Surgical Technique & Anatomic Study of Latissimus Dorsi & Teres Major Transfers

Content

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BACKGROUND: Combined latissimus dorsi and teres major musculotendinous transfer has been described for the treatment of massive rotator cuff deficits. The procedure is technically complex because of the proximity of the radial nerve, the axillary nerve and its posterior branches, and the neurovascular bundles to the muscles. The purpose of the present cadaveric study was to examine surgically relevant relationships for latissimus dorsi and teres major tendon transfers.

METHODS: Twelve cadaveric shoulder girdles were dissected, and the latissimus dorsi, the teres major, and the posterior cord of the brachial plexus and its branches were identified. The relationships between the tendons and local neurologic structures were measured during various steps of the latissimus dorsi/teres major transfer procedure. The effect of humeral rotation on the exposure of the latissimus dorsi and teres major tendons through the posterior approach was quantified, and relevant surgical landmarks were described.

RESULTS: The radial nerve passed directly anterior to the tendons at an average of 2.9 cm medial to the superior aspect and 2.3 cm medial to the inferior aspect of the humeral insertions. From the posterior axillary approach, maximal internal rotation facilitated exposure for tenotomy by delivering the tendon insertions on the humerus into the surgical field. During axial mobilization of the musculotendinous units, the neurovascular pedicles to the latissimus dorsi and teres major were identified at an average of 13.1 and 7.4 cm axial to the humeral insertions, respectively. The posterior branch of the axillary nerve was noted to cross superficially over the transferred tendons as they were tunneled under the posterior deltoid.

CONCLUSIONS: Multiple steps of the combined latissimus dorsi and teres major musculotendinous transfer place local neurologic structures at risk. These steps include tendon release, musculotendinous axial mobilization, and tendon tunneling in the plane between the infraspinatus-teres minor and the posterior deltoid. We have quantified and described the relationship of the axillary and radial nerves to the tendons during tenotomy, the distance from the tendons' insertions to their neurovascular bundle that must be identified during axial mobilization, and the course of the posterior branch of the axillary nerve in relation to the tunneled path of the tendons.