

Speech therapy in total glossectomy – case study

Fonoterapia em glossectomia total – estudo de caso

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ABSTRACT

Curative surgery for tongue cancer results in sequelae that harm the good functioning of the stomatognathic system. The aim of the present study is to describe a case study, reporting the evaluation and evolution findings of the speech-language pathology rehabilitation of the swallowing and speech functions of a 58-year-old man submitted to total glossectomy in June 2009. After evaluation, the subject was diagnosed with severe mechanical oropharyngeal dysphagia and alteration in speech articulation. Speech rehabilitation used direct and indirect therapies. Indirect therapy focused on oral motor control, sensitivity, mobility, motricity, tonus and posture of the structures adjacent to the resected tongue. Direct therapy used the head back posture maneuver to help the ejection of food into the pharynx. The patient started exclusive oral feeding, except for solid foods, after ten months in treatment. Over-articulation, speed and rhythm exercises were used to improve speech intelligibility. Thus, the results of speech-language pathology intervention were considered positive, and the patient was discharged after a year in treatment. It is concluded that tongue resections present significant sequelae to swallowing and speech functions and, therefore, speech-language pathology intervention activity is indispensable for the modification and adaptation of these functions, in addition to providing the patient with better quality of life.

Keywords: Mouth neoplasms/complications; Tongue neoplasms/surgery; Postoperative complications; Glossectomy; Deglutition disorders/rehabilitation; Articulation disorders/rehabilitation; Speech therapy

INTRODUCTION

Malignant tumors located in the oral cavity (lips, tongue, hard and soft palate, gingiva, salivary glands, amygdala, mandible and floor of the mouth) are denominated cancer of the mouth⁽¹⁾.

In the year 2008, mouth cancer was ranked the seventh most common malignant tumor in Brazil. It was registered 10,380 cases in men and 3,780 in women. The total number of deaths in 2008 was 6,214 – 4,898 men and 1,316 women. The estimated incidence for the year 2010 was 10,330 new cases in men and 3,790 in women⁽¹⁾.

Smoking and alcohol consumption are the main risk factors for the development of mouth cancer, but factors such as age, gender, race, hereditariness, chronic irritability⁽²⁾, lack of oral hygiene and diet poor in vitamins and minerals⁽¹⁾ may also be considered predisposing factors for its development.

The therapeutic modalities for mouth cancer are: surgery, radiotherapy and chemotherapy. The choice of the ideal moda-

lity will depend on the location, degree of malignancy, tumor staging and the patient's physical conditions. Generally, the treatment of choice for advanced neoplasias is a combination of surgery and radiotherapy⁽³⁾.

When the manifestation of cancer occurs in the oral cavity, it is fundamental to provide speech therapy follow up in the pre- and post-treatment periods, providing the patient with guidance and treatment of the sequelae caused by the treatment modalities, since these will harm the good working of the stomatognathic functions, including swallowing and speech⁽⁴⁾.

In resections of the tongue, alterations in the pattern of swallowing and speech will depend on the size, extension and infiltration of the lesion⁽⁵⁾. Resections of less than 50% of the tongue, which involve tumors in the anterior or lateral portion, are denominated partial glossectomies. Those involving around three quarters or more of the tongue are denominated sub-total, and the largest are total glossectomies⁽⁵⁾.

It is important for the speech-language pathologist to know exactly which therapeutic modalities were recommended, in order to perform an adequate evaluation and prepare a therapeutic plan, as two surgeries classified with the same name may result in different speech-language pathology alterations⁽⁶⁾. Partial surgeries of the tip of the tongue leave sequelae that differ from those at the lateral edge, just as partial glossectomies leave fewer functional sequelae when compared with those of sub-total and total glossectomies⁽⁶⁾.

Studies have shown that the main sequelae of surgical

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treatment related to the processes of swallowing and speech are: difficulties in formation, anteroposterior propulsion or retention of the food bolus; increase in oral transit time; stasis of food in the anterior and lateral sulci, hard palate (thicker foods) and vallecula; increase in the number of times required to swallow something, and decreased speech intelligibility⁽⁷⁻⁹⁾.

Bearing in mind the possible stomatognathic complications resulting from cancer of the tongue, the aim of this study was to show how speech-language pathology rehabilitation of swallowing and speech functions may be efficient for individuals submitted to total glossectomy, because in addition to the modifications and adaptations of these functions, it may also provide the patient with a better quality of life.

CLINICAL CASE PRESENTATION

The patient who participated in this study was a 58-year-old man, who had been submitted to total glossectomy surgery, with removal of the floor of the mouth, in June 2009 (Figure 1). The study was approved by the Research Ethics Committee of Santa Casa de Misericórdia de Belo Horizonte, under registration number 040/2010. The patient signed a term of free and informed consent, authorizing his participation in the study and the disclosure of this research in accordance with Resolution 196/96 of CONEP.



Figure 1. Total glossectomy with removal of the floor of the mouth

In July 2009, when anamnesis was performed, the patient arrived accompanied by his wife, who related difficulty with swallowing and speech after the surgery, but the main complaint was the limitation in oral communication – complemented by written messages. The patient had lost weight in the immediate post-operative period (approximately two kilograms), using a gastrostomy feeding tube for nutrition, diet consisting of a bolus of food every three hours, with gastric tolerance of 300 ml, and use of a tracheostomy. The patient, who had been an ex-smoker for two months (after smoking for 40 years) and ex-alcohol consumer for one month, presented a great deal of secretion and constant episodes of coughing.

The subjective assessment specific for phonoarticulatory production – auditory-perceptual – comprised different speech production tasks: all isolate phonemes of the Portuguese language; specific syllables: *pé, bom, ter, dar, fé, vem, ser, Zé, chá, já, com, quer, gol, rã, ler, não, meu, nhô, lhe, pão, bem, tom, dor, fim, véu, sim, sol, zum, chão, gel, cor, gás, rim, lã,*

nem, mim, nhá, lha, pau, bar, tal, dom, faz, voz, som, sul, zás, giz, quem, réu, lar, mel, bis, teu, deu, til, fel, sal, cal, juz, rir, luz; specific words: *banana, bola, jacaré, tartaruga, caminhão, tambor, coelho, chapéu, guarda-chuva, maçã, trem, palhaço, anel, macaco, relógio, xícara, cachorro, cobra, fogão, vaca, sorvete, colher, galinha, banheira, bicicleta, pasta, globo, menino, violão, dado, garfo, fralda, sabão, zebra, laranja, prato;* and spontaneous speech observed during anamnesis and informal conversation. It was observed weak, slow, uncoordinated movements, articulatory adaptations and compensations by closing the lips and protrusion and retraction of the mandible in the production of almost all vowels and consonants (with the exception of bilabial phonemes). The voice presented hypernasal and pasty tones and speech was unintelligible, taking into consideration the speech intelligibility parameters used in our service, which are: unintelligible, intelligible when paying attention, partially intelligible and intelligible.

In the clinical evaluation of swallowing, foods colored with aniline blue in three consistencies were used, namely: liquid (water), fine pasty (Bliss®) and thick pasty (Danoninho®). As it was impossible for the patient to chew, the solid consistency was not evaluated. The following aspects were observed: stasis of food and saliva in the anterior and lateral sulci; oral escape; delay in triggering the swallowing reflex; increase in the number of times of swallowing (from three to four swallows); presence of choking and coughing before, during and after the swallowing process; alteration in cervical auscultation and discharge of secretion and food from the tracheostomy.

In view of the findings in the speech-language pathology evaluation, severe mechanical oropharyngeal dysphagia and alteration in speech articulation were diagnosed. The patient was not considered apt for the introduction of oral nutrition of any consistency, and the procedure indicated was speech-language pathology treatment twice a week, each session with a mean duration of 40 minutes.

The therapeutic plan sought to provide better oral communication and adapt the physiology of swallowing by developing compensatory movements of the remaining structures.

The first step in treatment was to perform isometric exercises (resistance without movement and action on muscular tonus⁽⁹⁾), isotonic exercises (with movement and action in the extension of movement, providing maximum mobility of the remaining structures⁽⁹⁾) and isokinetic exercises (with resistance and action on tonus and extension of movement with opposition to force⁽⁹⁾) of the mandible, buccinator and orbicularis oris. The patient was instructed to perform the exercises three times a day. The exercises used are listed below:

- Mandible: massage in the masseter and temporal regions; maximum mouth opening exercises with and without resistance, anteriorization and lateralization.
- Buccinator: suction of the cheeks with and without opposition to force, pursing the lips and smiling, smiling with closed lips, smiling without showing the teeth, smiling with lips slightly parted, filling the cheeks with air simultaneously and then alternately.
- Orbicularis oris: stretching and protrusion, protrusion with opposition to force, pursing the half-open lips, lateralization of the pursed lips, lateralization of the lips in “O”

shape, uniting the lips forcibly in an “O” shape, a blow kiss, press one lip against the other as though to pronounce the phoneme /p/.

In parallel, sensitivity of the intraoral region was approached by tactile (rough, smooth and prickly textures) and thermal (hot, warm and cold) stimulation. Each stimulus was kept up for a period of up to one minute.

Training of the exercises and stimulation of the intraoral region were performed for three consecutive weeks.

With improvement in the mentioned aspects, it was possible to start direct therapy, introducing foods of coarse, pasty consistency. As a compensatory movement, it was used the maneuver of backward posture of the head supported on the stretcher, at an angle of approximately 70 degrees (Figure 2). The patient's development was good. Afterwards fine pasty and liquid consistencies were introduced with satisfactory results. It is worth emphasizing that the tracheostomy cannula was occluded during therapy, and this was well tolerated by the patient.



Figure 2. Maneuver of backward posture of the head supported on the stretcher

With the beginning of radiotherapy and adjuvant chemotherapy treatment, three months after the beginning of speech-language pathology intervention, the patient had the following reactions: mucositis, reduction in salivary flow, pain in the oral cavity, edema and muscular fibrosis. Consequently, there was worsening in the condition of swallowing and he again presented food aspiration through the tracheostomy.

Still under radiotherapy treatment, but with an improvement in the reactions, feeding was once again emphasized and, after four months, the patient began to take in mixed feeding; that is to say, three meals taken orally and three by gastrostomy interspersed among them. The tracheostomy cannula was also removed.

As the patient developed satisfactorily and was able to ingest a sufficient quantity for nutritional support, after ten months in rehabilitation, he began to receive exclusively oral mixed feeding, with restriction on solid foods, accompanied by the removal of the gastrostomy tube.

After this, speech-language pathology intervention started focusing on speech through articulation exercises, and diminishing the rhythm and speed of speech. Partial improvement in speech intelligibility occurred in two months, taking into

consideration the extension of the resection performed.

After one year under treatment the patient was discharged having achieved adaptation of the physiology of deglutition and improvement in oral communication.

DISCUSSION

Cancer of the mouth accounts for 8 to 12% of cancer cases diagnosed in women and men, respectively⁽¹⁰⁾. The majority of these tumors originate in the lips, tongue or floor of the mouth, and the most common histologic type is squamous cell carcinoma⁽¹⁰⁾, which mainly affects male patients in the age-range from 50 to 80 years of age⁽¹¹⁾. The present study confirms the findings in the literature as regards the most common histologic type, patient's gender and age.

The most significant risk factors for the appearance of cancer of the mouth are the consumption of tobacco and alcoholic beverages⁽²⁾. The patient in the present study made use of both tobacco and alcohol.

It is known that cancer in the oral cavity may compromise the functions of speech and swallowing^(9,12). These functions may become altered to a greater extent after surgery as a result of removal of structures such as the tongue, fundamental for their performance. Depending on the structures involved in resection of the tumor, the sequelae in speech and/or swallowing may be temporary or more lasting, these being the main impacts after surgery^(9,12). In speech, there is impact on intelligibility, caused by articulatory imprecision and alteration in vocal quality⁽⁹⁾. In swallowing, these impacts may be manifested by an increase in the number of times swallowing is required^(7,8), stasis in the oral cavity, difficulty in oral transit and aspirations before, during and after swallowing⁽¹²⁾.

This case study is in agreement with the literature as regards the following alterations: unintelligible speech, imprecise articulation, pasty and hypernasal vocal quality, stasis of food and saliva in the oral cavity, increase in the number of times swallowing is required and aspirations before, during and after swallowing. However, the patient also presented oral escape, delay in triggering the swallowing reflex and alteration in respiration, which were not related in the literature researched^(7-9,12).

In speech-language pathology rehabilitation, direct and indirect therapies were used. In indirect therapy, isometric, isotonic and isokinetic exercises were used to improve oral motor control, sensitivity, mobility, motricity, tonus and posture of the remaining structures^(9,13). In direct therapy the head back posture maneuver was used to help ejecting food into the pharynx. As found in literature⁽⁷⁾, there was restriction of solid foods due to the patient's inability to chew.

Due to the action of radiation, not only in tumoral tissue, but also in normal tissues, the side effects of radiotherapy are expected^(2,4,9,10,15). Among the mentioned effects, the following were observed: mucositis, reduction in salivary flow, edema, muscular fibrosis, odynophagia, and dysphagia. These effects interfered directly in the processes of feeding and speech^(2,4,9,10,15).

The patient began to take in exclusive oral feeding, with the restriction on solids after ten months under treatment, which contradicted a study⁽⁷⁾ conducted in glossectomized patients

who returned to taking in exclusive oral feeding in average after three months under treatment.

Over-articulation, speed and rhythm exercises were used to improve speech intelligibility⁽⁹⁾. It is worth pointing out that the literature⁽⁹⁾ also indicates isotonic, isometric and isokinetic exercises of the remaining structures of the mouth for speech therapy, but these were performed in the beginning of treatment.

FINAL COMMENTS

Bearing in mind the possible stomatognathic complications

resulting from curative surgery of cancer of the tongue, the case study described illustrates the efficacy of the speech-language pathology actions taken, helping in the functions of swallowing and speech in patients submitted to total glossectomy because, in addition to providing modification of the normal pattern and the adaptation of these functions, it also provides better quality of life for the patients.

Therefore, it is important for individuals submitted to total glossectomy to receive speech-language pathology follow up and adequate intervention as soon as possible, to treat the sequelae caused by resection of the tongue.

RESUMO

A cirurgia curativa do câncer de língua ocasiona sequelas que prejudicam o bom funcionamento das funções estomatognáticas. O objetivo do trabalho é descrever, por meio de estudo de caso, os achados da avaliação e a evolução da reabilitação fonoaudiológica das funções de deglutição e fala de um indivíduo de 58 anos, gênero masculino, submetido à glossectomia total em junho de 2009. Após a avaliação diagnosticou-se disfagia orofaríngea mecânica severa e alteração na articulação da fala. Na reabilitação fonoaudiológica foram utilizadas, como formas de atuação, as terapias direta e indireta. Na terapia indireta trabalhou-se controle motor oral, sensibilidade, mobilidade, motricidade, tônus e postura das estruturas adjacentes da língua ressecionada. Na terapia direta empregou-se a manobra de postura de cabeça para trás para auxiliar na ejeção de alimentos para a faringe. O paciente passou a alimentar-se exclusivamente por via oral, com a restrição de sólidos, após dez meses em tratamento. No que se refere à fala, foram utilizados exercícios de sobrearticulação, velocidade e ritmo para melhorar a sua inteligibilidade. Dessa forma, considerou-se os resultados da intervenção fonoaudiológica positivos e o paciente recebeu alta após um ano em tratamento. Conclui-se que as ressecções de língua apresentam sequelas significativas nas funções de deglutição e fala, assim sendo, é imprescindível a atuação fonoaudiológica para modificar e adaptar essas funções, além de proporcionar melhor qualidade de vida ao paciente.

Descritores: Neoplasias bucais/complicações; Neoplasias da língua/cirurgia; Complicações pós-operatórias; Glossectomia; Transtornos de deglutição/reabilitação; Transtornos da articulação/reabilitação; Fonoterapia

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