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Potential Compressive Sites of the Anterior Interosseous Nerve in the Proximal Forearm: An Anatomic Study

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ABSTRACT

Background: The etiology and treatment of spontaneous paralysis variants of anterior interosseous nerve (AIN) syndrome remains controversial. Variation and multiple sites of potential compression complicate the successful performance of neurolysis. This anatomic study of the AIN and sites of potential compression in the proximal forearm facilitates critical steps involved in neurolytic procedures and management. **Methods:** Upper extremities of twelve cadavers were examined to evaluate potential sites of AIN compression in the proximal forearm. Potential sites of musculoaponeurotic compression were evaluated, including: *lacertus fibrosus*; inferior fibrous arch of the humeral head of the *pronator teres* (PT) muscle; inferior fibrous arch of the ulnar head of the PT muscle; fibrous arch in the *flexor digitorum superficialis* (FDS) muscle; *Gantzer's muscle*; and vascular structures near the AIN and median nerve. **Results:** The AIN arose at a mean distance of 54.5 mm distal to the elbow from the posterior (n = 9) or ulnar side (n = 3) of the median nerve. Relative positions of AIN branches were variable. A fibrous arch was found between the *lacertus fibrosus* and the PT in two cases. Nine cadavers had two fibrous arches in the PT and FDS, and three cadavers had one arch. An accessory head in the FDS was found to be a risk of AIN compression. *Gantzer's muscle* was present in six cases, crossing the AIN superficially. Two potentially compressive vascular arches were identified. **Conclusions:** Our observations confirm that multiple musculoaponeurotic and/or vascular structures can contribute to AIN compression in the proximal forearm. Understanding the complex anatomic relationships of this nerve is crucial to improving outcomes of neurolysis in cases of non-regressive AIN paralysis.

KEYWORDS

Anterior Interosseous Nerve; Anatomy; Compression; Paralysis; Neurolysis

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