

The biomechanic testing of the insertion point after supraspinatus reconstruction

Type of preferred presentation: Lecture
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Introduction: The reconstruction of tendons with a short lever arm is demanding. From a biomechanical point of view tendon refixation is still difficult to achieve and a reinforcement would be an opportunity. After acute ligament or tendon rupture a direct suture is often impossible, in chronic lesions with structure alteration as tendinoses or in cases of chronic disorders the augmentation of the tendon has an advantage for post operative physiotherapy and so for the post operative outcome. If any defect remains after mobilisation of the retracted tendon during surgery, an augmentation should be considered to achieve a better outcome. Especially in chronic lesions with muscle atrophy it is important to optimise the lever arm: This can be achieved by lateralize the insertion point of the supraspinatus tendon.

The question was how much force difference we have to expect, when we change the lever arm of the supraspinatus tendon.

Method: To answer the question two different surgical techniques has been tested: Type A with the reinsertion-point in the sulcus (Abbildung 1) and Type B which has the insertion-point lateral of the greater tuberculum (Abbildung 2). We tested 6 pairs of fresh frozen specimen. The force, applied on the reconstructed supraspinatus-tendon was measured in a servo-hydraulic testing machine during abduction.

Result: There was a lower force necessary (fig.3) to lift the arm up to 30° when the reinsertion was done at lateral point (dark blue). Also at 40° in 5 out of 6 cases Type B with the lateral insertion made it easier to lift the arm. Only in one case when an impingement occurred we measured higher forces. When the acromio-plastic to improve the subacromial space is done properly, the lateral insertion makes it easier to lift the arm and has an advantage especially in chronic defects with muscle atrophy.

List of Figures

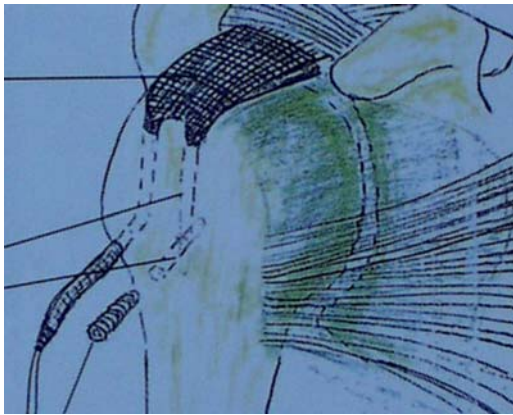


Abbildung 1. A: sulcus reinsertion

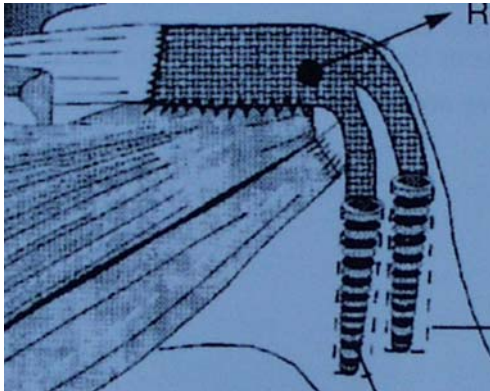


Abbildung 2. B: lateral reinsertion

Fehler! Keine gültige Verknüpfung.

Abbildung 3. abduction force at 30°