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EDITORIAL



## Quality of life living with ocular prosthesis

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### 1. Introduction

The absence of ocular content may be congenital [1] or acquired due to surgical removal which can be indicated in several cases such as traumas [2–4], cancer, blind painful eye, microphthalmos, endophthalmitis, and suprachoroidal hemorrhage [3]. The ocular defects can be corrected by prostheses which have many functions such as restore the esthetic, prevent eyelid deformation, protect the anophthalmic cavity, orientate the lacrimal flux, and avoid its accumulation in this cavity [5]. Furthermore, the ocular prosthetic rehabilitation is associated to psychosocial improvement, once the prostheses are able to influence positively the interpersonal relations [6,7], which leads to a positive impact on the quality of life.

The aim of this literature review was to report the etiology of ocular bulb loss, the types of ocular prosthesis, and their impact on quality of life as well as the post-rehabilitation care.

### 2. Etiology of ocular defects

Anophthalmia and microphthalmia are defined, respectively, as the absence of ocular tissue within the orbit and as smaller eyes that general population mean size [8] and they can affect one or both eyes [9].

The etiology of congenital ocular defects is still unknown, but there are studies that suggest hereditary and environmental causes such as genetic mutations [8], maternal nutritional deficiency, mainly Vitamin A [10], and maternal infections during pregnancy [11].

The acquired ocular defects may be caused by three types of surgery: evisceration, which is the removal of ocular bulb internal content keeping the bulb in the orbit; enucleation, which is the removal of whole ocular bulb keeping the adjacent structures in the orbit; and, lastly, the exenteration that is defined as removal of whole content, eyelid, and posterior coverage of epidermal tissue with a graft [12]. The literature points the enucleation as most frequent type among these surgeries, but the elected one varies according to the problem etiology, and trauma is the most frequent indication for the cited surgeries [12]. Coas et al. (2005) found higher predominance for ocular bulb loss in individuals who were 20–40 years old in their study and these authors

attributed this predominance to the fact that individuals in that age range are more often exposed to situation that might lead to ocular loss [12].

### 3. Prostheses, quality of life, and post-rehabilitation care

Attempts of aesthetic recovery after ocular loss have happened since ancient times, once there are references of different materials use since Egypt, Aztec, Roman, and Inca civilizations [12]. Currently, the materials used for fabrication of ocular prostheses are cryolite glass and, mainly, polymethyl methacrylate (acrylic resin) [13]. Besides these two materials, silicone is also used in prostheses that cover facial portions [14], that is, oculopalpebral prostheses. Ocular prostheses must be fabricated individually [15], with materials that allow a correct molding of the cavity, which results in correct prosthesis adaptation and comfort to the patient [7], and they should be finished with materials that offer good dimensional stability so that good retention, protection to the remaining tissues, and pleasant esthetic along the use can be achieved [14]. On the other hand, temporary prostheses can also be installed in patients soon after their surgery, when there is tolerance, aiming to improve the appearance [16]. The immediate prostheses seem not to affect the wound closure, neither the quality of the subsequent permanent prostheses [16].

Besides the manual fabrication cited earlier, the professional can also use modern techniques, such as computer-aided design and computer-aided manufacturing and rapid prototype modeling, aiming the fabrication of 3D printed customized prostheses [17]. This technique substitutes the molding phase aiming to decrease the errors cause by impression material and to save clinical time [17].

The absence of ocular content makes the periorbital musculature hypofunctional and individually fabricated, and well-adapted ocular prostheses help to recover the muscular tonus of orbicularis oculi muscle, once these prostheses allow a good adaptation in the cavity and on the muscle, improving its mobility [18]. Besides this physiological improvement, satisfactory prostheses also cause impact on emotional aspects

since patients become depressed after ocular content loss and feel better with the prosthetic restauration due to improvement in appearance [7].

The eyes are the most noticeable structure on the face [19] and their loss causes a psychological fragility of patients [4]. Shame, embarrassment, preoccupation to hide, insecurity, and fear are reported as significant feelings after surgery [7]. Ahm, Lee and Yoon, (2010) affirm that eye removal causes such devastating effect in the patient that some of them develop anthropobia, which is the fear of meeting new people or new environments [20]. The same authors studied the presence of anxiety and depression in anophthalmic individuals and in individuals with both health eyes and they found worse results to those who suffered ocular losses [20]. They affirm that the patients' negative feeling regarding interpersonal relationships causes physical and mental stress that result in emotional instability [20]. It is important to mention that anxiety represents a risk to the health and consequently to the quality of life, since anxious individuals seem to be more subject to report worse health conditions, pain, limitation for daily activities, limitation for physical and mental health, problems with vitality and sleep, as well as higher tendency to consume tobacco, alcoholism, sedentarism, and obesity [21].

Goiato et al. (2013) found in their study that ocular prosthesis cause positive influence in the patients' personal relations and that this fact can be associated to the psychological improvement along with prosthesis use [7]. Therefore, it is possible to affirm that prosthetic restauration had a fundamental role in the patients' personal identity recovery and their reintegration in the society [6]. A way to reduce the psychological impact caused by ocular loss is by shortening the interval between the surgery and rehabilitation [16].

After the prosthetic rehabilitation, the patients face the challenge of maintenance and care of their prosthesis. The artificial eyes must be washed twice/three times per day with clean water [22], removed during the night sleep [19], and the patient must return to have a professional checkup for every six months [19] in order to polish the prostheses, which will prevent protein and bacterial accumulation on the prostheses surface [19]. Song, Oh and Baek (2006) found in their study that the majority of patients did not know how to disinfect their prostheses, what demonstrates a failure of professionals in their orientation to the patients [23]. The same authors also affirm that the patients should be well-oriented about how to handle and clean their prostheses to reduce the incidence of conjunctivitis [23].

#### 4. Conclusion

Ocular defects may be congenital or acquired and can cause negative psychological impact that reflects directly on the quality of life. Ocular prostheses work as an instrument to recover the patients' self-confidence and allow improvements in their social convenience. Specific cares are necessary for prosthesis maintenance and reminiscent tissue health.

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#### Declaration of interest

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