



LETTER TO THE EDITOR

A brief summary of the history of head and neck surgery evolution

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Keywords: head and neck surgery; history of medicine; surgical procedures.

How to cite: Hojaj FC, Chinelatto LA. A brief summary of the history of head and neck surgery evolution. Arch Head Neck Surg. 2021;50:e2021119. <https://doi.org/10.4322/ahns.2021.0002>

Historical studies are important in all areas of knowledge, including medicine. By understanding the paths taken in the past, we can decide which ones to take in the future. Thus, understanding the history of Head and Neck Surgery (HNS) is essential to improve and innovate this specialty.

Reports on oral cancer date back to ancient times, with descriptions made by Egyptians and Hindus¹. The Sanskrit medical text *Sushruta-sahmita*, written between the 4th and 3rd centuries B.C.E., had a section dedicated to HNS, Otorhinolaryngology and Ophthalmology – *Shalakyatantra*². Although this text was more dedicated to the diagnosis of infectious diseases, it included citations for the diagnosis of oropharyngeal cancer as well as descriptions of surgical techniques². The term cancer was coined in Ancient Greece by Hippocrates, who defined it as an imbalance of the four humors (blood, yellow bile, black bile, and phlegm) and, therefore, it was initially treated using medication in an attempt to correct the humoral proportions¹. In turn, experiments and surgical excision techniques were best addressed between the 1st and 2nd centuries C.E. by Archigenes of Apamea, a Greco-Syrian physician, who described block excisions without affecting the nerves, emphasizing the importance of performing hemostasis through cauterization¹.

During the Middle Ages, there were no major advances in HNS. At that time, it was not uncommon to confuse neoplastic lesions with infectious lesions of the mouth, such as those caused by syphilis¹. In the 16th century, anatomy and surgery regained importance driven by the publication of the anatomical studies by Andreas Vesalius. With the development of the study of anatomy, the first reports on laryngeal cancer appeared, initially verified in autopsies. Pathology was first described in the 16th century by Marcellus Donatus in his book *De Medica Historia Mirabili Libri Sex* and then by Joseph Lieutaud in the 18th century in an autopsy report on laryngeal polyps². The description of laryngeal cancer in living subjects occurred only in the 19th century with the emergence of Manuel Garcia's indirect laryngoscopy. The advances in anatomical studies also allowed, in 1787, the first systematic description

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Financial support: None.

Conflicts of interest: No conflicts of interest declared concerning the publication of this article.

Submitted: December 04, 2020.

Accepted: April 06, 2021.

The study was carried out at Faculdade de Medicina, Universidade de São Paulo (USP), São Paulo, SP, Brasil.



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of the lymphatic vessels, made by Paolo Mascagini in his work *Vasorum Lymphaticorum Corporis Humani Historia et Ichnographia*³.

With the emergence of anesthesia in the 19th century, surgeries could be longer and more accurate, allowing the principle of treating laryngeal cancer to become similar to that of the mouth: surgical excision. The first complete resection of a laryngeal tumor was performed in 1850 by Charles-Henri Ehrman, from the Strasbourg School of Medicine⁴. The surgery, however, remained morbid until 1870. On 31 December 1873, the first total laryngectomy was performed, with replacement of the larynx with a T-tube by Theodor Billroth⁴. Two years later, Enrico Bottini reported the same surgery with a 10-year survival⁴. Total laryngectomy then became the standard treatment for laryngeal cancer in the 20th century.

Still in the 19th century, the first analyses of the effect of lymph node metastasis in the treatment of cancer were conducted. In 1840, Astley Paston Cooper described the finding of breast cancer cells in lymphatic vessels³, the first histological confirmation of lymph node metastasis. In 1847, Maximilian Joseph von Chelius, due to the poor prognosis of laryngeal cancers with lymphatic dissemination, claimed that it was impossible to control them^{4,5}. In 1880, concerned about the findings of lymphatic dissemination, Theodor Kocher described the surgical removal of a tumor of the tongue in a block, along with lymphatic vessels, through a mandibulectomy³. In 1894, the idea of elective neck dissection in oropharyngeal neoplasms began to be disseminated³. Although the first radical neck dissection was performed in 1888 by Jawdyski, a Polish surgeon, it was George Washington Crile who described the technique and standardized it in 1906^{3,5}.

The greatest advances in the treatment of head and neck cancer occurred in the 20th century. First in 1903, with Simon-Emmanuel Duplay and his colleagues from the so-called Anti-Cancer League, with the publication of *Les Tumeurs*, in which they associated oropharyngeal cancer with tobacco consumption¹. In the second half of that century, the treatment of oropharyngeal cancer with elective neck dissection became a standard upon the publication of a series of 1450 cases carried out by Hayes Martin at Memorial Hospital in 1951¹. In 1963, with the surgical report by Osvaldo Suarez, an Argentine doctor, the concept of neck dissection with preservation of noble structures such as the accessory nerve^{1,3,5} - known today as modified neck dissection - emerged. However, it was only with Ettore Bocca, in 1967, that the modified neck dissection technique was popularized³. In 1978, Jesse Ballantyne et al. published a study in which no discrepancy in recurrence rate between radical and modified neck dissections was observed⁵. Such advances in cervical emptying and knowledge about lymphatic drainage allowed partial laryngeal surgeries to become the standard again during the 1970s and 80s, then with better morbidity rates due to adequate indication and strategic lymph node resection⁴.

In 1988, the American Academy of Otolaryngology - Head and Neck Surgery (AAO-HNS) began a project to classify cervical emptying, much influenced by the publications of Jatin P. Shah of the 1980s and 90s³. In March 1989, Jesus E. Medina published an editorial proposing an anatomical division of the cervical regions and, consequently, of neck dissections⁶. This and other

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articles by that author have greatly contributed to the standardization of the description of neck dissection. The first classification of the AAO-HNS was published in 1991 and became one of the main guides to different surgical approaches. Currently, there is debate about the use of sentinel lymph node biopsy and ways to decrease surgical morbidity without affecting the results of disease-free survival.

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