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Medicine

PRIMARY VOICE REHABILITATION FOLLOWING TOTAL LARYNGECTOMY: OUR EXPERIENCE

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ABSTRACT:
DESPITE THE MODERN TECHIQUES OF CONSERVATIVE SURGERY AND RADIATION THERAPY, TOTAL LARINGECTOMY REMAINS A CURATIVE AND NECESARY INTERVENTION FOR PATIENTS THAT SUFFER FROM LARYNGEAL CANCER. THESE PATIENTS HAVE A GOOD OVERALL SURVIVAL, BUT THEIR QUALITY OF LIFE CAN BE VERY LOW AS THEY OFTEN HAVE DIFFICULTIES IN COMMUNICATING, SWALLOWING AND SOCIAL REINTEGRATION. THE PHYSICIAN ALONG WITH THE TEAM OF SPEECH THERAPIST, PSYCHOLOGIST AND ONCOLOGIST NEED TO HELP THE PATIENT IN VOICE, DEGLUTITION, OLFACTORY AND PULMONARY REHABILITATION IN ORDER TO HAVE THE BEST RESULTS. IN OUR CLINIC, WHICH IS AN ONCOLOGICAL CENTER, IN THE LAST YEAR, THERE HAVE BEEN PERFORMED 230 PROCEDURES OF TOTAL LARYNGECTOMY FOR PATIENTS SUFFERING FROM T3 TO T4 LARYNGEAL CANCER, WITH NECK DISSECTION ACCORDING TO THE TNM CLASSIFICATION. 70 PATIENTS BENEFIT FROM PRIMARY VOICE REHABILITATION WITH VOCAL PROSTHESIS. ALMOST ALL OF THEM HAD GOOD RESULTS, BEING ABLE TO COMMUNICATE EASILY.

KEY WORDS: VOICE REHABILITATION, TOTAL LARYNGECTOMY, VOCAL PROSTHESIS

INTRODUCTION

Total laryngectomy is the best option for patients that suffer from advanced laryngeal cancer, and it often provides a good five-year survival rate, but lowering the quality of life, as these patients need voice, olfactory, swallowing and pulmonary rehabilitation. In order for them to be reintegrated in society and to achieve an optimal outcome, a team formed by the physician, psychologist, speech therapist and specialized oncological nurses is necessary.

In our clinic, which is an important head and neck oncological center in Romania, from January 2018 to December 2018, there were performed over 230 total laryngectomies for patients suffering from T3 and T4 laryngeal cancer. The decision of radical surgery is taken in the oncological board, which is formed by the surgeon, the oncologist, the radiotherapist and the pathologist, along with the patients' fully informed consent. Unfortunately, patients refer to the specialist in advanced stages, as there is a lack of medical education in general population and we often face difficult, extended cases.

Primary prosthetic voice rehabilitation, meaning transesophageal puncture and voice prosthesis at the time of total laryngectomy represents the gold standard in all developed countries.

As the Romanian government provides for only two voice prosthesis per year and the heat and moisturize exchangers are not free of charge, it is a challenge for the physician to provide the best rehabilitation necessary to the patient, especially since some of them have a low-income status so these devices are not affordable.

This retrospective study aims to emphasize the benefit of this procedure, in our clinic, over 11 months.

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MAIN TEXT

MATERIAL AND METHODS

Primary voice restauration, meaning transesophageal puncture and voice prosthesis at the time of total laryngectomy, is currently the method of choice for optimal rehabilitation in all developed countries. In our country, this is not yet available or affordable for all patients but, there is hope that it will be soon.

Comparing to the electrolarynx, in which the voice is robotic-like and there is a continuous impediment of having to use one hand to produce speech, or to esophageal speech, which requires a hard, time-consuming training, the voice prosthesis speech is easily achieved by most patients. Tracheoesophageal voice is pulmonary driven and, therefore, is closest to normal speech.

It is an important psychological advantage for patients to start communicating immediately after removal of the feeding tube. After total laryngectomy, the pharyngo-esophageal segment has two main functions, as a sound generator, in the folds of the mucosa, and a pathway for food.

RESULTS

In our clinic, from January 2018 to December 2018, there have been performed over 230 total laryngectomies with neck dissection for advanced laryngeal cancer. 78% of the patients did not receive any treatment before surgery, while 22% underwent radiation therapy.

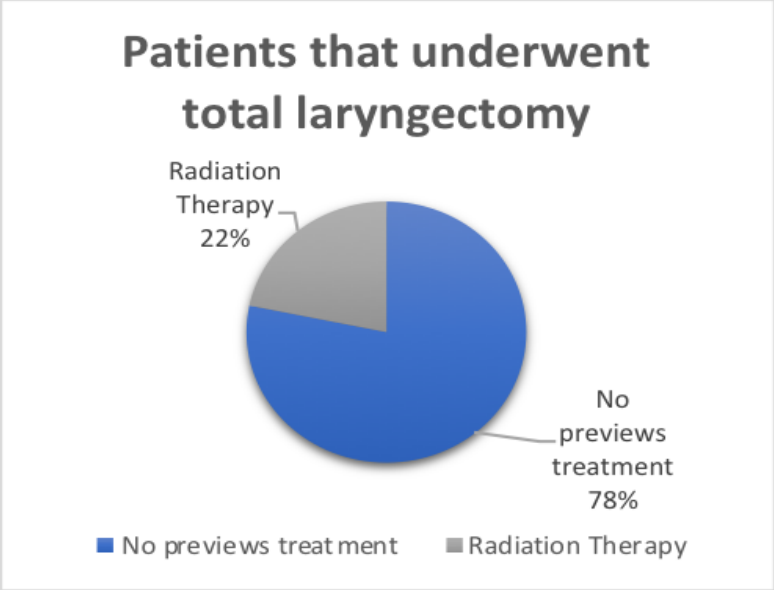

Figure 1. Previews treatment for laryngeal cancer

In 30% of the cases, primary voice rehabilitation with voice prosthesis was performed. In our clinic, secondary voice rehabilitation is also performed in selected cases. Both Provox and Blom-Singer prosthesis were used.

68% of the patients that benefit from primary voice rehabilitation with voice prosthesis had a really good voice immediately after removal of the feeding tube, being satisfied by their ability

to communicate, while 29% had a reasonable voice. Only 3% had a lack of good voice, all of them belonging to the group that had radiation therapy before surgery (figure 2).

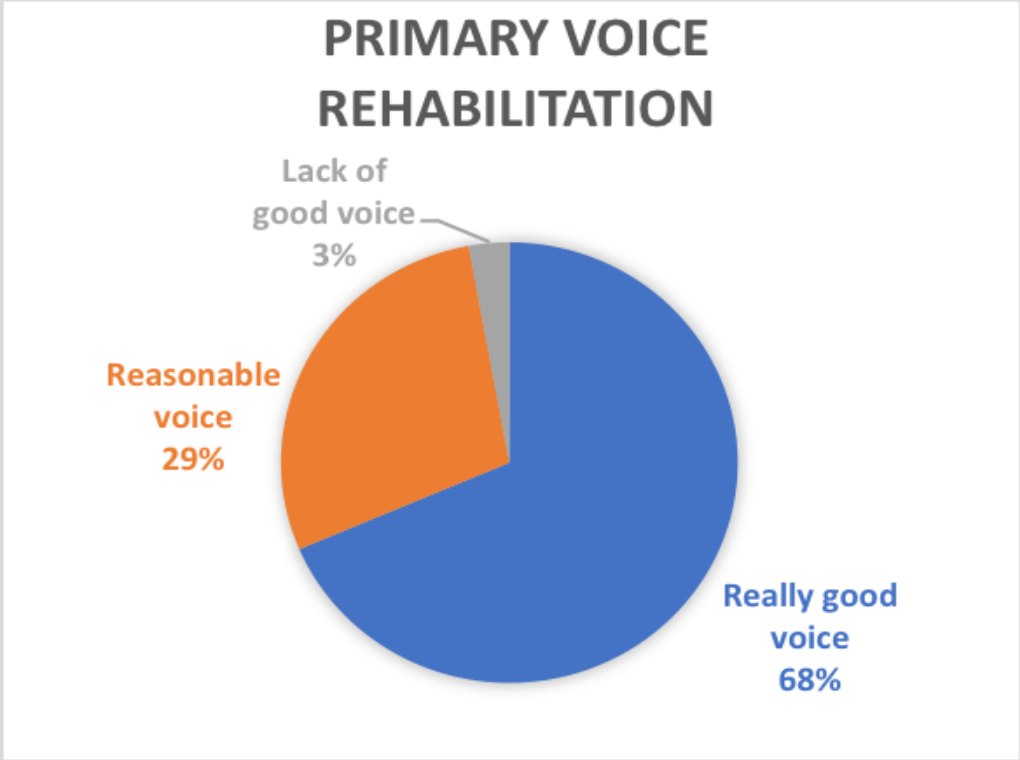

Figure 2. Voice results after primary voice rehabilitation

In order to optimize the prosthetic voice restoration, we always perform a short myotomy of the upper esophageal sphincter to prevent hypertonicity. The pharyngeal mucosa closure without tension prevents fistula and formation of abnormal mucosal folds. It is also very important to create a stable stoma, by suturing the trachea in a separate fenestra in the inferior skin flap and we sometimes cut the sternal heads of the sternocleidomastoid muscle in order to avoid a “deep” stoma. It is advisable to create the transesophageal fistula in the upper part of the stoma, in order for the patient to be able to clean and maintain the voice prosthesis.

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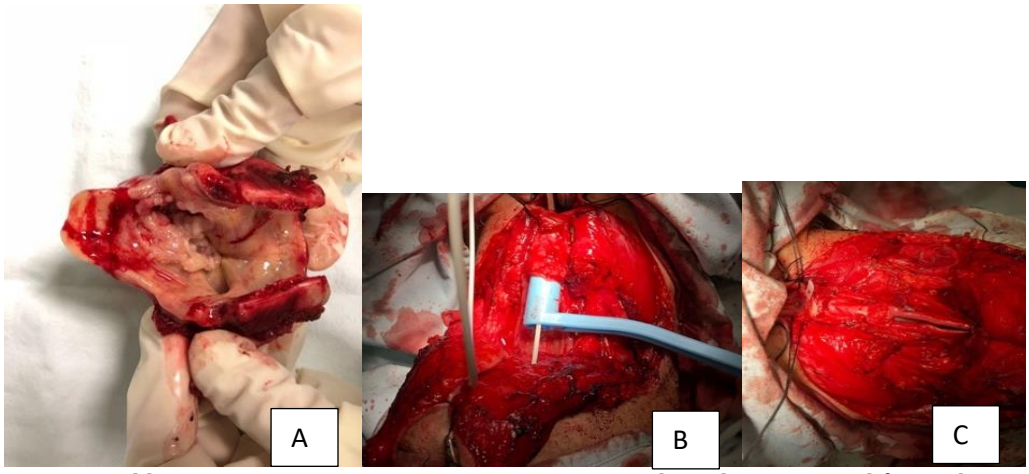

Figure 3. Total laryngectomy – A: resection piece; B: transesophageal puncture and fixing the voice prosthesis; C: fixing the stoma and checking the voice prosthesis

Regarding the complications of this procedure, leakage is the most common, followed by the inability to speak. This is influenced by the remaining pharyngeal mucosa and the extent of the resection to the base of the tongue. Also, the hypertonicity of the pharyngoesophageal segment and gastro-esophageal reflux can alter the function of the prosthesis, therefore, proton pump inhibitors are recommended to most of the patients after total laryngectomy. The contour of the stoma is another important aspect.

Figure 4. Tracheal stoma and voice prosthesis

DISCUSSIONS

The outcome depends on both the surgeons' skills and the patients' ability to clean and maintain the voice prosthesis[12]. It is also important to replace it when necessary, as biofilm is often found on the device[13]. As, in Romania, the laryngectomizee can access only two free voice prosthesis per year, it is sometimes necessary for the patient to buy another device and all the heat and moisturize exchanger. This is not always possible, as some patient cannot afford to buy the device or the heat and moisturize exchangers.

A regular check-up of the stoma and prosthesis is necessary, and this is an advantage from an oncological point-of-view as these patients are regularly monitored. Patients with voice prosthesis have to be able to clean their stoma and voice prosthesis daily and also practice voice prosthesis speech.

The quality of life for patients that benefit from primary voice rehabilitation was much higher compared to those who did not receive a voice prosthesis[14].

A multidisciplinary specialized team is of outmost importance in any head and neck oncology clinic, along with a continuous training for physicians, nurses and therapists.

CONCLUSION

Voice prosthesis rehabilitation at the time of total laryngectomy has become the gold standard of care.

In order to achieve the best outcome for the patients, surgical prosthetic voice rehabilitation requires a multidisciplinary team formed by the head and neck surgeon, speech therapist, psychologist and oncology nurses[15].

It is important to remember the need for permanent training of the team in charge of the laryngectomee[16].

The technique for voice, swallowing, pulmonary and olfactory rehabilitation needs to be well known by all the physicians working in a head and neck oncology clinic and it represents an

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important part of the treatment of any patient with laryngeal cancer that underwent total laryngectomy[17].

We hope that in the near future, this technique will be available to all patients suffering from laryngeal cancer, as quality of life needs to be maintained after surgery.

CONFLICT OF INTEREST

The authors have no conflict of interest.

CONTRIBUTION OF AUTHORS

All authors have equally contributed to this work

ETHICAL APPROVAL

All procedures performed in this study were in accordance with the ethical standard of the institution and with the 1964 Helsinki declaration and its later amendments.

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