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CLINICAL REPORT

Rehabilitation using immediate loading in patients with partial resection of the jaw

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ABSTRACT

Ameloblastoma is a rare tumor that affects the maxillomandibular region. Surgical resection is often indicated, and oral rehabilitation becomes a challenge. This study aims to report on the mandibular rehabilitation with implant supported prosthesis using immediate loading with subsequent resection. A patient with a confirmed diagnosis of multicystic ameloblastoma in the left jaw underwent a partial resection of the mandible and a reconstruction with a titanium plate. After 2 years of follow-up with clinical examinations and imaging testing and with no signs of recurrence, the patient underwent the technique of immediate load implants, rehabilitating the mandible with an implant supported fixed prosthesis and the maxilla with a conventional complete denture. During the seven years of follow-up with the patient, there was no sign of recurrence of ameloblastoma. The rehabilitation with oral implants under immediate loading demonstrated to be successful, and the cemented cylinder technique used in this study coupled with passivity showed a favorable prognosis for the longevity of implants.

KEYWORDS

Ameloblastoma; Dental implant; Oral rehabilitation; Immediate loading

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INTRODUCTION

Ameloblastoma is a rare benign odontogenic tumor that represents 1% of oral tumors and cysts.¹⁻⁵ It may appear as an asymptomatic swelling or a large lesion, with the perforation of cortical bone resorption and dental displacement.²

It is slow growing, with a benign appearance; however, it may present local invasiveness and a high incidence of recurrence. It can be classified as solid or multicystic, cystic and periférico.¹ The multicystic ameloblastoma mostly affects young adults, aged 35 years old, without sex predilection. The incidence in the mandible is four times higher than in the maxilla, especially in the region of the ramus.^{2,3} Due to the lack of symptoms, patients usually seek professional advice when the tumor has a large area and the resection of the lesion is indicated.³

The rehabilitation of mandibular defects associated with tumor resection presents a significant challenge for the prosthodontic rehabilitation.⁴ To minimize the functional and psychological impact to the patients, the jaw reconstruction can be used to reestablish continuity of the jaw and provide an optimal supporting tissue bed for the prosthetic rehabilitation.⁵ Thus, the oral rehabilitation restores the function and the esthetics, preserves the associated structures, and contributes to the patient's perception of an improved quality of life.⁶

Osseointegrated implants can make a significant contribution assisting in addressing problems related to denture retention, support, and stability.^{1,7} In recent years, the use of immediately loaded implants became more acceptable as a standard protocol for completely edentulous lower jaw.⁸ This technique may potentially provide immediate function and esthetics to the patient. After jaw reconstruction, there is also an improvement in the patient's psychosocial well being.⁹

This paper presents the case of a patient with mandibular ameloblastoma whose treatment was the partial resection of the mandible and the oral rehabilitation with implants under immediate load and using the technique of cylinder cemented in implant supported denture.

CASE REPORT

Patient AA, male, age 53, attended the dental clinic complaining of asymmetry in the left mandible (Fig. 1). After clinical and radiographic examination, the patient was referred to the Cancer Institute of Londrina-PR with a suspicion of ameloblastoma (Fig. 2). Histopathologic



Figure 1. Initial clinical aspect of patient.

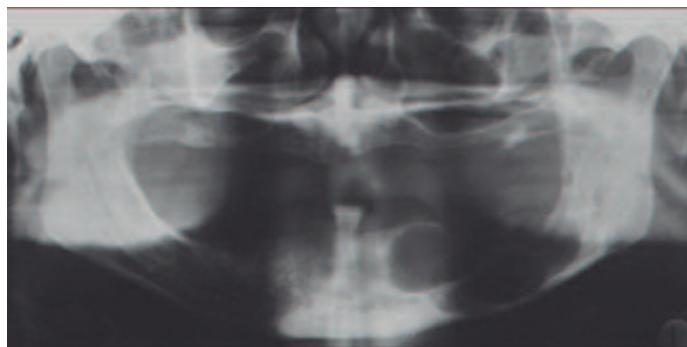


Figure 2. Panoramic radiograph before mandible resection.

examination confirmed the presence of a multicystic benign odontogenic tumor in the region of the left mandible. The treatment proposed was the partial resection of the left mandible and the reconstruction with titanium plate. After 2 years of follow up, with clinical and radiographic and no signs of recurrence, a rehabilitation dentistry was performed in the mandible with an implant supported fixed prosthesis through the technique of immediate load implants with the installation of five single body implants (GT – Cortical Titamax – Neodent – Curitiba – Brazil) and the cemented cylinder technique. The maxilla received conventional complete denture.

The feasibility of the rehabilitation with implants in patients undergoing mandibular reconstruction after resection of tumors is described in the literature, there was no significant difference in the health of peri-implant tissues of such patients compared with patients who underwent implants for other reasons.¹ The choice of using the cemented cylinder technique was due to the freedom of placement of the attachments during surgery combined with the correction of small marginal fit in the interface below – metal structure/pillar, promoting the passivity and longevity of the clinic work.¹⁰ Among the five single body implants placed in the mandible (region 32, 42, 44–3.75×17mm/region 45, 46–3.7×9mm), only three were put into function, the two most posterior implants were amputated as a safety measure in case there was a loss of some element (Fig. 3). The mini conical pillars (Neodent, Curitiba, Brazil) were installed. The molding trailing was performed with the use of a multifunctional guide, copying the new condition of the tissues around implants for the fabrication of metallic infrastructure (Figs. 4 and 5).

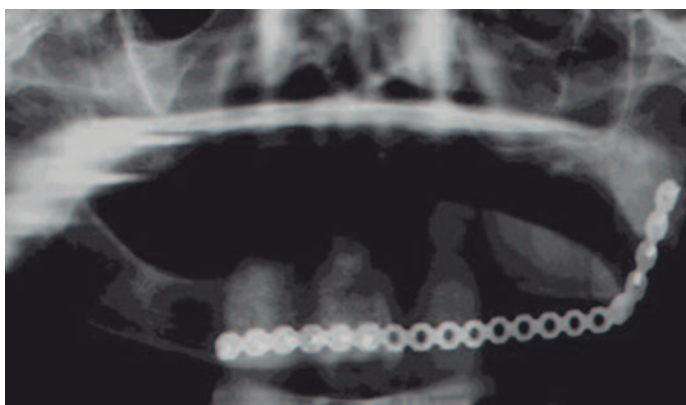


Figure 3. Panoramic radiograph prior to implant placement.

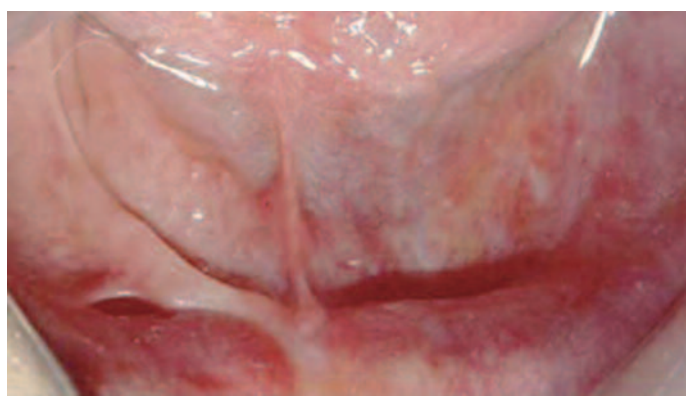


Figure 4. Clinic aspect of mucosa after ameloblastoma resection.

After preparing the working model and the semi-adjustable articulator, mounted in relation to the maxillomandibular positioning with a removable superior denture, we started the waxing of the metal infrastructure.

The technique of cemented cylinder is composed of three different cylinders (burnout, tin and titanium) (Fig. 6a and b). The technique consisted of the manufacture of a one-piece structure, with laser welding, which was integrated into a reference cylinder to place it in the mouth. Next, accommodations were prepared in the regions correspondent to the cylinders left, previously placed and fixed in the transepithelial pillar, so that the cylinders were subsequently cemented directly in the mouth



Figure 5. Installation of the single body implants.

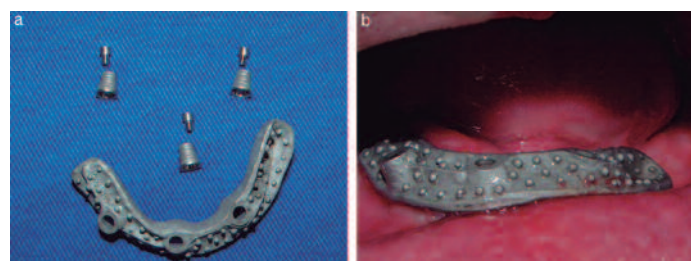


Figure 6. a and b: Technique of cemented cylinder.



Figure 7. Interocclusal record using multifunctional guide

with the aid of a dual activation composite resin for cementing. The cylinder burnout was superimposed on the tin cylinder, and the set was screwed on analogs of the abutments of the implants of a single body (GT – Neodent®, Curitiba – Brazil) (Fig. 7). After the casting, the glass sphere blasting and machining, the metal was again screwed on the tin rings in the model and the mounting of the teeth, waxing, inclusion, curing, finishing and polishing of the prosthesis were performed.

To decrease the settings in the installation, occlusal adjustments were made in the articulator. For cementation, the tin rings were replaced by a dimensionally smaller titanium cylinder, with an internal relief of cylinder/ metal structure, which will later be filled with cemented resin. Utility wax was inserted into the inlet of the screws (to prevent excess cement drain and cover them), resin cement afforded, handled according to the manufacturer's instructions (Panavia® Kuraray, Okayama – Japan) and inserted within the bar and around the cylinders.

After the removal of the excess, a gel was applied on the area of cement around the interface cylinder/bar, causing a chemical polymerization under



Figure 8. a). Fixed denture on implants installed, occlusal view. b). Fixed denture on implants installed, frontal view.

the absence of oxygen. After complete polymerization, the prosthesis was removed and the cleaning was done for later installation (Fig. 8a and b Fig. 9). After the installation, the torque of 20N was performed in the prosthetic screws and the occlusion was refined with small adjustments. Upon completion of the work, a new panoramic radiography was requested to the patient (Fig. 10). The 7-year computed tomography follow-up has shown the clinical success in rehabilitation with implants under immediate load (Figs. 11 and Fig. 12 at Fig. 15).



Figure 9. Case finalized.



Figure 11. Computed tomography, frontal view, of patient follow-up after seven years of rehabilitation.

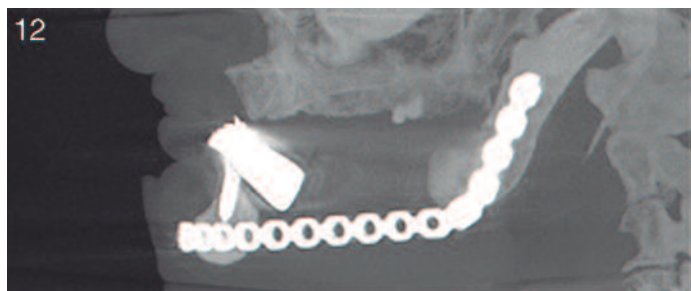


Figure 12. Computed tomography, lateral view, of patient follow-up after seven years of rehabilitation.

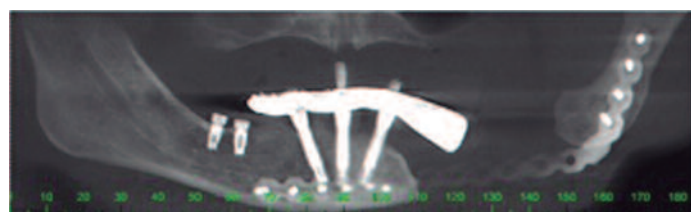


Figure 13. Computed tomography, frontal view, of patient follow-up after seven years of rehabilitation.

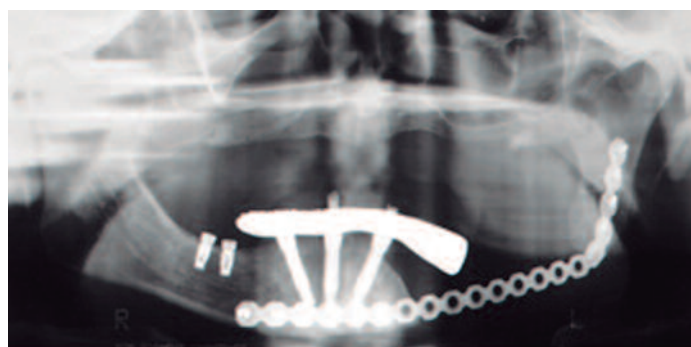


Figure 10. Panoramic radiograph case finalized.

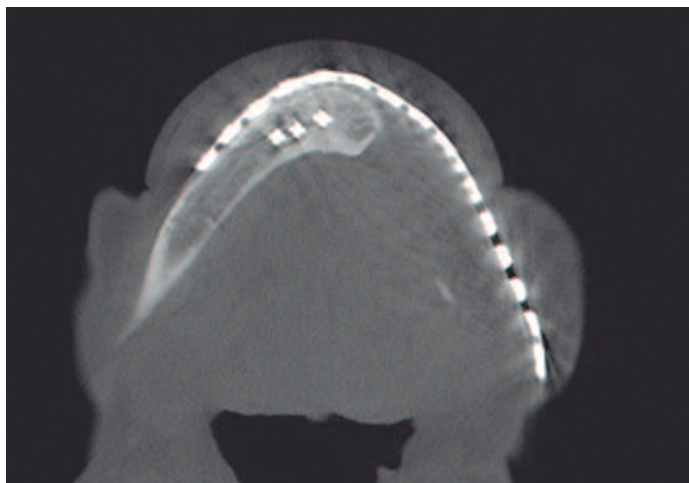


Figure 14. Computed tomography, axial view, of patient follow-up after seven years of rehabilitation.

DISCUSSION

Ameloblastoma is a benign odontogenic tumor that can be locally aggressive and invasive. Metastases are rare but possible, and it we must consider it as a malignant form of the tumor.¹ Surgical resection of aggressive solid or multicystic ameloblastoma is a well-documented and accepted treatment modality, but there are controversies with regard to the extent of operative intervention.² Although irradiation can reduce the size of the ameloblastoma, especially the soft-tissue component, the proposed curative dosages are high and present numerous potential side effects, thus it should be reserved for unresectable lesions.¹¹ In this case report, the surgical resection of the ameloblastoma and the rehabilitation with titanium plate had an 7-year clinical and radiographic follow-up, and no sign of recurrence was found, so the choice of treatment was successful (Figs. 12–14 Figs. 13–15).

With the advancement of knowledge on osseointegration and on its biomechanics through the years, the rehabilitation treatments involving a smaller number of implants were conducted and followed with promising results. The use of three and four implants for the same design of prosthesis is a reality in the clinical treatment, and the compensating factors are increased spacing interimplantar and distal inclination of the two most posterior implants, thereby, an increase of the polygon support prosthesis and a decrease of the extent of cantilever.^{2,3,11} Bioengineering study affirms the geometric arrangement of the implant-prosthesis assembly is increased by joining the fixings, making the system rigid and biomechanically favorable.¹² However, the use of five implants to support a fixed denture would generate a greater predictability in case there was no implant failure over time.³ In this work, two implants were buried with this purpose.



Figure 15. Clinical aspect of patient after seven years of rehabilitation

The use of immediate load in implant dentistry is widely discussed and its success is demonstrated in the literature, therefore, various treatment modalities and laboratory techniques are proposed for the prosthetic rehabilitation. The technique of cemented cylinder used in this study has the major advantage of preserving the implants due to the passivity promoted by the cementation of the cylinders of titanium metal structure.^{3,8} Compared with other techniques, the cylinder cemented promotes minimum levels of marginal gaps, and it promotes the high-strength metal infrastructure, due to casting monoblock¹³ and absence of the welding process that reduces the porosity that could weaken the infrastructure. The number of clinic sessions is also reduced, since any relationship maxillomandibular was first obtained by graft screwed into the working model and the assembly mounted on the articulator.¹⁴

Ameloblastoma is a challenging, destructive tumor that demands an accurate diagnosis and careful surgical planning and execution, with a long-term follow-up to identify recurrences. Reconstruction can be used to reestablish continuity of the jaw and provide an optimal supporting tissue bed for prosthetic rehabilitation restoring function and esthetics, preserving the associated structures, and contributing to the patient's perception of an improved quality of life. The use of immediately loaded implants becomes effective and safe to be used in daily practice. The technique of cemented cylinder showed a greater passivity coupled with the favorable prognosis for the longevity of implants.

CONFLICT OF INTERESTS

The authors declare that there is no conflict of interests regarding the publication of this manuscript.

References

- Cheung LK, Leung CF. Dental implants in reconstructed jaws: implant longevity and periimplant tissue outcomes. *J Oral Maxillofac Surg.* 2003;61:1263-74.
- Malo P, Rangert B, Nobre M. All-on-Four immediate-function concept with Brånemark System implants for completely edentulous mandibles: a retrospective clinical study. *Clin Implant Dent Relat Res.* 2003;5:2-9.
- Chauhan DS, Guruprasad Y. Plexiform ameloblastoma of the mandible. *J Clin Imaging Sci.* 2011;1:61.
- Carini F, Francesconi M, Saggesse V, Monai D, Porcaro G. Implant-supported rehabilitation of a patient with mandibular ameloblastoma. *Ann Stomatol (Roma).* 2012;3:21-5.
- Wong TL, Wat PY, Pow EH, McMillan AS. Rehabilitation of a mandibulotomy/onlay/graft-reconstructed mandible using a milled bar and a tooth- and implant-supported removable dental prosthesis: a clinical report. *J Prosthet Dent.* 2010;104(1):1-5.
- Branemark PI, Engstrand P, Ohmell LO, Gröndahl K, Nilsson P, Hagberg K, et al. Brånemark Novum®: a new treatment concept for rehabilitation of the edentulous mandible. Preliminary results from a prospective clinical follow-up study. *Clin Implant Dent Relat Res.* 1999;1:2-16.
- Chiapasco M, Colletti G, Romeo E, Zaniboni M, Brusati R. Long-term results of mandibular reconstruction with autogenous bone grafts and oral implants after tumor resection. *Clin Oral Implants Res.* 2008;19(10):1074-80.
- Barber AJ, Butterworth CJ, Rogers SN. Systematic review of primary osseointegrated dental implants in head and neck oncology. *Br J Oral Maxillofac Surg.* 2011;49(1):29-36.
- Roumanas ED, Garrett N, Blackwell KE, Freymiller E, Abemayor E, Wong WK, et al. Masticatory and swallowing threshold performances with conventional and implant-supported prostheses after mandibular fibula free-flap reconstruction. *J Prosthet Dent.* 2006;96:289-97.
- Oteri G, De Ponte FS, Pisano M, Cicciù M. Five years follow-up of implant-prosthetic rehabilitation on a patient after mandibular ameloblastoma removal and ridge reconstruction by fibula graft and bone distraction. *Dent Res J.* 2012;9(2):226-32.
- Abada RL, Kadiri F, Tawfik N, Benchakroun N, Bouchbika Z, Chekkoury AI, et al. Multiple metastases of a mandibular ameloblastoma. *Stomatol Chir Maxillofac.* 2005;106:177-80.
- Anastassov GE, Rodriguez ED, Adamo AK, Friedman JM. Case report. Aggressive ameloblastoma treated with radiotherapy, surgical ablation and reconstruction. *J Am Dent Assoc.* 1998;129:84-7.
- Götz W, Gedrange T, Bourauel C, Hasan I. Clinical, biomechanical and biological aspects of immediately loaded dental implants: a critical review of the literature. *Biomed Tech.* 2010;55(6):311-5.
- Minichetti JC, D'Amore Schwarz E. Complete oral rehabilitation of a postresection ameloblastoma patient: a clinical case report. *J Oral Implantol.* 2011;37(6):735-44.