5.3 Anatomical variations of the superficial palmar arch in Sri Lankans – A cadaveric study.

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ABSTRACT

Introduction:

Vasculature of the hand is one of the complex areas having a high degree of anatomical variations. It is very important to have an adequate knowledge of the arterial supply to the hand in this era of modern medical technology, as a significant number of surgical procedures such as radial arterial cannulation, radial forearm flap, and radial artery conduits in coronary artery grafting are carried out. Improvement of microsurgical techniques in reconstructive hand surgery also have made a necessity for better understanding of the vasculature of the hand.

The superficial palmar arch provides the major blood supply to the hand along with the deep palmar arch and represents an important anastomosis between the ulnar and radial arteries.

Objective:

To study the variations of the superficial palmar arch in Sri Lankans compared to the classical description given in standard text books.

Methodology:

Eighteen hands from formalin preserved cadavers, both males and females of the ages between 30 to 80 years were dissected. Special attention was paid to trace the blood vessels supplying the thumb.

Results:

The superficial palmar arch is mainly formed by ulnar artery and some contribution from the radial artery. Two types of superficial palmar arches were described, as complete and incomplete. The classic superficial palmar arch was described as the direct continuity between the ulnar artery and the superficial palmar branch of radial artery which is considered as the sub group of complete type. In the incomplete type superficial palmar arch is formed only by the ulnar artery with some communications from the deeper palmar arch .

According to the previous literature, complete type ranges from 80% to 90%.
In our study 16 hands (89%) were with complete type and 02 (12%) were with incomplete type. However the anastomosis between radial and ulnar arteries were seen in all the specimens of our study. Classical palmar arch having a direct continuity between the ulnar artery and the superficial palmar branch of radial artery was found in 10 (55%) hands, in contrast to the 10% in the literature.

Palmar type of median artery was noticed in 2 (12%) hands contributing to form the superficial palmar arch, in contrast to the 20% in literature.
Although the sole blood supply to the thumb is by the princeps pollicis according to the standard text books, in our study it was found only in 6 (33%) specimens.
The classical picture of the superficial palmar arch, with the princeps pollicis supplying the thumb was not seen in any of the specimens.

Conclusion:

Variations in the terminations of the radial and ulnar arteries are common. Since there are anastomoses between radial and ulnar arteries it may be safe to sacrifice any of the main arteries when performing surgical and medical interventions of the hand in the absence of vascular diseases.