A STUDY ON THE INNERVATION OF INTRINSIC MUSCLES OF LARYNX.

ABSTRACT:

The innervation of intrinsic muscles of larynx, lacks its uniformity in the mode of branching and pattern of distribution of the superior and recurrent laryngeal nerves. At present, the problem of laryngeal muscle innervation especially with regard to intrinsic laryngeal muscles makes the study essential to analyse.

All the intrinsic muscle of larynx are supplied by the recurrent laryngeal nerve except the cricothyroid muscle, which is innervated by the external branch of superior laryngeal nerve. The internal branch of superior laryngeal nerve gives motor fibres to the interarytenoid muscle. So, the nerve supply of interarytenoid muscle is yet controversial.

The fact that internal branch of superior laryngeal nerve under the risk of injury causes loss in the cough reflex. Therefore the study on morphology of internal branch of superior laryngeal nerve is essential , as it is the only nerve traversing from lateral to medial.

There are functional differences in the sensory and motor innervation of individual subjects due to the different prevalence of the connecting pattern of the nerve.

Aim:

- To study on the mode of innervation of intrinsic muscles of Larynx.

Objectives:

- To find out the detailed pattern of intralaryngeal distribution of recurrent laryngeal nerve - its level, branches and mode of terminal division.

- To study the anatomy of superior laryngeal nerve - its origin, course and terminal branches.
- To study the detailed pattern of intralaryngeal distribution of internal branch of superior laryngeal nerve.
- To study the detailed pattern of intra laryngeal distribution of external branch of superior laryngeal nerve.
- To study the anatomy of the anastomosis between laryngeal nerves.

METHODOLOGY:

A total of 25 adult human larynx specimens were collected from the Department of Forensic Medicine, Thanjavur Medical College(TMC) and also from the cadavers in the Anatomy dissection hall, Thanjavur Medical College(TMC) after the institutional ethical clearance. Bilateral gross dissections were made on each specimen and fixed in 10% formalin to find the exact course, relations and terminations of internal ,external branch of superior laryngeal nerve, recurrent laryngeal nerve and also the intrinsic laryngeal muscles innervated by them were dissected, analysed and documented with photographs.

CONCLUSION

The intrinsic muscles of larynx are innervated by superior and recurrent laryngeal nerves.The IbSLN lies parallel and medial to the superior laryngeal artery in 82% of the dissected specimens, gives 3 branches after piercing the thyrohyoid membrane in 76% and innervates the interarytenoid muscle in few specimens. The fact is that internal branch of superior laryngeal nerve under the risk of injury causes loss in the cough reflex. Therefore the study on anatomy of internal branch of superior laryngeal nerve is essential , as it is the only nerve traversing from lateral to medial.

The EbSLN crosses about 1cm more above the superior pole of thyroid gland in 68% and lies dorsal to the superior thyroid artery in 76% of the dissected specimens. The EbSLN divides into two branches at the level of cricoids in 34% of the specimens and innervates cricothyroid muscle. The recent research shows the multiple roles of this nerve in voice and speech. Cricothyroid muscle is the primary control of fundamental frequency of voice.

The RLN lies lateral to trachea on bothsides in 54% of the specimens and is in close relation to the thyroid gland in 94%,posterior to the inferior thyroid artery in 44% of the dissected specimens. The RLN gives branches in 54% of the specimens before entry into the larynx and the level of branching occurred 1cm below the the point of entry in 70% of the specimens. Majority of the nerve have two branches in 76% of the dissected specimens. The nerve gives mostly two branches to posterior cricoarytenoid muscle and a branch to lateral cricoarytenoid,interarytenoid and thyroarytenoid muscles. To know about every detail of this nerve is very important for a surgeon to avoid nerve injury during surgery.

Keywords: Internal branch of superior laryngeal nerve, ,External branch of superior laryngeal nerve, Recurrent laryngeal nerve, Variation ,Cricothyroid, Posterior cricoarytenoid , Lateral cricoarytenoid, Interarytenoid, Thyroarytenoid muscle, Superior laryngeal artery ,Superior thyroid artery ,Inferior thyroid artery, Thyrohyoid membrane, Thyroid gland.