BRANCHING OF THE RECURRENT LARYNGEAL NERVE


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The purpose of this study was to examine the rate of extralaryngeal bifurcation of the RLN and to demonstrate the distribution of the motor fibers within its branches. Recognition of extralaryngeal branching of the recurrent laryngeal nerve (RLN) is crucial, as inadvertent division of an unidentified branch may lead to significant voice, breathing or swallowing problems. This is a prospective study containing data collected from 211 patients over the course of 24 months. Operative data obtained includes the type of operation, location of the nerve, number of branches, the distance from the inferior border of the cricothyroid entry point to the point of bifurcation, the minimal stimulation level required (mA) to stimulate the nerve, and the location of the branches of the RLN that contain motor fibers that innervate the intrinsic muscles of the larynx. Data on 296 RLNs were collected (153 nerves were located on the right side and 143 nerves on the left). 128 of these RLNs (43.2%) were bifid, with a distribution of 65 (42.5%) bifurcations on the right, and 63 bifurcations (44.1%) on the left. Of the 82 patients dissected bilaterally, bilateral bifurcation occurred in 28 (34.1%) of them. The mean branching distance (SD) from the cricothyroid membrane on the right was 5.42 mm (2.18), while on the left it was 5.90 mm (2.20). The mean recorded minimal intensity for stimulation (SD) detected by the nerve monitor was 0.94 mA (0.39). In all 128 cases of bifid RLNs, the anterior branch contained only motor fibers to the vocal cords, while the posterior branch contained only sensory fibers based on the EMG reading. Extralaryngeal bifurcation is present in 48.2% of the RLNs presented in this case series. The motor fibers of the RLN are consistently located in the anterior branch of these bifurcations. These data indicate that the surgeon must have a high level of scrutiny when identifying the RLN to ensure that no branches are left vulnerable to inadvertent transection.