



A Cadaveric Micro-anatomic study of intra-fascicular topography of brachial plexus

Sumit Sinha MS MCh; Sanjeev Lalwani MBBS, MD

Introduction

To map the fascicular topography in the roots of brachial plexus.

Methods

The right-sided brachial plexus of 25 adult male cadavers was dissected. The whole of the plexus was then taken out, including roots from 5 mm distal to their exit from the intervertebral foramen, to proximal 1 cm of the distal branches. All roots were tagged on ventral aspects by 10-0 nylon, about 5 mm distal to their exit from foramen. The fixed specimens were then dissected and interfascicular longitudinal dissection performed under magnification. The dissection was conducted proximally to the level of the nylon stitch and distally till the plexal branches. The area occupied by different nerve fascicles was then expressed as percentage of the total cross-sectional area of the roots.

Results

Fascicular branching is fortuitous, but microdissection is possible. Localization of fascicular groups is consistent in roots. Overall, 10.4% plexus supplies shoulder (Axillary and SS). 11% supplies Musculocutaneous N. 19.6% supplies the Median N. 14% supplies the Ulnar N. 38% plexus supplies the radial nerve- which is the main innervator of antigravity muscles. Thus, the antigravity muscles receive more representation in the plexus than the gravity muscles, supplied by median and ulnar nerves (33.6%).

Conclusions

Fascicular branching is common, especially in the C8-T1. Fascicular microdissection is possible with careful dissection. Definite anatomical localization of fascicular groups is feasible in plexal elements. Exact fascicular location is translatable to the operating room and this knowledge can be used to anastomose related fascicles in plexal surgery, thereby avoiding axonal misrouting and possibly improving the results of nerve grafting.

Learning Objectives

by the end of this session, the participants should be able to identify the location of corresponding nerve fascicles in the roots of the brachial plexus
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