

**BILATERAL
AUTOGENOUS DENTAL
TRANSPLANTATION
IN A YOUNG PATIENT
FOLLOWED FOR 9
YEARS**

José Ricardo Mariano

<https://lattes.cnpq.br/6392944312589252>

Mateus Veppo dos Santos

<http://lattes.cnpq.br/2531213052808671>

Marcella Aguiar Teixeira

<http://lattes.cnpq.br/0441557512377173>

Jean Vitor Eliazário Camargos

All content in this magazine is licensed under a Creative Commons Attribution License. Attribution-Non-Commercial-Non-Derivatives 4.0 International (CC BY-NC-ND 4.0).



Abstract: Dental self-transplantation is an efficient surgical maneuver to rehabilitate and consequently provide oral function through the implementation of an autogenous tooth in an alveolus due to the absence or loss of a tooth. And because they are young patients with tooth loss, there is a limitation of rehabilitation treatments, taking into account that currently the integrated osseous implants are presented as the gold standard in the replacement of lost teeth and that it is contraindicated for young patients. In order to carry out this treatment, there are several indications as well as their contraindications. Its values fall on the fact that it is the most biocompatible material possible, economic advantages, surgical time, quick recovery and not only in this case to be presented as in literature reviews, its success rates are considered high, above 90%. However, the present work aims to demonstrate and prove the successes and benefits of a bilateral autogenous dental transplant from tooth 48 to the alveolus of tooth 46 and from tooth 38 to the alveolus of tooth 36. But, clarifying, verifying and applying elements from a theory to dental practice in a way that proves the excellence and effectiveness of an autogenous transplant in the functional and aesthetic scope. Since the anamnesis, pre-surgical exams, transplant biology, surgical technique, the patient's systemic condition, surgical care, patient age, stage of root development and tooth eruption, among others, are crucial and relevant factors for success. of this clinical case.

Keywords: Autogenous tooth transplantation, dental autotransplantation, dental transplantation.

INTRODUCTION

Dental autotransplantation is an efficient treatment method. Its value lies in the fact that it allows dental reconstruction using the most biocompatible material possible, the patient's

own tooth (MACHADO LA, et al, 2016). a good prognosis of the transplant depends on the specific requirements of the patient, the donor tooth and the recipient site (SILVA, et al, 2019; AQUINO, et al, 2019).

There are several indications for dental transplantation, including tooth loss from caries, traumatic loss, atopic eruption of canines, root resorption, large endodontic lesions, cervical root fractures and localized periodontitis are the most common.

The procedure is contraindicated in cases where patients have infections with periodontal or endodontic lesions on the teeth to be transplanted (WARMELING, et al, 2019).

This stage can be performed using rigid or semi-rigid retention techniques, where the first consists of stabilizing the tooth post-surgery with orthodontic wires and composites and the semi-rigid is performed by stabilizing the suture threads (DUARTE et al., 2017).

Depending on the degree of mobility after adaptation of the transplanted tooth in the socket, retention can be performed using a flexible or rigid technique. Such restraints must be maintained for a period ranging from 1 to 6 weeks. However, there are few studies that report the influence of the flexible technique, using sutures, on the continuous root formation in molar transplantation (SILVA, et al, 2019).

METHODOLOGY

The case study methodology is useful for investigating new concepts, as well as for verifying how elements of a theory are applied and used in practice. The present study is of a descriptive nature, carried out in the private clinic of GUARÁ-DE, which was followed up in the surgery clinics of the University center UNIEURO, Campus Águas Claras-Df.

As for the literature review, it will be of a

qualitative nature, collected from real events, of a descriptive nature, with the objective of explaining and exploring a scientific theoretical basis of the present study. Based on data and research: SciELO; VHL Dentistry, Pubmed, using the following keywords: Autogenous dental transplantation, self-dental transplantation, dental transplant.

LITERATURE REVIEW

CONCEPT

It is possible for children and young adults to have congenitally missing teeth or loss from caries or trauma. Typical options for restoration are fixed partial dentures, implants, removable appliances, and orthodontic space closure. There is another alternative, not much used, which is autotransplantation, where a tooth is surgically moved from one place to another in the mouth in the same individual (MACHADO LA, et al, 2016).

Dental self-transplantation is an efficient treatment method. Its value lies in the fact that it allows dental reconstruction using the most biocompatible material possible, the patient's own tooth.

CLASSIFICATIONS OF SELF TRANSPLANT

We can classify dental transplants in relation to the donor/recipient and also the level of root formation, being the ideal technique for two-thirds to three-quarters of the formed root. Also, the classification can be by the type of transplant, such as homogenous, autogenous or heterogenous (WARMELING, et al, 2019).

INDICATIONS FOR SELF TRANSPLANTATION

There are several indications for dental transplantation, among them, tooth loss by caries, traumatic loss, atopic eruption of canines, root resorption, large endodontic

lesions, cervical root fractures and localized periodontitis are the most common.

An important point should be highlighted: dental transplants are not opposed to implants. In other words, transplants do not replace dental implants. Dental transplants have very specific indications for some cases of partial anodontia and as a solution to traumas followed by tooth loss, especially in young patients.

In adolescents and young adults, craniomandibular development restricts implants and prosthetic solutions as a definitive solution.

The limitation of dental transplants in relation to implants is also related to the availability of patients' teeth that can be transplanted (CONSOLARO, et al, 2008).

CONTRAINDICATIONS OF SELF-TRANSPLANTATION

The procedure is contraindicated in cases where patients have infections with periodontal or endodontic lesions on the teeth to be transplanted. In these cases, surgical treatment without previous treatment of the infection is contraindicated. In cases where the root morphology is complex, there is a need for sectioning teeth, making the procedure unfeasible. The procedure with teeth that are larger than the recipient area is also contraindicated (WARMELING, et al, 2019).

FACTORS AND CONDITIONS THAT FAVOR THE SUCCESS OF SELF-TRANSPLANTATION

The success rate of transplanted autogenous teeth ranges from 68% to 96%, however, a good transplant prognosis depends on the specific requirements of the patient, the donor tooth and the recipient site. Patients must be in good general health without systemic decompensation, be able to follow

postoperative instructions, and demonstrate an acceptable level of oral hygiene. In addition, there must be an adequate receptor site with absence of periodontal and periapical diseases, sufficient bone quantity, the extraction process of the condemned tooth is performed in a minimally traumatic way and a tooth with incomplete root formation, as there is a possibility of revascularization through the apical foramen. Although the prognosis of implantation of teeth with complete isogenesis is not so favorable, there are reports in the literature that document the success of this technique, becoming another treatment alternative (SILVA, et al, 2019; AQUINO, et. al, 2019).

The rooting stage is a crucial aspect. There is a debate in the literature regarding the ideal stage of root development for auto transplantation. However, most authors state that $\frac{1}{2}$ to $\frac{3}{4}$ of the total root length is a good phase to achieve success (DUARTEetal., 2017).

During extraction, there is total rupture of the vascular-nervous bundle and periodontal fibers. Therefore, the success of auto transplantation depends on the healing process of the tissues involved and the occurrence or not of complications in the maintenance of the periodontal ligament, because this structure is formed simultaneously with the process of root formation, connecting the root cementum region to the alveolar bone tissue. (MACHADOLA, et al, 2016; ACASIGUA, 2017).

Autogenous dental transplantation has the advantage of being able to be performed in patients in the growth phase, thus maintaining the viability of the periodontal ligament, proprioception, preservation of the alveolar bone, in addition to presenting low cost. (AQUINO, et al, 2019).

Follow-up of auto transplanted teeth is common for up to one year after surgery.

However, to assess the success of dental auto transplantation, it is important to verify the tissue healing process and its evolution over the years, since this procedure is used more frequently in children and adolescents (MACHADO LA, et al, 2016).

CLINICAL PROCEDURES

Imaging, as well as periapical radiography, are essential in the selection and indication of surgery, mainly to establish the stage of root formation, the mesio-distal diameter of the tooth to be transplanted and the possible pathologies in the surgical site(SILVA, et al, 2019).

PRE-SURGICAL REQUIREMENTS

Regarding the surgical technique, it is extremely important that the structures involved are minimally traumatized during the surgical procedure (DUARTEetal.,2017).

As for the surgical technique used, it recommends that the transplant be performed in just one step. The extra-alveolar time of the tooth is also an important factor in the prognosis of the procedure, due to the fibers of the periodontal ligament. (WARMELING, et al. 2019).

The care that the tooth to be self-transplanted does not undergo dehydration and, consequently, necrosis of periodontal ligament cells and dental pulp, requires special attention. It is important that the self-transplanted tooth remains outside the socket for as little time as possible, and must be housed inside the socket during extraction of the tooth to be removed and/or during preparation of the recipient socket (ACASIGUA, 2017).

RESTRAINTS/FIXATION OF AUTO TRANSPLANTS

This stage can be performed using rigid or semi-rigid retention techniques, where

the first consists of stabilizing the tooth post-surgery with orthodontic wires and composites and the semi-rigid is performed by stabilizing the suture threads (DUARTE et al., 2017).

Depending on the degree of mobility after adaptation of the transplanted tooth in the socket, retention can be performed using a flexible or rigid technique. Such retainers should be maintained for a period ranging from 1 to 6 weeks. However, there are few studies that report the influence of the flexible technique, using suture threads, on continuous root formation in demolar transplants (SILVA, et al, 2019).

POSTOPERATIVE CARE

The instructions for the postoperative period are similar to those recommended after surgical procedures – extractions. A pasty diet should be recommended and take at least two days after surgery. The patient should be instructed to avoid chewing at the transplant site and to maintain optimal oral hygiene. As an adjunct method to toothbrushing, the use of mouthwash with 0.12% chlorhexidine digluconate aqueous solution is recommended (ACASIGUA, 2017).

After the surgery, it is necessary to make a drug prescription for the patient, who for some time may feel a little pain and discomfort in the place, due to the inflammatory healing process. For this reason, the recommendation of anti-inflammatory and analgesic is important for the patient's comfort in the postoperative period and, even in the preoperative period, corticosteroids may be indicated to reduce edema. It is also important to recommend that the patient apply an ice pack on the site, aiming to reduce the inflammatory process and consequent pain. Antibiotic therapy can also be recommended according to the surgical procedure, aiming at preventing an infectious condition, recommend that the

patient be reviewed the day after the surgery to ensure that the transplant has had the desired retention in its new position, if the splinting is stable, and if the formation of edema and hematoma is within the normal range, not compromising the surgical condition (ACASIGUA, 2017).

NEED FOR ENDODONTIC TREATMENT AFTER AUTO TRANSPLANTATION

Tooth auto transplantation can also be performed on teeth with complete root development, but with a less predictable prognosis. In this phase of complete rooting, after auto transplantation surgery, endodontic treatment is required after 3 to 4 weeks, as the probability of pulp revascularization is minimal and, if not performed, pulp necrosis and subsequent infection in the periapical and periodontium may occur. et al, 2017).

Pulp healing usually restores the contents of the canal, including nerve and vascular support. The predictability of this response seems to be strongly related to the size of the apical foramen. A favorable healing of the periodontal ligament depends on the amount of viable cells present on the root surface. If the donor tooth is extracted with minimal damage to the periodontal ligament, healing is likely to be well successful (MACHADOLA, et al, 2016).

Regarding pulp revascularization, in a study by Teixeira (2006), only 15% of transplanted teeth with complete root formation recovered pulp vitality, while this rate was 96% in teeth with incomplete root formation (ACASIGUA, 2017).

CASE REPORT

Patient A.L.S.C.S, 18 years old, female, sought dental care at a private clinic in Guara-DF, complaining of pain in some teeth. During anamnesis, there were no

reports of systemic involvement. After clinical examinations and periapical radiographs, the diagnosis of impossibility of rehabilitation of teeth 16, 26, 36, 37 and 46 was obtained, and it was proposed to perform bilateral dental auto transplantation from tooth 48 to the alveolus of tooth 46, as well as from tooth 38 to the alveolus of tooth 36 (figure 1), in addition to other treatment needs. Prior to the surgery, the procedures were performed in the first consultation: supragingival scaling, bicarbonate jet and prophylaxis; in the second, extraction of teeth: 16, 26, 36, 37 and 46.

On the day of surgery, the prior use of 1g amoxicillin was indicated before surgery. The second technique was used for the extractions and the auto transplants were performed on the same day, without the need to prepare the socket, without storing the tooth in saline solution, semi-rigid fixation with 3.0 silk suture thread in x through the occlusal, with the tooth in the infra position. occlusion. After the surgery, the postoperative recommendations are the traditional ones, with greater attention to absolute rest for 02 days, application of ice to the face in the first 48 hours, avoid physical activity for 07 days, not chewing on the spot for 15 days and care at the time of local hygiene.

The return to the dentist took place after 14 days for radiographic follow-up (figure 2), analysis of the evolution of the case, removal of the semi-rigid fixation and as a method for diagnosing any intercurrent, which, if it occurs, would be treated immediately.

Soon after, the removal of the semi-rigid fixation was released for the introduction of softer foods, in the imminence of the stimulus and the induction of the formation of the periodontal ligament (figure 3). Subsequently, 21 days ago, normal feeding was progressively established.

Immediately, 4 months ago, the patient was evaluated for an evolutionary analysis of the

bilateral auto transplantation, in which the formation of the periodontal ligament can be observed (figure 4) in a satisfactory way.

After 9 years since the beginning of the first consultation, the patient was contacted again by Prof. Me. Mateus Veppone University center UNIEURO-Campus Aguas Claras - DF, being instructed to attend the UNIEURO dental clinic, finalizing the case and proving the success of the autogenous dental transplant from tooth 48 to the alveolus of tooth 46, as well as from 38 to 36(figures 5 to 12).

Therefore, it is possible to prove (figures 7 to 12), the dental rehabilitation from the bilateral dental auto transplantation technique, reaffirming the excellence and effectiveness of a transplant in the functional and aesthetic scope, promoting the reestablishment of the occlusion, masticatory function, maintenance of the architecture bone to, if necessary, perform dental implants.

CONCLUSION

Seen then, with data presented, dental auto transplantation is a theoretically conservative technique, being a treatment option for early tooth loss. Although not common in dental care, it has a high success rate, making it very cost-effective compared to other occlusal and aesthetic rehabilitation treatments in dentistry.

Its success, among the aforementioned factors, has as the main one the viability and integrity of the periodontal ligament.

Because it is a young patient, as in this clinical case, and the limitations related to rehabilitation for this group, bilateral auto transplantation has become a great option, in addition to having a favorable prognosis for the replacement of lost teeth 36 and 46.

We must also emphasize the benefits given to the patient, such as the prevention of atrophy of the alveolar bone, mesialization or distalization of adjacent or antagonist teeth,

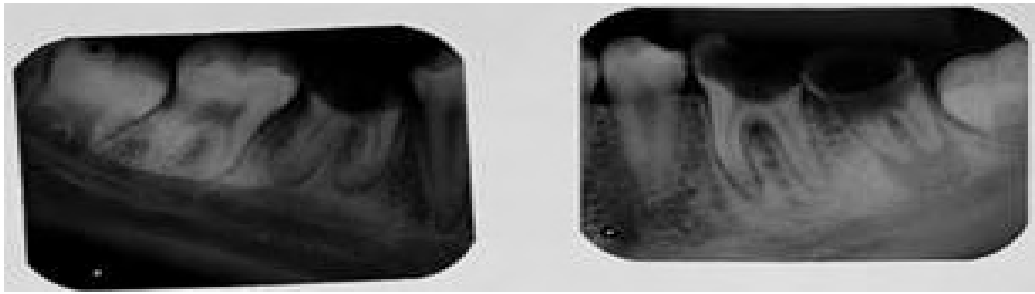


Figure 1. Initial periapical radiographs.

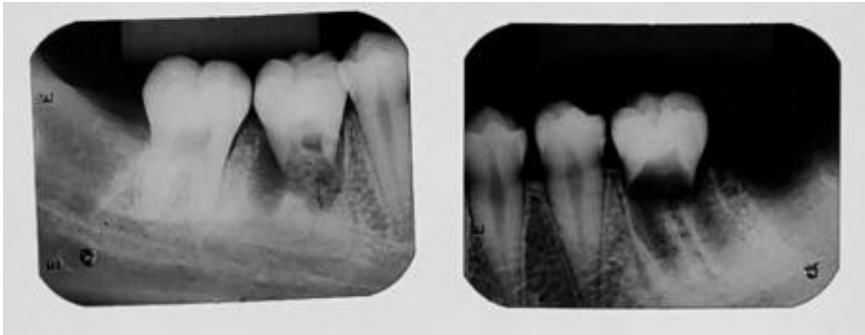


Figure 2. Periapical radiographs after 14 days of auto transplantation.

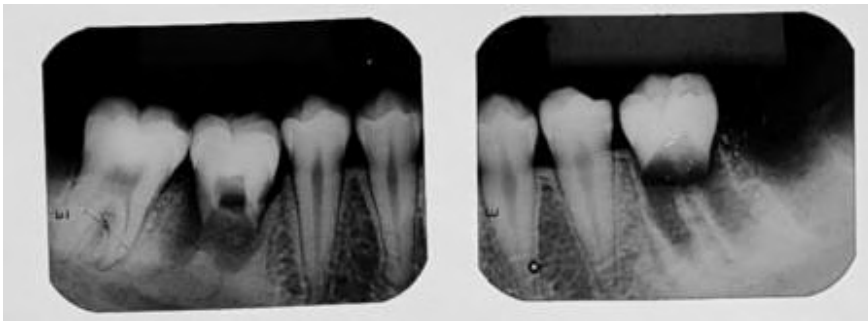


Figure 3. Periapical radiographs 21 days after auto transplantation.



Figure 4. Periapical radiographs 4 months after auto transplant.



Figure 5. Panoramic radiograph 9 years after auto transplantation.

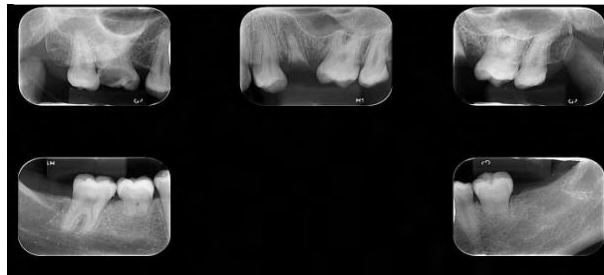


Figure 6. Periapical radiographs 9 years after auto transplantation.



Figure 7. Frontal photograph 9 years after autotransplant.



Figure 8 and 9. Photograph of teeth without occlusion with focus on tooth 48 in socket 46.



Figure 10 and 11. Photograph of teeth without occlusion focusing on tooth 38 in socket 36.



Figure 12. Photograph of auto transplants after 9 years.

malocclusion problems and masticatory dysfunction and the regeneration of periodontal tissue. However, success can be observed through the radiographs and clinical examination previously shown, the recovery of the supporting and supporting periodontium, favoring tooth movement for a future orthodontic treatment.

Therefore, with these successes and advantages that the autogenous transplant offers in relation to other rehabilitation dental treatments, it can be adopted and taken as an alternative treatment mainly for young people, taking into account their specificities and success factors.

REFERENCES

- ACASIGUA, Gerson Arisoly Xavier. Autotransplante dentário: uma revisão da literatura. 2017. Trabalho de Conclusão de Curso (Especialização em Ortodontia). Universidade Federal do Rio Grande do Sul. Porto Alegre, RS, 2017.
- AKHLEF, Yousra; SCHWARTZ, Ole; ANDREASEN, Jens; JENSEN, Simon.
- Autotransplantation of teeth to the anterior maxilla: A systematic review of survival and success, aesthetic presentation and patient-reported outcome. *Dent Traumatol*. V. 34, N. 1, p.20-27, Feb de 2018.
- ÁLVAREZ, et al. Technology at the service of surgery in a new technique of autotransplantation by guided surgery: a case report. *BMC Oral Health*. 07 de abril de 2020.
- ANITUA, et al. Tooth autotransplantation as a pillar for 3 D regeneration of the alveolar process after severe traumatic injury: A case report. *Dental Traumatology*. V. 33, ed 35, p.414-419, Out 2017.
- BALLINAS, Jesús de la Cruz; NÚÑEZ, Paulo César Ramos; OJEDA, Fermín Rodríguez; ESPADAS, Adriana Jácome. Autotrasplante de un tercer molar inmaduro: reportado de caso. *Revista ADM*, v.74 n.2, p.100-106, abril de 2017.
- BRENER, Ilan Vinitzky; SÁNCHEZ, Erica Patricia Weihmann; ROJAS, AnaMartha Aguilar; ANAYA, Edith Peña, Autotrasplante dental. Revisión de la literatura y presentación dos casos. *Revista ADM*, Ciudad de México, México, v. 73, n.4, p.212-217, 2016.

CHOPRA, Viresh; MUNDAL, Harneet; COMERT, Fügen Dagli. Auto Transplantation of a Mandibular Third Molar with Complete Root Development - A Case Report. **Journal of Dental Health, Oral Disorders & Therapy**, v.7, n.3, p.285-289, May/2017.

CONSOLARO, et al. Transplantes dentários autógenos: uma solução paracaso ortodônticos e uma casuística brasileira. **Rev. Dent. Press Ortodon. Ortop. Facial**, Maringá, v.13, n.2, p.23-28, Mar./Abr.2008.

DUARTE, et al. Autotransplante dentário: uma alternativa viável para a reabilitação oral. **Revista Digital da Academia Paraense de Odontologia Belém-PA**, v.1, n.1, p.29-34, maio/2017.

KAMIO, Takashi; KATO, Hiroshi. Autotransplantation of Impacted Third Molar Using 3D Printing Technology: A Case Report. **J-STAGE**, p.193-199, Aug/2019.

LA MACHADO et al. Long-term prognosis of tooth autotransplantation: a systematic review and meta-analysis. **Int J Oral Maxillofac Surg**. V.45, ed. 5, p.610-617, 01 de maio de 2016.

PINTO JÚNIOR, Aécio Abner Campos; COSTA, Savana Márcia Alves; CUNHA, Joanna Farias da; PALMIER, Andrea Clemente. Two-stage technique in third molar autotransplantation: case report. **RGO - Revista Gaúcha de Odontologia**, Campinas/SP-Brasil, v.66, n.1, p.96-100, janeiro 2018.

RESENDE, et al. Transplante dentário autólogo realizado no mesmo paciente em etapas diferentes do seu desenvolvimento. **Rev. Cir. Traumatol. Buco-Maxilo-Fac**. v.17, n.4, p. 12-16, dezembro 2017.

ROHOF et al. Autotransplantation of teeth with incomplete root formation: a systematic review and meta-analysis. **Clinical oral investigations**, v. 22, n. 4, p.1613-1624, março 2018.

SILVA, João António Carvalho da Costa. **Reimplantação dentária**. Dissertação (Mestrado em Medicina Dentária). Faculdade Ciências da Saúde, Universidade Fernando Pessoa. Porto, Portugal, p.74, 2016.

SILVA et al. Transplante Dental Autógeno como Alternativa à Reabilitação Oral. **Ver. ROBRAC**. v.28, n.85, p.73-76, junho 2019.

SOUNG Min Kim; EMMANUEL K. Amponsah, Impacted third molar transplantation on the malpracticed extraction socket. **Gana Medical Journal**, v.51, n. 4, p.200-202, dec. 2017.

SZEMRAJ-FOLMER A; Kuc-Michalska M; Plakwicz P. Patient with asymmetric multiple hypodontia treated with autotransplantation of 2 premolars. **Am J Orthod Dentofacial Orthop**. v. 155, n.1, p.127-134, janeiro 2019.

TOVÍO, Eilien Martinez; VALLE, Samuel-Urbano Del; GAMARRA, Jhonatan García. Autologous Transplant of the Mandibular Third Molar into a Postextraction Tooth Socket. **Case Report Duazary**, Cartagena, Colombia, v.17, n. 4, dezembro 2020.

Yoshino K, Kariya N, Namura D, Noji I, Mitsuhashi K, Kimura H et al. A retrospective survey of autotransplantation of teeth in dental clinics. **Journal of Oral Rehabilitation**. 2012;39(1):37-43.

ZAKERSHAHRAK et al. Autogenous Transplantation for Replacing a Hopeless Tooth | Iranian. **Endodontic Journal**, v.12, n.1, p.124-127, may/2017.

ZUFIA, Juan; ABELLA, Francesc; TREBOL, Ivan; OMEZ, Ramon Meda. Autotransplantation of Mandibular Third Molar with Buccal Cortical Plate to Replace Vertically Fractured Mandibular Second Molar: A Novel, **Technique** JOE. v.75-n9-, p1-5, 2017.