

An objective functional evaluation of the flexor carpi ulnaris set of triple tendon transfer in radial nerve palsy

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Abstract

This study reports an objective assessment of postoperative function of 11 triple transfers for high radial palsies, using pronator teres for wrist extension, flexor carpi ulnaris for finger extension and palmaris longus for thumb extension. The mean follow-up was 3.3 years. Assessment was done by recording the active ranges of wrist motion, grip strength, wrist and finger strength and work simulation. The mean strength and range of wrist extension were 42% and 86%, respectively, of the contralateral wrist. Other measured movements were within the functional range and work simulation confirmed good restoration of function. The mean DASH score was 3.45, with no patient reporting any specific functional complaints. This study shows that even though the range of wrist motion and the strength of the wrist and fingers are less than normal, hand function remains good. We conclude that the flexor carpi ulnaris set of tendon transfer works well.

Level of evidence: 3

Keywords

Radial nerve, flexor carpi ulnaris, tendon transfer, Ganga therapeutic equipment

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Introduction

Loss of radial nerve function in the hand leads to significant disability (Labosky and Waggy, 1986; Riordan, 1974). While the use of pronator teres (PT) for wrist extension and palmaris longus (PL) for thumb extension are well established, the tendon transfer best suited for extension of the fingers remains controversial (Ingari and Green, 2011). Current authors debate the relative merits of using flexor carpi ulnaris (FCU), flexor carpi radialis (FCR) and flexor digitorum superficialis (FDS). Intrinsic to this debate is the donor morbidity of the use of these motors, in particular wrist flexors (Riordan, 1974). Although very definite opinions are expressed in the literature as to the relative merits of the alternatives, the literature is lacking in objective data, both in respect of measurements of the effectiveness of the transfer and the donor motor deficit. Data on the function of the transfers in the workplace and domestic setting of the patients is also poor.

The aim of this study was to objectively assess the functional capacity of the hand after transfer of PT for wrist extension, FCU for finger extension and PL for thumb extension in patients with high radial nerve

palsy and analysing the possible functional deficit caused by use of the FCU.

Patients and methods

Between January 2002 and June 2012, 11 patients who had fractures of the humerus with unrecovered radial nerve injury and who underwent the triple transfer were included in the study and were assessed at least 6 months post-operatively. Patients with brachial plexus injuries, other nerve injuries, and forearm and hand fractures were excluded from this study.

A total of 11 patients, seven men and four women with a mean age of 33 years (range 17–56), were evaluated at a mean of 3.3 years (range 6 months–7.6 years)

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