Rotator cuff repair with bioinductive patch achieves equivalent patient-reported outcomes at 1 year

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Poster #118

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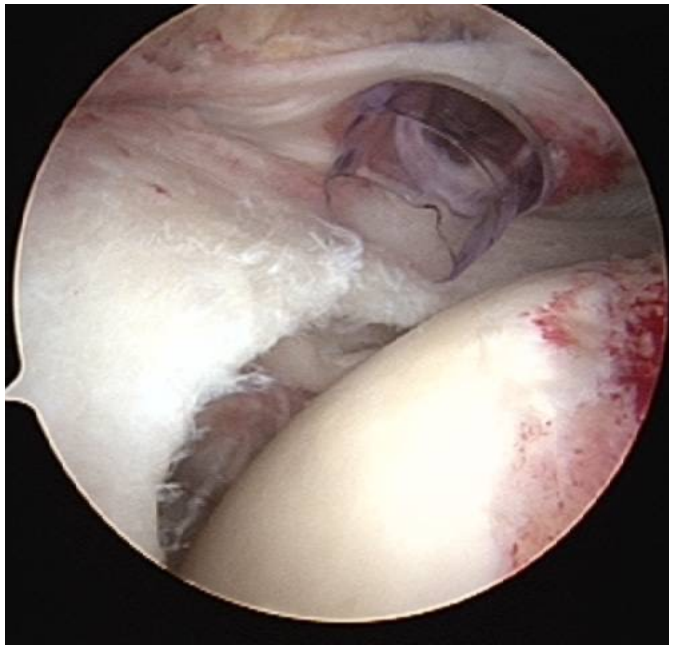
Disclosures

- I, and the co-authors, have no relevant financial disclosures related to this presentation.

Background

- **Rotator cuff tears (RCT)** are among the **most common** upper extremity pathologies,[1-3] leading to significant debilitation and financial impact due to loss of productivity[4]
- Despite advancements in **arthroscopic rotator cuff repair**, **retears** have been reported to be as high as **40%** for small and medium tears, and **94%** for large and massive tears[5-6]
- **Augmenting** the repair with an **allodermal or bioinductive implant** has been theorized to provide additional structural support, biological healing potential, and protection of the repair.[7]



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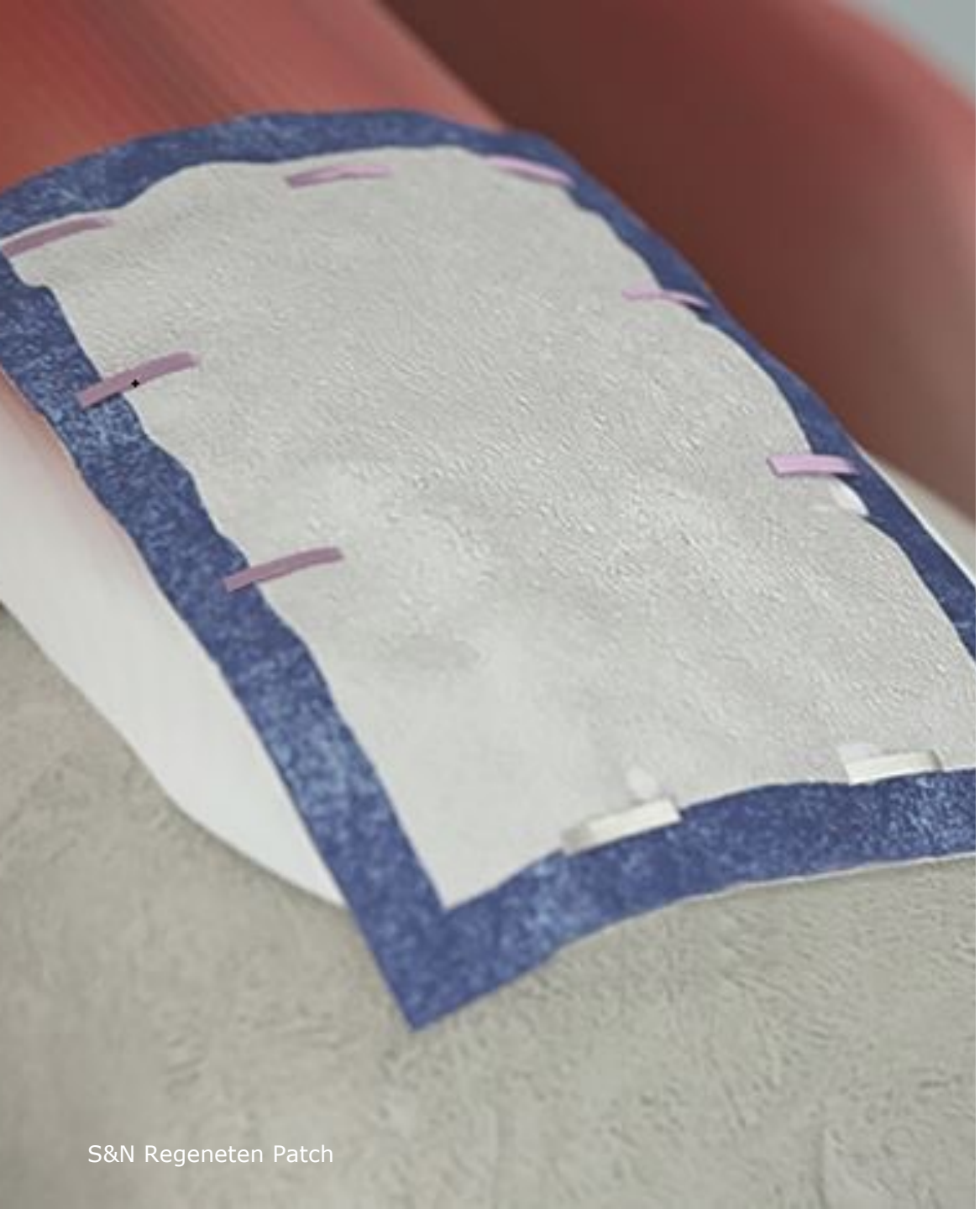
S&N Regeneten Patch

Background

- Previous studies have demonstrated **variable success** of synthetic and allograft **patch augmentation**, with **lower re-tear rates** and **variable improvements** in **patient-reported outcome measures** (PROMs).[8-10]
- With significant **heterogeneity** in patient characteristics such as **tear size, primary vs. revision repair, and study quality**, further studies are required to determine the efficaciousness of patch augmentation and identify the proper indications.

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Purpose

- To evaluate the impact of a **bovine bioinductive patch augmentation** on rotator cuff tears in terms of **PROM's**, rate of **re-tears** and **complications** compared to traditional RCR without augmentation

Methods

- **Retrospective review** at a single institution 2016-2021
- Inclusion:
  - Patients with MRI or ultrasound confirmed RCT's who underwent primary arthroscopic rotator cuff repairs **+/- bioinductive patch augmentation**
- Exclusion:
  - Open/mini-open repair, history of ipsilateral shoulder surgery, rheumatologic disease, active infection
- Patch RCR patients were **matched 1:2** to controls based on tear **thickness, size, age, sex, and BMI**

Methods

- Preoperative Variables:
  - Demographics: age, sex, BMI, comorbidities
  - Tear characteristics: traumatic vs degenerative tears, partial vs full thickness, and tear size
- Postoperative Variables
  - Patient-Reported Outcome Measurement Information System (PROMIS) score up to 1 year
  - Range of motion
  - Complications

Results

- 243 patients total
- Majority of tears full thickness
  - **Equal distribution of tear sizes** between groups

Table 1. Demographics and tear characteristics			
n=243	Control (n=162)	Patch (n=81)	P-value
Age, mean ± SD	58.3 ± 9.5	57.7 ± 7.9	p = 0.63
Sex, n (%)			p = 1
Male	90 (55.6%)	45 (55.6%)	
Female	72 (44.4%)	36 (44.4%)	
Comorbidities			
DM	16 (9.9%)	9 (11.1%)	p = 0.74
ID-DM	8 (4.9%)	1 (1.2%)	
Tear Characteristics			
Degenerative	50 (30.9%)	34 (42.0%)	
Traumatic	62 (38.2%)	41 (50.6%)	
unspecified traumatic vs degenerative	50 (30.9%)	6 (7.4%)	
Partial thickness	14 (8.6%)	7 (8.6%)	p = 1
Full thickness	148 (91.4%)	74 (91.4%)	p = 1
Small (0-1cm)	12 (8.1%)	7 (9.5%)	
Medium (1-3cm)	55 (37.2%)	27 (36.5%)	
Large (3-5cm)	16 (10.8%)	7 (9.5%)	
Massive (>5cm or 2 tendons)	65 (43.9%)	33 (44.5%)	
DM, diabetes mellitus; ID-DM, insulin dependent-diabetes mellitus.			

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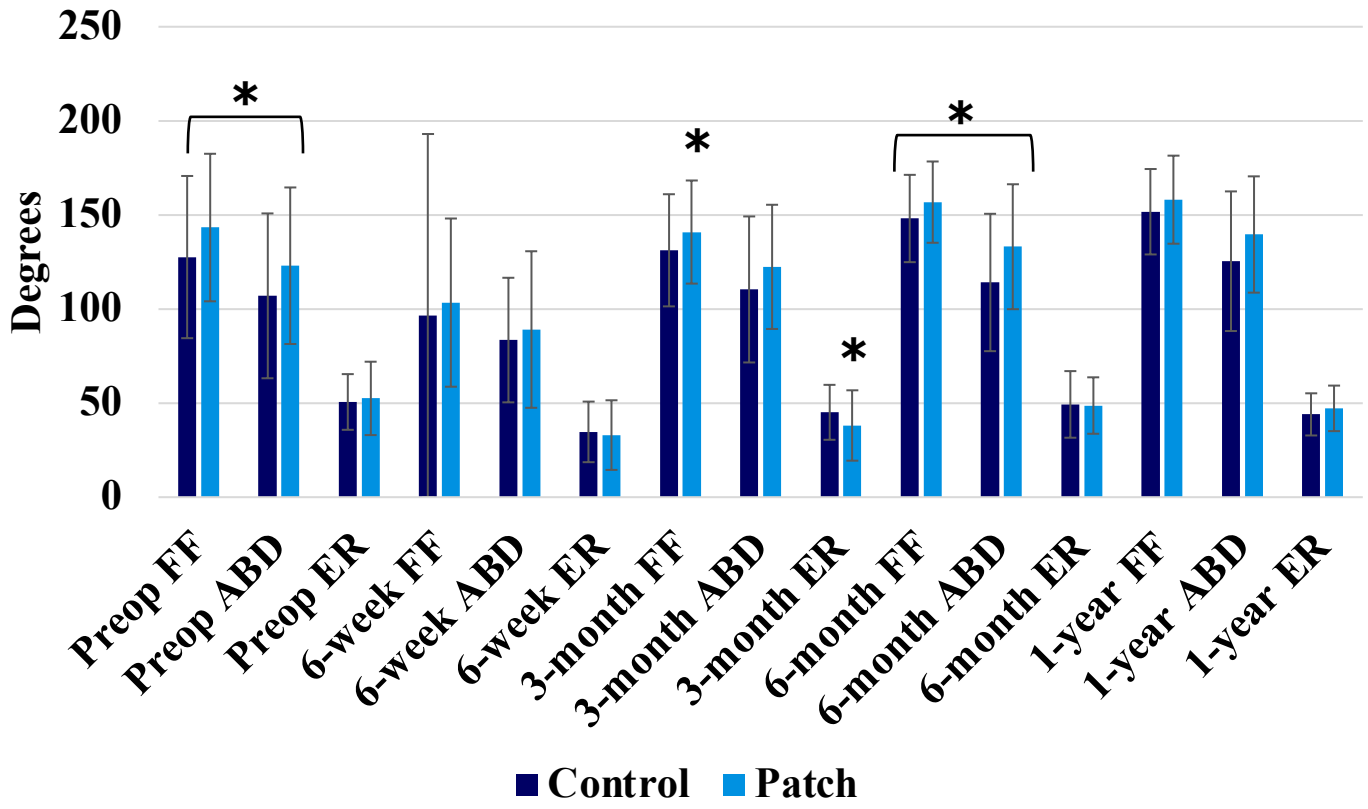
Range of Motion

- Significantly greater preoperative shoulder forward flexion (FF) and abduction (ABD) in the patch group
- **No differences in ROM** demonstrated at 1 year between groups



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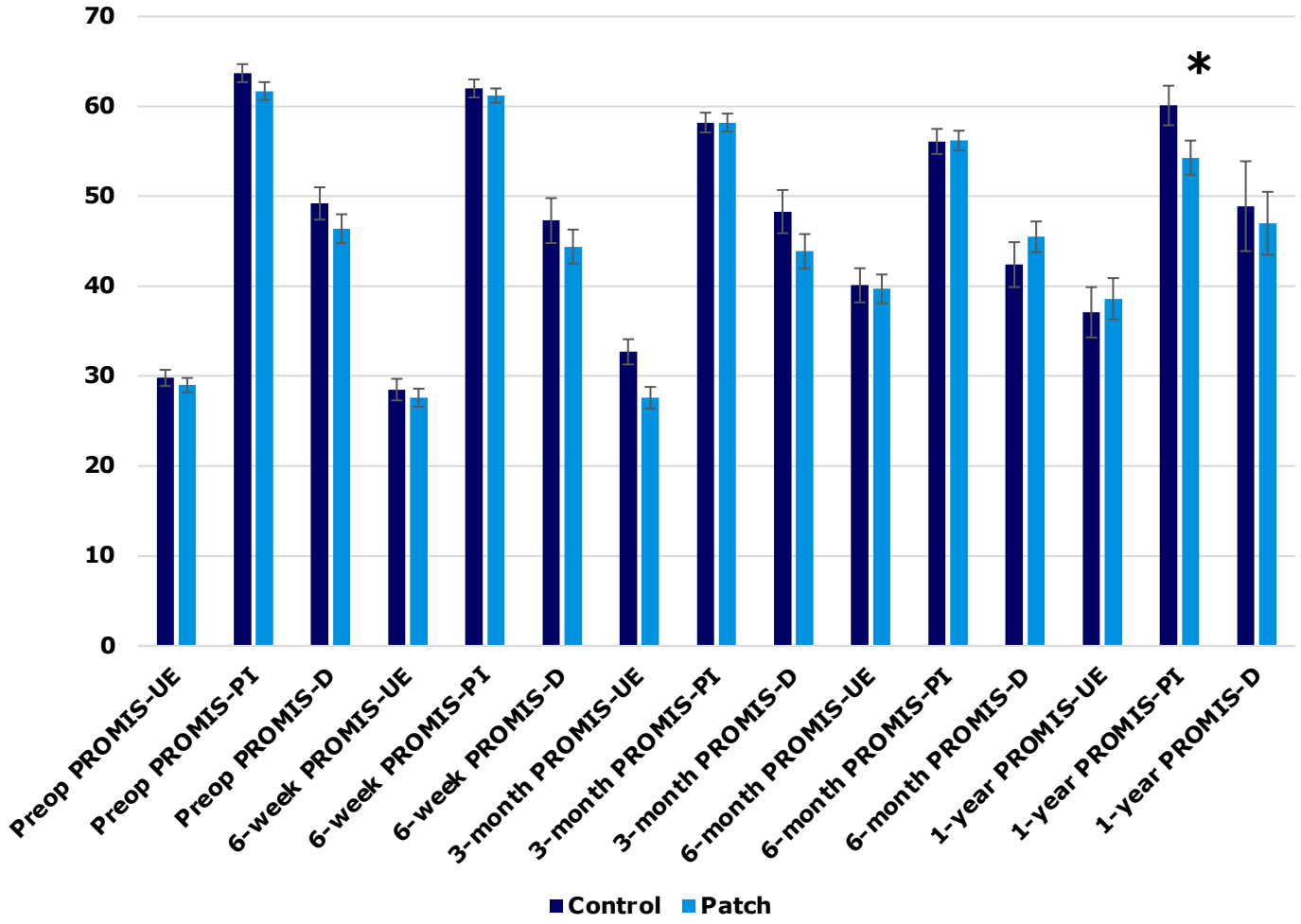
Patient-reported outcomes

- Significantly **lower PROMIS-Pain Interference at 1 year**, but no differences at 1 year.
- No significant differences in **PROMIS Upper Extremity** (UE) or **Depression** (D) scores up until 1 year



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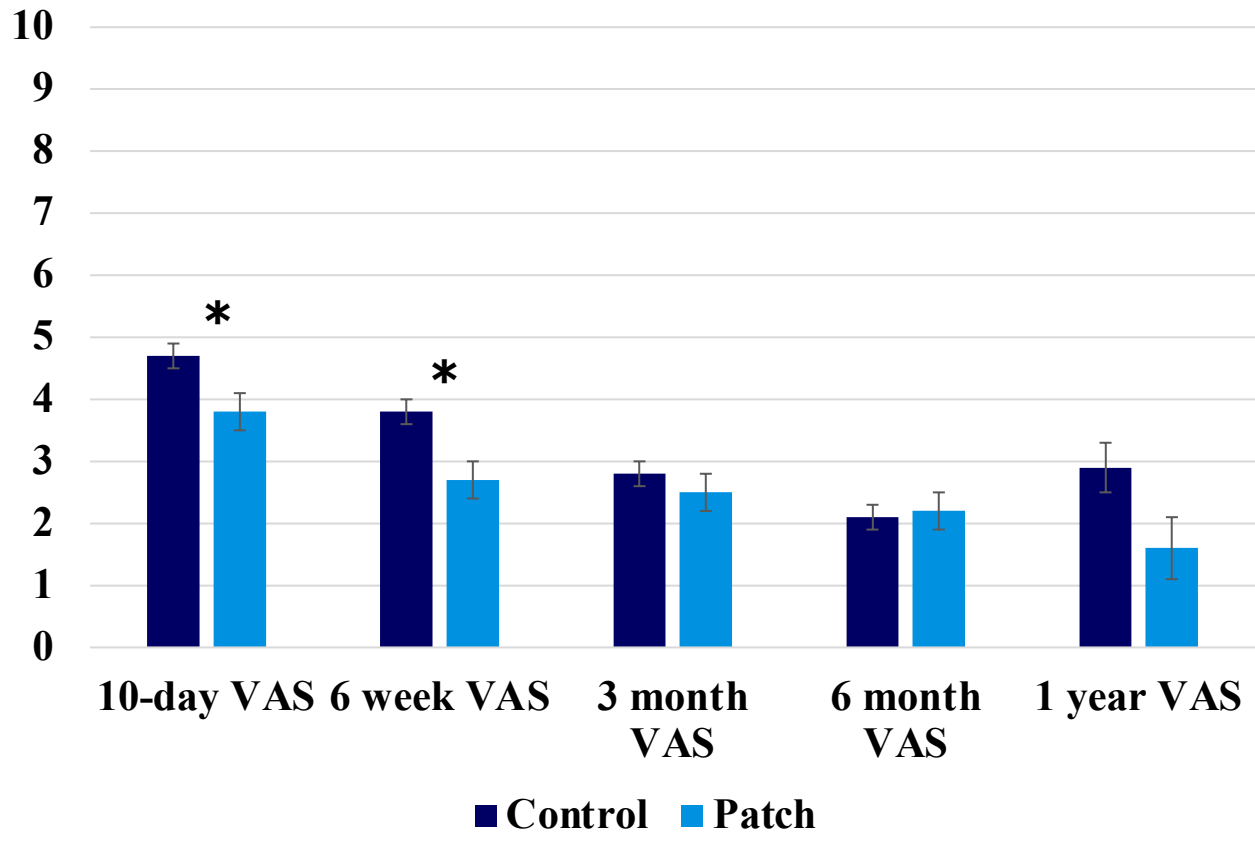
Visual Analog Scale

- Significantly **lower VAS pain scores** for those **augmented with a patch** at **10 days and 6 weeks**, but no difference observed up until 1 year



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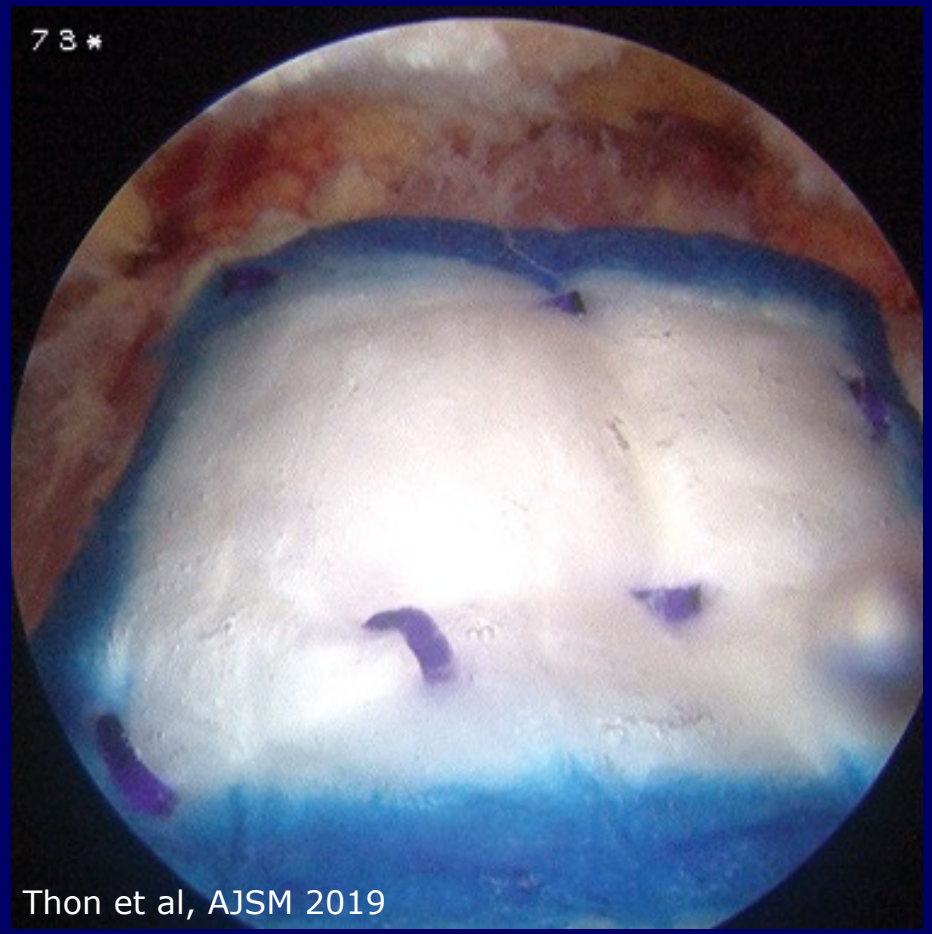
Results

- **Nonsignificant difference in retear rate** between controls (6.8%) and patch group (4.9%)
- Similar rate of revision RCR 4.9% in controls vs. 3.7% in patch group.

Table 2. Complications			
	Control (n=162)	Patch (n=81)	P-value
Total Complications n (%)	20 (12.4)	10 (12.4)	1
Re-tear	11 (6.8)	4 (4.9)	.572
Required Revision RCR	8 (4.9)	3 (3.7)	
Adhesive Capsulitis (AC)	4 (2.5)	6 (7.4)	.068
AC during 2020-2021	1 (0.6)	5 (6.2)	
Complex Regional Pain Syndrome	1 (0.6)	0 (0)	
Persistent pain requiring injection	1 (0.6)	0 (0)	
Impingement syndrome	1 (0.6)	0 (0)	

Conclusions



Thon et al, AJSM 2019

- Patients achieve **similar** improvements in **pain and function** 1 year after arthroscopic rotator cuff repair **with and without bioinductive patch augmentation**
- No difference in **retear or revision rates**
- Further prospective studies required to identify which patients are ideal candidates for patch augmentation

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Thank you.

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