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DENTAL SCIENCE
Case Report

How to Fabricate an Ocular Prosthesis in an Uncooperative and Indifferent Patient with a Compromised Ocular Tissue Bed

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Abstract

Fabrication of a maxillofacial prosthesis for a congenital or acquired deformity demands a high degree of skill and refinement on the part of prosthodontists. This task becomes more challenging if either the recipient tissue is not well-suited to receive the prosthesis, or the patient is either indifferent to his/her wellness or is firmly convinced that the prosthesis is not going to improve the present condition of his/her appearance or function. This article deals with the method of overcoming such physical and psychological difficulties in fabricating a custom ocular prosthesis in an uncooperative, middle-aged female who showed signs of self-punishment and guilt.

Keywords: *Ocular prosthesis; Maxillofacial prosthesis; Ocular conformer; Custom impression tray; Artificial eye*

Introduction

Numerous reasons for the loss of an eye have been documented in literature, such as congenital anomalies, neoplasms or a penetrating/crushing injury to the ocular tissues, eventually leading to the surgical removal of the defective part [1]. As an eye is one of the most essential organs amongst the seven senses possessed by the humans, its loss causes immense physical and emotional trauma to the patient; making them vulnerable to an unavoidable and negative psychological effect [2].

Vision disability makes a patient susceptible to social stigma, as the patient has to cope with diverse response to the organ-loss like pity and discrimination. Hence early fabrication of prosthesis for an ophthalmic socket after healing is completed is an absolute essential need. A multidisciplinary approach is necessary to provide accurate and effective rehabilitation for the patient. Therefore, the collective efforts of the ophthalmologist and the maxillofacial prosthodontist are crucial for restoring the individual's quality of life [3].

A number of techniques have been used in fabricating artificial eye prostheses. Empirically fitting a stock eye prosthesis, modifying an existing stock eye by making an impression of the ocular defect and the custom eye technique [3] are some of the common ones. A custom acrylic resin eye provides better aesthetics and satisfactory results because an impression establishes the defect contours and the iris, the sclera are fabricated accordingly.

Over a period of time, many techniques have been introduced to achieve optimal fit of ocular prostheses [4]. A few Impression and fitting techniques used in the fabrication of acrylic resin custom ocular prosthesis are -

Impression with Stock Ocular Tray: Allen and Webster were the first to propose this technique. It is also known as 'modified impression method'. Perhaps it's the most common ocular impression technique and it involves a stock ocular tray to help support the impression material. A perforated stock ocular tray has a hollow stem fastened in the middle through which comparatively thinner alginate is injected. Perforations help in flow and retention of the material [5].

Stock Ocular Tray Modifications: The above mentioned technique was modified by many authors. Maloney in 1979 placed 3 channels through the superior edge of his own set of customized stock trays to prevent air entrapment. Engelmeier in 1987 introduced metallic stock trays to permit sterilization and reuse [6]. Sykes., *et al*. [7] advocated the use of plastic impression compound as an ocular tray material, which is used by adapting it around one half of a rubber ball and attaching a hollow tube through it to facilitate the flow of alginate [7].

Impression with Custom Ocular Tray: It was Miller in 1996 who introduced a custom ocular tray for unusual situations. He attached a solid suction rod to the patient's existing prosthesis, conformer, or wax shell followed by investing it in alginate. After the alginate sets, the prosthesis, conformer, or wax is removed and replaced with clear acrylic resin [9].

Impression Using Stock Ocular Prosthesis: In this technique, stock eye is used as a tray to carry impression material. It involves selecting an aesthetic stock eye and reducing its peripheral and posterior aspects. It is then lined with a thin mix of alginate and inserted for the ocular impression [10].

This article deals with the difficult and rare issue of interacting with an indifferent and uncooperative patient; and the challenges faced by the prosthodontist in making a maxillofacial prosthesis on a compromised tissue bed with reduced orbital volume.

Case Report

A 43 year old Asian female presented herself in the post-graduate department of Prosthodontics, Government Dental College, Indore, India, not as a patient but as an attendant to her sister who came for full mouth rehabilitation. She was wearing an ill-fitted and anaesthetic stock ocular prosthesis which hung out of the inferior fornix of the socket (Figure 1).

Figure1: *Existing unaesthetic stock eye prosthesis of the patient.*

When she was approached for ocular rehabilitation for which she refused, stating that she came as an attendant and did not wish to do more harm to her already damaged eye. On reasoning that she would look much better with a custom made ocular prosthesis, she said that 'she did not want to look unnecessarily pretty' and that she has passed a certain age which now requires her to be 'moral and modest'.

Repeated and continuous efforts to convince her were made by the prosthodontist and the patient's sister, after which she consented for the prosthesis, demanding that it should be 'hassle-free'. A detailed case history revealed that she had lost her eye when she was about eight year old due to cholera and did not wear any prosthesis until her marriage ten years later. Patient's medical history was non-contributory.

Visual examination of the ocular tissues of right enucleated socket showed redundant cicatrical tissue which led to fibrous adhesion between lower fornix and inferior tarsus, impinging on the lower palpebral border (Figure 2). This reduced the overall orbital volume,

thereby shrinking the recipient tissue bed and obliterating the lower undercut which aids in retention of the prosthesis (Figure 3). An option of surgical removal of the scar tissue and deepening of the lower palpebral border was suggested to the patient as it would improve the tissue bed. However patient did not want any surgical intervention and did not consent for it.

Figure 2: *Anophthalmic socket with reduced intra-orbital volume.*

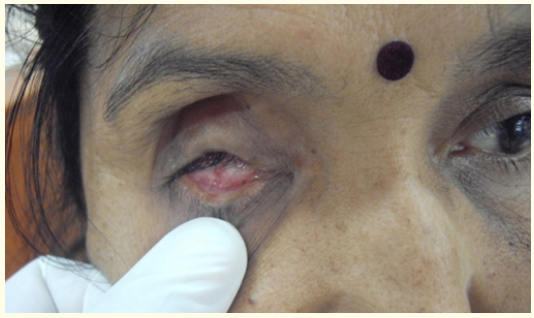

Figure 3: *Cicatrical tissue formation between lower tarsus and inferior fornix.*

Impression of the right eye socket was made by the technique described by Allen and Webster 7, using a stock impression tray and runny alginate*. A two piece mould was poured in dental stone†. Wax conformer was made using modelling wax$^{\Psi}$. The ocular contours were well adjusted after evaluating the eyelid contour both in open and closed position. Particular attention was given to lower border of the conformer as the tissue on which it rested was not appropriate for retention. Proper colour matching was done, taking the reference of the contralateral eye and iris was selected from a pre-available bank of stock eyes (Figure 4).

Wax pattern was then flasked and processed using heat polymerizing acrylic resin$^{\xi}$. Characterization of the sclera was done using floccules of red and blue threads to emulate veins and the bluish tinge of bulbar conjunctiva. Throughout the clinical procedures, patient was quite indifferent and negligent towards the final outcome. She was against any drastic improvement in her appearance as she did not want to look 'unnecessarily pretty' and draw unwanted attention. After continuous efforts were made towards maintaining a pleasant conversational tone with the patient and making her feel at ease, she confided that her spouse had abandoned her, calling her 'handicapped and ugly'. Over the years, this had turned her indifferent to her appearance, believing that she would never look 'normal' or 'pretty'.

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ξDPI Heat-cure, Dental Products of India ltd, India

Figure 4: *Iris placement after adjustment of conformer contours.*

Before insertion of the prosthesis, she was also shown the difference in size and appearance of her existing prosthesis and the one newly made (Figure 5). Final placement of the prosthesis dramatically improved her appearance and she was quite satisfied with improvement of her facial features. In her words, she now looked 'like a normal human being' (Figure 6 and 6.1).

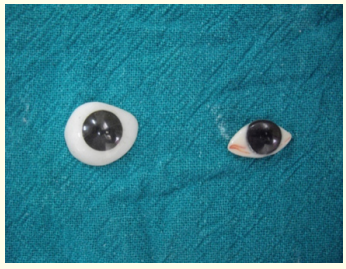

Figure 5: *Difference between size and aesthetics of old and new artificial eyes.*

Figure 6 and 6.1: Front and lateral profile of patient with custom-made ocular prosthesis.

She was also referred for psychiatric evaluation which she agreed to reluctantly. In the next follow-up appointments, she seemed more positive regarding her appearance and behaviour.

Case Discussion

Providing maxillofacial prosthetic treatment for patients with congenital and craniofacial defects should not only be limited to addressing physical and functional deformities. It should also assess the possible psychological effects of such deficiencies. Unfortunately, this aspect of the prosthodontic treatment is often ignored and should be essentially integrated into the prosthetic care [11].

Sometimes, when an individual suffers from a physical trauma that also has psychological undertone, he/she develops a certain attitude towards the causative event which could be dominated by anger, guilt or remorse.

As Freud points out, in patients, the unconscious need for punishment is expressed in forms of self-torment and self-sabotage. It is equated with an unconscious sense of guilt, present in patient's lives without any actual realisation of presence of that guilt. The self-damaging or self-tormenting behaviours are commonly seen in patients, and although initially they may be unconscious of bringing such suffering on themselves, they ultimately realize it when it is pointed out to them. Freud writes that self-punishing behaviour is a manifestation of guilt, particularly unconscious guilt, equating this with the unconscious need for punishment [12].

The concerned patient showed similar signs of guilt and self-punishment as she believed that no prosthesis could make her look better and that her eye-loss was responsible for her broken marriage. She was positive in her mind that her condition is untreatable and that she does not need any further treatment. She firmly refused prosthetic treatment and had to be convinced for her own good.

Although the classification given by House is applicable to complete denture patients, [13] it also helps to understand the attitude a patient adopts towards the treatment. Loss of an eye had affected the patient's nature and attitude towards her well-being and social presentation. This patient can be classified as 'indifferent' because she did not have any desire to restore her aesthetic appearance.

Especially in maxillofacial prosthetic cases, it is critical that each patient should have an active involvement in the clinical procedures and should have an idea of the treatment outcome. This increases the probability of not only the acceptance but also the regular usage of the prosthesis by the patient. In this case, though the patient had least involvement regarding the procedure, prosthodontist nevertheless kept herself engaged in the whole procedure and she was explained the significance of every step which eventually helped build a feeling of mutual trust and respect to some extent and generated a positive attitude in the patient.

Therefore, a successful maxillofacial treatment not only improves a patient's appearance at a physical level, it also has a long-standing positive effect on the psychological level. It can bring about a change in the thought process of the patient, leading to an overall rehabilitation of a distraught patient.

Conclusion

This article describes the maxillofacial rehabilitation of an indifferent patient with a compromised tissue bed of enucleated right eye socket without ant surgical intervention. In such cases, a prosthodontist's role is not just to rehabilitate a 'physical defect', but also strive to build a positive interpersonal relationship with the patient within the confines of professionalism. A broad perspective adopted by the clinician not only helps the patient with overall physical and mental rehabilitation, it also provides a sense of satisfaction to the clinician.

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