

Oral rehabilitation after partial maxillectomy for removal of pleomorphic adenoma: case report

Reabilitação oral após maxilectomia parcial para remoção de adenoma pleomórfico: relato de caso

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ABSTRACT

Salivary gland tumors account for only 3%–5% of all tumors in the head and neck, 10%–15% of which originate from minor salivary glands. Pleomorphic adenoma is a benign lesion of the salivary gland, most commonly occurring in the region of the hard and soft palates. The treatment of choice for pleomorphic adenomas is with the partial or total function of the extension of the lesion, and placing palatal obturators are one method of reestablishing masticatory function and facial esthetics. This study aimed to rehabilitate a patient using a palatal implant following partial maxillectomy for the removal of a pleomorphic adenoma. A young patient with pleomorphic adenoma of the hard palate underwent a partial right-sided maxillectomy procedure which removed the hard palate and alveolar regions of the molars. Prior to surgery, the patient was assessed to make a surgical guide for resection of the tumor, as well as a provisional obturator plate using orthodontic wire clasps. After healing, the patient was rehabilitated using a palatal obturator which had been incorporated into a removable partial denture. The clinical sequence used to fabricate the final prosthesis was as follows: initial molding after surgery, prosthesis design, preparation of the mouth, work molding, structure testing and orientation planning, teeth testing and installation, and periodic maintenance. Thus, we can conclude that the palatal obturator is an excellent means of restoring a patient's oral function, facial esthetics, and overall quality of life.

Indexing terms: Adenoma, pleomorphic. Dentistry. Neoplasms. Rehabilitation.

RESUMO

Os tumores de glândulas salivares representam apenas 3%-5% de todos os tumores em região de cabeça e pescoço, dentre eles 10%-15% se originam de glândulas salivares menores. O adenoma pleomórfico é uma lesão benigna de glândula salivar, tendo

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uma maior prevalência em região de palato. O tratamento dessas lesões se dá por método excisional ou maxilectomia dependendo da extensão da lesão e, uma das formas de reestabelecimento da estética e função do paciente é com um obturador palatino. O objetivo deste trabalho foi relatar uma reabilitação oral através da utilização de um obturador palatino em um paciente submetido a maxilectomia parcial para remoção de adenoma pleomórfico. Paciente de 22 anos, com adenoma pleomórfico em região de palato, foi submetido a maxilectomia parcial, removendo região de palato duro e região alveolar dos molares do lado direito. Foi realizada moldagem da maxila previamente a cirurgia para confecção de um guia cirúrgico, o guia foi utilizado na ressecção do tumor e, serviu também, para confecção de uma placa obturadora provisória associada a fios ortodônticos. Após cicatrização completa, foi acordado que a reabilitação do paciente seria com uma prótese parcial removível do tipo obturador palatino. A sequência clínica para a realização da prótese foi: moldagem inicial após a cirurgia, delineamento, preparo de boca, moldagem de trabalho, prova da infraestrutura e plano de orientação, prova dos dentes, instalação e manutenções periódicas. Com isso, podemos concluir que o obturador palatino é um excelente meio de reestabelecer função e estética do paciente, melhorando sua qualidade de vida.

Termos de indexação: Adenoma pleomorfo. Odontologia. Reabilitação. Neoplasias.

INTRODUCTION

Salivary gland tumors comprise 3%–5% of all head and neck tumors. The number of cases in major salivary glands is higher than that in minor salivary glands, which represent only 10%–15% of all salivary gland tumors [1].

Pleomorphic adenoma is a benign, mixed tumor of the minor salivary glands that mainly affects the palatal region, and is classified by the World Health Organization according to its cellular and architectural pleomorphism. Histopathological diagnosis is characterized by the identification of epithelial and myoepithelial cells in a mucoid, chondroid, or myxoid matrix, with or without the presence of a fibrous capsule. Optimal treatment of this pathological condition involves total surgical excision [2]. Pleomorphic adenoma also has a higher prevalence in the second decade of life [3]. The prevalence of this condition in children is 66%–90% of all benign salivary gland tumors, whereas in patients aged 20 years or older, the prevalence is 5%-10%.

The mainstay of treatment for this condition is surgical enucleation, with partial or total maxillectomy indicated in more severe cases. These resections may be unilateral or bilateral, may include the orbital floor and eyeball, and may involve the floor of the skull. Resections involving the orbit can be classified into three types: orbital floor preservation, loss of orbital support, and orbital exenteration and ethmoidectomy. Orbital floor preservation can be divided into low and high depending on the osteotomy, and whether it is below or above the infraorbital foramen [4]. When patients undergo this type of procedure, some sequelae become evident, such as impaired nasal speech, occlusion, and mastication, as well as extravasation of liquid into the nasal cavity; esthetic results are unfavorable depending on the extension of the procedure and lesion removal [5].

Depending on the extent of surgical tissue removal the use of a palatal obturator may be necessary to restore the patient's speech, occlusion, and masticatory function. A provisional palatal obturator fabricated prior to maxillectomy can act as a surgical guide for the head and neck surgeon and can serve as a temporary palatal prosthesis, assisting in the healing process until it is possible to make a definitive device [6]. Obturators can be associated with implants, cobalt chromium staples, and even muco-supported implants, such as complete dentures; however, the optimal form of rehabilitation depends on the physical, physiological, and financial state of the patient [7].

CASE REPORT

A 21-year-old patient with leukoderma was referred to the extension project in rehabilitation of facial deformities, promoted by a private university in Fortaleza, after an incisional biopsy performed by a head and neck surgeon diagnosed pleomorphic adenoma. During the extraoral examination, no abnormalities were noted (figure 1a). During the intraoral examination, a painless, nodular lesion was observed in the region of the hard and soft palates. The lesion was characterized by a sessile base, color similar to that of the mucosa, firm consistency, smooth texture, and well-defined edges (figure 1b, figure 1c).



Figure 1. a) Unremarkable extraoral examination of the patient; b and c) Intraoral examination showing a nodular lesion in the region of the hard and soft palates, with a color similar to that of the mucosa, well-defined borders, and smooth texture.

Considering the extent of the lesion, the team of head and neck surgeons proposed performing a partial maxillectomy. To facilitate healing, a temporary palatal obturator was recommended for use immediately after surgery. Prior to surgery, an impression of the maxillary arch was made with an irreversible hydrocolloid material (Hydrogum 5, Zhemarck) to create a plaster model. The entire lesion and associated teeth were removed from the plaster model, and a surgical guide was made for use during the maxillectomy procedure. A temporary palatal obturator of transparent acrylic resin and orthodontic wire was fabricated to provide retention in some remaining teeth (figure 2), after which the patient underwent surgery to remove the pleomorphic adenoma.



Figure 2. Temporary palatal obturator with orthodontic wires to improve retention and aid in mastication and speech.

The procedure was performed in a public hospital under general anesthesia. A Weber–Ferguson approach was employed during which an osteotomy was performed in the maxilla, extending from the pterygoid region to the distal aspect of tooth 24. A palatal osteotomy was performed with 3.5–4.5 mm surgical margins, allowing removal of the

surgical piece. The patient returned for post-surgical evaluation 15 days later, and the presence of a nasogastric tube to assist in feeding was observed; healing was incomplete, and the palatal obturator was not retained.

The obturator's orthodontic wires were then activated to increase retention, and the obturator was relined with a provisional relining material (Soft Prov, TDV). After treatment, the patient was advised to return in one month to allow enough time for the surgery site to completely heal. On return, satisfactory healing was observed, and the optimal final rehabilitation was determined to be a removable partial denture-type palatal obturator associated with cobalt chromium staples (figure 3). The nasogastric tube was removed because oral intake of food was possible, despite some difficulties; said difficulties improved following the most recent adjustment.

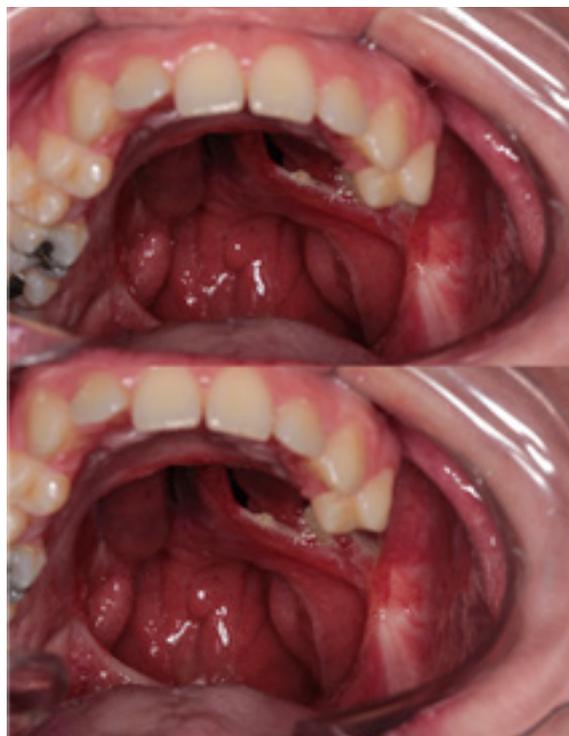


Figure 3. Satisfactory healing of the surgical wound, allowing for planning of the definitive palatal obturator design.

The steps involved in fabrication of the final palatal obturator were as follows: initial study molding, prosthesis design, mouth preparation, working molding, metallic infrastructure testing with wax rollers, testing the teeth, installation, and periodic monthly maintenance.

The first operative step was the study impression made with Hydrogum 5 irreversible hydrocolloid material, similar to the provisional obturator made prior to surgery. The impression was then poured with type II plaster (Quimidrol) to obtain the study model, on which the final design was based. The said design was predicated on visualization of the retentive areas and the relative parallelism between the supporting teeth, in order to plan the insertion axis of the prosthesis; then, the metallic frame was constructed. A twinning circumferential clip was planned for the molars and a T-tip action clamp was planned for the premolar, with a double palatal bar-type connector.

After the final design was complete, the mouth was prepared to adapt the supporting teeth and oral cavity to receive the prosthesis. At this stage, the niches were prepared, and composite resin was added to the abutment teeth, in order to achieve adequate retention and wear on the surfaces and prevent interference with the insertion trajectory; thus, satisfactory biomechanical function and masticatory efficiency were achieved. Niches were made in the molars and premolars to receive the prosthetic supports, and a working mold was then made with Hydrogum 5 alginate. The mold

was cast with type IV plaster special (snock rock premium), and sent to the prosthesis laboratory for fabrication of the metal frame.

Upon return from the laboratory, the metallic infrastructure was tested to observe adaptation of the clips to the molars and premolars (figure 4a). After observing the adaptation, individualization of the orientation plane was carried out in wax to observe the buccal corridor, height, dimension, and registration of the interocclusal relationship of the teeth, as well as the occlusion in habitual maximum intercuspation (figure 4b). For this, we used light condensation silicone (Optosil, Kulzer).



Figure 4. a) Adaptation of the metallic structure to the abutment teeth, showing good retention; b) Buccal corridor adjustment during individualization of the orientation plane, carried out in wax.

The next step was to test the teeth still fixed in wax to verify that the position, occlusion, and color of the teeth were satisfactory to the patient. The patient was instructed to continue using the provisional palatal obturator until the new prosthesis was delivered, both to improve his nutrition and to keep the teeth in their proper alignment. Prevention of tooth shifting was important, as any misalignment would complicate installation of the final palatal obturator.

The final step was assessment of the palatal obturator, which was satisfactory and provided adequate sealing of the surgical wound (figure 5). At the conclusion of this study, the patient's condition was stable; he was taking classes with a speech therapist and returning every six months for periodic maintenance of the prosthesis.

The study was approved by the Research Ethics Committee of Centro Universitário Christus (protocol 33625320.1.0000.5049). The patient authorized the use of data and images by signing a free and informed written consent form.

DISCUSSION

Currently, the preferred treatment for pleomorphic adenoma is surgical subperiosteal excision of the lesion, including the lining mucosa and respecting a small safety margin; however, more severe cases require more aggressive



Figure 5. Final permanent palatal obturator, showing satisfactory sealing of the palate and retention by the abutment teeth.

treatments, such as partial or total maxillectomy, due to the risks of recurrence and malignant degeneration [8]. Patients with unilateral or bilateral maxillary defects may experience functional weakness during mastication, swallowing, and nasal speech, facial collapse, dry mucous membranes, and crusting of the surgical area [3].

There are several reasons that a patient may require a palatal obturator, but the most prevalent is tumors, and one of the most frequent tumors involved in these cases is pleomorphic adenoma. This lesion is most prevalent in the salivary glands, representing approximately 60% of cases, with an annual incidence of 2.4–3.5 per 100,000 inhabitants. The most common treatment for this condition is surgical excision with a small margin of safety, because the lesions are benign [4].

In our case, the patient underwent partial maxillectomy with a large margin of safety, which is not indicated in most studies, especially in young patients. Due to the significant extent of this surgical procedure, available rehabilitation methods were limited given the large amount of bone loss [9]. Palatal obturators can be implant-associated, muco-supported, tooth-supported, or a combination of these designs. In cases where obturators are fixed through implants, it is essential to have adequate bone availability [10].

In cases of muco-supported prostheses, the surgical defect must be very small in order to achieve satisfactory retention. Alternatively, a tooth-supported obturator is used when the surgical defect prevents the use of fixation implants, and when there are at least two teeth remaining to facilitate obturator retention [3]. The patient in question lost a large amount of bone tissue during surgery, which made rehabilitation with fixation implants impossible; as a result, it was decided to use a palatal obturator prosthesis. Tooth support [2].

Some studies have shown that the use of implant-associated palatal obturators in patients following partial or total maxillectomy procedures led to improvements in prosthetic stability, phonetic performance, and quality of life with regard to masticatory performance. However, tooth- and muco-supported palatal obturators are also quite resolute in terms of management of patients with maxillary deformities [1].

When employed in a manner that respects the resilience of adjacent tissues and with adequate prosthetic adjustments, tooth- and muco-supported prostheses are associated with high success rates. If designed and employed correctly, patients can use prostheses to reestablish their daily functions; however, correct obturator care and maintenance are required in order to provide greater device longevity and maximize patient comfort during use [11,12].

Considering the successful rehabilitation of our patient, it is important to emphasize an interdisciplinary treatment, as masticatory function, speech, movement, and psychosocial performance may be impaired after a maxillectomy procedure; therefore, the cooperative participation of dentists, physiotherapists, speech therapists, and psychologists is extremely important for the physical, mental, and social recovery of these patients [11,13].

CONCLUSION

The dentist plays a crucial role in the lives of maxillectomy patients. In addition to assisting with the functions of chewing, swallowing, and speech, dentists also support resocialization, given that the self-esteem of these patients can be significantly impacted by their surgical procedures.

It is extremely important that the type of obturator chosen fits the patient's physical and financial condition, in order to optimize improvement in their quality of life. Further research into new techniques and materials is necessary, considering the increasing frequency of harmful habits which can lead to conditions requiring maxillectomy procedures. Correct diagnosis, surgical treatment plan, and postoperative management will depend on the knowledge of the treating head and neck surgeons, dentists, and prosthodontists who, if they are able, will bring great and lasting benefits to the patient.

Collaborators

IS Ximenes, CEN Malta, LO Barros, RMBL Verde and CEA Gomes, contributed to patient care and the construction of the case report. JOL Martins and JVM Lemos, contributed to patient care.

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