

CASE REPORT

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Prosthetic Rehabilitation of an Eye Globe: Case Report

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ABSTRACT

Introduction: The lack of an eye has an immediate and long-term impact on a patient's life.

Aim: The aim of this study is to show a case of prosthetic rehabilitation of an eyeball. **Case report:** Male patient, 60 years old, sought care at the Oral Oncology Center of the São Paulo State University "Júlio de Mesquita Filho", for the rehabilitation of the orbital cavity with an acrylic eye prosthesis. This prosthesis was made with thermopolymerizable acrylic resin and hand painted iris with oil paint on cardboard. The prosthesis was installed after finishing and polishing and the hygiene and general care instructions were explained. **Conclusion:** In the present case, the patient was satisfied with the aesthetics and comfort of the prosthesis, which demonstrates the success of the treatment.

Keywords: Ocular Prosthesis. Enophthalmos. Glaucoma.

1. INTRODUCTION

Facial aesthetics in daily interpersonal relationships is of paramount importance to an individual (1). A patient's self-judgment can lead to emotional instability, change in personality characteristics, and change in socialization (2). Surgical removal of an eye can result in depression, difficulties in performing any activity, such as driving a vehicle, and aesthetic problems (3).

As the aesthetic and functional demands of these patients are often compromised after surgery, the best way to rehabilitate is making a prosthesis that covers the defect and fills the region (4). Also, rehabilitation with an eye prosthesis may give professional and social acceptance (4)

2. AIM

The aim of this study is to show a case of prosthetic rehabilitation of an eyeball.

3. CASE REPORT

Male patient, 60 years old, sought the service of the Oral Oncology Center of the São Paulo State University "Julio de Mesquita Filho" (COB/UNESP) after the ophthalmic evaluation with a doctor. The patient's main complaint that due to glaucoma had lost his left eye three years ago and had never used an eye prosthesis (Figure 1).

Figure 1. The frontal side of the patient. Note the muscle atrophy in the affected region.

The photographs were authorized by the patient and the protocol for prosthesis confection follow the recommendations described by Goiato et. al. (2013) (5). At the process of two steps impression, the first was with dense addition silicone (Express XT; 3M ESPE, USA) and after insertion of this material into the cavity the patient was instructed to perform the opening and closing movements of the eyes. Then, at the second step, a fluid portion of this material (Express XT; 3M ESPE, USA) was dispensed with an Automix dispenser (DMC, Brazil) into the orbital cavity and around the first mold. Then, the patient was instructed to repeat the opening and closing movements of the eyes, finishing the impression.

The second phase of impression was included in type III stone plaster (Asfer, Brazil) in a metal muffle. After the crystallization, the second mold was removed and the nº1 white acrylic thermo-polymerizable (Classic, Brazil) was added and polymerized following the manufacturer's recommendations. This material was finished with the Tungsten drill (Edenta, Switzerland) and polishing was performed on a lathe (Nova OGP, Brazil) with brushes and pumice, followed by calcium carbonate.

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Figure 1. The frontal side of the patient. Note the muscle atrophy in the affected region.

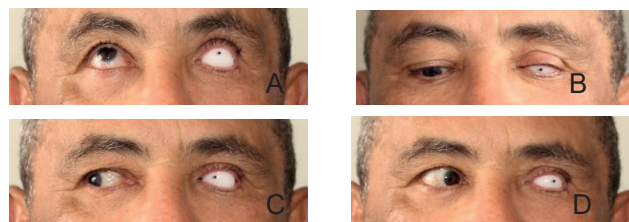


Figure 2. Sclera positioned in the eye socket. Retention test movements: A) Up; B) Low; C) Right; D) Left.

The acrylic sclera has been proved and noted that its volume was insufficient. Then a layer of wax (Wilson–Polidental Ind. and Com. Ltda, Brazil) was added to the surface of the sclera to fill, and the whole set was again tested on the patient. After finding the volume recovery of the region, as well as the functionality of eyelid movements, the sclera was manufactured again.

With the sclera in the orbital cavity, a symmetrical point based on the pupil of the natural (right) eye was marked on the acrylic sclera. This point would correspond to the position of the pupil in the prosthesis (Figure 2).

For characterization, the right eye iris was measured and photos were taken to aid in the painting of the prosthesis. The new acrylic sclera was half covered with silicone (Zetalabor, Zhermack, Italy), and after material hardening, this set was included in the type III plaster (Asfer, Brazil) inside the base of the muffle. After crystallization of the plaster, the other part of the acrylic sclera was encased in silicone, the muffle was closed and the plaster was dispensed inside the muffle to complete this step.

Through the Daniel Mazzo Palaton characterization kit (Dencril, Brazil) and the self-curing monomer (Classic, Brazil) the sclera was painted. The iris was reproduced on 11 mm diameter cardboard paper with oil inks (Gato Preto, Brazil) associated with Cobalt Secant (Gato Preto, Brazil) (6) and stayed at 37°C incubator for one week.

The marked point on the sclera was drilled about 4-5 mm deep (orifice) for reference of the pupil position. With a Maxicut 1251 (Edenta, Switzerland), a plateau was made to position the paper with the iris painting. Before gluing the iris on the sclera, the orifice was sealed with indigo acrylic resin. The iris was glued with cyanoacrylate on the acrylic sclera so that the pupil of the painting was just above the indigo point of the sclera. Subsequently, the sclera was inserted into the muffle and coated with translucent thermopolymerizable acryl-



Figure 3. A) Ocular prosthesis finished. B) Ocular prosthesis in position.

ic resin. Posteriorly, the muffle was closed with 1 ton of load for 40 minutes.

After thermopolymerization, finishing and polishing, the ocular prosthesis was installed and patient evaluated the aesthetics and functional movements with the orbicular muscles. Additionally, the patient was instructed how to place and remove his prosthesis. It was recommended to clean the prosthesis with neutral soap (7) and to remove it to sleep (avoiding mucosal irritation and proliferation of microorganisms) (8). The patient was instructed to return for evaluations every 6 months and to change the prosthesis at most every 2 years (7).

4. DISCUSSION

In the present study, the prosthesis was customized. This type of prosthesis provides better mobility, pressure distribution and better fit in the cavity compared to pre-fabricated prostheses (7). These factors are possible because a personalized eye prosthesis achieves close contact with the tissue, and this can help restore even some natural eye movements without pain or discomfort (7, 9).

The molding technique for making the prosthesis, in this case, does not generate soft tissue irritation when compared to the “wax scleral blank technique”. Additionally, for the molding technique used in this study, there is no need for a syringe, and therefore no patient discomfort, fear, and anxiety is generated, making the molding safer (5). In addition to aesthetics, eye prostheses have the function of preventing possible complications such as ulcers, infections, tissue retraction, severe orbital defects and eyebrow and drooping eyelids (5). In addition, these prostheses restore tear dynamics and help the tear glands partially recover their natural position (7). Goiato et al (2015) (10) found that restoration of the anophthalmic cavity with an ocular prosthesis promotes an increased electrical activity of the orbicularis oculi muscle, restoring some of the muscle tone and motor function to the muscle of the affected area. In the present case, the patient took 3 years to be rehabilitated with an eye prosthesis and it was deprived for a long period of these benefits. Throughout the treatment, the patient was aware of the importance of using this prosthetic modality.

5. CONCLUSION

Rehabilitation of patients with eye prostheses is a challenge for the dentist due to the difficulty of reproducing the aesthetic characteristics of the natural eye. In the present case, the patient was very satisfied with the

aesthetics and comfort of the prosthesis, which demonstrates the success treatment.

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