

## Profile of Custom Ocular Prosthesis Users in a Tertiary Eye Care Centre in Nepal

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### Abstract

**Objective:** To analyze the profile of custom ocular prosthesis users in Nepal.

**Methodology:** This was a retrospective study done at Drishti Eye Care System, Nepal from January 2019 to June 2019. One eyed subject who used custom prosthesis for minimum of 6 months or above of any age group were recruited in the study. Information regarding laterality, cause of loss of eye, reason for opting ocular prosthesis and source of information regarding ocular prostheses were collected from the participants. A set of questions were asked to the participants through telephonic interview after the duration of 3 to 6 months wear of ocular prosthesis to collect information on any symptoms after the wear.

**Results:** Mean age of subjects in the study was  $31.35 \pm 16.59$  years (range 1.5 years – 78 years), 46.7% (n=14) were male and 53.3% (n=16) were female. Trauma was the most common cause of loss of the eye in 43.3% (n=13), followed by congenital loss and eye infections in 16.7% (n=5). 43.3% (n=13) of the subjects had lost their right eye and 56.7% (n=17) subjects had lost their left eye. 33.3% (n=10) of the subjects didn't have any symptoms with the use of prosthesis. Milder form of symptoms like small appearance, mild discharge and pain were major complaints after the wear.

**Conclusion:** There is a need of best prosthetic rehabilitation for the anophthalmic patients.

**Keywords:** Ocular prosthesis, Enucleation, Evisceration, Artificial eye, Anophthalmos

### Introduction

The ocular prosthesis, also known as 'prosthetic eye' or 'artificial eye', is a type of craniofacial prosthesis that occupies the anterior part of an anophthalmic socket and is designed to restore a lost eye due to trauma, congenital anomaly, irreparable damage, tumors or sympathetic ophthalmia and others [1].

An ocular prosthesis is readymade (stock ocular prosthesis) or can be custom made. Stock prosthesis come in standard sizes, shapes and colors. They are especially use for temporary purposes (2) whereas custom-made prosthesis have better mobility, more even pressure distribution, improved fit, comfort adaptation, facial contours and enhanced aesthetics gained from the control over the size of the iris, pupil and colour of the sclera [2-4]. The presence of prosthesis retains the shape of the socket, preventing collapse of the fornices and loss of shape of the lids. This in turn provides proper muscular actions of the lids, helps to retain proper position of the tear ducts, prevents accumulation of fluids in the cavity, protects the socket from foreign bodies and by all these aids, a prosthesis conserves the normal facial expression since the muscle of the face find their

roots near the orbit [5,6]. Also in the eviscerated eye, a custom ocular prosthesis achieves intimate contact with the tissue bed and helps in restoring natural eye movements without pain or discomfort which is a drawback in stock prosthesis [7].

The main problem, the ocular prosthesis user complains is the restricted movement of ocular prosthesis. Although research suggests that adjusting to life with an ocular prosthesis can happen within the first 6 months for about 40% of patients this can take 2 years or more. Many of the patients are satisfied by the outcomes obtained from custom ocular prosthesis cosmetically but few of them have still facing difficulty psychosocially. Despite the disfiguring nature and difficult management of such conditions, the psychological consequences of living with an ocular prosthesis are poorly understood [8].

Prosthesis user complains of watering, discharge and discomfort with the regular use of prosthesis. These discomforts are due to irregular surface, sharp edges and deposits over the prosthesis. The remedies for these problems are how good standard polish is given

to the surfaces of prosthesis [9].

In a view of the greater number of patients who suffer from eyeball loss and considering the need for treatment that re-establish esthetics and psychological health, this study aims to determine the profile of customized ocular prosthesis users in Nepal.

### Methodology

A retrospective study was conducted at Drishti Eye Care Center, Nepal from January 2019 to June 2019. All the subjects who underwent fabrication of customized ocular prosthesis were included in the study. A total of 30 subjects were included in the study. Demographic characteristics, cause for the loss of eye, laterality of lost eye, reason for opting prosthesis and the source of information for the Customized ocular prosthesis (COP) was recorded from the Hospital Electronic Medical Record. Additionally, a telephonic

interview was performed with all these 30 subjects who have used the prosthesis for at least 6 months of time. A set of questions were asked to the subjects. Data were entered and analyzed with SPSS 21 version.

1. How comfortable is the prosthesis?
2. What was the main issues after first using the prosthesis?
3. Any symptomatic issues with the use of ocular prosthesis?

### Results

Mean age of subjects in the study was  $31.35 \pm 16.59$  years (range: 1.50 years – 78 years). 46.7% (n=14) were male and 53.3% (n=16) were female. Trauma was the most common cause for the loss of eye in 43.3% (n=13) of the subjects, followed by lost since birth and some infections in the eye in 16.7% (n=5) of the subjects. Other causes are shown in Figure 1.

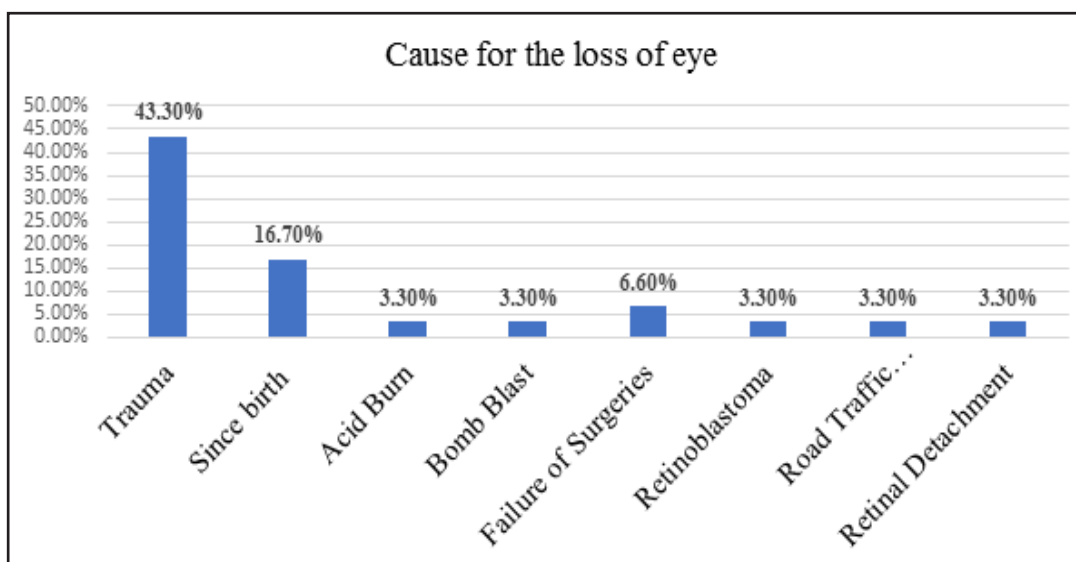


Figure 1: Bar diagram showing cause for loss of the eye

When the laterality was considered, 43.3% (n=13) of the subjects had lost their right eye and 56.7% (n=17) subjects had lost their left eye. 73.3% (n=22) of the subjects didn't had any surgeries before. Evisceration was performed in 20% (n=6) of the subjects. Enucleation was performed in 3.3% (n=1) of the subjects and retinal surgery was performed in 3.3% (n=1) of the subjects. Out of all 30 subjects included in the study, only 13.3% (n=4) had previous history of wearing the prosthesis.

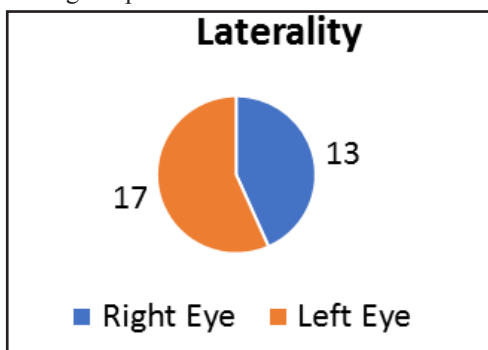


Figure 2: Pie chart showing laterality of the affected eye

Regarding, the source of information regarding the customized oc-

ular prosthesis at Drishti Eye Centre, 40% (n=12) had got the information from the website, 33.3% (n=10) subjects were referred from other hospitals, 16.7% (n=5) subjects were referred from other branches of Drishti Eye Care System, 6.7% (n=2) subjects were referred from patients previously wearing prosthesis and 3.3% (n=1) subjects had got the information regarding customized ocular prosthesis from electronic medium.

Most i.e. 33.3% (n=10) of the subjects hadn't any symptomatic issues with the use of prosthesis. 26.7% (n=8) subjects had discharge, 26.7% (n=8) cases had small appearance of the eyes and mild pain in 6.7% (n=2) of the subjects.

### Discussion

Loss of the eye can occur at almost any age. In the current study the age range was from 1.5 years to 78 years. The best time for fitting a custom-made prosthesis varies from person to person, but 8 weeks post-operative is generally accepted [10]. Anophthalmic children need to be treated in two stages to recover orbital and palpebral symmetry. Firstly, the treatment should be initiated using expander device to prevent other disorders in orbital region. Then, the manufacturing of ocular prosthesis offers the child a normal appearance [11]. The management of the pediatric anophthalmic

socket is distinguished from adult anophthalmia because normal socket and facial development is dependent on orbital growth [12]. The primary purpose of treatment of pediatric patients is stimulating growth, to get enough palpebral and conjunctival tissue or supporting the future ocular prosthesis which restores the orbital volume, promoting socket and facial development [13].

In our study the main reason for the loss of eye was trauma followed by eye infections in the childhood. This observation signifies the level of hygiene and negligence of health on the part of the patients. Ocular injury is very common in underprivileged and developing countries. Of all the children with trauma, 12.3% of the subjects had monocular blindness [14]. The disease like trachoma, Vitamin A deficiency were the most common cause of corneal blindness according to Nepal Blindness Survey in 1981 [15]. The long-term impact of these disease has been loss of the eye and corneal opacity. Custom-made prosthesis is useful for proper cosmesis in these conditions for the restoration of normal cosmesis of eye.

The findings of the present study revealed a predominance of left eye over the right eye. These findings is in accordance with the previous studies which also found that left side was more involved [16]. But the findings were not statistically significant due to which they concluded that the side involved didn't not seem to be an important issue.

In the current study only 13.2% of the subjects had previous history of using the prosthesis. Although our study couldn't find the time lag between eye loss and rehabilitation, this was found to be up to more than 10 years in majority of the subjects (60%) [17]. This finding is probably attributed to the fact that people from the rural background have low awareness about prosthetic rehabilitation. Knowledge and awareness about ocular prostheses among general population can bring this time lag down.

After loss of vision, the main concern of patients is to rehabilitate the appearance of eyeball. The custom ocular prosthesis plays very important role to rehabilitate the normal appearance of eyeball especially in kids helps for normal orbital growth and prevents socket contracture [18]. Sometimes it is done along with orbital surgery like evisceration and enucleation for more attractive appearance and comfort ability with prosthesis [19].

All the subjects were asked to wear prosthesis all throughout the time. The recommended use of an ocular prosthesis is 24 hrs a day [20]. This is generally not removed at night (except for patients with very specific problems) because this can cause lids to fold and inflame the conjunctiva or lacrimal fluid to accumulate at the bottom of the cavity, favoring infection [21]. There is no current consensus on the precise care needs for prosthetic eyes in terms of cleanliness and handling [22]. The main complaints of the subjects in our study wearing custom-made prosthesis were mild discharge and mild pain and small appearance of eyeball. Eye sockets vary greatly in sensitivity in as much as some patients can literally tolerate anything while others react promptly to the slightest pressure or irritation. In the majority of cases, the discomfort is due to directly to the prosthesis [6]. The final outcome of the prosthesis depends upon two factors: firstly the volumetrics of the prosthesis and secondly the artistry (colour match) to the contralateral eye.

The volumetrics depend on several factors including implant size, prosthesis size, and contracted socket [23]. These factors may be the reason for subjects complaining of small appearance of eyes after the customized prosthesis. Many patients with ocular prosthesis report varying degrees of ocular discomfort such as discharge, dryness, irritation and sticky sensation [24]. Infection of anophthalmic socket, glutinous surface deposits and roughened prosthesis are mechanisms that have proposed for the development of ocular discomfort in prosthetic eye wearers [25].

### Conclusion

There is a need of best prosthetic rehabilitation for the anophthalmic patients. Proper awareness and knowledge regarding the usefulness of custom-made prosthesis is necessary to restore the cosmesis of the face. Adequate knowledge regarding handling the prosthesis may prevent the possible complications. A better and hygienic prostheses not only beautify the patient but also increase his/her self-confidence and hence productivity.

**Financial Interest:** The authors declare that they don't have any financial interest with this publication.

**Conflict of Interest:** The authors declare that they have no competing interest. All authors have agreed to authorship and order of authorship for this manuscript.

### Few Happy patient by using Customized ocular prosthesis



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