

Two rare anomalies of the brachial plexus

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Morphological variations of the brachial plexus and variants in the distribution of the anterior division of the middle trunk are relatively frequent. Two of the rarest anomalies occurred in the left brachial plexus of a 62-year-old Japanese male, one of 104 plexuses dissected between 1996 and 1997 at Kanazawa University Faculty of Medicine. The superior trunk of the brachial plexus was formed by the anterior primary division of C5 and C6 and a thin branch (0.5 mm in diameter) from C4, the middle trunk by the C7, and the inferior trunk by C8 and T1 (Fig. a, b). We could not determine whether there was a branch derived from T2 to T1, since the cadaver died of lung cancer. The entire anterior division of the middle trunk crossed the axillary artery and joined the medial root of the median nerve which was the continuation of the medial cord after the cord branched off the ulnar nerve. The lateral cord pierced the coracobrachialis muscle, and divided into the musculocutaneous nerve and the lateral root of the median nerve at the passing point, finally joining the medial root of the median nerve superficial to the brachial artery about 115 mm distal to the lower border of the latissimus dorsi muscle to form the median nerve. The musculocutaneous nerve branched off the nerves to the biceps

1 brachii, the brachialis, and the long head of the biceps brachii
2 and finally continued to the lateral cutaneous nerve of the
3 forearm. The branch to the coracobrachialis muscle had already
4 been cut and the course could not be traced.

5 Twenty-nine types of plexus were described by Kerr (1918)
6 and twenty-seven by Hirasawa (1931). Union of the anterior
7 division of the medial cord with the medial root of the median
8 nerve was found in 1/175 arms by Kerr (1918), in none of Hirasawa's
9 200 arms (1931), and in 1/200 fetal arms by Obara (1950). In
10 168 (84 paired plexuses) formation of the lateral cord was normal
11 (C5,6,7) but there were contributions of C7 to the medial cord,
12 medial root of the median and the ulnar nerve in 21, 14 and 5
13 instances, respectively (Bowden et al. 1968). The combined
14 data from these four studies show that in only 2/543 cases, the
15 anterior division of the middle trunk combined with the medial
16 root of the median nerve; the addition of our findings gives
17 an incidence of 3/643.

18 Le Minor (1990) appears to have recorded the only other
19 instance in which the lateral cord and musculocutaneous nerve
20 pierced the coracobrachialis muscle. When the lateral cord
21 divided into the musculocutaneous nerve and the lateral root
22 of the median nerve around the boundary between the axilla and
23 the upper arm or when the musculocutaneous nerve was fused
24 completely or incompletely with median nerve or its lateral root,

1 Nakatani et al. (1997 a,b) did not find any case in which the
2 lateral, the musculocutaneous nerve and lateral head of the
3 median nerve pierced the coracobrachialis.

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21 FIGURE LEGEND

22 Fig. (a) Photograph of the left arm. (b) Corresponding drawing.
23 Arrowheads indicate the anterior division of the middle trunk
24 of the brachial plexus which joins the medial root of the median

1 nerve at the small asterisk. The lateral cord divides into the
2 musculocutaneous nerve and a lateral root of the median nerve
3 at the site indicated by an arrow. The medial and lateral cords
4 of the median nerve unite at the site indicated by the large
5 asterisk to form the median nerve. Bar in a, 10 cm. Numbers
6 in parentheses indicate the diameters (mm) of nerves in b. A,
7 axillary artery; B, brachialis; C, cervical nerve; CB,
8 coracobrachialis; IT, inferior trunk; L, long head of biceps
9 brachii; LC, lateral cord; LCNF, lateral cutaneous nerve of
10 forearm; LR, lateral root of median nerve; MC, medial cord; MCN,
11 musculocutaneous nerve; MCNF, medial cutaneous nerve of forearm;
12 MN, median nerve; MR, medial root of median nerve; MT, middle
13 trunk; PC, posterior cord; S, short head of biceps brachii; UN,
14 ulnar nerve.

