Capítulo 8

Reconstruction and implant-prosthetic rehabilitation after loss of the body mandibular segment due to ressection an odontogenic myxoma

Reconstrução e reabilitação protética com implantes após a perda do segmento mandibular do corpo devido à ressecção de um mixoma odontogênico

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ABSTRACT
Odontogenic myxoma is an uncommon benign neoplasm; it has mesenchymal origin and has the potential to be locally invasive, with greater predominance of the maxillary bones. It manifests clinically between the second and third decade of life, and the treatment of choice is surgical resection. Clinical and radiological manifestations are variable and non-specific and often lead to confusion with other benign and malignant lesions. The treatment of these lesions, which frequently involve large resections, can be followed by functional, aesthetic and psychological consequences for the patient. After removal of the tumor, the priority of prompt rehabilitation of the patient is discussed, given possible changes resulting from the treatment and the adoption of an expectant approach, until a greater risk of recurrence can be ruled out. The objective of this paper is to report a clinical case of resection of a mandibular odontogenic myxoma, with reconstruction using bone graft from the iliac crest and dental rehabilitation supported by implants.

Keywords: Myxoma, case report, odontogenic tumor, maxillofacial surgery.

RESUMO
O mixoma odontogénico é uma neoplasia benigna pouco comum; tem origem mesenquimatosa e tem o potencial de ser localmente invasivo, com maior predominância dos ossos maxilares. Manifesta-se clinicamente entre a segunda e terceira década de vida, e o tratamento de escolha é a ressecção cirúrgica. As manifestações clínicas e radiológicas são variáveis e inespecíficas, levando frequentemente a confusão com outras lesões benignas e malignas. O tratamento destas lesões, que frequentemente envolvem grandes ressecções, pode ser seguido de consequências funcionais, estéticas e psicológicas para o paciente. Após a remoção do tumor, discute-se a prioridade de reabilitação imediata do paciente, dadas as possíveis alterações resultantes do tratamento e a adopção de uma abordagem expectante, até se poder excluir um maior risco de recidiva. O objectivo deste trabalho é relatar um caso clínico de ressecção de um mixoma odontogénico mandibular, com reconstrução utilizando enxerto ósseo da crista ilíaca e reabilitação dentária apoiada por implantes.

Palavras-chave: Mixoma, relato de caso, tumor odontogénico, cirurgia maxilo-facial.

1 INTRODUCTION

Odontogenic myxomas (OM) are relatively rare lesions. These lesions may originate from interactions between the odontogenic epithelium and the odontogenic ectomensenchyme[1]. Any region of the gnathic bones can be affected, being more frequent in the mandible. They appear predominantly between the second and fourth decade of life[1,2,3].

The treatment of odontogenic myxoma is surgical. Many lesions require marginal or segmental resection, as it can infiltrate to adjacent bone[4,5]. Mandibular resections can produce severe aesthetic and functional sequelae, leading to loss of quality of life for the patient[4,6].

Mandibular reconstruction with a graft from the iliac bone is highly recommended[5,6,7]. Autogenous free graft from the iliac crest is an affordable option, technically simple, subject to minimal complications in an economy with limited resources[5].

Dental rehabilitation using prostheses supported on oral implants is currently the best and most predictable alternative for restoring edentulous areas[7,8,9].

Considering the importance of rapid rehabilitation of patients with sequelae of tumor resections, this article reports the treatment of a case of odontogenic myxoma in the mandible, rehabilitated through autogenous free graft from the iliac crest and implant-supported dental prosthesis.

2 CASE REPORT

Patient P.V.D.S., male, 29 years old, sought the Oral and Maxillofacial Surgery and Traumatology Service of the Hospital das Clínicas of the Universidade Federal de Minas Gerais, for evaluation of a recurrence of OM in the mandible. The lesion was treated primarily, through curettage, 1 year ago in another hospital.

The patient reported pain symptoms in the mandible. No cortical expansion was observed and tooth 36 was absent. Computed tomography (CT) revealed a hypodense, multiloculated lesion in the body of the mandible region, on the left side, without affecting the basilar portion (Figure 1).

CT scan showed a close relationship between the tumor and adjacent teeth. Histopathological examination performed on a biopsy specimen revealed proliferation of fusiform and rounded cells, loosely arranged in a myxoid matrix, confirming the diagnosis of odontogenic myxoma.

Through the combination of Risdon and transoral surgical approaches, a marginal resection of the mandible was performed, with a safety margin of 10mm, preserving the integrity of the mandibular basilar. Associated teeth were removed together with the neoplasm. Peripheral ostectomy and Carnoy's solution were applied in the surgical pocket to mitigate the possibility of recurrence of the neoplasm. A reconstruction plate and titanium screws, 2.4mm system (Neo-ortho®, Curitiba, PR, Brazil) were used in the resected region (Figure 2).

The surgery produced a 28mm long defect. After eight months, with no signs of lesion recurrence, mandibular reconstruction was performed using an autogenous free graft from the stabilized iliac crest (Figure 3). Risdon's surgical access was used and there was no exposure of the graft to the oral environment.

Four months after performing the bone reconstruction, three dental implants were installed (Straumann® Tissue Level, Basel, Switzerland), which enabled prompt implant-supported prosthetic rehabilitation, restoring the patient's facial harmony and masticatory physiology (Figure 4).

3 DISCUSSION

The most important concern after benign odontogenic tumor surgical treatment is the relapse of these tumors followed by the reconstruction of postoperative bone deffect. The Ameloblastoma is the most common odontogenic tumor of the jaws, and showed the recurrence rate ranges from 13% to 19% (Adebayo et al.,; Arotiba et al.). On the other hand, the Odontogenic Mixoma showed a greater recurrence rate ranging from 10 to 33%. This high recurrence rate may be attributed to the type of surgical treatment used. The surgical enucleation and simple curettage can raise the incidence of relapse. This may lead us to know that Odontogenic mixoma requires a more aggressive surgical approach, like marginal bone resection (Lo Muzio et al., 1996; Li TJ, Sun LS, Luo HY, 2006). This paper report a case of surgical resection of odontogenic mixoma, and this type of treatment, allowed the bone graft reconstruction after 8 months followed by dental implant placement.

Although the main objective is the cure, aesthetic and functional rehabilitation has become a priority in the treatment of these patients. The reconstruction of areas that present bone defects resulting from surgeries can be performed immediately after resection or in a second surgical procedure, thus waiting for a period of time of absence of disease[12]. Before adhering to the early reconstructive proposal, the patient should be aware of the possibility that an eventual tumor recurrence may require new surgeries, including partial or total loss of previously performed rehabilitation procedures. In this case report, the surgeons and the patient opted to wait the wound healing process taking into account the high relapse incidence rate and the large size of bone graft needed. Thus, after 8 months of the resection procedure an iliac crest bone was grafted to the bone defect.

The iliac crest free graft is characterized by a large volume of bone, as well as a high osteogenic potential[13,14,15]. This type of graft is reliable to reconstruct mandibular defects of 5 to 6 cm in size, while larger mandibular bone defects requires micro vascular fibular flap (Murphy et al., and Jörg Handschel et al.,). Another interesting aspect is that the cortical bone of this flap allows for good plate fixation, lower surgical morbidity, ease of use of the technique, good facial contour and the possibility of obtaining sufficient bone volume for the installation of implants, which will serve as support for dental prostheses, with great predictability of success[9,11,12,14,15], the bone originating from the iliac crest being the most frequent donor site (76.1%)[10]. As the present case showed a bone defect of 28 mm long, the free graft of iliac crest was used to reconstruct the bone defect.

For the technique to be successful, graft fixation must be adequate and without movement, in addition to wide soft tissue coverage and absence of local infection[14,15]. Moreover, success depends on well-adjusted stumps, well-vascularized bone receptor edges and adequate occlusion[8]. In the present case, the iliac grafts were modeled to fit the mandibular defects and drilled in their cortical portion to allow for better vascularization. Then, they were fixed to the reconstruction plate with bicortical screws. There was no exposure of the graft to the oral environment, which may have contributed to the absence of postoperative infection. The extra oral Risdon flap was performed to decrease the chance of graft exposure as the skin shows better resistance than intraoral mucosa.

After grafting a waiting period of four to six months is necessary, to promote the safe installation of osseointegrated dental implants. This repair period allows us to verify the incorporation and revascularization of the reconstructed area[7,13]. Autogenous free graft from the iliac crest, followed by installation of osseointegrated dental implants and a prosthesis over this graft, seem to be the best option for the rehabilitation of patients with small and medium-sized mandibular defects resulting from the treatment of tumors. The success rate of dental implants placed in non-vascularized grafts ranged from 82 to 93.3 %, after 94 months of follow-up (Foster et al., Matteo-Chiapasco et al.) An important aspect is that the early functional load on implants stimulates grafting and inhibits bone resorption[9,13]. The data obtained demonstrated that the success rate of implants placed in regenerated areas is very similar to that obtained in implants installed in untouched bone[16].

This report represents a multidisciplinary treatment for a benign odontogenic mixoma. The success of treatment is due the knowledge of surgical pathology, techniques of mandibular bone graft, and rehabilitation with dental implants, in the surgical and prosthetics steps.

The patient provided a written informed consent for inclusion of her clinical and imaging details in the manuscript for the purpose of publication.

4 CONCLUSION

This case report demonstrates that the reconstructions of mandibular bone defects can be performed, soon after resective surgeries for odontogenic myxomas, through autogenous bone grafts, providing a good prospect of success for dental implants installed in these areas.

Declarations

Author contribution statement

All authors listed have significantly contributed to the investigation, development and writing of this article.

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Data availability statement

Data will be made available on request.

Declaration of interest's statement

The authors declare no competing interests.

Additional information

No additional information is available for this paper.

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FIGURE LEGENDS

FIGURE 1. CT scan reveals a hypodense image in the region of the left mandibular body.

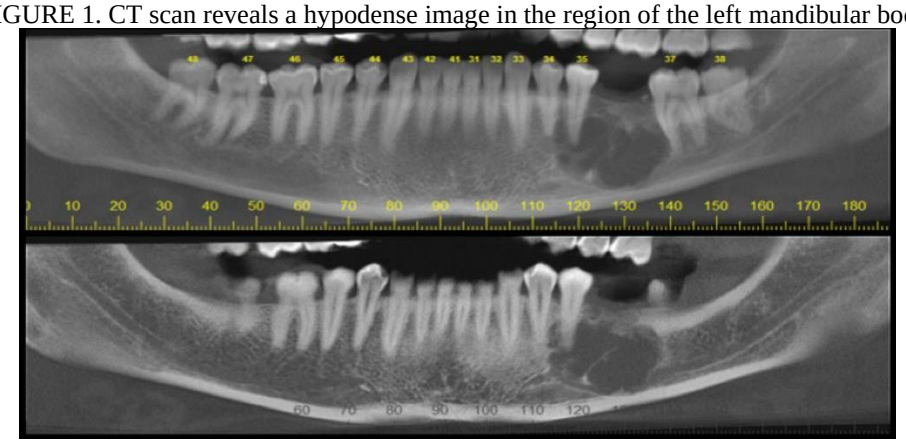

FIGURE 2. Marginal resection of the mandible with a reconstruction plate.

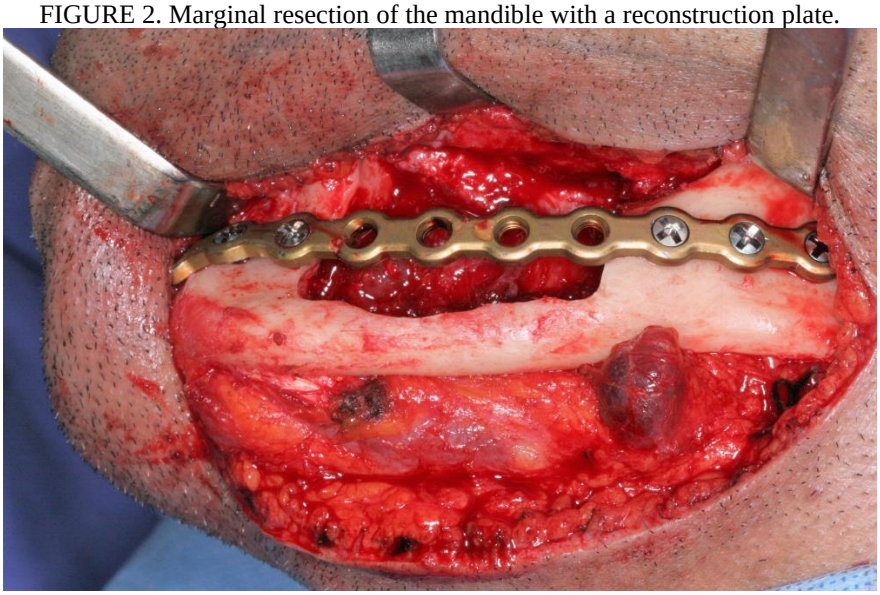

FIGURE 3. Reconstruction with free iliac crest bone graft.

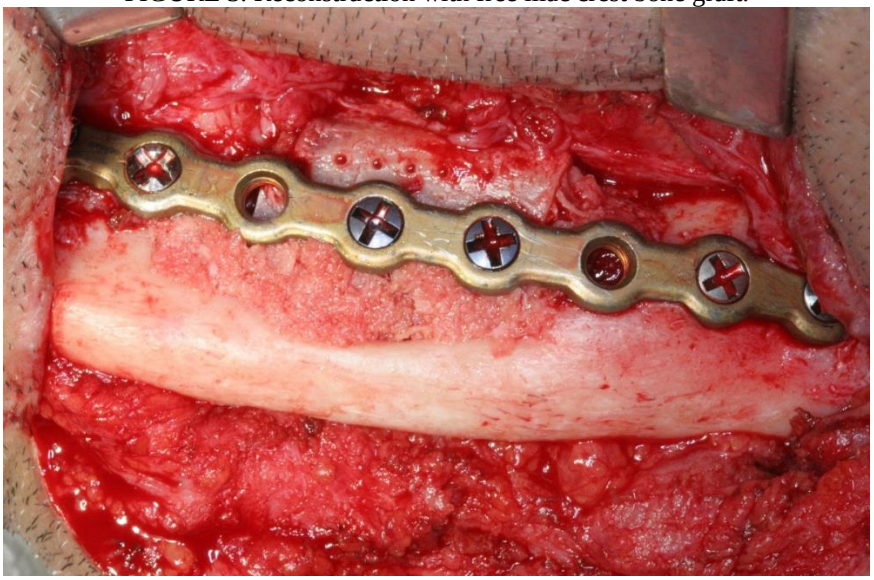

FIGURE 4. Clinical and radiographic appearance after treatment. Implant-supported prostheses were performed on bone grafted from the iliac crest after resection of an odontogenic myxoma.