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Laryngeal function impairment - How can it be functionally restored? Understanding how laryngeal reinnervation works

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Injury to the RLN can result in impairment of all three laryngeal functions. The RLN is capable of regeneration but laryngeal functions in cases of severe injury remain impaired. This permanent impairment is caused by either incomplete regeneration and /or occurrence of laryngeal synkinesis.

Laryngeal reinnervation can be approached either non-selectively, focusing on nerve reconstruction or selectively, focusing on separate target muscle reinnervation. Nonselective reinnervation comprises anastomosis to the mainstem of the RLN leading to reinnervation of both abductor and adductor muscle groups (nerve-based reconstruction). In selective reinnervation abductor and/or adductor muscles are separately reinnervated (function-based reconstruction).

A review of laryngeal reinnervation techniques, results in animal models and the results achieved in patients is given. The clinical implications of reinnervation in unilateral as opposed to bilateral vocal fold paralysis are considered.

For unilateral vocal fold paralysis, non-selective reinnervation good voice results can be achieved. It has the advantage that no foreign materials need to be implanted and may also be used in a growing larynx in the case of children or adolescents. For bilateral vocal fold paralysis good functional results, recovery of airway as well as voice, can be achieved with selective (or function-based) reinnervation.

Biography

Julie van Lith is the director of Laryngology of The voice and Swallowing Centre in Almere, The Netherlands and has worked in the Department of Laryngology in Clinique Universitaires Saint-luc, Brussels, Belgium. She has a special interest in laryngeal nerve re-innervation. She is a member of the European Laryngological Society and is acitve in the international arena lecturing on neurolaryngology.

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