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Effect of Fatty Degeneration of the Infraspinatus on the Efficacy of Arthroscopic Patch Autograft Procedure for Large to Massive Rotator Cuff Tears

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Summary:
This study confirms the beneficial effects of this arthroscopic patch autograft procedure for treating large to massive rotator cuff tears with low-grade fatty degeneration of the infraspinatus, and we identify that large to massive rotator cuff tears with high-grade fatty degeneration are not adequately treated with this procedure.

Abstract:
BACKGROUND
Massive rotator cuff tears with fatty degeneration of the rotator cuff muscles are difficult to repair. The degree of fatty degeneration in such cases is an important indicator of clinical and structural outcomes after surgery with a variety of techniques, including arthroscopic patch grafting, though no studies have assessed how the degree of fatty degeneration affects outcomes with specific techniques.

PURPOSE
The aim of this study was to compare the effects of an arthroscopic patch autograft procedure for treating large to massive rotator cuff tears (RCTs) on the structural and functional outcomes for low-grade and high-grade fatty degeneration of the rotator cuff muscles.

METHODS
A case series of 45 consecutive patients with large to massive RCTs with high grade fatty degeneration of the supraspinatus and either low-grade (n = 26, Group L) or high-grade (n = 19, Group H) fatty degeneration of the infraspinatus were treated with an arthroscopic patch autograft procedure. Clinical (Constant and ASES) scores, structural (MRI) outcomes, range of motion, and muscle strength were assessed at a minimum 2-year follow-up and compared between the two groups.

RESULTS
Group L had a higher frequency of intact repairs than Group H (73.1% vs. 10.6%, $P < .001$), as assessed by MRI. The clinical scores, range of motion, and muscle strength ratios were improved after surgery in both groups. However, there were significant differences in the Constant and ASES scores and external rotation motion between the two groups ($P < .0001$, $< .001$, and $= .0316$, respectively) between the two groups. Moreover, there were significant differences between groups in the affected side-to-healthy side muscle strength ratios for both abduction and external rotation ($P < .0001$ for both).

CONCLUSIONS
These data confirm the efficacy of our patch procedure for repairing large to massive RCTs with low-grade fatty degeneration of the infraspinatus. This technique is not as beneficial for similar RCTs with high-grade fatty degeneration, suggesting that alternative procedures should be considered in such cases.