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Paper #225

Influence of the Latarjet Procedure on Biceps Brachii Alterations: Results of a Prospective Multi-Center Study

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Summary:
Influences of the Latarjet procedure on biceps brachii alterations.

Abstract:

Background

Biceps brachii alterations concerning strength and pop-eye deformity following Latarjet procedure are unknown.

Purpose

The purpose of this study was to prospectively compare forearm supination strength, elbow flexion strength and pop-eye deformity of both upper extremities in patients who underwent a mini-open Latarjet procedure to treat anterior shoulder instability.

Methods

Between 2016 and 2018 20 patients from two shoulder centers were prospectively enrolled in the study. Subjects were pre- and postoperatively tested for elbow flexion and forearm supination strength of both upper extremities by the use of Isobex isometric dynamometer (Cursor, Bern, Switzerland) and digital torque adapter (BGS technic KG, Wermelskirchen, Germany). Pop-eye deformity was defined as distalization of the greatest circumference of the muscle belly of the upper arm towards the lateral epicondyle of the elbow. Clinical outcome was assessed by the use of the Constant Score (CS), American Shoulder and Elbow Score (ASES) and Simple Shoulder Test (SST). Achievement of a full flexion and supination strength compared to the healthy side was defined as endpoint of the study.

Results

Between 2016 and 2018, 20 patients (4 female, 16 male) with a mean age of 27.2 ± 6.1 years were included in the study. At a mean follow-up of 9.8 ± 3.3 months the elbow flexion strength was restored to the preoperative state in both arms (surgical arm 186 ± 72 N to 181 ± 76 N (P=0.493) vs. non-surgical arm 192 ± 70 to 177 ± 78 (p=0.240)). Forearm supination strength significantly decreased in both arms, 17% in the surgical arm (12.4 ± 4.5 Nm to 10.3 ± 3.0 Nm (p=0.015)) vs. 14 % in the non-surgical arm (12.1 ± 4.2 Nm to 10.4 ± 3.2 Nm (p=0.023)). There was no statistical difference comparing both arms concerning elbow flexion strength (p=0.510) and forearm supination strength (p=0.495). No pop-eye deformity was observed in both arms (p=0.111 vs. p=0.508). A significant increase of muscle belly circumference in both upper arms, 4% in the operated arm (p=0.001) vs. 5% in the non-operated arm

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(p=0.002), was noted. Clinical outcome scores improved significantly from 72.6 ± 17.8 to 82.2 ± 12.9 (p=0.014) for CS and 75.6 ± 22.1 to 89.4 ± 12.1 (p=0.008) for ASES score pre- to postoperatively. No difference in the SST was documented (p=0.010).

Conclusion

The Latarjet procedure showed no influence on elbow flexion strength and provided comparable forearm supination strength compared to the uninjured arm with reliable clinical outcome. However, a decrease of forearm supination strength in both arms occurred in the early postoperative phase. In contrast, muscle belly circumferences of the upper arms increased.