

Disorders of innervation of the larynx

The larynx is innervated by 2 branches of the vagus nerve. They are:

- **superior laryngeal nerve** and
- **recurrent laryngeal nerve.**

Paresis of superior laryngeal nerve

The **superior laryngeal nerve** branches into **ramus internus** and **ramus externus**.

- Ramus internus provides **sensory** innervation of the **supraglottic part of the larynx**.
- The ramus externus **motorically** innervates the **cricothyroideus muscle**.

Paresis of the *superior laryngeal nerve* can occur:

- **by damage to the nuclei of the *vagus nerve***;
- **damage to the own *vagus nerve*** above the distance of the *superior laryngeal nerve* - tumor, trauma, neurological disease, skull base surgery;
- **damage to the *superior laryngeal nerve*** - larynx surgery, pharynx surgery (rarely thyroid surgery).

As follows from the function of the *superior laryngeal nerve*, paresis of this nerve will lead to **anesthesia of the supraglottic part of the larynx** and **paresis of the *cricothyroideus muscle***.

- Anesthesia of the supraglottic part of the larynx → dysphagia, food falling into the airways with the risk of aspiration.
- Paresis of the *cricothyroid muscle* → limitation of vocal range.

Therapy: swallowing rehabilitation, phoniatric care.

Paresis of recurrent laryngeal nerve

Nervus laryngeus recurrens provides **sensory** innervation of the **subglottic part of the larynx** and **motorically all muscles of the larynx except the *cricothyroideus muscle***.

Paresis of *n. laryngeus recurrens* can occur:

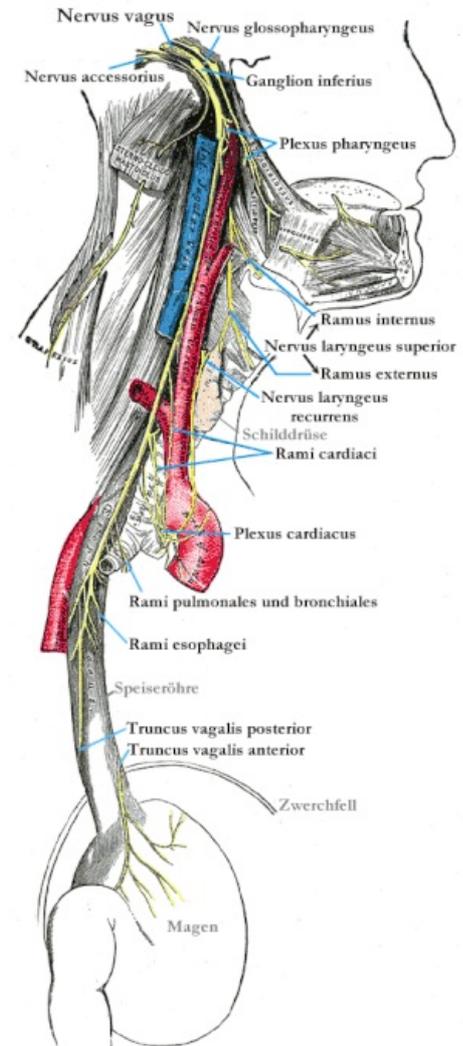
- **by damage to the nuclei of the *vagus nerve***;
- **damage to the *vagus nerve* itself** above the *recurrent laryngeal nerve* - tumor, trauma, neurological disease, skull base surgery;
- **damage to recurrent *laryngeal nerve*** - neck surgery, upper mediastinal surgery and above all **thyroid surgery**.

Unilateral paresis

- Unilateral paresis is manifested by a phonation disorder. Inspiratory dyspnea is not present.
- The vocal cord becomes immobile, it is fixed in the paramedian position.
- **Therapy:** phoniatric care - in case of failure, surgery (thyreoplasty) comes next.

Bilateral paresis

- Bilateral paresis leads to airway stenosis in the glottis region.
- Clinically, it manifests as dysphonia, dysphagia, and inspiratory dyspnea with inspiratory stridor.
- The vocal cords are immobile, fixed in a paramedian position.
- **Therapy:** provision of airways, widening of the respiratory slit (laterofixation of the vocal cords,



Topography of the neck



N. laryngeus recurrens in thyroidectomy

arytenoidectomy, chordectomy).

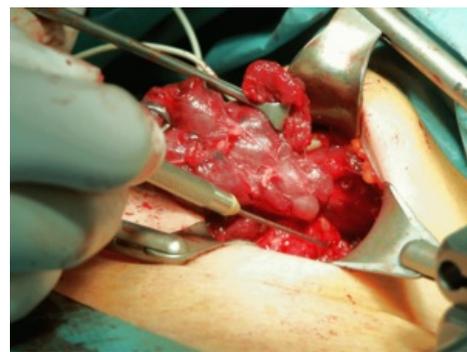
Links

Source

- BENEŠ, Jiří. *Studijní materiály* [online]. ©2007. [cit. 2009]. <http://jirben2.chytrak.cz/materialy/orl_jb.doc>.

Used literature

- KLOZAR, Jan. *Speciální otorinolaryngologie*. 1. edition. Galén, 2005. 224 pp. ISBN 80-7262-346-X.



Intraoperative monitoring