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Case Report

Anatomic Variation of the Common Palmar Digital Nerves and Arteries

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Variations in the course and distribution of common palmar digital nerves and arteries are rare. A classic common palmar digital nerves and arteries are defined as concomitant. During routine dissection classes to undergraduate medical students we observed formation of each common palmar digital nerve divided into 2 or 3 branches and formed a ring enclosing the corresponding common palmar digital artery. Knowledge of the anatomical variations of the common palmar digital nerves and arteries is crucial for safe and successful hand surgery.

Key Words : Common palmar digital nerve · Common palmar digital artery · Anatomic variation.

INTRODUCTION

The conventional morphologic features on common palmar digital nerve and artery is well-documented[3]. The median and ulnar nerve divided into three common palmar digital nerves, then descending with common palmar digital arteries without any branch before finger webs. In this present study, we describe a rare and unreported variation in the course and distribution of the common palmar digital nerves and its relation to the common palmar digital arteries. Knowledge of the frequency of anatomical variations of the neural and arterial pattern of the hand is crucial for safe and successful hand surgery.

CASE REPORT

As the number of hand surgical interventions increase a better understanding of the anatomy of hand nerves and arteries gain in importance. Here we describe a rare anatomic variation of the common palmar digital nerves and arteries in a 42-year-old yellow male cadaver right palm fixed in 10% formalin. That cadaver specimen was detected during dissections performed in a routine gross anatomy course. The skin of the bottoms of palm was removed, and the vessels and nerves were exposed. The superficial palmar arch and three unusual anatomic variation pairs of the common palmar digital nerves and arteries were identified. Each common palmar digital nerve divided into 2 or 3 branches and clamped the corresponding common palmar digital artery (Fig. 1). To the best of our knowledge the variation of common palmar digital arteries went through palmar digital nerves have so far not been described. To understand the rare anatomic variation and collect new anatomical data, now it is reported as follows.

We set the line connecting the scaphoid node with the pisiform bone as a reference line. The following data were measured by vernier caliper with the accuracy of 0.02 mm. We show here three common palmar digital nerves originated from the median nerve or ulnar nerve divided into 2 or 3 smaller branches, and clamped the corresponding common palmar digital artery. The distance from the crotch of nerves to the reference line were 53.12 mm, 54.70 mm, 54.46 mm, respectively. The distance from the concourse to the reference line were 65.60 mm, 67.76 mm, 58.80 mm, respectively. Each common palmar digital nerve downward to the finger weds, and then divided into two branches named proper palmar digital nerves. Besides, from intersection of each common palmar digital artery and nerve we also detected the vascular impression with the diameter of 1.38 mm, 1.18 mm, 1.26 mm, respectively. The diameter of proximal vascular impressions were 1.52 mm, 1.73 mm, 1.56 mm, respectively (Fig. 1).

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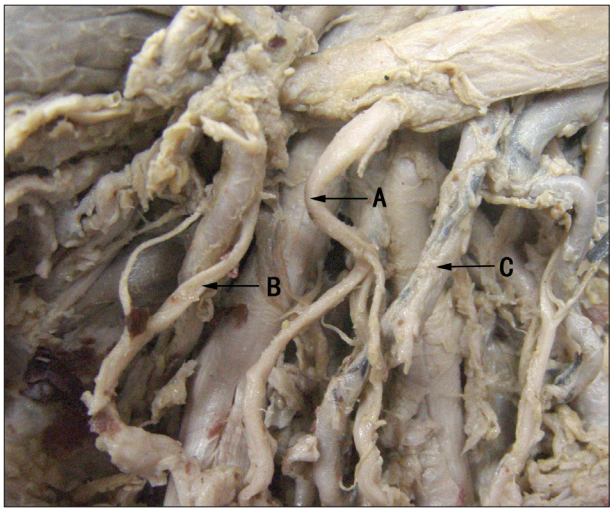

Fig. 1. Course and distribution of the variation common palmar digital nerves and arteries. A, main trunk of the common palmar digital nerve; B, branches of the common palmar digital nerve; C, the common palmar digital artery.

DISCUSSION

Variations in the ulnar and median nerves are not uncommon. The median nerve formed a ring enclosing the median artery has been reported[7]. Bozkurt et al.[2] described an unusual termination of the ulnar nerve in the palm. Other variations about the superficial palmar arch seem to be quite common. Vollala et al.[8] observed formation of superficial palmar arch solely by superficial branch of ulnar artery without any contribution from the radial artery or median artery. Meals and Shaner[6] in their comprehensive study on the common palmar digital nerves of 50 palms did not find the variation of common palmar digital nerves divided into 2 or 3 smaller branches, and clamped the corresponding common palmar digital artery.

Most of peripheral nerve injuries involve the hand (30%)[1]. The injury of common palmar digital nerves and arteries are the center of attraction for most of the surgical procedures and traumatic events in the hand. The hand surgeon should keep in mind this kind of variations before performing surgical procedures such as, neurosuture, arterial repairs, replantation of severed limbs[4]. The knowledge of the variations of the common palmar digital nerves and arteries is useful in clinical as well as surgical practice. They may be the cause of nerve entrapment syndrome, ischemia because of variable relations of nerves with the surrounding muscles and the vessels. The presence of anatomical variations in the common palmar digital nerves and arteries is used to explain unexpected signs and symptoms useful in medical practice.

The present case revealed the common palmar digital arteries went through the common palmar digital nerves. This variation can cause anomalies of the sensory innervations of the hand. With the deepening of cognition on peripheral nerve compression, the incidence of nerve entrapment syndrome of common palmar digital nerve has been increasing year by year. As one of reasons, common digital palmar artery may cause the entrapment of common palmar digital nerve[5].

CONCLUSION

Thus, these variations are important to note by the anatomist and clinicians. Knowing the existence of the abnormal case of the common palmar digital nerves and arteries is very essential, as it may be damaged during surgery, in trauma in these area.

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