

Rotator Cuff Repair

Massive Tears

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SURGICAL GOALS

Massive rotator cuff tears have been variably defined as tears exceeding greater than 5 cm in diameter¹ or involving the detachment of at least 2 entire tendons.² Though once requiring open repair techniques, the vast majority of massive rotator cuff tears can now be managed arthroscopically.³⁻⁷ Successful arthroscopic treatment of massive rotator cuff tears depends upon tear pattern recognition, tendon mobilization, and margin convergence (when necessary) to create a tension-free tendon-to-bone interface and a biomechanically stable repair construct that balances forces in the transverse and coronal planes.

Burkhart and Lo have recognized 4 major types of full-thickness rotator cuff tears.⁸ Crescent tears can be easily reapproximated to the prepared greater tuberosity and repaired under minimal tension. U-shaped tears extend medially, occasionally to the level of the glenoid rim. These types of tears have minimal medial-to-lateral mobility but demonstrate sometimes surprising posterior-to-anterior mobility. Using the principle of margin convergence, sequential side-to-side sutures are placed in the anterior and posterior leaves of the tear.⁹ As these sutures are tied from medial to lateral, the free ends of the tear converge to the anatomic insertion. This margin can then be anatomically reduced to the prepared footprint and repaired under minimal tension similar to a crescent-type repair. L-shaped tears have both longitudinal and transverse components. Leaf mobility in an L-shaped tear is unequal—one flap will be easier to reapproximate in the anterior-posterior direction and facilitate footprint reattachment. This more mobile leaf forms the corner of the repair to the tuberosity. The longitudinal split component is reapproximated with side-to-side sutures followed by repair of the converged transverse margin to the greater tuberosity. Massive, contracted immobile rotator cuff tears are characterized as having severely retracted margins and minimal movement in both medial-to-lateral and anterior-to-posterior planes.⁶

Adequate tendon mobilization and margin convergence techniques for U-shaped and L-shaped tears, is critical for reducing tension and strain at the repair margin. Adequate tendon mobilization is achieved by releasing all adhesions between the tendon and capsule in addition to bursal adhesions between the rotator cuff, acromion, and deltoid. For the rare massive, immobile rotator cuff tears, additional releases, such as anterior and posterior interval slides are performed to increase medial to lateral mobility and obtain a repair under minimal tension.⁶

Balancing force couples in the transverse and coronal planes is of utmost importance in the repair of the massive rotator cuff tear.⁸ If possible, our preference is to completely restore the anatomic footprint without excessive tension. Alternatively, a partial repair of the posterosuperior