

A RARE VARIATION BETWEEN THE MEDIAN NERVE AND MUSCULOCUTANEOUS NERVE: A CADAVER STUDY

N. MEDIANUS VE N. MUSCULOCUTANEUS ARASINDAKİ NADİR BİR VARYASYON: BİR KADAVRA ÇALIŞMASI

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Gazi Medical Journal 2003; 14: 41-43

SUMMARY: *The median and the musculocutaneous nerves are among the largest and most important nerves of the upper extremity. Both nerves innervate different muscle groups and they generally do not receive nerve fibers from each other. In this case report, we present a communicating branch between these two nerves and the use of these kinds of variations in surgical procedures.*

Key Words: *Median Nerve, Musculocutaneous Nerve, Variation, Plastic and Reconstructive Surgery.*

INTRODUCTION

The median nerve has two roots from the lateral (C5, 6, 7) and medial (C8, T1) cords, which embrace the third part of the axillary artery, uniting anterior or lateral to it. The median nerve enters the arm at the first lateral to the brachial artery. Near the insertion of the coracobrachialis; it crosses in front of the artery, descending medial to it to the cubital fossa without receiving any other branch. The musculocutaneous nerve (C5, 6, 7) comes from the lateral cord, as one of the terminal branches, opposite the lower border of the pectoralis minor, usually pierces the coracobrachialis and descends laterally between the biceps brachii and brachialis to the lateral side of the arm (1-4).

CASE REPORT

We report an unusual unilateral variation between the median and musculocutaneous

ÖZET: *N. medianus ve n. musculocutaneus üst ekstremitenin büyük ve önemli sinirlerindedir. Her iki sinir farklı kas gruplarını inerve ederler ve genellikle birbirlerinden sinir lifi almazlar. Bu vaka takdiminde, iki sinir arasındaki bağlayıcı bir dal ve bu tür varyasyonların cerrahi işlemlerdeki önemi gösterilmektedir.*

Anahtar Kelimeler: *N. Medianus, N. Musculocutaneus, Varyasyon, Plastik ve Rekonstrüktif Cerrahi.*

nerves that was found during the dissection of the arm of a 48-year-old male cadaver. The median nerve was originating normally from the brachial plexus, but on its way to the cubital fossa it received an accessory branch from the musculocutaneous nerve. The communicating branch was about 2.5 cm long and had an oblique course between two nerves (Fig. 1). The other courses and branches of the two nerves in the arm, forearm and hand of this side were normal in every aspect, as were the courses and branches of the median and musculocutaneous nerves of the contralateral side.

DISCUSSION

Several abnormal branches between the median and musculocutaneous nerves have been well described by many authors. Kerr found that a branch from the musculocutaneous nerve to the median had been reported in 8.1 to 36.19% of different series, and estimated its incidence as



Fig. 1: *: communicating branch;
MC: musculocutaneous nerve;
M: median nerve;
U: ulnar nerve.

somewhat less than the 24% found in his series (1). Studies by Nakatani et al. revealed three variations in which the musculocutaneous nerve did not pierce the coracobrachialis (5). Le Minor described a case of a lateral fasciculus that first pierced the coracobrachialis muscle and then one of its terminal branches, joining the medial root forming the median nerve (6). Iwamoto et al. reported a communicating branch from the median nerve to the musculocutaneous (7). Sargon et al. stated a variation of the median nerve which is formed by the union of three roots, two of them coming from the lateral cord (8). Venieratos and Anagnostopoulou reported three types of communication between the median and musculocutaneous nerve, with the coracobrachialis muscle being the reference point. In type 1 communication was proximal to the entrance of the musculocutaneous nerve into the coracobrachialis, in type 2 communication was distal to the muscle and in type 3 the nerve and the communicating branch did not pierce the muscle (9). Tsikaras et al. revealed that the musculocutaneous nerve arose from the median nerve unilaterally in a male cadaver (10).

In our case the lateral root of the median nerve from the lateral cord was significantly normal and the abnormal communicating branch was significantly thick. It is not particularly uncommon to find a nerve trunk of considerable

size leaving the musculocutaneous, while this lies behind the biceps brachii muscle, and passing distally and medially to join the median nerve. This is to be regarded as a result of median nerve fibers from the lateral cord passing into the musculocutaneous rather than into the lateral root of the median, and then rejoining the median nerve at a lower level. When this occurs, the lateral root of the median nerve is typically abnormally small.

From a clinical point of view, such variations are of clinical importance during flap dissections, post-traumatic evaluations of the arm or peripheral nerve repair. After trauma to the arm, when the median nerve seems to be surgically intact, the fibers coursing in the musculocutaneous nerve may be damaged and median nerve injury signs may be observed in such patients. While flap dissections and unexpected damage could occur to the musculocutaneous nerve, double nerve injury could also result.

An anterior approach for the internal fixation of humeral fractures seems to be safer than the posterior approach because of the risk of radial nerve damage in the posterior approach. Although it is easier to retract the neurovascular structures during the anterior approach for humeral fractures, a surgeon should be familiar with the neurovascular variations of this region so as not to cause iatrogenic damage to these structures.

In conclusion, such variations of the peripheral nerves noticed in autopsy or in cadaver dissections should be included in surgical training programs, even if they are not necessary for inclusion in routine anatomy education in medical schools.

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