OCULAR PROSTHESIS FITTING IN A NIGERIAN TERTIARY HOSPITAL: A 5 YEAR REVIEW

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ABSTRACT

Background: *Ocular prosthesis (OP) plays an important role in reducing the psychological trauma of eye removal. It helps in restoring self confidence in the patient, prevent eyelid deformation, and orientate the lacrimal flux. OP is usually inserted between 6-8 weeks post-operatively following evisceration and enucleation. This study is set to report our experience on the use of ocular prosthesis vis-à-vis indications and common complications associated.*

Method: *All 77 patients who had destructive ocular surgeries and ocular prosthesis fitted within the 5 year study period in our hospital were reviewed. Information obtained from the patients' folders include socio-demographics characteristics and indication for OP fitting, type of destructive ocular surgery done and complication following ocular prosthesis insertion.*

Results: *Seventy-seven patients had destructive ocular surgeries and ocular prosthesis inserted within the study period. The mean age of the patients was 38.7 (SD ± 28.9) and their ages ranged from 1year- 90years. More than half (57.1%) were male, 28.6% were farmers while, 20.8% were full-time housewives.*

Endophthalmitis (37.7%) and anterior staphyloma (31.2%) were the main indications for destructive ocular surgery that required OP insertion.

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Seventy-four evisceration was performed within the study period, while 72 of the patients had ocular implant inserted during the primary surgery. Forty-four OPs were fitted into the left eye using stock type of ocular prosthesis.

Conclusion: *Endophthalmitis and anterior staphyloma were the main indications for destructive ocular surgery which necessitated OP fitting. Evisceration was a major surgical technique used, and the stock shell ocular prostheses were mostly implanted*

Key Words: *Destructive eye surgery, eye clinic, Kebbi State, ocular prosthesis.*

INTRODUCTION

The need to remove an eye or other orbital contents is always a difficult decision to come to term with by patients, but ocular prosthesis (OP) also called artificial eye plays an important role in reducing the patient's psychological trauma associated with eye removal. Ocular prosthesis is made from cryolite glass or poly-methyl methacrylate (PMMA)[1]. OP can either be custom-made or stock (readymade). However, the custom-made gives better cosmetic appearance because of similarity to the normal eye in terms of iris colour, size and blood vessels. OP helps in restoring self confidence in the patient, prevent eyelid deformation, orientate the lacrimal flux and hence prevent fluid accumulation in the anophthalmic socket[2].

The need for an ocular prosthetic device knows no boundaries as the population that can be affected by ocular conditions requiring eye removal and ocular prosthesis fitting is not a function of age, sex or race

The three main surgical techniques used in the removal of the eye are evisceration and enucleation, which are the most common, as well as exenteration which is the least common. Evisceration is the removal of the contents of the globe while, leaving the sclera and extraocular muscles intact. Enucleation is the removal of the eye from the orbit while, preserving all the other orbital structures, and exenteration is the removal of the globe as well as the soft tissues of the orbit (connective tissue, fat, and muscles).

OP is usually fitted between 6-8 weeks post-operatively following evisceration and enucleation[3]. However, the early fitting from 5-12 days have been reported to give a better result[4-5].

OP fitting following orbital implant gives better result in terms of artificial eye movement and gives a better cosmetic effect than non-orbital implant surgery[6]. OP is usually produced and fitted by Ocularist. However in the absence of Ocularist, OP (stock) can be inserted by any trained eye care worker. As at the time of this study, there are 2 Ocularist in Nigeria.

Ocular prosthesis is associated with some complications such as giant papillary conjunctivitis, persistence eye discharge, post anophthalmic socket syndrome, dry eye, and lagophthalmos[6]. Hence, it is important for Ocularist and Ophthalmologist to do proper anophthalmic socket assessment before insertion, educating patient on maintenance, cleaning and post insertion prescription of tear substitute to prevent the above complications.

There is paucity of work on ocular prosthesis in Nigeria, partly due to dearth of personnel and material resources, hence the reason for the conduct of this research.

METHOD

This was a 5 year retrospective study carried out between 1st January 2016 - 31st December 2020 in the Ophthalmology department of the Federal Medical Centre, Birnin Kebbi, Kebbi State, Nigeria. Federal Medical Centre, Birnin-Kebbi is the only tertiary hospital in Kebbi State which serves the populace and the surrounding States (Sokoto, Zamfara, Kaduna and Niger) and countries (Benin and Niger Republics)[7].

Ethical approval for the study was gotten from Ethical Research Committee of Federal Medical Centre, Birnin Kebbi.

All the patients' folders were retrieved through medical record department of the hospital. The information extracted from the patient's folders included socio-demographic characteristics (age, sex, occupation, level of education, tribe and religion). Others information retrieved were indications for ocular prosthesis fitting, type of destructive ocular surgery done, laterality of the eye, time of ocular prosthesis insertion, ocular prosthesis used (custom or stock), whether orbital implant was used during destructive ocular surgery (evisceration and enucleation) and complication following ocular prosthesis insertion.

All the eviscerations and enucleation surgeries were performed with primary or non-orbital implant by either unit consultant or residents doctors under local or general anaesthesia depending on the age of the patient.

Data obtained were analysed using SPSS version 21 software (SPSS Inc., Chicago, IL, USA). Frequency tables were generated for relevant variables and represented with charts

RESULTS

Seventy-seven patients had destructive ocular surgeries and ocular prosthesis inserted during the 5 years study periods. There were 44 (57.1%) males and 33 (42.9%) females, with male to female ratio of 1.3:1.

The mean age of the patients was 38.7±28.9 years and their ages ranged from 1year- 90years. More than half (57.2%) of the patients were aged 40 years and below. The other socio-demographic characteristics of the patients were as summarized in Table 1

Table 1: Socio-demographic characteristics of the patients

Socio-demographics characteristics	Frequency	%
Age (years)		
1-20	24	31.1
20-40	20	26.0
41-60	17	22.1
>60	16	20.8
Gender		
Male	44	57.1
Female	33	42.9
Occupation		

Farmer	22	28.6
Full time house wife	16	20.8
Student	11	14.3
Retired civil servant	2	2.6
Civil servant	6	7.8
Child(dependents)	10	13.0
Artisan	9	11.7
Driver	1	1.3
Tribe		
Hausa	68	88.3
Igbo	1	1.3
Fulani	4	5.2
Other	4	5;2
Religion		
Islam	73	94.8
Christian	4	5.2
Marital status		
Married	52	67.5
Single	8	10.4
Widower	2	2.6
Child	15	19.5

*Others (Tiv, Ijaw , Baruba, Igalla)

Endophthalmitis 29 (37.7%) and anterior staphyloma 24 (31.2%) were the main indications for the destructive ocular surgeries that necessitated ocular prosthesis fitting (figure 1).

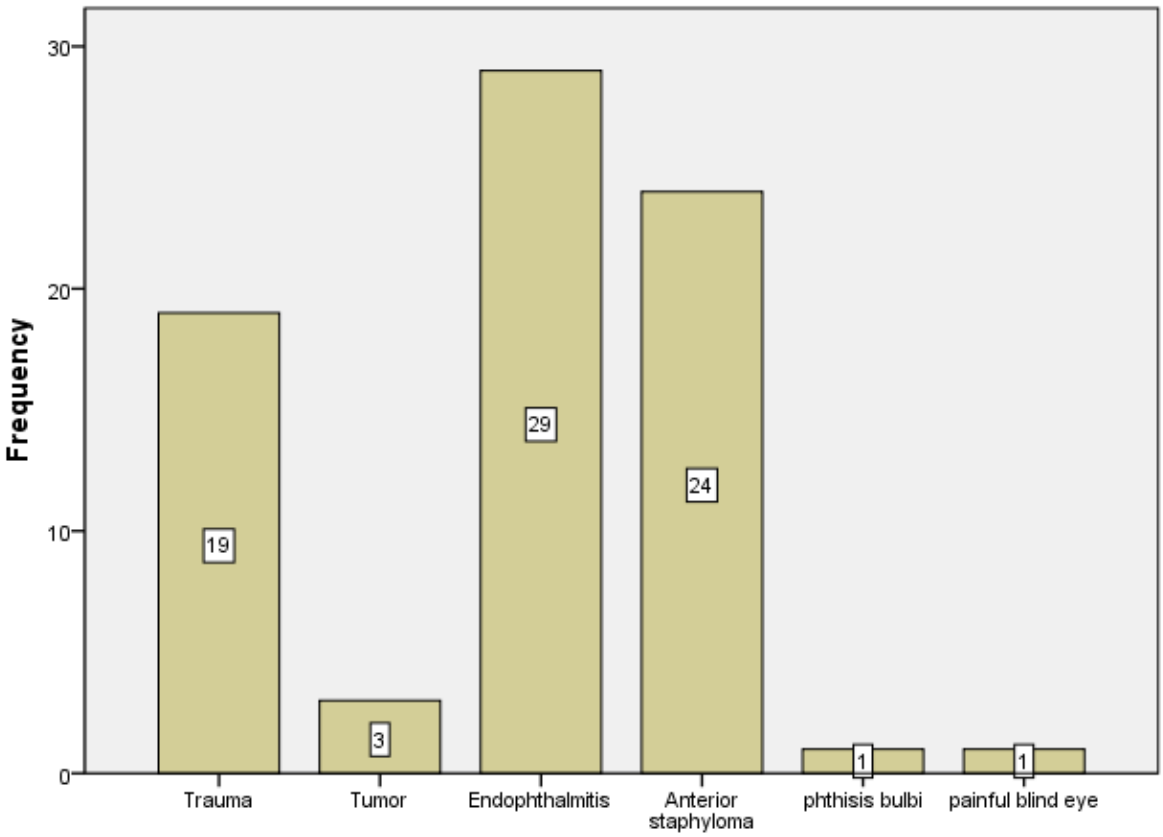

Figure 1: Indication for ocular prosthesis fitting

Evisceration 74 (96.1%) was the main destructive ocular surgeries performed within the study periods (figure 2).

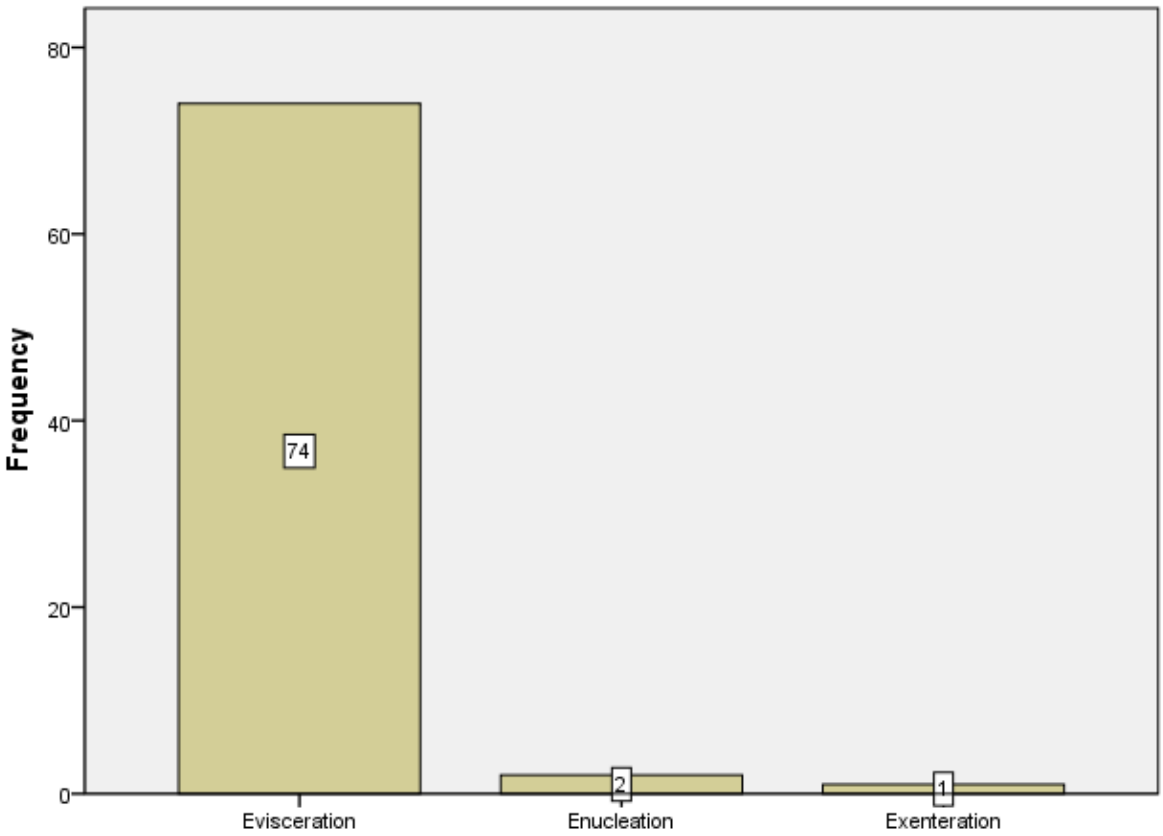

Figure 2:Type of destructive ocular surgery done

Artificial eye (ocular prosthesis) were mainly inserted into the left eye, 44 (figure 3),

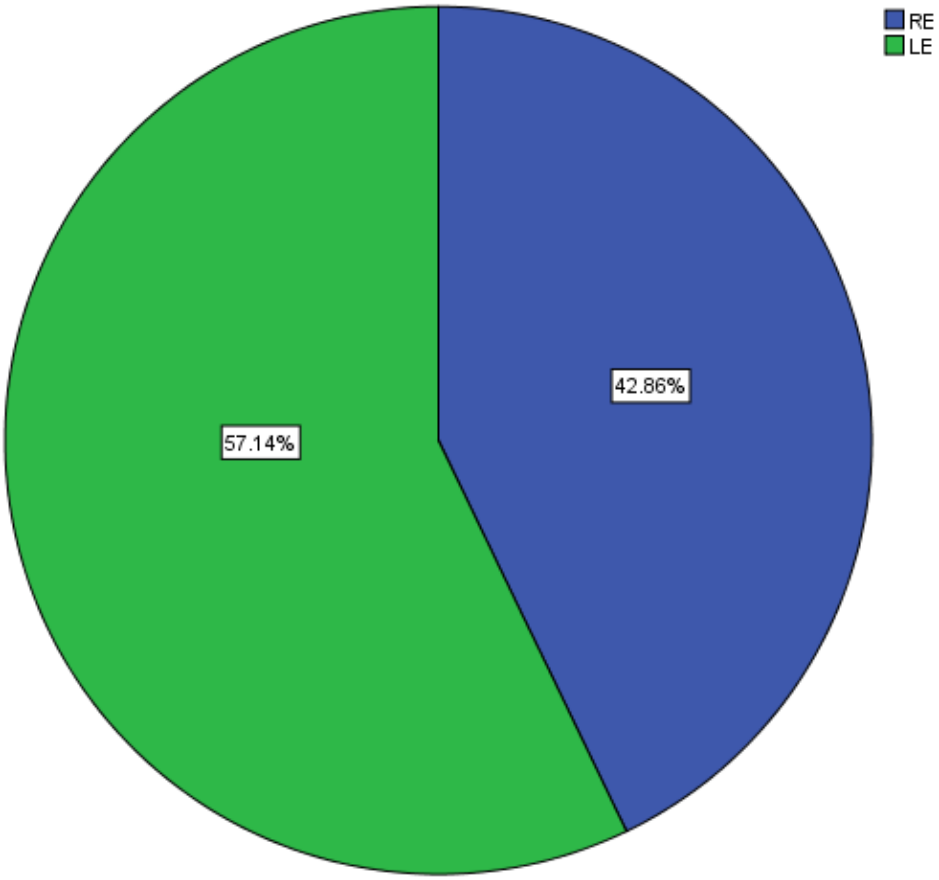

Figure 3: Laterality of the eye with Ocular prosthesis

Using stock shell (ready-made) type of ocular prosthesis at 8 weeks in all the 76 patients (figure 4).

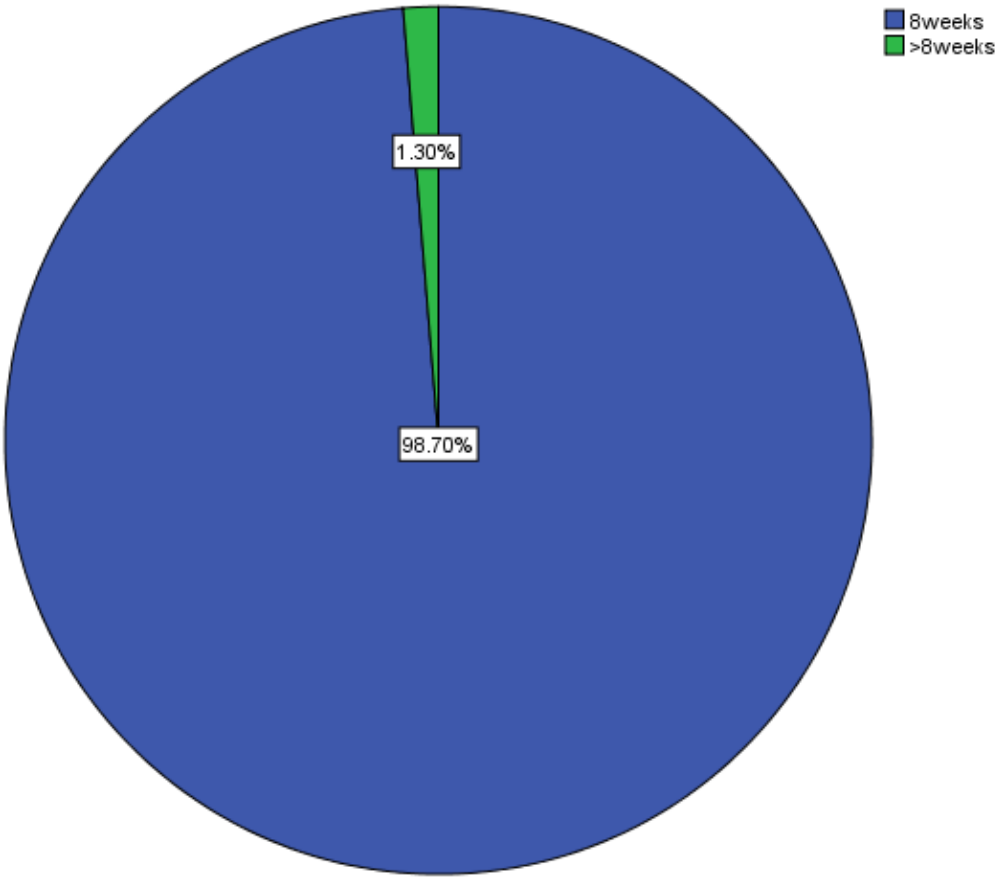

Figure 4: Ocular prosthesis inserted

Most 72 (93.5%) of the patients had ocular implant inserted during the primary surgery (figure 5).

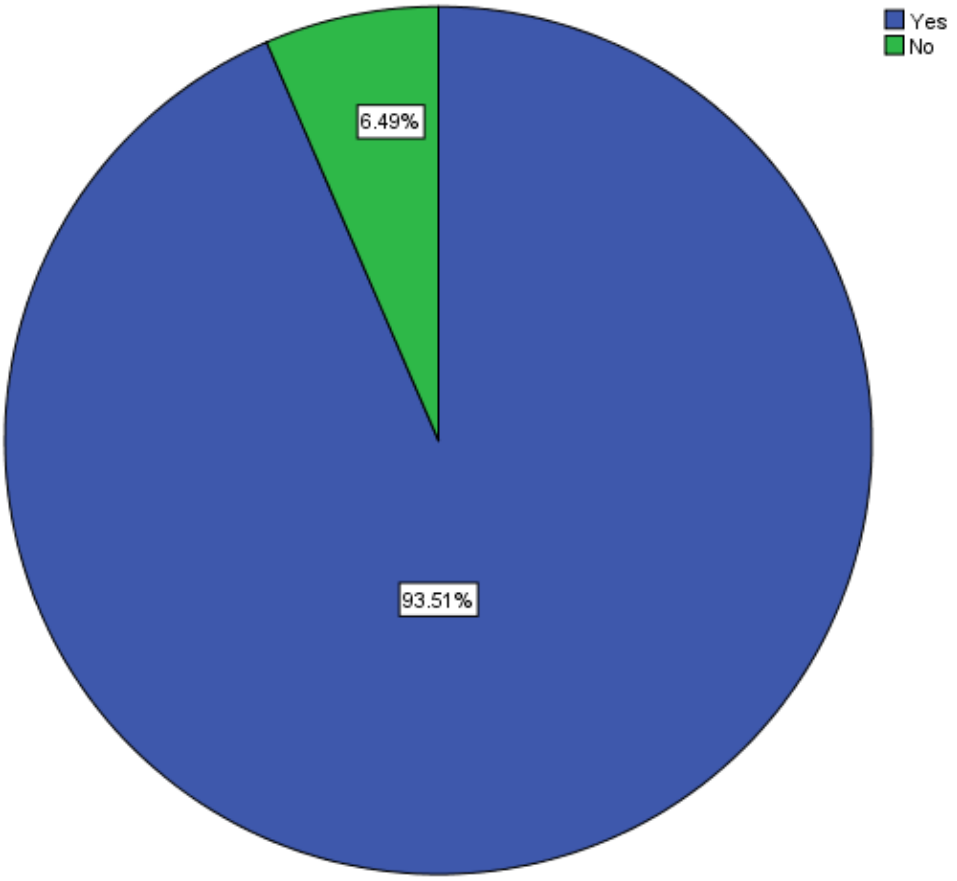

figure 5: Ocular implant used during destructive ocular surgery

Majority 72 (93.5 %) had no complication following ocular prosthesis insertion (figure 6).

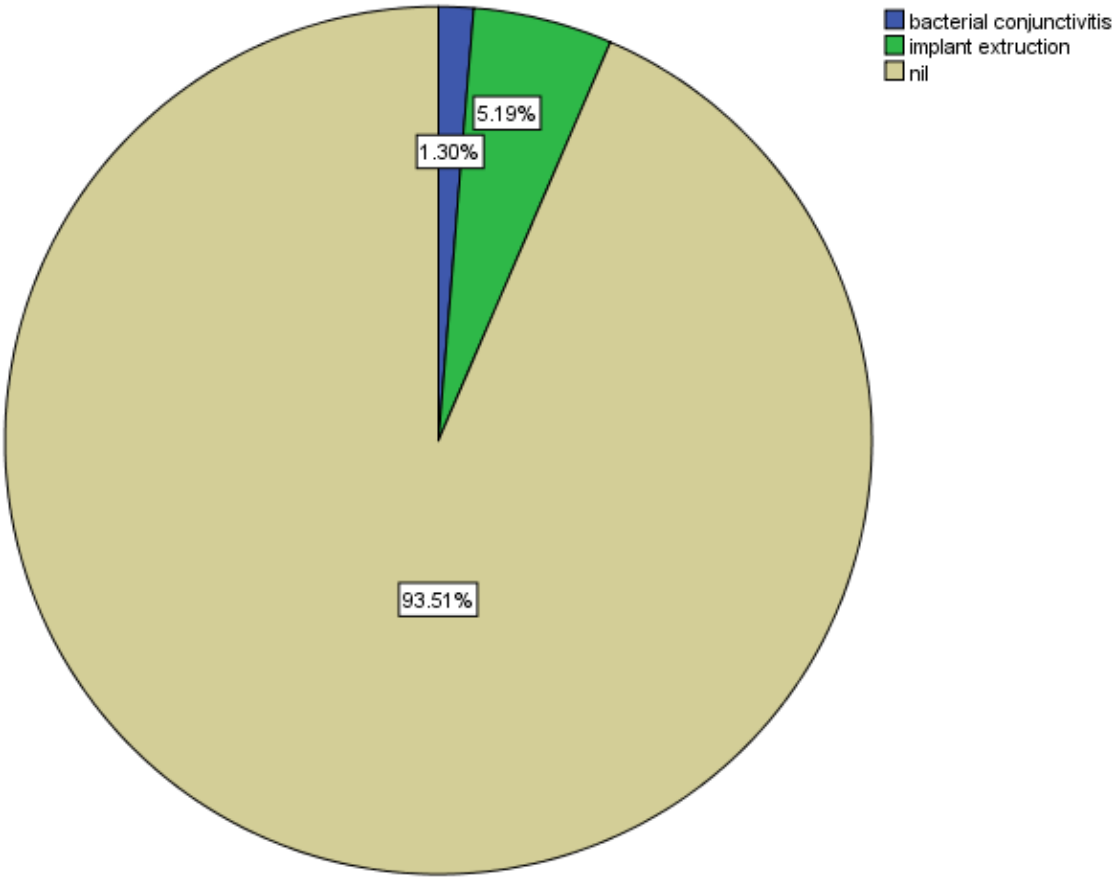

figure 6: Complication following ocular prosthesis insertion

DISCUSSION

In this study, more males underwent eye removal which necessitated ocular prosthesis fitting. This is similar to the observations in previous studies[8-11]. The possible reason for this may be the nature of men's job and the propensity for risky behaviours, which exposed them to ocular diseases. This may also account for a better acceptability of the destructive ocular surgery by males.

The mean age of participants in this study was 38.7 which is slightly higher than 32 reported by Naji *et al*[9].

Majority of the patients in this study were farmers similar to the findings of Malu *et al*. in Nigeria[11]. This may explain the reason why endophthalmitis was the major indication for eye removal necessitating ocular prosthesis fitting. They are more at risk of eye infections because of the less sophisticated farming techniques still in use in Nigeria.

Indications for eye removal necessitating ocular prosthesis fitting were mainly endophthalmitis, anterior staphyloma and trauma. This is in contrast to the observation of Raizada *et al*[12] in a three year retrospectives study who reported retinoblastoma, anterior staphyloma, and ocular inflammation. In this study, congenital eye condition was not reported as an indication for eye removal compared to previous studies from India[12-13] and China[14] where congenital eye condition was reported as the third reason for destructive ocular surgery and OP fitting. The difference might be because of lower incidence of congenital eye anomaly, lack of awareness about the availability of destructive ocular surgery by the public and also non acceptability of eye removal by child's parent or guidance.

In the current study, most of the OP were inserted into the left eye similar to what was reported by Danya *et al*[8] from Middle East study and Naji *et al*[9]. In our study evisceration was the main ocular destructive surgery performed, similar to previous studies[8-11]. The fact that evisceration is an easier procedure to do with reduced operation time compared to enucleation could be contributory to its preference.

Five patients refused orbital implant because of religious beliefs despite detailed explanation of the benefits, like the cosmetic and better ocular motility with implant, to them. Hence there is need for more awareness campaign on the important of ocular implant among the populace by the eye care providers in the State. Almost all the patients had OP insertion at 8 weeks, which is in agreement with previous study[3] while only one patient had OP inserted at 9weeks because of financial constraint in paying for the insertion.

Only 6.5% of the patients who had OP fitting in this study developed complication. This is low when compared to the documentation in other studies (15-16). However, it is worthy of note that the follow up period for majority of the patients was short as majority were lost to follow up.

CONCLUSION

Endophthalmitis and anterior staphyloma were the main indications for destructive ocular surgery necessitating OP fitting. Evisceration was the most commonly performed destructive eye surgery and stock shell type of ocular prosthesis were mainly used in this study with few complications recorded. Therefore, OP fitting is highly recommended following destructive eye surgeries especially evisceration and enucleation.

Ethical Conformity

Ethical approval for the study was gotten from Ethical Research Committee of Federal Medical Centre, Birnin Kebbi.

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