

The Modified Posterior Deltoid Split Approach Provides Excellent Access for Grafting an Engaging Hill Sachs Lesion in Anterior Shoulder Instability

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INTRODUCTION: Options for addressing an engaging Hill Sachs lesion include remplissage, derotational osteotomy, increasing the glenoid arc with an anterior bone block procedure, or directly addressing the Hill Sachs lesion itself with a structural bone graft or synthetic implant. To date, the ideal approach to the posterolateral humeral head articular surface for the purposes of bone grafting a large and engaging Hill Sachs lesion has not been identified. The aim of this study was to compare the area of the humeral head visualized using a modified posterior deltoid split approach versus a standard deltopectoral approach, with particular attention to access to engaging Hill Sachs lesions for the purpose of bone grafting in the setting of anterior shoulder instability.

METHODS: Four human cadaveric shoulders were mounted in the beach chair position. The modified posterior deltoid split approach and deltopectoral approaches were performed. The area accessed was mapped using a probe and 3D digitizing software including total surface area and access to a simulated Hill Sachs lesion. Statistical analyses were performed including calculation of basic descriptive statistics and the relationship between the area of humeral head accessed and surgical approach with a paired Wilcoxon rank test.

RESULTS:

In total, 45% (range 24-58, SD 15.2) of the humeral head was accessed from the deltopectoral approach and 22.2% (range 17-30%, SD 6.1) from the modified posterior deltoid split approach. The modified posterior deltoid split approach accessed 100% of the simulated Hill Sachs lesion; the deltopectoral accessed 0%. The angle of access to the articular surface was superior with the modified posterior deltoid split approach.

DISCUSSION AND CONCLUSION: This study showed that one cannot reliably access a Hill Sachs lesion through a standard deltopectoral approach even when the biceps is tenotomized. The modified posterior deltoid split approach provided access to the area of interest in all specimens, although the overall area of the humeral head accessed was less than the deltopectoral approach. The modified posterior deltoid split approach provides optimal access to the humeral head for the purposes of grafting a Hill Sachs lesion compared to the deltopectoral approach.

