

Restoration of Hand Function in Isolated Lower Brachial Plexus Injury with Brachioradialis to Flexor Pollicis Longus and Biceps to Flexor Digitorum Profundus Transfer

Vimal Kumar KUMMARI, Praveen BHARDWAJ, Vigneswaran VARADHARAJAN,
Nallatparambil Chandra MADHUSUDHAN, Hari VENKATRAMANI,
S. Raja SABAPATHY

Department of Hand and Microsurgery, Ganga Hospital, Coimbatore, India

Background: Isolated lower (C8T1) brachial plexus injury (BPI) is uncommon and the aim of treatment is to achieve a satisfactory grasp enabling the use of the hand for daily activities. The aim of this study is to report the outcomes of the transfer of brachioradialis (BR) to flexor pollicis longus (FPL) and biceps to the flexor digitorum profundus (FDP) for an isolated lower BPI.

Methods: This is a retrospective study of all patients with an isolated lower BPI who underwent a BR to FPL and biceps to FDP transfer for restoration of digital flexion over a 1-year period from May 2019 to June 2020. Patient demographic and injury data were collected at the presentation. Outcomes data included the ability to grasp and perform activities of daily living and DASH score.

Results: The study included three patients (all men) with an average age of 30.3 years. All sustained an isolated lower BPI following a road traffic accident and tendon transfers were performed at a mean of 9.3 months after the initial injury. At a mean of 1-year follow-up, all three recovered grade M4 motor power of digital flexion, achieved good grasp function with pulp-to-palm distance of <1 cm. All are able to use the hand for independent as well as bimanual activities. The individual DASH scores were 36, 30 and 30.

Conclusions: BR to FPL for thumb flexion and biceps to FDP using fascia lata graft to restore finger flexion is simple and effective surgeries in patients with isolated lower BPI.

Level of Evidence: Level V (Therapeutic)

Keywords: Lower plexus, Brachial plexus, Tendon transfer, Biceps, Finger flexion, Thumb flexion, Brachioradialis

INTRODUCTION

Brachial plexus injury (BPI) involving only the lower roots (C8T1) is uncommon with a reported incidence ranging from 0.3% to 3.5%.^{1,2} In these patients, shoulder and elbow flexion function is preserved but there is a variable weakness of wrist extension, and their hand function is negligible. Typically, the finger and thumb flexors and all the intrinsic muscles are paralysed, grossly impairing the hand function. Given that the lower root injuries are often avulsions and the distance from the site of injury to the motor endplates, these injuries seldom show any

Received: Nov. 5, 2021; Accepted: Apr. 16, 2022

Published online: Aug. 11, 2022

Correspondence to: Dr. Praveen Bhardwaj

The Department of Hand and Microsurgery, Ganga Medical Centre and Hospital, 313, Mettupalayam Road, Coimbatore, 641043, India

Tel: +91-9944562422

E-mail: drpb23@gmail.com