARCR between the patients with and without shoulder stiffness.

Hypotheses

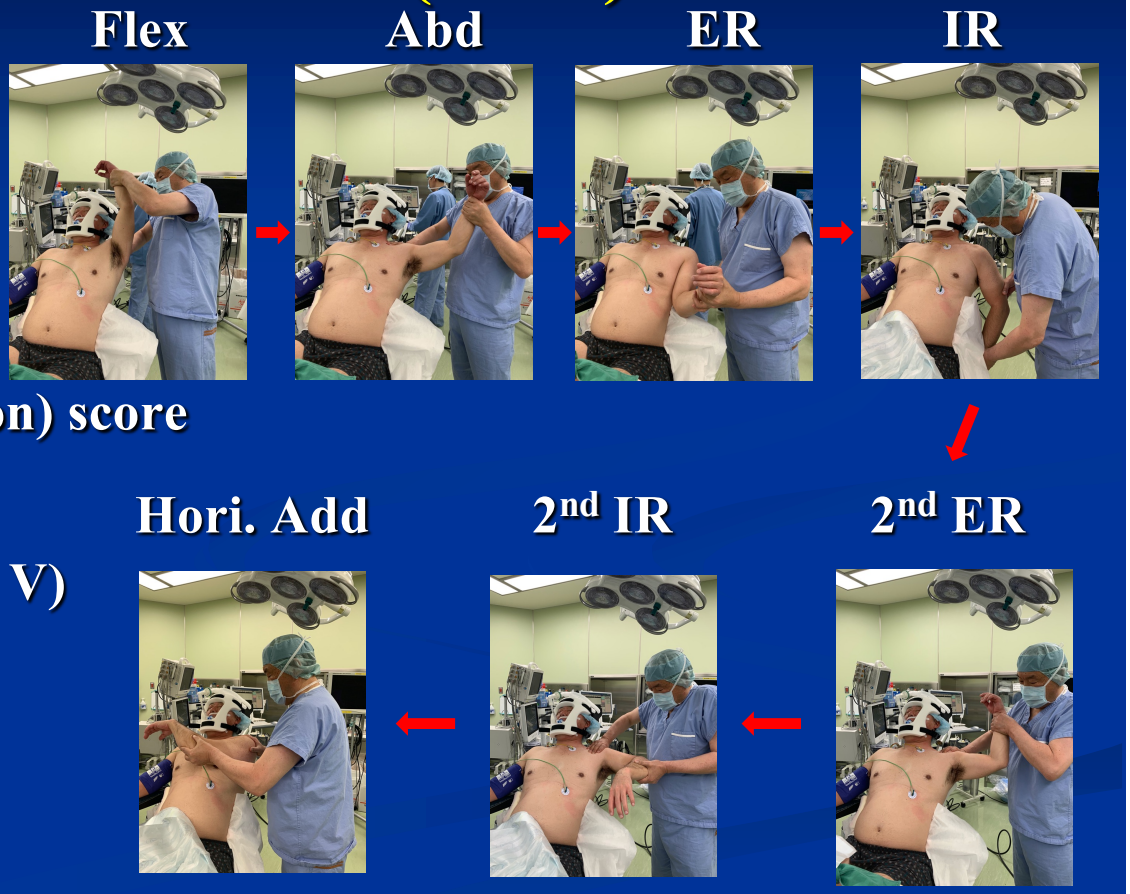
- Clinical outcomes and retear rate of patients who underwent ARCR combined with MUA alone are comparable with those of patients without shoulder stiffness.


ARCR from Jan 2012 to Aug 2019: 361 shoulders
OA: 2
Instability: 12
Previous shoulder surgery: 0
PT tear: 13
Isolated SSc tear:6
MUA+ACR: 3
Partial repair: 19
< 2-year FU: 59
Lack of MRI examination: 1
Lack of Clinical Evaluation at any postoperative period: 26
Stiff+Non-stiff: 220
Stiffness (ARCR+MUA): 69
Non-stiffness (ARCR only): 151

Evaluation & Stat. Analyses

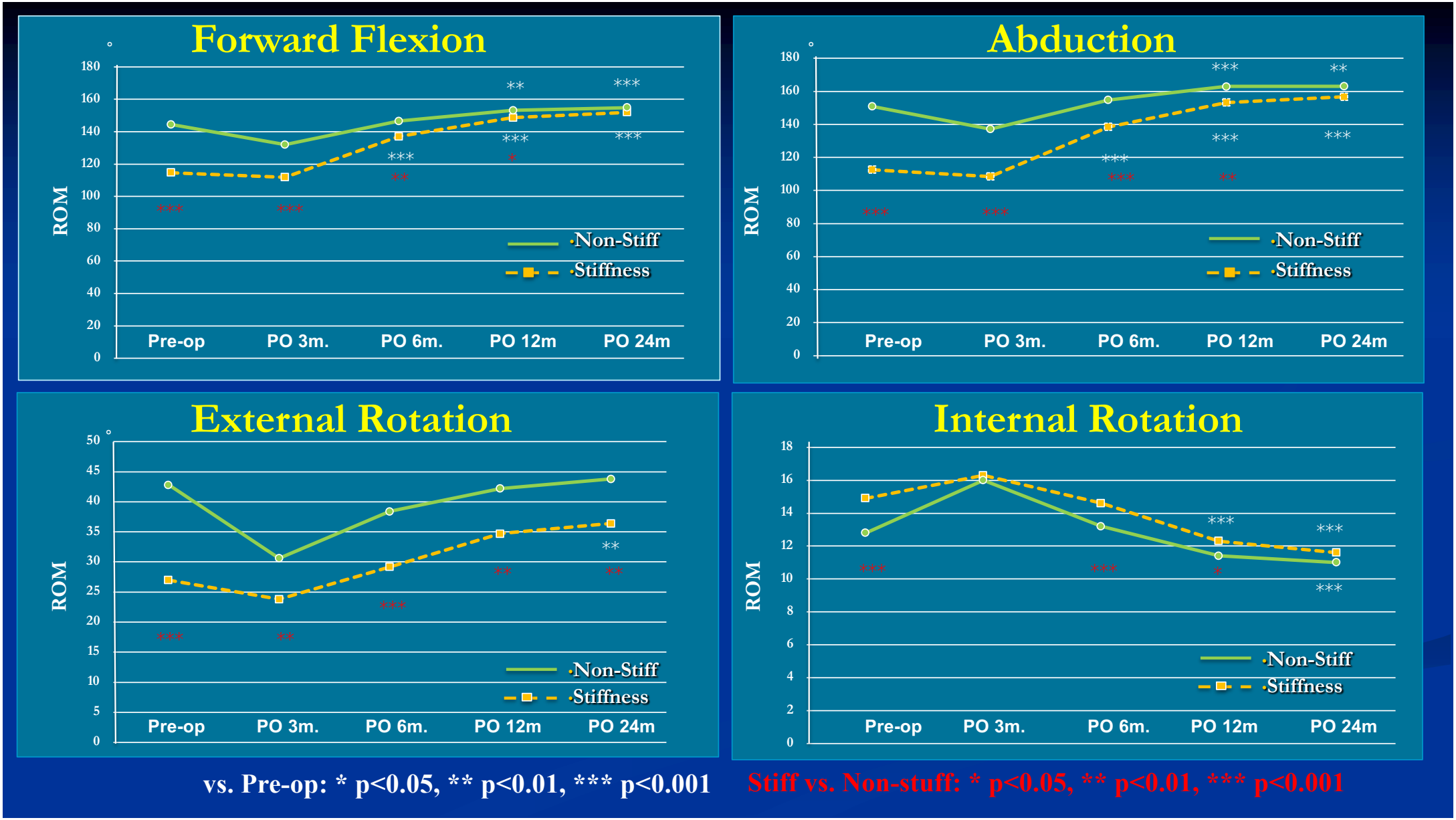
- PROM:Pre-, Post 3,6,12,24m.
  - Flex, Abd, ER, IR
- Clinical Evaluation:Pre-, Post 6,12,24m.
  - UCLA score
  - JOA(Japanese Orthopaedic Association) score
- MRI at 4~6 m. after ARCR
  - Sugaya classificaion（Failure:Type IV, V)
- Statistical Analyses
  - Student t-test, Mann-Whiney U test
  - Chi-square test, one-way ANOVA
  - P<0.05

Manipulation Under Anesthesia (MUA)

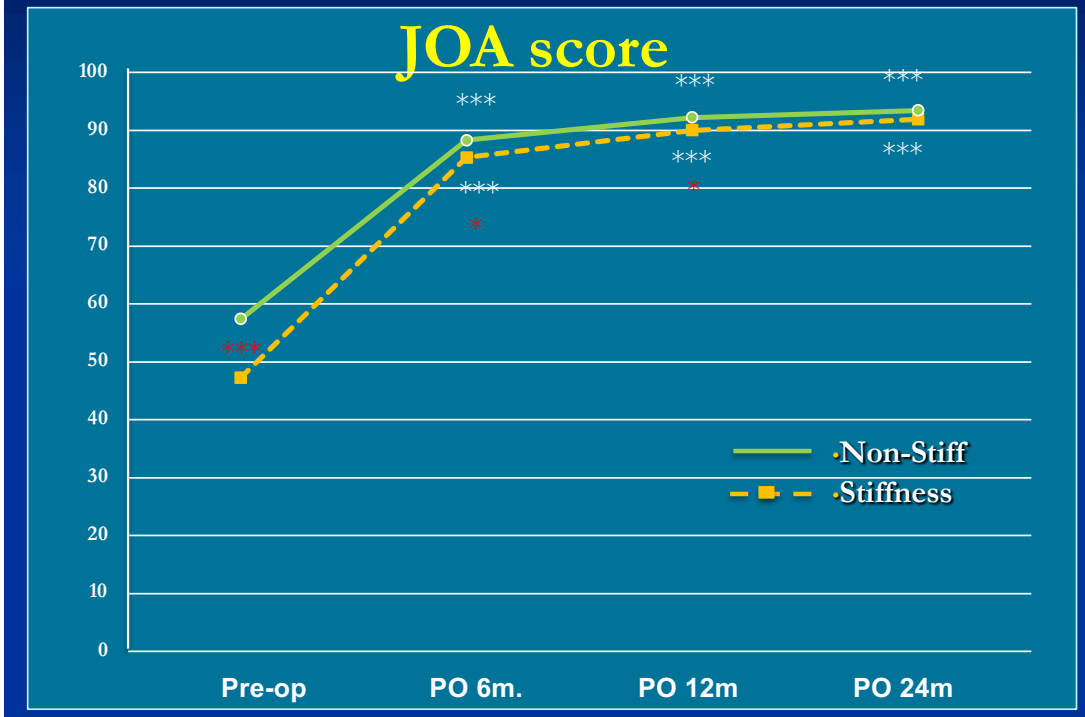


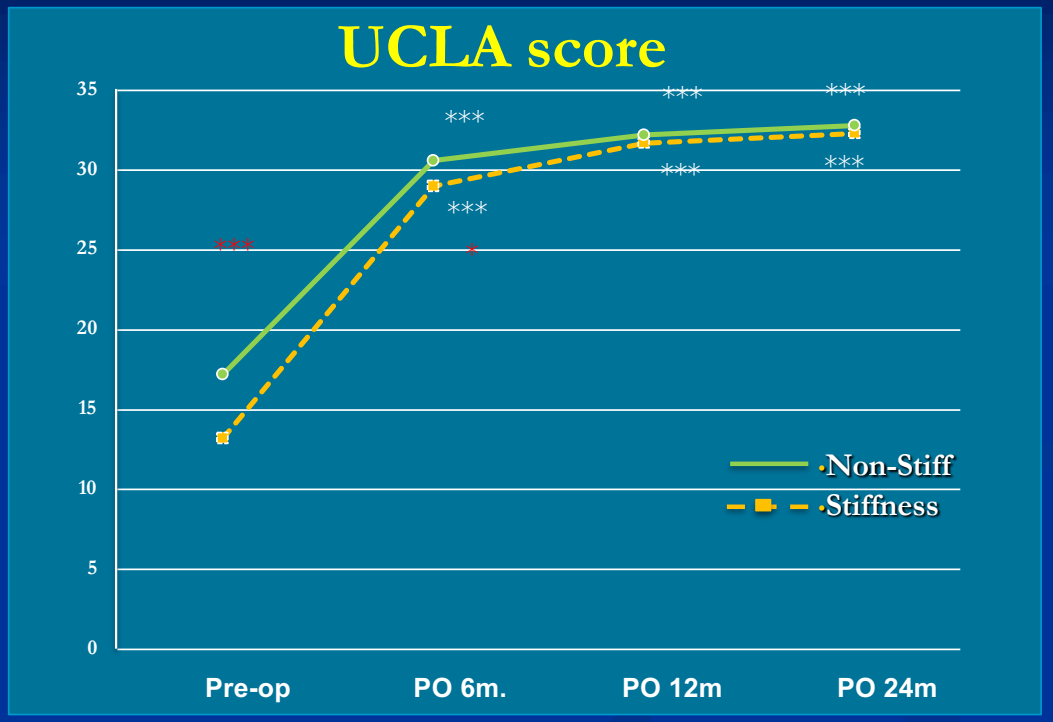
Preoperative Demographics & Intraoperative Findings

	Stiff (n=69)	Nonstiff(n=151)	p value
Sex(M/F)	49/20	111/40	0.700
Age (y)	63.3±9.5	63.9±9.0	0.651
Follow-up period (mo)	26.6±10.9	26.4±8.3	0.540
BMI	25.0±4.0	24.6±3.8	0.972
DM	14 (20.3%)	19 (12.6%)	0.137
Duration of symptoms	7.5±15.3	9.1±9.8	0.006*
Trauma history (%)	53 (76.8)	89 (58.9)	0.010*
Tear size(mm)			
mediolateral	24.5±8.2	22.4±8.3	0.087
anteroposterior	26.9±9.3	23.3±8.5	0.004*
LHBT procedure (None/Tenotomy/Tenodesis)			
	60/8/1	107/35/9	0.030*


Forward Flexion
ROM
°
180
160
140
120
100
80
60
40
20
0
Pre-op
PO 3m.
PO 6m.
PO 12m
PO 24m
·Non-Stiff
·Stiffness
Abduction
External Rotation
50
45
40
35
30
25
20
15
10
5
Internal Rotation
18
16
14
12
8
6
4
2
vs. Pre-op: * p<0.05, ** p<0.01, *** p<0.001
Stiff vs. Non-stuff: * p<0.05, ** p<0.01, *** p<0.001

Clinical Scores

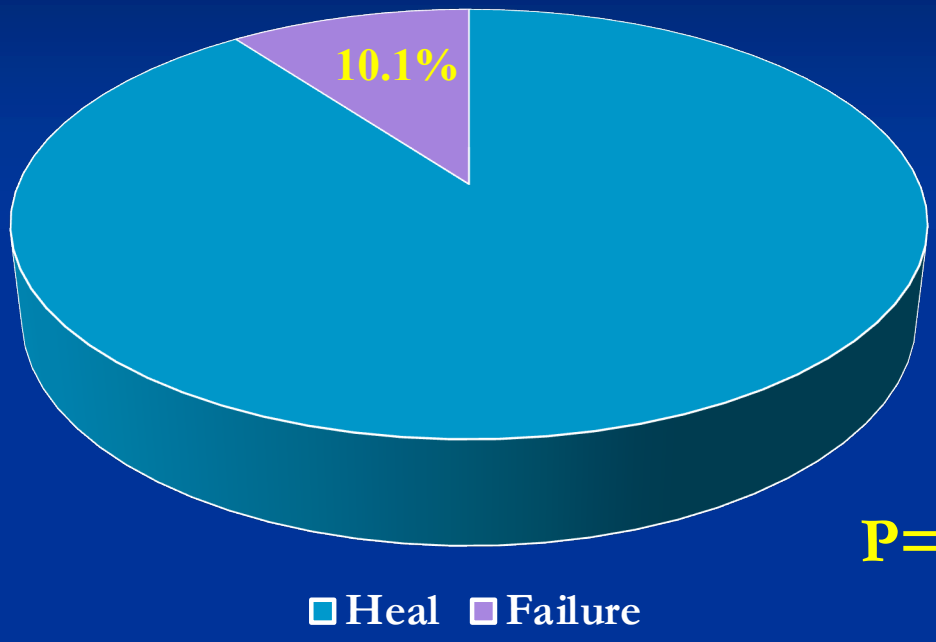




vs. Pre-op: * p<0.05, ** p<0.01, *** p<0.001

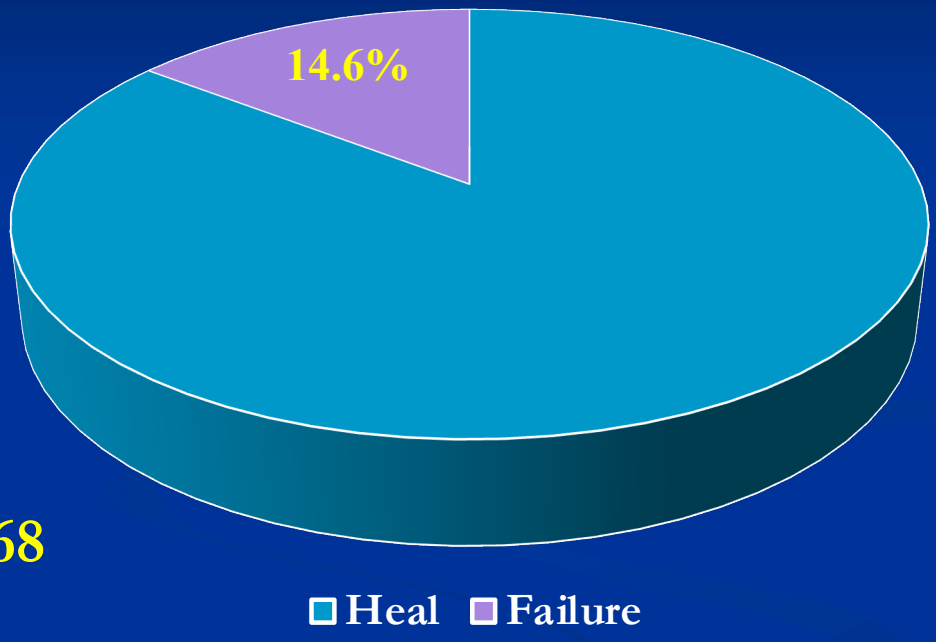
Stiff vs. Non-stuff: * p<0.05, ** p<0.01, *** p<0.001

Tendon Healing after ARCR



Stiffness group

P=0.368



Non-stiffness group

Discussion

Pathophysiology of the shoulder stiffness

Primary frozen shoulder

Capsular fibrosis & inflammation[6]

↓

Global stiffness[4]

Stiffness with RCT

Not by intra-articular capsular contracture[2]

↓

ROM deficit in 1 or 2 directions[7]

↓

Hypothesis

Arthroscopic pancapsular release **is** not always necessary **for stiffness with RCTs**

↓

The results proved the hypothesis

- **Preoperative stiff shoulders treated with** MUA alone **showed** significant improvement in ROM and clinical outcomes.
- **At the final follow-up,** clinical outcome scores and ROM **except for ER were** not significantly different **between the stiff and non-stiff groups**

Discussion

Healing failure rate after ARCR

	Stiff	Non-stiff	p value
McGrath[8]	0%	20%	0.009
Kim I-B[2]	2.6%	14.7%	0.043
Jeong JY[3]	5.3%	12.3%	0.004
Current study	10.1%	14.6%	0.368

- Although preoperative stiffness positively affects RC healing is a need for further study, our results indicated that the preoperative stiffness might not negatively affect RC healing

Conclusion

- Patients with preoperative stiff shoulders who underwent ARCR combined with MUA alone showed significant improvement in ROM and clinical outcome scores.
- Healing failure rate of the stiffness group was not significantly different from that of the non-stiffness group.
- The results suggested that many stiff shoulders associated with rotator cuff tear can be treated with ARCR combined with MUA alone, and arthroscopic capsular release is not always necessary.

References

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4. Ueda Y et al. JBJS Am 2015: 1233-7
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