
症例報告

SUPERFICIAL BRACHIAL ARTERY CONTINUING INTO THE FOREARM AS THE RADIAL ARTERY

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Abstract : The superficial brachial artery continuing into the forearm as the radial artery was observed in the right upper limb of an 86-year-old Japanese woman who died of pneumonia. The large-sized superficial brachial artery originating from the axillary artery descended ventral to the median nerve, crossed over the median nerve, and continued into the forearm as the radial artery. The small-sized brachial artery, the continuation of the axillary artery, gave off the deep brachial artery and continued into the forearm as the ulnar artery. The brachial artery joined the superficial brachial artery with an anastomotic branch.

Key words : superficial brachial artery, brachial artery, upper limb, human

INTRODUCTION

Variations in the arterial pattern of the upper limb have been observed frequently, either in routine dissection or in clinical practice¹⁾. One of the more frequent variations is the persistent superficial brachial artery²⁻⁸⁾. A superficial brachial artery is defined as a brachial artery with a superficial course to the median nerve, whereas a deep brachial artery corresponds to the brachial artery with a normal course behind the median nerve^{2,5,9)}.

During an ordinary dissection by medical students at Nara Medical University in 2003, the large superficial brachial artery originating from the axillary artery was observed in the right upper limb of an 86-year-old Japanese woman. The large superficial brachial artery continued into the forearm as the radial artery, whereas the small brachial artery continued into the forearm as the ulnar artery.

FINDINGS

One case of the superficial brachial artery originating from the axillary artery was found in the right upper limb of an 86-year-old Japanese woman who died of pneumonia.

The right axillary artery passed ventral to the brachial plexus (Fig. 1). The axillary artery (8.0 mm in diameter) branched off the superficial brachial artery (5.0 mm in diameter) at 1.8 cm distal to the derivation of the thoracoacromial artery from the axillary artery. Thereafter, the axillary artery passed between the medial and lateral roots of the median nerve and gave rise to the common trunk of the subscapular artery (2.5 mm in diameter) and the posterior circumflex humeral artery (3.0 mm in diameter) at 1.8 cm distal to the

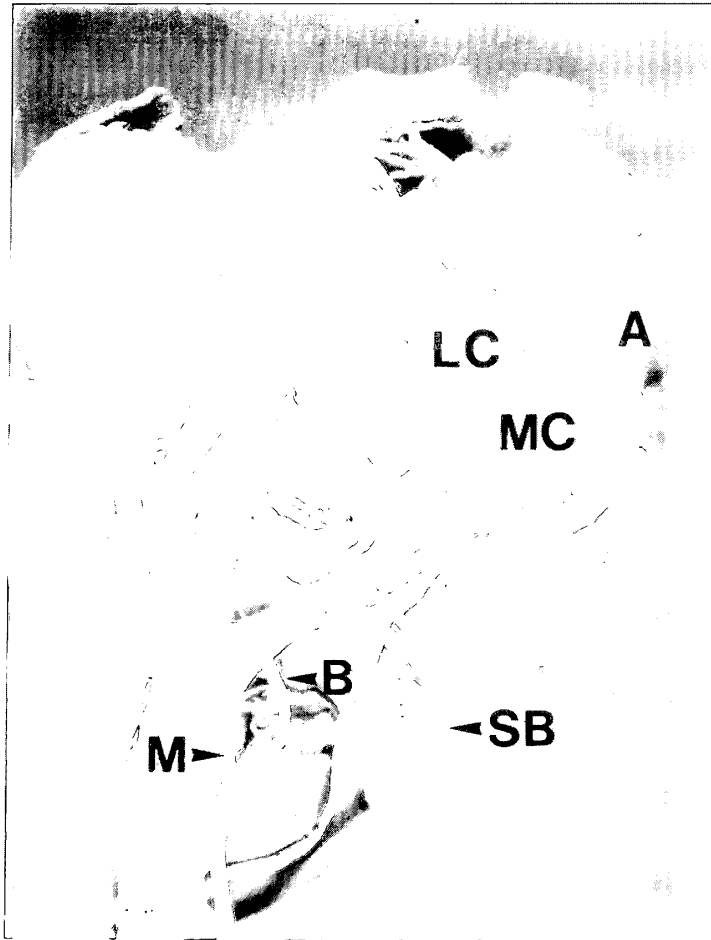


Fig. 1. Anterior view of the right axilla. A = axillary artery; B = brachial artery; LC = lateral cord; MC = medial cord; M = median nerve; and SB = superficial brachial artery.

derivation of the superficial brachial artery (Fig. 2A).

The brachial artery (3.0 mm in diameter) branched off the deep brachial artery (2.5 mm in diameter) at 2.6 cm distal to the derivation of the common trunk of the subscapular artery and posterior circumflex humeral artery. The muscular branches to the biceps brachii muscle arose from the brachial artery. The brachial artery continued into the forearm as the ulnar artery. The posterior interosseus artery arose from the ulnar artery (Fig. 3).

The superficial brachial artery passed medial to the medial root of the median nerve, descended with superficial course to the median nerve, and crossed over the median nerve and the brachial artery. The superficial brachial artery made a hairpin bend at the lower part of the brachium (Fig. 2B). Without ramification, the superficial brachial artery continued into the forearm as the radial artery. The superficial brachial artery joined the brachial artery with an anastomotic branch in the cubital fossa (Fig. 2C). The anterior interosseus artery arose from the anastomotic branch (Fig. 3).

The caliber of the superficial brachial artery was about two times larger than that of the brachial artery. It is thought that the main blood supply to the forearm was dependent on the superficial brachial artery.

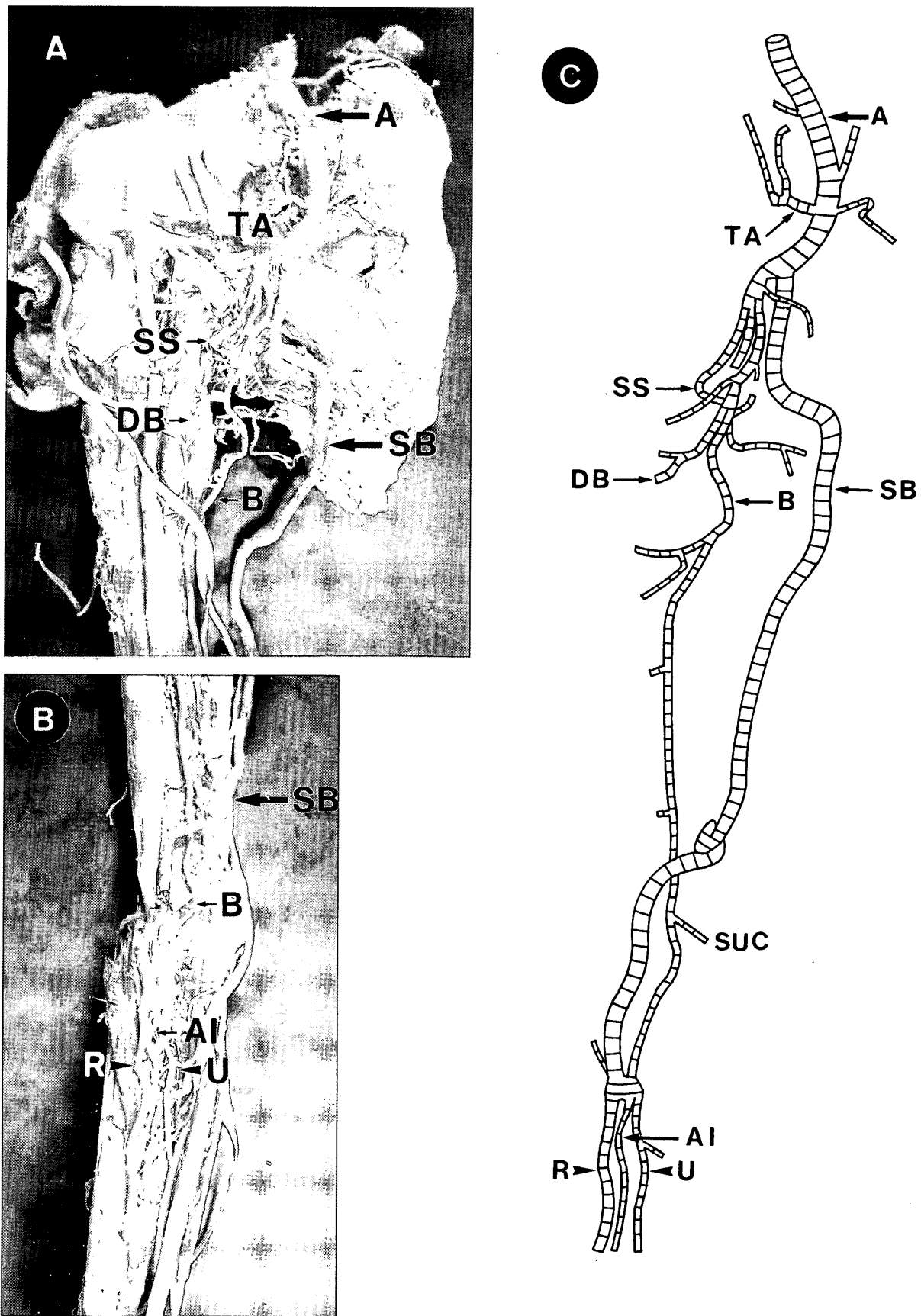


Fig. 2. Anterior views of the axillary, superficial brachial, and brachial arteries (A and B) and their tracing (C).
 A = axillary artery; AI = anterior interosseus artery; B = brachial artery; DB = deep brachial artery; LC = lateral cord; M = median nerve; MC = medial cord; R = radial artery; SB = superficial brachial artery; SS = subscapular artery; SUC = superior ulnar collateral artery; and TA = thoraco-acromial artery.

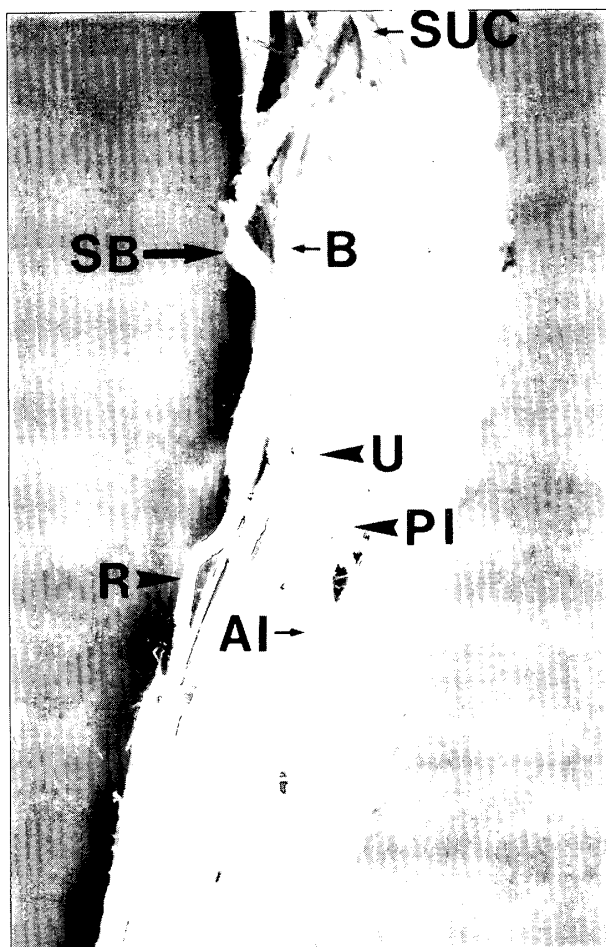


Fig. 3. Anterior view of the cubital fossa. AI = anterior interosseus artery; B = brachial artery; PI = posterior interosseus artery; R = radial artery; SB = superficial brachial artery; SUC = superior ulnar collateral artery; and U = ulnar artery.

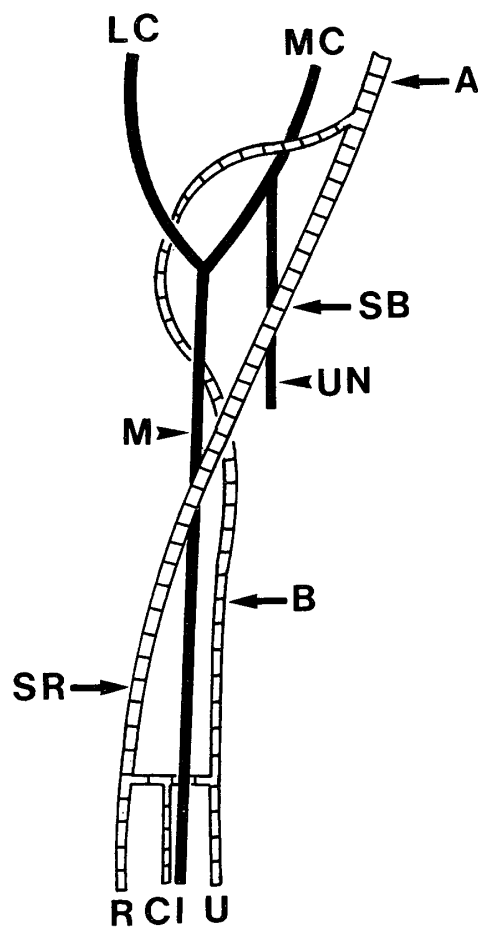


Fig. 4. Possible development of the present case. A = axillary artery; B = brachial artery; CI = common interosseus artery; LC =lateral cord; MC = medial cord; M = median nerve; R = radial artery; SB = superficial brachial artery; SR = superficial radial artery; U = ulnar artery; and UN = ulnar nerve.

Otherwise, the arteries of the left upper limb were in a normal pattern.

DISCUSSION

In the present case, the superficial brachial artery originating from the axillary artery descended medial to the medial root of the median nerve, crossed over the median nerve and the deep brachial artery, and joined the brachial artery with a anastomotic branch in the cubital fossa.

The incidence of the superficial brachial artery from the axillary artery was reported as 3% (3 of 100 arms) by Müller⁹, 3.4% (14 of 410 arms) by Adachi², 0.1% (1 of 960 arms) by Miller¹⁰, and 4.5% (9 of 200 arms) by Fuss et al.¹¹. We found a case of this anomaly in 46 arms (2.2%). The caliber of the superficial brachial artery was smaller than that of the brachial artery in most, but not all instances of this anomaly². In the present case, the

superficial brachial artery was about twice larger in comparison with the brachial artery. Sarikcioglu et al.¹²⁾ reported a very similar case.

The prevalence of persistent superficial brachial artery in the right upper limb was observed by Lanz and Wachsmuth¹³⁾, McCormack et al.⁵⁾, and Rodriguez-Baeza et al.¹⁴⁾. The present case was also found in the right upper limb.

Based on the development of the arteries of the arm as proposed by Müller⁹⁾ and Singer¹⁵⁾, a normal development of the axillary and brachial arteries seems to include the persistence of the axillary, superior and medial superficial brachial, brachial, radial, and ulnar arteries. If the axillary, superior and medial superficial brachial, brachial, radial, ulnar, and superficial radial arteries are persistent, this anomaly can be formed (Fig. 4).

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