

# Evolutions in the conservation of the larynx: my journey over the years

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Kasr Al Aini Medical School was founded in 1827. Developments in otolaryngology within this medical school have always been at par with international advances. The war era that started in 1956 had a negative impact on all branches of science and medicine. During the late 1970s, peace prevailed and Egypt looked forward to recovering from the damages caused to the fields of medicine and science.

Laryngology, as a subspecialty, was somewhat neglected during this era in which otology was the rising star of the specialty. Patients with cancer of the larynx and hypopharynx were only referred for endoscopic diagnosis and biopsy. Otolaryngologists were mainly concerned with minor surgeries. Patients referred to doctors of otolaryngology as tonsil doctors; they lost confidence in the surgical skills of these doctors and preferred treatment in the surgical and oncological departments.

Because of the lack of training and expertise, the procedure of total laryngectomy was performed under duress. The laryngofissure technique for treatment of a scleroma was a common practice that encouraged a surgeon to use vertical partial laryngectomy as a substitute for treatment. Less than 10 total laryngectomy surgeries per year and sporadic cases of vertical partial laryngectomy were the collective experience of the department during this era.

During the early 1980s, several of my colleagues returned to the country, each armed with scientific materials, full of enthusiasm and ready for practice. In France, I was familiarized with conservative laryngeal surgery. My request to join the National Cancer Institute was accepted, which proved to be the turning point in my career. Owing to the enormous referral of head and neck cancer patients and the guidance of skillful surgeons, I was able to put my vast theoretical knowledge to practice [1,2].

My age and experience regarding the larynx in the head and neck surgeries, defined my practical performance into two stages.

## Cancer of the larynx

In 1983, we performed the first supracricoid laryngectomy (SCL) in our department. By the early 1990s, the procedure gained popularity and was widely practiced, competing with total laryngectomy. The experience was documented and the first publication reported SCL as a favorable treatment for carcinoma affecting the anterior commissure [3,4]. Modifications to expand the indications of SCL were designed, in which both arytenoids cartilages were excised [5]. Recently, a detailed article was published to discuss the experience with SCL over a period of 25 years [6].

Endoscopic laser surgery (ELS) constitutes another conservative tool for the treatment of laryngeal cancer. T1 midcordal carcinoma was the original indication for ELS; unfortunately, misuse of power and disastrous trials to expand its indications were overwhelming against the sound of reason [7].

In this respect, we reported that the main indications of transverse laryngeal surgery (TLS) are midcordal T1 glottic carcinoma and some selected early cases of T2 lesions. Trials to extend the indications of TLS carry the risk of incomplete tumor resection and hence increase the rate of local failure, especially in inexperienced hands. Recurrence after TLS was followed by total laryngectomy and loss of laryngeal function in 37% of patients who were initially amenable to conservation laryngeal surgery [7].

Involvement of the anterior commissure or other cords or supraglottic or subglottic carcinoma is an indication for conservative laryngeal surgery. Positive margins are best treated by surgical re-excision; this seems to be difficult through TLS, especially if the tumor is large (large T2, T3, and T4) or/and involves the anterior commissure [3,4].

Radiotherapy was considered as adjuvant to postoperative therapy and was rarely used in patients with T1 glottic carcinoma. Chemotherapy was not part of the regular protocol and was used to potentiate the effect of

radiotherapy. Advances in chemotherapy, particularly target chemotherapy, and new policies for induction, in addition to fractionated radiotherapy, ranked chemoradiotherapy higher than surgery.

Newer policies on organ preservation established ELS as the most commonly preferred treatment for T1 glottic carcinoma, sparing the anterior commissure, T1 suprahyoid, and also excluding selected cases of T2 supraglottic carcinoma. Proper exposure of the tumor is mandatory to proceed with ELS.

Chemoradiotherapy is the prime choice for T1b, T2, and T3 glottic and supraglottic carcinoma. Cartilage invasion in T3 lesions requires surgery, either SCL or total laryngectomy (TL).

In T2 and T3 lesions, proper endoscopic evaluation and documentation is mandatory. A double or triple chemotherapy protocol is induced for two sessions and the lesion is then re-evaluated. The response to computed tomography (CT) predicts the response of a tumor to radiotherapy. Patients with advanced tumors that responded to neoadjuvant CT, either partially or completely usually respond to radiotherapy treatment. TL, and occasionally SCL, is reserved for treatment failure.

Lastly, the organ preservation policy is taking over and we are performing lesser number of surgeries. The surgeries include ELS for well-defined early lesions and TL for patients with cartilage invasion for palliation and for those tumors that did not respond to induction CT. Against the expectations of many surgeons, surgery (TL, and especially SCL) is no longer the prime tool in management of cancer of the larynx.

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## Laryngotracheal stenosis

### Scleroma

Scleroma is a granulomatous disease endemic in Egypt. Affection of the larynx is often morbid because of subglottic involvement and resultant stridor. To avoid tracheotomy, removal of the scar tissue through a laryngofissure was previously the leading form of surgery. Insertion of a Montgomery T tube was quite popular. In addition, the raw area within the larynx and trachea was covered with a skin or mucosal graft.

In the hope of achieving better results, resection of the stenotic segment including the central portion of the cricoid cartilage was reported [8].

The overall results were quite deceiving because of many factors:

- (1) Surgeries were performed in the fibrotic stage of the scleroma, as proven histopathologically. Unfortunately, the follow-up showed that this did not represent absolute healing of the scleroma. The disease almost always recurs and so do the symptoms. The six cases reported in the laryngotracheal resection article showed remissions, the last one after

8 years. Lastly, all these six patients underwent permanent tracheotomy with speaking valves.

- (2) Most of the scleroma patients are referred from rural areas and many are living in the countryside. At that time, lack of suitable medical services exposed these patients to a greater risk due to frequent blockage of the tube and lack of trained personnel to deal with this mishap.
- (3) The Montgomery tube often induced granulation at both ends of the stent. The patients had patent airways for some time, but later a large percentage of patients developed late stridor and extra long tracheotomy tubes had to be used to bypass their lower tracheal stenosis.

### Traumatic stenosis

Patients managed under this category almost always have similar medical histories [9]. They have had prolonged endotracheal intubation after surgical interventions or traffic accidents and continuously develop tracheal and/or laryngeal mucosal ulceration induced by movement of the endotracheal tube. After 2 to 3 weeks from discharge, fibrotic healing of these ulcers results in variable degrees of stenosis. Two lines of treatment are mainly followed:

#### *Surgical management*

This is similar to the approach described previously for scleroma. Excellent results have been reported, but in real practice this is not the case. Personal experience leads to the belief of targeting only those patients whose lesions are limited to the trachea.

#### *Endoscopic management*

This includes laser dilatation and/or stenting.

Rejecting their general medical knowledge, surgeons abused this tool to the maximum. Healing is the adjuvant of fibrosis and burn scars are the worst. Stenting offered no better results than laser. Foreign material in the airway is liable to friction, and granulation tissue formation and obstruction is a matter of grave concern. Endoscopic removal is almost impossible and an open approach is mandatory to extract the blocked stent.

Upper airway stenosis should be approached carefully. The risk of restenosis is always present, and patients living in areas with poor medical services are at a greater risk.

Tracheal resection and anastomosis is the preferable treatment for patients with purely tracheal stenosis. Surgical adventures are best avoided for patients in whom the fibrous tissue involves the cricoids and larynx, who have recurrences after tracheal resection and anastomosis. Such patients can be more safely treated using a permanent tracheotomy with a speaking valve.

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## Conclusion

The Egyptians used to call the doctor the wise person. Head and neck surgeries require a lot of practice and a great deal of wisdom. Unfortunately, in recent practice

we rarely encounter such qualities. Doctors come under a great deal of materialistic influences when making surgical decisions and the patients are the victims. I hereby state that nowhere is the truth of the foregoing more apparent than in the management of head and neck cancer. This is so because the disease is serious, the prognosis often grim, and the interventions radical, leading to major disfigurement and dysfunction, as well to as much pain and suffering. The decisions (made in the face of much uncertainty) can often lead to complications for both the physician and the patient.

The rapid advancement of medical science and technology has made it possible to intervene in the course of human life and disease in powerful ways that have the capacity, both to relieve and to harm. Decisions to use or to withhold these technologies must include balancing the expected benefits against the expected and potential burdens imposed on the patients and others [10].

Obviously, amateurs are teaching amateurs to become amateurs. People get away with it because it is quite easy to pass off mismanagement in cases of advanced cancer, and even in cases of early cancer, because of the natural history of the disease. Surgeons hiding behind the cloak of mutilation may be misleading to many general practitioners and other surgeons [11].

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### Conflicts of interest

There are no conflicts of interest.

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