Twenty-seven patients who underwent gracilis single-stage free functioning muscle transfer for elbow flexion and hand prehension after a pan-plexus injury were included. All patients presented with a minimum of 2 years of follow-up. Postoperative finger flexion, elbow flexion strength, preoperative and postoperative Disability of the Arm, Shoulder, and Hand questionnaire scores, secondary hand procedures, complications, and demographic characteristics were analyzed.

Results: Twenty patients (74%) demonstrated active finger pull-through. Only six patients (25%) considered their hand function useful for daily activities. Disability of the Arm, Shoulder, and Hand score improved by 13.1 ± 13.7 (P < 0.005). All patients were expected to require one secondary procedure (wrist fusion, thumb carpometacarpal fusion, and/or thumb interphalangeal fusion) because no extensor reconstruction was performed. These were performed in 89%, 78%, and 74% of patients, respectively. Four postoperative complications (hematoma, seroma, wound dehiscence, and skin paddle loss) occurred. No flap loss occurred.

Conclusions: In pan-plexus injuries, the use of a gracilis single-stage free functioning muscle transfer is an alternative to the double free functioning muscle transfer procedure and contralateral C7 transfer, especially for patients who are unable to undergo two to three important operations in a short period of time. Further research and studies are required to improve hand function in these patients ¹⁾.

Traumatic brachial plexus injury is generally severe, and in many cases associated with surrounding tissue injury, which makes them hard to diagnose at the right time.

Rasulić et al. from Belgrade, Kosovska Mitrovica, Kragujevac, Serbia, presents etiological and epidemiological characteristics of surgically treated civilian traumatic brachial plexus injuries.

This retrospective study included 68 patients, operated due to the traumatic brachial plexus injuries at Clinic for Neurosurgery, Clinical Center of Serbia, during the 11-year period.

The vast majority of injured patients were men in full working maturity. In our study, there were seven different etiological factors. The road traffic accidents were the most common-41 (60.3%), while the motorcycle accidents were the most dominant subtype (53.7%) of all road traffic accidents, and also representing 32.4% of all causes of trauma. Supraclavicular elements of the brachial plexus were injured in more than 80% of patients. A total of 49 (72.1%) patients from our study had one or more associated injuries. The most common associated injuries were bone fractures, brain contusions, and vascular injuries.

Although rare, non-war-related severe brachial plexus injuries represent a group of patients carrying high risk of insufficient functional recovery regardless of treatment modality, or surgical technique. Epidemiological and etiological data are therefore very important to identify the groups in risk and to induce preventive actions aimed at these patients².

In a study, Monreal analyze the results obtained in 20 patients treated with phrenic nervemusculocutaneous nerve transfer to restore elbow flexion after brachial plexus injuries. A consecutive series of 25 adult patients (21 men and 4 women) with a brachial plexus traction/crush lesion were treated with phrenic-musculocutaneous nerve transfer, but only 20 patients (18 men and 2 women) were followed and evaluated for at least 2 years postoperatively. All patients had been referred from other institutions. At the initial evaluation, eight patients received a diagnosis of C5-6 brachial plexus

nerve injury, and in the other 12 patients, a complete brachial plexus injury was identified. Reconstruction was undertaken if no clinical or electrical evidence of biceps muscle function was seen by 3 months post injury. Functional elbow flexion was obtained in the majority of cases by phrenicmusculocutaneous nerve transfer (14/20, 70%). At the final follow-up evaluation, elbow flexion strength was a Medical Research Council Grade 5 in two patients, Grade 4 in four patients, Grade 3 in eight patients, and Grade 2 or less in six patients. Transfer involving the phrenic nerve to restore elbow flexion seems to be an appropriate approach for the treatment of brachial plexus root avulsion. Traumatic brachial plexus injury is a devastating injury that result in partial or total denervation of the muscles of the upper extremity. Treatment options include neurolysis, nerve grafting, or neurotization (nerve transfer). Neurotization is the transfer of a functional but less important nerve to a denervated more important nerve. It has become an important procedure in the restoration of function in patients with irreparable preganglionic lesions. Restoration of elbow flexion is the primary goal in treating patients with severe brachial plexus injuries. Nerve transfers are used when spinal roots are avulsed, and proximal stumps are not available. Newer extraplexal sources include the ipsilateral phrenic nerve as reported by Gu et al. (Chin Med J 103:267-270, 1990) and contralateral C7 as reported by Gu et al. (J Hand Surg [Br] 17(B):518-521, 1992) and Songcharoen et al. (J Hand Surg [Am] 26(A):1058-1064, 2001). These nerve transfers have been introduced to expand on the limited donors. The phrenic nerve and its anatomic position directly within the surgical field makes it a tempting source for nerve transfer. Although not always, in cases of complete brachial plexus avulsion, the phrenic nerve is functioning as a result of its C3 and C4 major contributions. In the present study, we analyze the results obtained in 20 patients treated with phrenic-musculocutaneous nerve transfer to restore elbow flexion after brachial plexus injuries 3 .

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Maldonado AA, Poppler L, Loosbrock Rn MF, Spinner RJ, Bishop AT, Shin AY. Restoration of Grasp after Single-Stage Free Functioning Gracilis Muscle Transfer in Traumatic Adult Pan-Brachial Plexus Injury. Plast Reconstr Surg. 2023 Jan 1;151(1):133-142. doi: 10.1097/PRS.000000000009787. Epub 2022 Oct 11. PMID: 36219863.

2)

Rasulić L, Savić A, Lepić M, Puzović V, Karaleić S, Kovačević V, Vitošević F, Samardžić M. Epidemiological characteristics of surgically treated civilian traumatic brachial plexus injuries in Serbia. Acta Neurochir (Wien). 2018 Jul 29. doi: 10.1007/s00701-018-3640-7. [Epub ahead of print] PubMed PMID: 30056518.

Monreal R. Restoration of elbow flexion by transfer of the phrenic nerve to musculocutaneous nerve after brachial plexus injuries. Hand (N Y). 2007 Dec;2(4):206-11. doi: 10.1007/s11552-007-9050-6. Epub 2007 May 19. PubMed PMID: 18780054; PubMed Central PMCID: PMC2527228.

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