ENSIGN COLLEGE OF PUBLIC HEALTH

KPONG- EASTERN REGION, GHANA

A REVIEW OF EYE REMOVAL (EVISCERATION) AT OUR LADY OF GRACE HOSPITAL BREMAN ASIKUMA CENTRAL REGION, GHANA 2012-2016

BY

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DECLARATION AND CERTIFICATION

I hereby declare that this thesis is the result of our own original work and that all works consulted have been dully acknowledged. No part of this work had been presented in parts or whole for another degree in any other Institution.

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DEDICATION

To my beloved wife, Dorine Annick Mireille Famboka, for her love, indefectible support and encouragement to embark in this programme at Ensign College of Public Health during this difficult time of my life.

To my children Jael, Johnny, Jennifer and James Youfegan for sacrifices and adjustments made while I was time to time away from you.

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ABSTRACT

Introduction: The World Health Organisation (WHO) - supported VISION 2020 is a global initiative that aims to eliminate avoidable blindness by the year 2020. To reduce and possibly eliminate the need to undertake evisceration in Ghana, there is the need to understand the causes of eviscerations. The Our Lady of Grace Hospital in the Asikuma–Odoben-Brakwa District of the Central Region of Ghana has for many years provided specialised eye care services. This study is a five-year review of eviscerations undertaken at this facility.

Methodology: Using a standard tool, data was extracted from the records of patients who had undergone eviscerations at the hospital between January 2012 and December 2016. Data extracted included demographic records, the circumstances of eye injury and the indications for evisceration. Supplementary information was obtained from theatre logbooks. In-depth telephone and face-to-face interviews were conducted with nine patients with readily-available contact information. Data analysis was largely descriptive.

Result: Eighty-one cases of eviscerations were conducted. This represented a rate of 27 per 1,000 eye surgeries at the facility. The mean age of patients was 50 years (range 50 to 59). The highest proportion of patients were 60 years and above. Right (51%) and left (49%) eyes were eviscerated in nearly equal proportion. The occupations of the majority of patients were farmers/fishers (55.6%) and trading (19.8%). The trauma-related indications for evisceration were stick/vegetal materials, stick eye injury and assault. The non-trauma-related indications for evisceration were endophthalmitis (45%) and ulcerative keratitis (27%). The underlining factor in most cases was occupation and most (55.6%) cases presented in complicated conditions.

Conclusion: Late reporting to health facility and involvement of aged people in manual unprotected farm activities are common underlying causes of evisceration. Public education to encourage early reporting is needed. The aged should be discouraged from engaging in unprotected manual farm-related activities.

LIST OF ABBREVIATION

AOB	Asikuma-Odoben-Brakwa
DHMT	District Health Management Team
NHIS	National Health Insurance Scheme
OLGH	Our Lady of Grace Hospital
WHO	World Health Organization

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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the study

Vision is defined as the act or power of sensing with the eyes; sight. It is the process or function of seeing specifically the physical sense by which light stimuli received by eye are interpreted by the brain and constructed into a representation of the position, shape, brightness, and usually colour of objects in space (Merriam-Webster Dictionary, 11th Ed. 2003).

The eye is probably the most amazing and complex structure in the body. The two eyes provide about half the total sensory input from the entire body into the brain. Unfortunately, numerous diseases called "tropical" or "neglected" diseases affect eyes and can lead to infection of this important organ (Sanford-Smith, 2004). Hot and humid climates are favourable to growth and multiplication of bacteria, fungi and other micro-organisms. Diseases may be spread by insects and other carriers of disease found in the tropics. Most hot countries are poor and poverty causes poor hygiene and poor nutrition. Low level of literacy, ignorance and use of traditional medicine or/and self-medication are all contributing factors to eye infections that lead to eye removal.

In an ophthalmology practice where the goal is "to do everything to enhance vision," the last resort, eye removal, may seem imbued with a subtext of professional failure, an unspoken feeling that "we could have done something" (Sandford-Smith, 2004). Unseen, this feeling is heartfelt by many clinicians and is viewed as the end of a struggle. In fact, treatment continues, usually with a healthier patient. Amid psychological and medical reasoning, the strengths of, and advances in evisceration technique in the past two decades have increased its use in surgical removals. Even when each patient receives a "clear explanation" of alternatives with their loved ones, some may

refuse to sign consent to the “complete removal of the eye.” In these instances, “removal of the diseased part of the eye, while keeping the covering,” may be accepted or imagined more easily. Once secured, the evisceration technique still has options. The decision to remove an eye is one of the most difficult by an ophthalmologist who is supposed to preserve the vision and improve eye health; it is even more difficult for the patient and relatives to accept. (Okoye et al., 2013).

There are mainly three (3) surgical techniques of eye removal: evisceration, enucleation and exenteration.

Evisceration is the removal of the eye's contents, leaving the scleral shell and extraocular muscles intact. The procedure is usually performed to reduce pain or improve cosmesis in a blind eye, as in the case of endophthalmitis unresponsive to antibiotics. An ocular prosthesis can be fitted over the eviscerated eye in order to improve cosmesis. Either general or local anesthetics may be used during eviscerations, with antibiotics and anti-inflammatory agents given (Sanford-Smith, 2004).

Enucleation is the removal of the entire globe from the orbit while preserving all other orbital structures. The optic nerve is detachted from eyeball. This technique is usually for intra ocular tumors or malignancies (Sanford-Smith, 2004).

Exenteration is the removal of all of the orbital tissues including the eye ball. It is destructive procedure performed in attempt to save life. It is mostly undertaken to treat malignant eye diseases (Sanford-Smith, 2004).

1.2 Statement of problem

Despite the Vision 2020 programme - the right to sight initiative launched in 1999 by WHO to eliminate avoidable blindness, more than 80% of all the diseases which can cause avoidable blindness are still found in some individual developing countries and disparity exist even within one country (http://www.who.int/blindness/partnerships/vision2020/en/).

Among these diseases are those which affect the cornea such as keratitis due to infection, trauma and self-medication such as use of traditional medicines. The condition could worsen when the patients arrive very late at the facilities and had tried self-medication without success or gone to a prayer camp before visiting eye care professionals. Consequently, when the patient presents at the facility with a painful blind eye, with melted cornea and endophthalmitis, there is no other option than to remove the eye surgically (evisceration) to stop spreading of the infection and to protect the fellow's eye from getting sympathetic ophthalmia (Pham, 2008).

Recently, it is realized in various eye clinics that, the number of eye removals through evisceration technique is on the rise, although most of them can be avoided. Eye removal has been increasing, which has necessitated the researcher to conduct a research study on the impact of evisceration on patients reporting at the facility.

1.3 Justification

The researcher wished to determine the indications for eye removal. Consequently, the clinical evidence or presentations that led to evisceration are ascertained. There has been no study done in Our Lady of Grace Hospital on eye removal since the establishment of the eye clinic. This study will be used as a database for further studies and a basis for advocacy and also for health services planning. It will also help in the determination of circumstances that lead to eye conditions and their subsequent removal.

1.4 Objectives of the study

The main objective is to study the impact of evisceration on patients reporting to Our Lady of Grace Hospital in the Asikuma-Odoben-Brakwa District of the Central Region of Ghana.

Specific objectives

i. To determine the prevalence of eye removal in Our Lady of Grace Hospital, Breman Asikuma.
ii. To evaluate the socio-demographic characteristics of affected patients.
iii. To describe the indications for eye removal
iv. To describe the clinical presentation that lead to eye removal.
v. To evaluate the effects of Evisceration on the affected patients.

1.5 Research questions

i. What is the prevalence of eye removal by evisceration technique in Our Lady of Grace Hospital?
ii. What are the socio- demographic characteristics of eviscerated patients?
iii. What are the indicators for eye removal by evisceration technique in Our Lady of Grace Hospital?
iv. What are the clinical presentations that lead to eye removal by evisceration?
v. How lives of the eviscerated patients are affected?

1.6 Significance of the study

The findings of this research will be used by the various stakeholders such as the District Health Directorate, including District Health Management Team, other non-governmental organizations

to plan appropriate intervention strategies to help identify areas where these problems are coming from and find immediate solution.

It will also serve as a baseline data for future studies, thus motivate other researchers to carry out advance studies in the area. This would help identify diverse factors on eye removal and research in other parts of the country will enhance the generalizability of the findings of the study.

1.7 Scope of the study

Though there are other techniques in eye removal, the scope of this research focused on eyes removed by evisceration method due to unavailability of data on the other two techniques. After probing further for the reasons why data on other methods were unavailable, it was found out that there were inadequate logistics, equipment and human resources to undertake those methods.

1.8 Organization of the study

The study is structured to provide a critical review of relevant information regarding evisceration. The study comprises of six chapters and it is presented as follows:

Chapter One: Dealt with the introduction, giving the background to the study along with the statement of the problem. The chapter also outlined the research objectives together with the research questions, research scope, limitations, delimitation, significance, and organization of the study.

Chapter Two reviewed related literature regarding evisceration as well as the eye as a whole.

Chapter Three presents the research methodology and focused on research design, the study population and area, sampling and data collection activities, and data analysis methods.

Chapter Four presents the results, which was subsequently interpreted and analyzed in relation to the research objectives and questions, and discussion of findings of the study.

Chapter Five discusses the findings of the result.

Chapter Six draws conclusions and also makes recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter addresses the theoretical orientation underlying the present study and provides a review of related literature that contributes to the conceptualization of the study. The goal of this chapter is to provide the necessary literature background to the study. The history of evisceration, a brief anatomy, physiology and pathology of the eye that may lead to an eye removal are presented in this section.

2.1 Overview of eye

The eye is a very complex and detailed organ. The collective function of the non-retinal parts of the eye is to keep a focused, clear image of the outside world anchored on the two retinas. Each eye is positioned in its socket by the six small extraocular muscles.

The eye is a highly-specialized organ of photoreception for processing light energy from the environment to produce action potentials in specialized nerve cells, which subsequently relayed to the optic nerve and then to the brain where the information is processed and consciously appreciated as vision (Sandford-Smith, 2004).

The eyeball is located in the anterior portion of the orbit and attached by the extraocular muscles and tenon's capsule. The eyelids protect the eye from trauma, dryness, and too much light. The secretory system (the lacrimal gland and the tarsal gland) for the delivery of the tears and the excretory system for disposal of the tears (Figure 2.1).

In order to perform this basic physiological process, the other structures (cornea, lens, iris, ciliary body) in the eye are necessary parts of the system for focusing and transmitting the light onto the

retina and for nourishing and supporting the tissues of the eye (the choroid, aqueous outflow system, and lacrimal apparatus).

The eyeball is made up of two spheres joined at the limbus (junction of the cornea and sclera). The cornea is the smaller anterior sphere with radium of 7.8 mm, and the sclera is a larger posterior sphere with a radius of 17 mm. The anterior-posterior diameter (visual axis) of the eye ball is about 24 mm. (op.cit.)

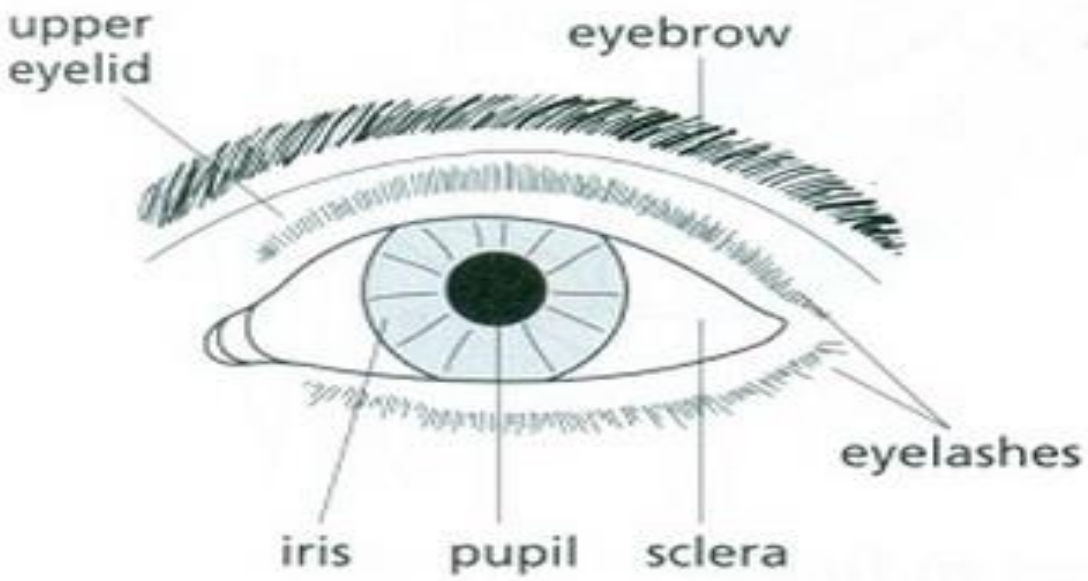


Figure 2. 1:Sketch of a normal external Eye

Source: Researcher's Sketch, 2016.

2.1.1 Anatomy of the Eye

Its structure or anatomy and how it works (physiology) can be divided into several parts:

- The eyeball itself and its connections to the brain by the optic nerve.
- The eyelids, conjunctiva and lacrimal or tear system which together protect the eye.

- The extraocular muscles and the orbit.
- The blood and nerve supply to all the eye structures.

The eyeball consists of three layers of tissue; the outer layer or protective layer, the middle layer of blood vessels, pigment cells and muscle fibres and the inner light-sensitive layer called retina (Figure 2.2).

i. The outer layer- the sclera and cornea

The outer layer is tough and thick, and is made of collagen fibres. Most of this layer (1/5) is opaque and is called the sclera which means tough. The anterior part is transparent, and allows light to enter the eye. This transparent "window" is called cornea. The cornea itself consists of three layers which are: the surface epithelium, the inert stroma and the endothelium. The anatomical integrity of the cornea is important for good vision and any wound of the cornea need early and correct treatment to avoid evisceration.

ii. The middle-layer- the iris, ciliary body and choroid

The middle layer appears black, soft and round like a grape. This middle layer is called the uvea which means grape in Latin and consists of three parts: the iris, the ciliary body and the choroid. All three parts contain many pigment cells which absorb the light, and have a very good blood supply, mainly the choroid. The iris and ciliary body also contain smooth muscle fibres that are controlled by the autonomic or involuntary nervous system. The middle layer is richly vascularised and provides nutriment and oxygen to the retina. Infection from the outer layer, specially the cornea can easily reach the middle layer which can spread it through vessels.

iii. The inner layer- the retina

The retina is the light sensitive membrane at the back of the eye. The cells of the retina are specialized and have a very complex arrangement. The rods are more sensitive in dim light, and these are found in the periphery of the retina. The cones are more sensitive in bright light, and these are found towards the centre of the retina. The very centre of the retina is called macula which contains closely packed cone cells.

The lens and the vitreous body: The lens consists of closely packed transparent cells enclosed in a capsule. It is attached to the fibres of the suspensory ligament. The lens and the cornea together focus the light on the retina. Four-fifths of the focusing power of the eye comes from the cornea and only one-fifth from the lens. Behind the lens is the vitreous body which is an inert, transparent jelly that fills most of the eye.

The visual pathways: The visual pathways connect the optic nerve with the part of the brain concerned with vision. This is the occipital part of the cerebral cortex.

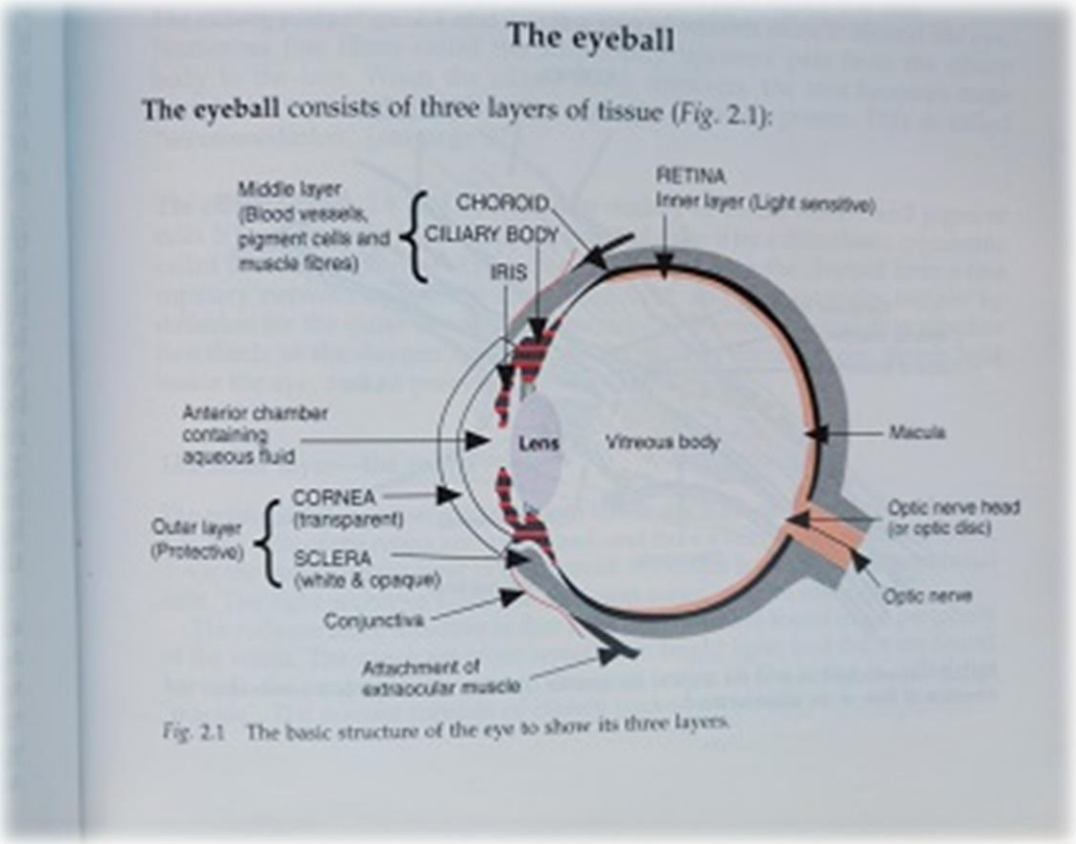


Figure 2. 2:Structure of the eyeball

Source: Sanford-Smith, 2004.

2.2 Concept of eye removal

Removal of the eye may be necessary after several ocular traumas, to control pain in a blind eye, to treat some intraocular malignancy, in severe eye infections that are unresponsive to medical therapy, and for cosmetic improvement of disfigured eye. (Migliori M. E, 2002)

There are three mainly procedures for eye removal, which are; Evisceration, Enucleration and Exenteration.

Evisceration

Evisceration is the complete evacuation of the intraocular contents preserving the sclera shell and extraocular appendages. It was first described by James Bear in 1817 as a technique utilized after an expulsive haemorrhage during iridectomy. Noyes and mules added to this technique in the late 19th century when describing this approach to treat ocular infection and first reporting the replacement of an orbital implant respectively.

It is the removal of the eye's contents, leaving the scleral shell and extraocular muscles intact. The procedure is usually performed to reduce pain or improve cosmesis in a blind eye, as in the case of endophthalmitis unresponsive to antibiotics. An ocular prosthetic can be fitted over the eviscerated eye in order to improve cosmesis. Either general or local anesthetics may be used during eviscerations, with antibiotics and anti-inflammatory agents injected intravenously.

Enucleation

Enucleation is the removal of the globe from the orbit.it is the removal of the entire globe from the orbit while preserving all other orbital structures. The optic nerve is detached from eyeball. This technique is usually for intra ocular tumor or malignancy.

Exenteration

Exenteration is the removal of the globe including all or part of orbital soft tissue. It is the radical procedure that involves removal of all of the orbital tissues including the eye ball. It is a destructive procedure performed in attempt to save life. It is mostly undertaken to treat malignant eye diseases. However, the study considered eye removal by Evisceration method

Figure 2. 3:Pictorial view of eviscerated eye on the left eye

Source: Fieldwork, 2016.

Figure 2. 4:Pictorial view of eviscerated eye on the right eye

Source: Fieldwork, 2016.

2.3 Indications for eye removal

The eye is a very sensitive organ. The integrity of the eyeball is critical to overall good health. Where this is compromised, removal of the eye may be needed to save life. Here are some of the conditions that can lead to eye removal:

- Endophthalmitis and panophthalmitis which is partial or total infection of the eyeball respectively.
- Trauma.

- Gonococci Conjunctivitis.
- Cancers: Retinoblastoma, rhabdomyosarcoma, squamous cells carcinoma.
- Painful blind eye.
- Disfigured eye.

Gyasi in 2009 did a study on causes and incidence of destructive surgeries in Northern Ghana and found that the most common causes of evisceration were endophthalmitis or panophthalmitis which represent 47.9%.

A study done in Cameroon on indications of surgical removal of the eye in rural areas (total N=253) by Giles Kagmeni (2014), found that 67.19% (n = 170) of participants were farmers and lived in rural zones. In all, 79.05% (n = 200) confessed to have tried a medication before the presentation. Surgical indications included infective causes (perforated corneal ulcer 33.20% (n = 84) and endophthalmitis 18.20% (n = 46)), trauma 17.40% (n = 44), painful blind eyes 11.50% (n = 29), malignancy 10.70% (n = 27), and others 9.10% (n = 23).

Again, Rasmussen (2010) in a study on phantom eye syndrome and quality of life reported that approximately 23% of all eye amputated experience phantom pain for several years after the surgery. Phantom pain was reported to be of three different qualities: (i) cutting, penetrating, gnawing or oppressive (*n* = 19); (ii) radiating, zapping or shooting (*n* = 8); (iii) superficial burning or stinging (*n* = 5); or a mixture of these different pain qualities (*n* = 7). The median intensity on a visual analogue scale, ranging from 0 to 100, was 36 [range: 1–89]. One-third of the patients experienced phantom pain every day. Chilliness, windy weather and psychological stress/fatigue were the most commonly reported triggers for pain. Factors associated with phantom pain were: ophthalmic pain before eye amputation, the presence of implant and a patient reported high degree

of conjunctival secretion. A common reason for eye amputation is the presence of a painful blind eye. However, one third of these patients continue to have pain after the eye amputation. Refer to appendix C for pictures of some conditions that lead to evisceration in Our Lady of Grace Hospital:

2.4 Impact of eye removal

Ocular trauma has an impact on the healthcare system and also the wider economy due to time off work. Negrel and Thylefors reported that worldwide 1.6 million people are blind secondary to ocular injuries, 2.3 million with low visual acuity bilaterally and 19 million with unilateral blindness or low vision. (Negrel and Thylefors, 1998)

The impact of an eye amputation is considerable. Patients with amputated eyes have poorer health related quality of life, poorer self-rated health and more perceived stress than does the general population. The largest differences in health-related quality of life between the patients with eye amputated and the general population were related to limitations due to emotional problems and mental health. Patients with the indication of painful blind eye are having lower scores in all aspects of health-related quality of life and perceived stress than patients with the indication of neoplasm and trauma. The percentage of patients with eye amputated who had divorced or separated was twice as high as in the general population. Furthermore, 25% retired or changed to part-time jobs due to eye disease and 39.5% stopped participating in leisure activities due to their eye amputation.

Around 29,000 eye injuries occur in Australia annually. Hospital admissions are not a complete record of prevalence and risk factors for ocular trauma because mild to moderate injuries such as corneal foreign bodies and corneal abrasions are not included as they are treated as an out-patient. However, nearly all severe and blinding injuries can be captured by using hospital admission data.

Not only is the trauma often preventable but appropriate management of injuries can have a significant reduction on the burden of the visual impairment. (Archana Pandita, 2012).

2.5 Effectiveness of eye removal

Evisceration relieves pain. Total post-operative pain (as compared to pre - operative pain or immediate post-op pain) with evisceration has been shown to be both lower in intensity and with a shorter duration. It has been reported that, complete pain relief is achieved in all patients at average time of quarter of a year. (Shadah-Desai et al., 2000).

2.6 Surgical technique for eye removal

The pre-operative evaluation is performed to ensure there is no intraocular malignancy in the operative eye when planning an evisceration. In our setup, all cases suspect of malignancy are referred to tertiary centre in Accra at Korle-Bu Teaching Hospital, where enucleation and exenteration can be done. The laterality of the eviscerated eye must be carefully confirmed prior to initiation. In adult, generally we performed evisceration under local anaesthesia. Retrobulbar administration of anaesthetics with epinephrine is often given to reduce intraoperative bleeding and postoperative pain. The patient is appropriately prepared and draped in a sterile manner, and an eyelid speculum is placed.

A 360-degree conjunctival peritomy is then made at the limbus before utilizing Wescott scissors to undermine the conjunctiva and Tenon's capsule in a careful anterior dissection. A full-thickness incision is then made at the limbus so that scissors may be introduced to excise the cornea in a circumferential manner. All intraocular contents, including uveal tract, crystalline lens, vitreous humor, and retina are then removed. Techniques for removing the intraocular contents include use of an evisceration spoon, spatula, suction, or other instruments. The anterior sclera, Tenon's

capsule, and conjunctiva are then carefully closed in a layered approach before placement of a conformer. Perioperative antibiotics are administered and are especially important in cases of evisceration in the setting of endophthalmitis. The duration of antibiotic therapy usually range from 10 days to several weeks, depending on the nature of the infection.

A pressure patch may be applied and kept in place for approximately 48 hours following surgery. The patient is asked to come for prosthesis fitting 6-8 weeks following surgery. Refer to appendix B on the pictures for surgical techniques on eye removal.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter presents the extracts and the methods that were used to analyze the data in this thesis. The chapter is in two parts. That is, the method for collecting the data, which describes the population studied, the study design and the rational for the design, the sampling method used and the size of the sample, measurement and other procedures employed in collecting the data and the nature of the data. Tables and figures were used to support the analysis.

3.1 Study design

3.1.1 Study type

A review of cases of eye removal at a district hospital in the Central Region of Ghana from January 2012 to December 2016. A retrospective records review was undertaken. The review was followed up with in depth interviews on 9 patients who had eye removed through evisceration at the hospital during the period. Thus, both quantitative and qualitative methods were used in this study (mixed design method).

3.1.2 Study location

Our Lady of Grace Catholic Hospital located at Breman Asikuma was established as a clinic in the mid-1940s, by Our Lady of Apostles (OLA) sisters. In 1953, the clinic was converted into a hospital. In 1972, the daily management of the hospital was handed over to the present Spanish congregation, “Sisters of Charity of St. Anne”. On the 8th of February 2002, the Catholic Archbishop of Cape Coast at that time, His Eminence Peter Cardinal Kojo Appiah Turkson christened the hospital as Our Lady of Grace Hospita”. It is among the 5 Catholic hospitals in the

Cape Coast Catholic Archdiocese. The hospital is currently under the supervision of His Grace, Most Rev. Matthias Kobina Nketsiah, Archbishop of Cape Coast Diocese.

It is a 130-bed hospital that serves as the district hospital and the only such facility in the AOB District.

The hospital is the focal point in health care delivery system in the district. It is well acclaimed both locally and internationally for its painstaking devotion to the provision of ophthalmic services in the catchment area of the hospital, and other parts of the country.

The hospital had annual outpatient attendance of 100,073 over the past 5 years. About 20% (23,731) were patients with eye related conditions. The eye clinic in Our Lady of Grace Hospital in 2016 provided surgeries of 611 of the total 19,858 eye cases, in which evisceration of the eye was found to be part.

The eye clinic receives and treats patients who are referred from the surrounding districts and the whole region and even beyond because of the great strides in eye care provision for over 60 years in the country. The eye clinic is run by one ophthalmologist, two ophthalmic nurses, one optometrist and an optician. The facility is also getting support from partnership with British and German specialist doctors, and other international NGOs also visit the facility, conduct surgeries and support the clinic with instruments and consumables.

Over 80% of patients use the National Health Insurance (NHIS) to pay for services and drugs, whiles the remaining pay out of pocket.

Eye removals, mainly evisceration services, have been available in the hospital over the past 20 years.

The majority of people in the district are subsistence farmers. Farm related injuries are common. Literacy levels are also generally low.

The top 10 causes of OPD morbidity in the hospital are presented in table 3.1.

Table 3. 1: Top ten causes of morbidity for 2016, OLGH

Cause of morbidity	Number of cases
Malaria	15,614
Hypertension	5,919
Eye infections	5,551
Diabetes mellitus	4,015
Cataract	3,698
Diarrhea diseases	2,270
Anaemia	2,218
Gynecological condition	1,506
Upper respiratory tract infection	642
Rheumatism & joint pains	383

Note: OLGH represents Our Lady of Grace Hospital

3.2 Study population

The population under study were the patients who had undergone eye removal by the method of evisceration at Our Lady of Grace Hospital.

3.4 Sampling methods

3.4.1 Sampling size

No formal sample size estimation was applicable in this study. All cases of evisceration over the study period for which individual patients' folders could be obtained were included in this study under the review.

3.5 Sampling and data collection

This section highlights on the sampling methods and data collection techniques that were used for the study and how these were used to answer the research questions.

The data was collected from a theatre book that is readily available at the eye department. The first point of information on the eviscerated patients over the study period was retrieved from the theatre log book. The theatre log book contains serial numbers, folder number, with corresponding names, age, sex, diagnoses, description of the surgical procedure, locality of patients operated for any eye condition, and the names of the surgeon and assistant surgeon.

After the folder numbers of the eviscerated patients over the study period had been retrieved from the theatre log book, the folders were traced from the filing shelves in the records unit. The OPD number given to each patient was also recorded in the theatre book. This number or code was used to retrieve folders for patients included in the study. The information found in the folders was record by the researcher.

Structured questionnaires were also used in gathering the pieces of information needed for the study.

Telephone and face-to-face interviews were adopted to supplement the information available in the folders where applicable. With the telephone interviews, the interviewer called the experimental units on phone and asked for other necessary information needed, and where the

sampling unit was not readily available on phone call, the interviewer book appointment to visit the respondents in their various communities for the face-to-face interviews. This approach helped the researcher to have sufficient and consistent information for the study.

3.6 Data processing and analysis

After the data had been collected, it was checked for completeness, accuracy and consistency. The researcher did the cross checking by revisiting the retrieved folder from which information were transferred onto the questionnaire.

Data collection in any research becomes meaningful only when it is well–organized and explained (Krippendorff, 2004). The analysis of the data was strictly guided by the research questions.

The data gathered from the patients were analyzed electronically. The use of Statistical Package for Social Sciences (version 21) enabled the researcher to extract the descriptive statistics.

3.7 Ethical consideration

An individual with one or both eyes amputated may be emotionally and psychologically sensitive. Caution was taken when dealing with them, especially those with visit appointments with the ophthalmologist. Ethical clearance was sought from the Ethical Board of Ensign College of Public Health, and permission from the Management team of Our Lady of Grace Hospital. Patients' confidentiality was ensured. No picture was taken without the consent of the patient. Patients were well educated on the nature of study, and they could leave at any point, which would not have effect on the care they receive in the facility. Only responsible persons in routine employment in the hospital had access to patient records.

The study was approved by the Medical Director as well as Human Resource Manager in our Lady of Grace Hospital. All procedures in accordance with the ethical standards of the Christian Health Association of Ghana and Ghana Health service were followed.

Nine patients with working phone contacts were called to book appointments to be interviewed for the study and assurance of meeting them face-to-face was also secured from those residing in remote areas where there was difficult to be reached on phone. The interview for the qualitative study was mainly done through telephone interviews, except for 4 respondents for whom face-to-face interviews were used to collect the needed information. The primary questions asked were:

i. Whether participants have had any evisceration in Our Lady of Grace Hospital
ii. What led to the loss of the eye
iii. Interventions taken before reporting to the eye care specialist
iv. Length of time spent before reporting to the eye care professional
v. Presence of phantom syndrome
vi. Any feeling of stigmatization

The interviews were recorded through audio recording with permission, and their responses on the interview guide written in an unbiased manner. Descriptive analysis was done based on responses given by the patients interviewed.

1.8 Limitations

The researcher was constrained by the following problems:

i. **Wrong address and contact details**: most of the information provided by eviscerated patients were found to be either incorrect or inadequate. That led to difficulties in tracing patients for face-to- face interviews.
ii. **Language barrier:** the researcher had a communication restriction since he cannot speak any of the local dialects in Ghana and this impeded the quick progress of the study.

iii. **Difficulty in retrieving folders:** it was found that most of the folders in which detailed information including demographic, social, past medical history, examination, diagnoses and among others could be found were not available. Thus, out of 137 patients eviscerated over the past 5 years, it was found out that 84 folders were available and 3 of the 84 folders were found to be new folders which did not contain information on the evisceration procedure. This necessitated the use of 81 patients in the study.

The researcher intended to cover the entire population to give a true representation. However, as a result of unavailability of adequate information 81 patients were studied in an unbiased manner. Patients who had undergone eye evisceration through surgical procedure but the information or folders were unavailable were not considered for the study.

1.9 Delimitation

Difficulty in retrieving the folder: Unavailability of adequate information constraint was tackled without jeopardizing the reliability and precision of the research result as guided by the scope of the study.

Language barrier: In order to overcome the problem of language barrier, the researcher involved the service of a research assistant who assisted in the data collection as well as interpretation of the language to both parties, thus the researcher and the patients.

CHAPTER FOUR

PRESENTATION OF RESULTS

4.0 Introduction

In the previous chapter, the methodological procedures of the present study were presented. This chapter covers the presentation of results from the data analysis. The results are made up of the quantitative and qualitative components of the study.

4.1. Presentation of quantitative results

4.1.1 Distribution of surgeries and evisceration rate

Table 4 1: Distribution of annual surgeries and evisceration rates at OLGH from 2012 to 2016

	2012	2013	2014	2015	2016
Eye Surgeries	740	562	505	578	611
Eviscerated Eyes	23	22	15	18	23
% of Evisceration	3.1%	3.9%	3.0%	3.1%	3.8%
No. with available Information	13	16	12	18	22

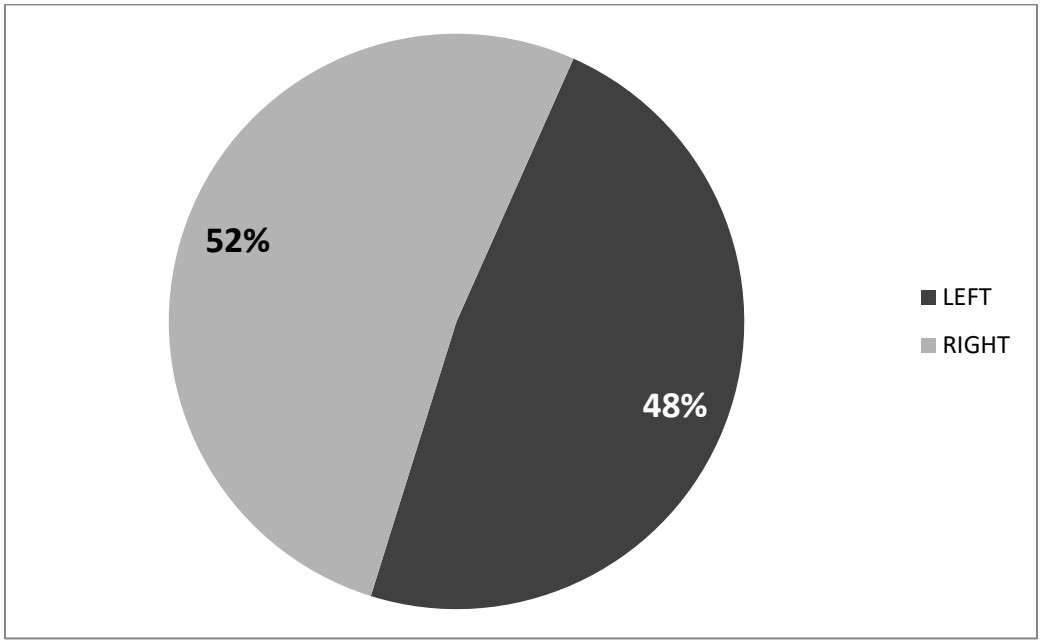
Note: OLGH represents Our Lady of Grace Hospital

The 5 years' eye surgeries cover the period starting from January, 2012 to December, 2016 for eye removal done exclusively by evisceration technique.

The highest number of the eye surgeries was done in 2012 and 2016 which represent 3.1% and 3.8%, respectively (table 4.1). Though 2013 recorded the second lowest number of eye surgical

operations, it was found out that the year recorded the highest evisceration rate of 3.9% followed by 2016 with evisceration rate of 3.8%. (table 4.1).

4.1.2 Laterality of eviscerated eye



Note: OLGH represents Our Lady of Grace Hospital

Figure 4 1.2: The laterality of eye removal among eviscerated patients at OLGH

The majority of the affected eyes of the eviscerated patients were found to be right eyes which recorded 52% of cases. (Figure 4.2).

4.1.3 Demographic characteristics

A total number of 81 patients had records which represented patients who underwent evisceration over the period of 5 years out of 2,996 total eye surgeries over this same period.

Table 4.2: Demographic profile of patients

Variable	Categories	(%)
Age (years)	<20	2
	20-34	16
	35-49	16
	50-59	18
	60-69	14
	70 and above	30
Gender	Female	50.6
	Male	49.4
Marital status	Single	19.8
	Married	58
	Divorced	6.2
	Widowed	16.0
District of residence	Asikuman Odoben Brakwa	16
	Other Districts	84
Region of residence	Central region	75.3
	Eastern region	12.3
	Western region	8.6
	Ashanti region	3.7
Religious affiliation	Christians	88
	Muslims	7
	No religion	4
	Others	1
Ethnicity	Akan	90.1
	Hausa	3.7
	Ewe	2.5
	Other	3.7
Occupation	Farming/fishing	55.6
	Trading	19.8
	Artisan	9.9
	Unemployed	6.2
	Student	4.9
	Retirees	2.5
	Civil/public service	1.2

Educational level	None	27
	Primary	38
	JHS/JSS	26
	SSS/SHS	8
	Tertiary	1
NHIS subscription	Yes	90
	No	10

Note: Data is presented in frequencies and percentages (%)

The median age group of patients was 43 years, and the mean age was 50 (+1.53Sd) years. Overall, most of the patients were seventy years and above (30%). Patients aged less than 20 years of age constitute less than 2%.

Patients with eviscerated eye were composed of 41 males and 40 females.

With regards to marital status, the majority (58%) of patients were married whiles least category of the respondents was found to be divorced (6.2%). It is interesting to note that more married males had their eyes removed than females. In contrary, females who were single, divorced and widowed were more exposed to eye removal.

The majority of the patients with their eye removed were found to come from outside AOB District (84%). Additionally, Christians were the majority of patients (88%). The rest were made up of Traditionalist, Muslims, and others.

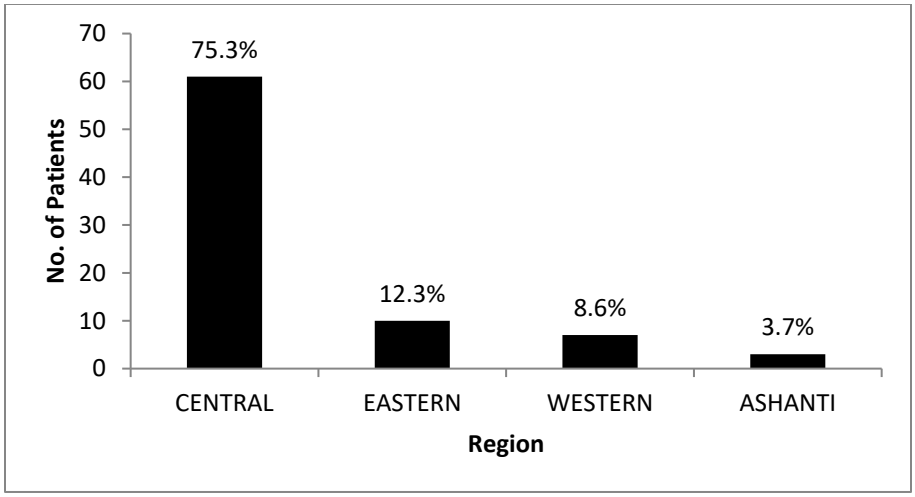
On ethnicity, Akan ethnic group constituted the majority of 90.1% out of the total number of eviscerated patients.

Those who had up to primary level of education formed 38% whiles those who had never had any formal education constituted 27% out of the total number of eviscerated patients under study. Junior High School education were 26% while those who have completed senior high or and tertiary were 8% and 1% respectively.

With regards to occupation, the majority of the patients were farmers/fishers which constitute 55.6% followed by those who engaged in trading (19.8%).

4.1.4 Region of Residence

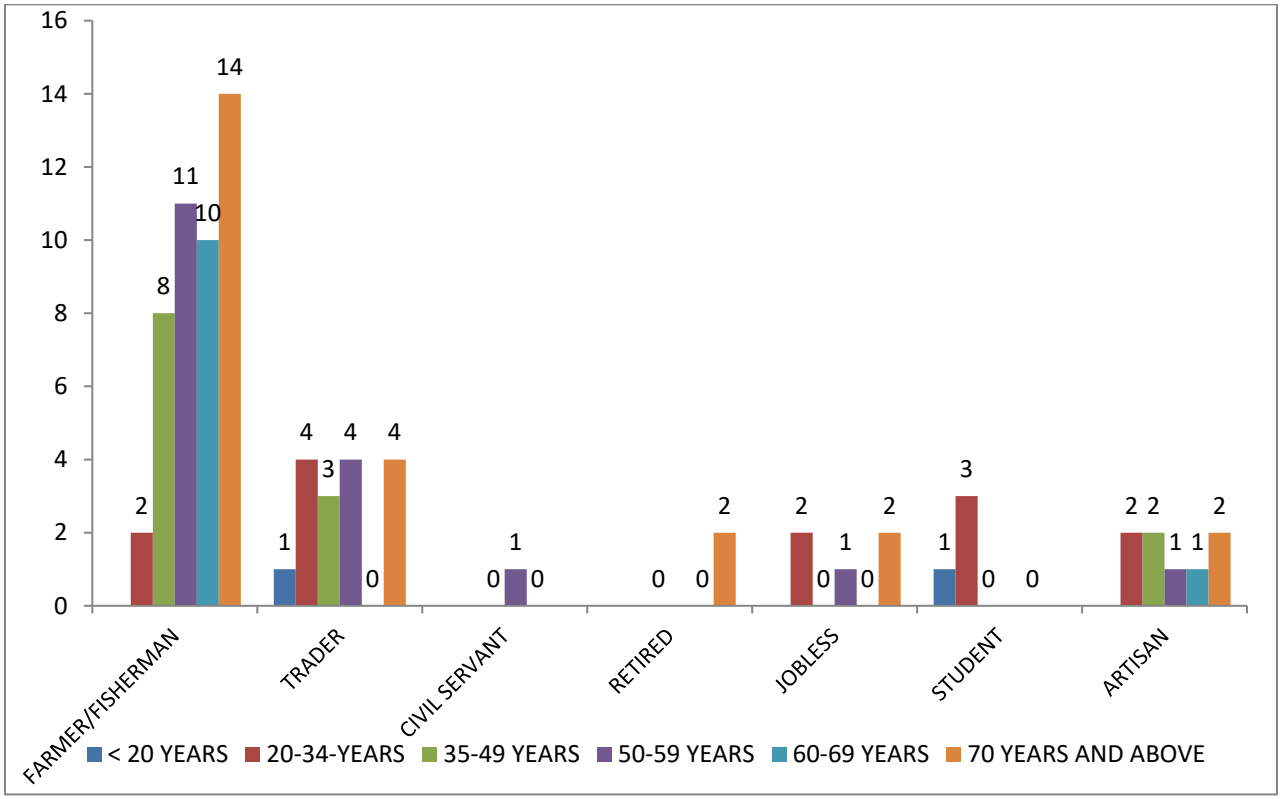
Figure 4. 1.4: Region of residence of patients who underwent evisceration at OLGH from 2012 to 2016



Over the 5 years' period, patients who underwent evisceration came from 4 out of 10 region of Ghana. These are Central (75.3%), Eastern (12.3%), Western (8.6%), and Ashanti (3.7%). None of the patients came from the remaining six district of the country.

4.1.5 Relationship between age and occupation

Figure 4 .1.5: Age versus occupation



The study revealed that occupation had impact on a person's eye being eviscerated. Farmers/ fishermen had their eyes eviscerated most and those 60 years and above were more prone to being eviscerated. Furthermore, older patients in the other occupations had their eye eviscerated more than the younger patients.

4.1.6 Visual acuity testing

4.1.6.1 Right eye visual acuity of patients whose left eye had been eviscerated

All 81 patients have one eye removed. Visual acuity was tested from the remaining eye, and has been classified into categories.

Those with right eye visual acuity have their left eye surgically removed; 38.3% of them had adequate vision while 8.6% had poor vision. The largest group (53.1%) were those who cannot have useful vision in the single remaining eye; they are totally blind (Table 4.3).

Table 4 2: Right eye visual acuity of patients whose left eye had been eviscerated

Visual Acuity	Frequency (%)	Comment
Normal or mild visual disability (6/6 - 6/60)	31 (38.3)	Adequate Vision
Counting Fingers at 0.5-5 meters	7 (8.6)	Poor vision
Hand Movement – Non-Perception of Light	43 (53.1)	Blind

Note: Data is presented in frequencies and percentages (%)

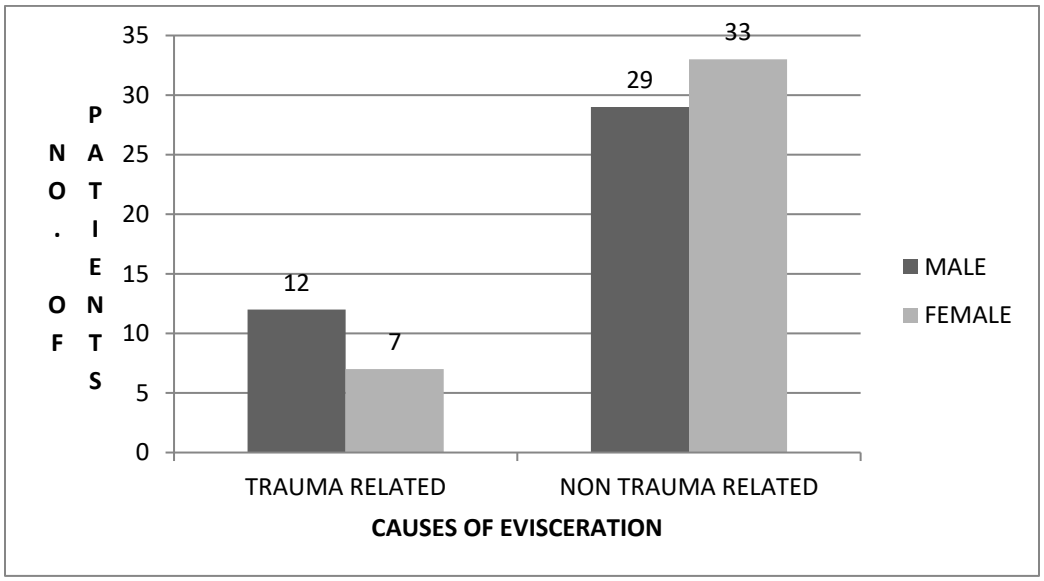
4.1.6.2 Left eye visual acuity of patients whose right eye had been eviscerated

Table 4 3: Left visual acuity of patients whose right eye had been eviscerated

Visual Acuity	Frequency (%)	Comment
Normal or mild visual disability (6/6 - 6/60)	33 (40.7)	Adequate Vision
Counting Fingers at 0.5-5 meters	6 (7.4)	Poor vision
Hand Movement – Non-Perception of Light	42 (51.9)	Blind

Patients with left eye visual acuity have their right eye surgically removed; 40.7% of them have adequate vision while 7.4% have poor vision. The largest group (51.9%) were those who cannot have useful vision in the single remaining eye; they are totally blind (Table 4.4).

4.1.7 Causes of eye removal



Note: OLGH represents Our Lady of Grace Hospital

Figure 4.1.6: Causes of evisceration by sex distribution of patients who underwent eye removal at OLGH from 2012 to 2016

4.1.8 Trauma related cause of eye removal

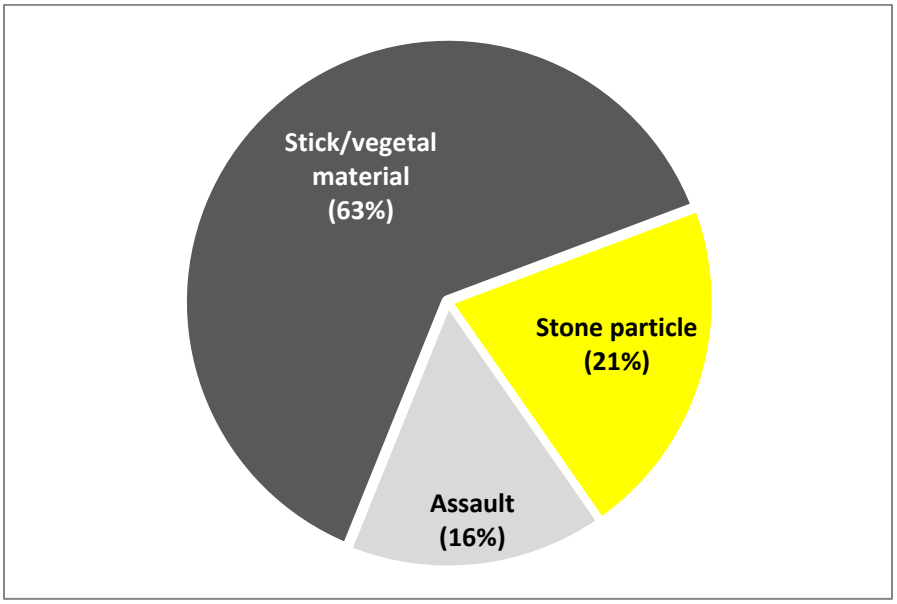


Figure 4.1.7: Trauma related cause of evisceration

Trauma related causes were mainly the result of injury from stick or vegetative material (63.1%), stone/particle (15.8%) and assault (21.1%). (Figure 4.8).

4.1.9 Non-trauma related cause of eye removal

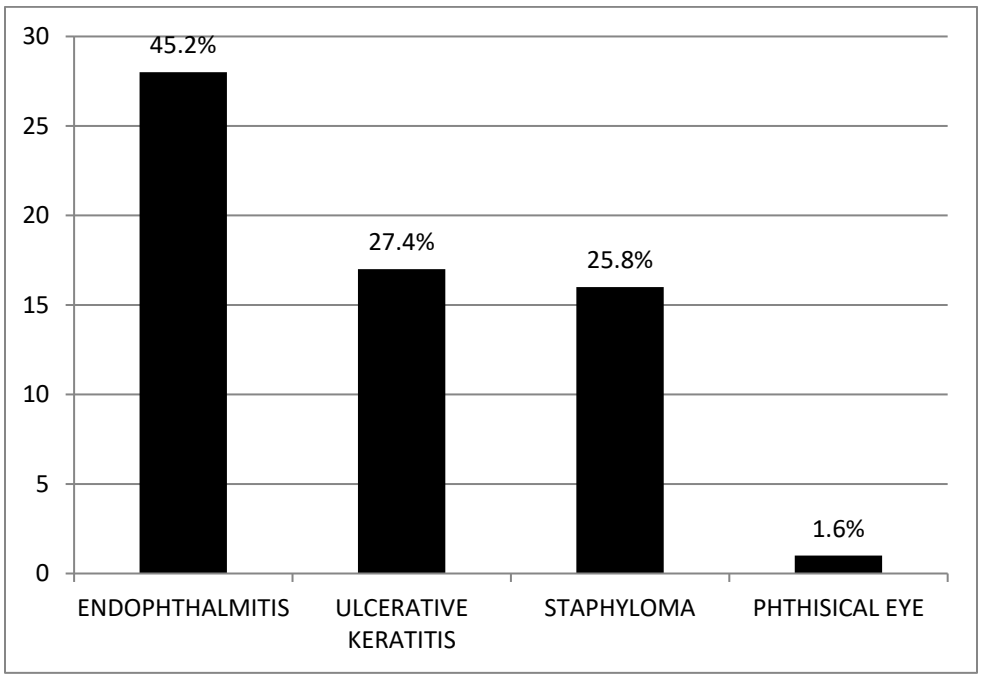


Figure 4.1.8: Non-trauma related causes of evisceration.

The study revealed (figure 4.8) that no patients was eviscerated as a result of tumor in the eye; 1.6% of the patients had shrunken eye technically known as phthisical eye. Ulcerative keratitis and endophthalmitis both caused by infections constituted 27.4 and 45.2% respectively (Figure 4.14).

4.1.10 Presenting complaints as extracted from patients records

The past medical history of the studied patients shown in table 4.8 that majority of the respondents had past medical history on pain and eye redness (80.2% and 69.1% respectively).

Table 4.4: Presenting complaints as extracted from patients records

Past medical history	Number (%)
Pain	65 (80.2)
Eye redness	56 (69.1)
Eye discharges	40 (49.4)
Loss of vision onset	37 (45.7)
Gradual loss of vision	37 (45.7)
Foreign body sensation	24 (29.6)
Headache	19 (23.5)
Self-medication/use of traditional medicine	13 (16.0)
Eye itching	12 (14.8)

Note: Data is presented in frequencies and percentages (%)

4.1.11 Clinical findings as extracted from patients records

Table 4 5: Clinical findings as extracted from patients records

Clinical findings	Number (%)
Conjunctival injection	54 (66.7)
Uveal prolapse	33 (40.7)
Tearing	33 (40.7)
Corneal ulceration	28 (34.6)
Purulent discharge	24 (29.6)
Eye swelling	23 (28.4)
Spontaneous evisceration	19 (23.5)
Chemosis	18 (22.2)
Melted corneal	8 (9.9)
Corneal laceration	4 (4.9)

Note: Data is presented in frequencies and percentages

The clinical findings revealed that conjunctival injection was the highest disorder found during the clinical examination with the proportional recording of 66.7%. Only 4.9% of them were found to have corneal laceration. Other patients were found after clinical examination to have eye swelling, eye tears, purulent discharge in the eye, chemosis, prolapse of the uveal and melted cornea. Spontaneous evisceration (23.5%) implies that the respondent presented an already damaged eye to the clinic (Table 4.6).

4.1.12 Diagnoses of patients

Table 4 6: Diagnoses of patients with eye removal

Diagnosis	Number (%)
Staphyloma	32 (39.5)
Endophthalmitis	28 (34.6)
Ulcerative keratitis	17 (21.0)
Traumatic evisceration	6 (7.4)
Phthisical eye	1 (1.2)

The clinical diagnosis of the studied patients indicated (table 4.7) that the patients clinically diagnosed of ulcerative keratitis, endophthalmitis, traumatic evisceration and staphyloma were found to be 21.0%, 34.6%, 7.4%, 1.2% and 39.5% respectively.

4.2 Presentation of qualitative results.

The events surrounding the evisceration of their eyes were found to be predominantly non-trauma related. The study revealed that most of the patients who had their eyes removed through evisceration technique were self-medicating either with the use of herbal medicine or orthodox drugs from unregistered or unprofessional eye care specialists.

For instance, a female patient 76 years of age said:

"A cocoa chemical spray entered my eye which I have used herbal medicine to treat it until I started feeling severe discharge (pus) and pain in the affected eye and I reported to the hospital".

A male patient 46 years of age said:

"Something fell on my eye and I did not attend to it because I thought it was not much affected but went to the counter chemical seller to buy chloramphenicol eye drop to treat the eye redness and other symptom seen for about five (5) weeks".

The study found that patients stayed at home to self-medicate for average of 1 month, either with orthodox or herbal medicines, before seeing health professionals.

Other effects on the affected eyes were pains and itching at the surgical sites.

The presence of phantom syndrome on the presence of light and shadow on the eviscerated eye were not found on any of the studied patients. Some of them were affected by evisceration because they cannot see clearly (blur) and most of them too cannot see at all with the fellow eye.

Lastly, the kind of life patients live after evisceration as compared to before evisceration was ascertained and it was found that they were not stigmatized by the society. The people around them related positively with the eviscerated patients, irrespective of the place they find themselves, including work, religious meeting places and the study area. According to a female respondent 45 years of age: *"though there is change in my walking and focus since I now walk and focus with only one eye but I have not experienced any form of stigmatization from anybody*

being personal or societal". She also added: *"people rather supported and encourage me after the operation which left me with only one eye"*.

CHAPTER FIVE

DISCUSSION

5.1 Prevalence of eye removal

From the findings in this studyindicate that less than a tenth of the patients who underwent eye surgeries in the hospital had their affected eye removed. This finding of 27 eviscerations per 1,000 eye surgeries corroborates the result of a study by Gyasi et al. (2009) who found an average crude incidence of 26.6 eviscerations per 1,000 surgical procedures per year.

5.2 Phantom syndrome

Rasmussen et al. (2010) in a study among 431 patients with one eye removed found out that phantom eye syndrome was frequent among eye amputated patients; visual hallucinations were described by 42% of the patients; the contents were mainly elementary visual hallucinations, with white or colored light as a continuous sharp light or as moving dots. In our study, none of the patients interviewed complained about phantom syndrome, except phantom eye pains.

5.3 Stigmitization

Although patients with one eye eviscerated are obliged to change their occupation sometimes, and having somehow worsening of the quality of life, none of the patients interviewed expressed any stigmatization. On the contrary, they acknowledged that people around them empathized and were ready to assist them.

5.4 Eye infection

Infections alone accounted for more than half of the non-trauma related causes of eye removal by evisceration. This finding is similar to a study done by Kanmeni *et al*. (2014) on indications for

surgical removal of the eye in rural areas in Cameroon, where surgical indications included infective causes (51%).

O Okoye *et al*. (2012), on Ten-year rural experience of surgical eye removal in a primary care center south-eastern Nigeria found that severe eye infection account for the most common causes of eye removal (60.6%).

The melted cornea presentation indicate that the eye can neither be repaired nor treated so when a case of this happens, the best decision to take is to eviscerate in other to save the affected patient's life. Traumatic evisceration when an eye is damaged as a result of trauma before presenting it to the clinic. In this case, the best decision is to perform surgical procedure of eye evisceration on the affected patient.

Though, ulcerative keratitis and gonococci conjunctivitis is treatable, the research revealed that most of the eviscerated respondents report very late at the clinic. In this wise, late report of gonococci conjunctivitis or ulcerative keratitis give clinical presentation that lead to eye removal.

5.5 Laterality

This study found that patients with right eyes eviscerated outnumber slightly those with affected left eye.

5.6 Demographic characteristics

5.6.1 Male dominance

Slightly more men had their eye removed than women.

5.6.2 Age

Majority of the patients were 70 years of age and above. Patients aged less than 20 years of age were very few. Older persons had higher tendency of getting their eyes removed as compared to

their younger age group counterparts. Older patients again in the other types of occupations had their eye eviscerated more than their younger counterparts. Older people again in the different types of occupations had their eye eviscerated more than the younger patients. This indicate that older people still working despite their old age, and they exposed themselves to eye injuries that could lead to eye removal by working as farmers or fishermen.

5.6.3 Marital status

More than half of the patients with eyes removed by evisceration technique were married. It is interesting to note that more married males had their eyes removal than females. On the contrary, females who are single, divorced and widowed are more exposed to eye removal; this implies that females who are single may be obliged to do risky jobs for their living.

5.6.4 District of residence

The majority of the patients with their eye removed were found to come outside AOB District. It can be inferred that the eye clinic serves more outsiders than residents in the District.

5.6.5 Ethnic group

The predominant ethnic group that utilizes services from OLG Hospital was Akans, regarded as the largest ethnic group in Ghana.

5.6.6 Occupation of patients

The majority of the patients were farmers/fishermen. This implies that people such are more prone to eye removal as their job are more physical.

5.6.7 Level of education

It was found out from the study that patients who never had any formal education were the majority of eviscerated patients in our study. This implies that the higher the person's education, the lower the chance of getting their eyes eviscerated.

5.2 Late reporting and self medication

The past medical history, clinical findings and diagnoses demonstrate that majority of patients' are reporting late. Some participants recognized that their delay to come to the eye clinic or self-medication for days or weeks before attending the eye clinic might have worsened their conditions.

CHAPTER SIX

CONCLUSIONS AND RECOMMEDATIONS

6.1 Conclusions

The rate of evisceration in Our Lady of Grace Hospital was 3 out of every 100 patients operated. Slightly more men had their eye removed than women, and more than half the participants with eyes eviscerated were married.

The higher percentage of patients recorded from the Central Region could be due to the fact that the hospital is situated in the Central Region, and it also serves as a referral center. Participants e were more prone to eye removal if their jobs were more physical in nature. The higher a participant's education, the lower the chances of getting their eyes eviscerated.

Clinical presentations that led to eye removal by evisceration included presence of melted cornea, late presentation of ulcerative keratitis and gonococci conjunctivitis, and traumatic evisceration.

Most of the participants who had their eyes removed through evisceration were self-medicated, either with herbal medicine or orthodox drugs from unregistered or unprofessional eye care specialists.

Phantom syndrome and stigmatization were not present in this study; pain was a major complaint expressed by participants.

6.2 Recommendations

Based on the study findings, recommendations are made for the improvement of eye removal rates in AOB District and the rest of the country.

i. The District Health Management Teams, government and non-governmental agencies and stakeholders should intensify education on the need to eschew controllable causes of blindness such as self-medication on the eye.

ii. Stakeholders such as the health directorates and non-governmental organizations should intensity sensitization on eye problems, regular eye screening and prompt reporting of eye cases.

There should be provision of, and increase in equipment and logistics such as culture sensitivity analysis machine to aid the ophthalmic team to provide emergency services. There should be ready availability of antifungal and antibiotics medicines.

REFERENCES

A Omgbwa E, V A Dohvoma, G Koki, A Oumarou, A L Bella, C E Mvogo 2011. Indications for destructive eye surgeries at the Yaoundé Gynaec
Obstetric and Paediatric Hospital, Cameroon. Clinic Ophthal.; 5:561-565.

Archana Pandita and Michael Merrinan, 2012. Ocular trauma epidemiology: 10 years retrospective study, volume 125 Nbr 1348.

F Beby, L Kodjikia, O Roche, P Denis 2006; Perforating ocular injuries in children, a retrospective study of 57 cases. French journal of Ophthalmology vol29, N01- pp.20-23.

M E Gyasi, W M Amoako, and M Adjuik, 2009. Causes and incidence of destructive eye procedures in the North-Eastern Ghana. Ghana medical journal 43(3) 122.

G Kanmeni, CD Noche, G Nguefack-Tsague, P Wiedemann, 2014. Indications for surgical removal of the eye in rural areas in Cameroon. Ophtalmol Eye Dis. Pp. 6:27-30 Published online Jun 9. Doi: 10.4137/ OED. S14019.

Limbu B., Saiju R., and Ruit S., 2009. A Retrospective study on the causes for evisceration at Tilganga Eye Centre. Kathmandu Univ Med J (KUMJ). Apr-Jun; 7(26): 115-5.

Murithi I, Gichuhi S, Njuguna MW, 2008. Ocular injuries in children (a retrospective series). East Afr.Med.Journal. Jan; 85(1):39-45.

Mpyet C, Wade P, Ramyil A., 2008. Indications for surgical removal of the eye in adults: a five year review. Niger J MedJan-Mar, 17(1):107-9.

MT Koylu, G Gokce, Y Uysal, OM Ceylan, D Akincioglu, A Gunal ; 2015. Indications for eye removal surgeries. A 15-year experience at tertiary military hospital. Saudi Med J. Oct, 36(10):1205-1209 doi:10.15537/smj. 10.12031.

M U Saeed 2006. Twenty-year review of histopathological findings in enucleated/eviscerated eyes. PubMed; 59(2):153-155. O Okoye, CM Chuka-Okosa, NO

Magulike; 2012. Ten-year rural experience of surgical eye removal in a primary care center south-eastern Nigeria. Rural and Remote Health 13:2303; Negrel and Thylefors, 1998 Ocular trauma

O Okoye, CM Chuka-Okosa, NO Magulike; 2012 Ten-year rural experience of surgical eye removal in a primary care center South-Eastern Nigeria. Rural and remote health 13: 2303

Pharms LTL, M Graff, M Gehrs, 2008. Hanging trends in sympathetic ophthalmia: Sympathetic ophthalmia following repeated vitreoretinal surgery with no history of trauma. Ophthalmology and visual sciences

Rajat Maheshwari, MS 2010 Review of Orbital Exenteration from an Eye Care Center in

Western India. Shri Ganapati Netralaya, Jalna(Maharashtra), India.

Rasmussen ML., .2010. The eye amputated – Consequences of eye amputation with emphasis on clinical aspect, phantom eye syndrome and quality of life. Acta ophthalmol. Dec; 88 Thesis2: 1-26. doi: 10.1111/j. 1755-3768.2010. 02039.X.

Said, Hussein., 2014. A review of indications for removal of the eye at Kenyatta national hospital. URI:http://hdl.handle.net/11295/90198. Shadah-Desai et al 2000; http://www.who.int/blindness/partnerships/vision2020/en/. (Assessed 25th March, 2016)

Sanford-Smith J, 2004. Eye diseases in hot climate. Elsevier, a division of Reed Elsevier, India.

APPENDICES

Appendix A

Questionnaire for the Quantitative part of the Study

QUESTIONNAIRE

TOPIC: A REVIEW OF EYE REMOVAL AT OUR LADY OF GRACE HOSPITAL BREMAN ASIKUMA OVER 5 YEARS PERIOD, CENTRAL REGION GHANA.

Patient's Number: /…/…/…/

Patient's Folder Number: /……../

Date of Evisceration: …./…/….

SECTION A:

DEMOGRAPHIC INFORMATIONS

1	Age	/…/…/…/ Information not available /…/	AGE
2	Sex	Male /…/ Female /…/ Information not available /…/	SEX
3	Residence	Town /……/ Region/……/ Information not available /…/	RESID
4	Marital Status	Single /…/ Married /…/ Divorced/…/Widowed /…/ Information not available /…/	MARIST
5	Occupation	Farmer /…/ Trader /…/	OCCUP

		Miner /…/ Civil servant /…/ Retired /…/ Jobless /…/ Information not available /…/	
6	Religion	Christianity /…/ Moslem /…/ Traditional /…/ No religion /…/ Other religion (specified) /……../ Information not available /…/	RELIG
7	Ethnic Group	Akan /…/ Ga /…/ Ewe /…/ Guan /…/ Gruma /…/ Grusi /…/ Mole Dagbani /…/ Mande /…/ Non-Ghanaian /…/ Hausa /…/ Others (specified)/……/ Information not available /…/	ETHNGP
8	Level of Education	Not educated /…/ Primary /…/ JHS /…/ SHS /…/ Tertiary Level /…/ Information not available /…/	LEVELEDU
9	NHIS Subscription	Yes /…/ NO /…/ Information not available /…/	NHISSUB

SECTION B:

CLINICAL RECORDS OF PATIENTS

9	Past Medical History	No History of Trauma (spontaneous) /…/ Pain: Yes /…/ NO/…/ Headache /…/ Foreign Body sensation /…. / Loss of vision at onset: Yes /…/ No /…/ Gradual loss of vision: Yes /…/ No /…/ Eye itchiness: Yes /…/ No /…/ Eye discharge; Yes /…/ No/…/ Redness: Yes /…/ No /…/ Trauma: By stick (vegetal material) /…/ By stone (particle)/…/ By assault /…/ By Chemicals /…/ By Road traffic accident /…/ At home /…/ Work place (office or market) /…/ When farming /…/ Use of traditional medicine: Yes /…/ No /…/ Post-operative endophthalmitis: Yes /…/ No /…/ Information not available /…/	PASTMEDH
10	Affected Eye	Right Eye /…. / Left Eye /…. / Information not available /…. /	AFFECTEYE
11	Clinical Findings	Eyelid swelling /…/ Tearing /…/ Purulent discharge /…/ Conjunctival injection /…/ Chemosis /…/ Corneal laceration /…/ Uveal prolapse /…/ Corneal ulceration /…/ Spontaneous evisceration /…/ Associated adnexial lesion /…/	CLINICALF

12	Diagnosis	Ulcerative keratitis /…/ Endophthalmitis /…/ Traumatic evisceration /…/ Tumours: Malignant (Retinoblastoma) /…/ Benign /…/ Phtysical eye /…/ Staphyloma /…/ Information not available /…/	DIAGNOS

SECTION C:

POST-OPERATIVE CLINICAL FINDING DURING FOLLOW-UP

14	Early Post-op findings(<1month)	Headache: Yes /…/ No /…/ Fever: Yes /…/ No /…/ Eyelid Oedema: Yes /…/ No /…/ Chemosis: Yes /…/ No /…/ Bleeding: Yes /…/ No /…/ Loose stitches:	EARLYPOSTOP

		Yes /…/ No /…/ Purulent discharge: Yes /…/ No /…/ Orbital growth: Yes /…/ No /…/	
15	Late Post-op findings(>1month)	Pain: Yes /…/ No /…/ Discharge: Yes /…/ No /…/ Orbital growth: Yes /…/ No /…/ Eye Prosthesis: Yes /…/ No /…/ Information not available /…/	LATEPOSTOP

APPENDIX B

Supplementary Unstructured Questionnaire for Qualitative part of the Study

i. Have you been eviscerated in the OLGH before?

   If Yes

ii. Summary of PMH; event surrounding the evisceration.

iii. What was the intervention taken when the incidence happened? Self-medication either herbal or orthodox medicine.

iv. How long it took you to see an eye care professional?

v. Is there any presence of phantom syndrome; pain, light flash, shadow?

vi. What kind of life you live after evisceration as compared to before evisceration?

vii. Any other comment?

APPENDIX C

Figure 1: Initial stage before General Anesthesia

Source : Field work, 2017.

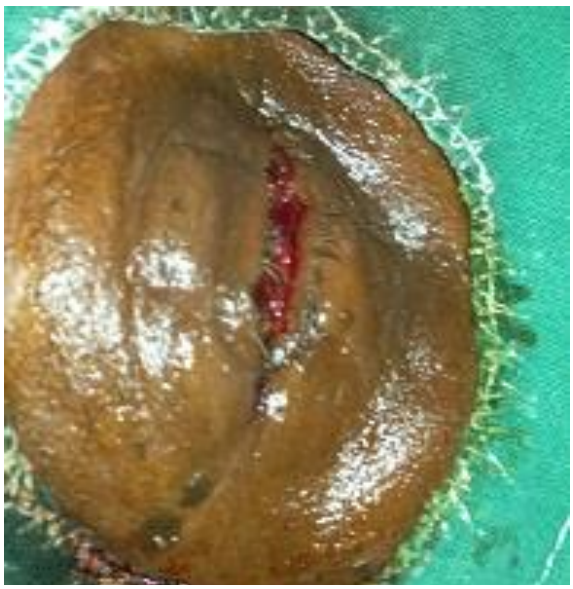
This is an affected eye as a result of eye infection with purulent discharge .

Figure 2.2 : limbus incision on eye ball content.

Figure 2.3: Removal of all contents in the Eye ball.

Figure 2.4 A : End of surgery with Speculum in Situ

Figure 2.4 B : A : End of surgery with Speculum removed



Pictures of some conditions that lead to evisceration in Our Lady of Grace Hospital:

Figure 2.5: Ulcerative Keratitis due to Self-Medication.

Source: Fieldwork, 2016.

Figure 2.6: Late Presentation of Patient with Corneal ulceration and melted due to Corneal Ulcer.

Source: Field Work 2016.

Figure 2.7: Gonoccoci Kerato Conjunctivitis with Corneal Perforation

Source: Field work, 2016.

This cause of evisceration was infection of the eye due to gonococci bacteria. The causative agent is very virulent and has the capability to perforate a healthy cornea. The early presentation has similar clinical presentation as Conjunctivitis 'APPOLO'. The only difference that exists between the two is the massive purulent discharge in the eye. (Sandford-Smith, 2004)

Figure 2.8: Staphyloma

FRONTAL VIEW **LATERAL VIEW**

Staphyloma means grape. It happens when there is an obstruction to the flowing of the aqueous. Fluid that makes the pressure in the corneal to rise and the thin scar will bulge forward. It is disfiguring and the eye needs to be removed for prosthesis to be replaced. (op.cit.).