Original Article

Clinico-pathologic study of 70 Enucleations

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Abstract

Objective: To assess patients' history, demographic charactertics, cause for enucleation and orbital implant trends.

Methods: A cross-sectional descriptive case study of 70 patients who underwent enucleation for various reasons between January 2004 to June 2007 at Khyber Institute of Ophthalmic Medical Sciences, Hayatabad Medical Complex, Peshawar were reviewed. The patients' history, demographic characteristics, cause for enucleation after histopathology and the type of orbital implant were analyzed.

Results: Seventy eyes of patients who underwent enucleation were reviewed. The male patients were 62.85% and female 37.14%. The most common age group involved was paediatric in 51.42%. Retinoblastoma was the most common indication for enucleation in 42.85% of children followed by choroidal melanoma in 17.14%, painful blind eye in 11.42% and phthisis bulbi in 8.57% in adults. Enucleation with orbital implant was done in 45.71%, with dermofat graft in 34.28% and no implant in 20%. The most common complication being erosion in 21.87% and excessive discharge in 15.62%.

Conclusions: Males were the usual victims. Majority of patients were of paediatric age group. The most common indications for enucleation was retinoblastoma in children and choroidal melanoma and painful blind eye in adults (JPMA 59:612; 2009).

Introduction

Enucleation is an ophthalmic procedure reserved for end-stage eye diseases.[1] It is considered to be the oldest operation of Ophthalmology and history goes back as far as 2600 BC, where there was a Chinese god devoted to the profession of ocularists. In 1555, Johannes Lange was first mentioned having performed a modern enucleation.[2]

The usual indications for enucleation are intraocular malignancy like choroidal melanoma in adults and retinoblastoma in childhood, trauma including sympathetic ophthalmia and painful blind eye like neovascular glaucoma, endophthalmitis and uveitis and cosmesis in which enucleation may be required for severely traumatized and phthisical eyes.[3]

The objectives of our study were to determine the age and sex characteristics, indications for enucleation and orbital implant trends in our set up.

Patients and Methods

This study was conducted at Khyber Institute of Ophthalmic Medical Sciences, Hayatabad Medical Complex, Peshawar from January 2004 till June 2007. It was a cross-sectional descriptive study of patients admitted to the hospital for enucleation. The details of the patient's history, age, sex and cause for enucleation were entered into a proforma designed for the purpose. Enquiry was conducted whether it was ocular surface neoplasia or intraocular pathology. Cause for painful blind eye, disfiguring blind eye and phthisical eye was also taken. Previous history of trauma to the same or contralateral eye was also noted. In case of intraocular tumours CT Scan orbit and ultrasound were done to confirm clinical findings.

Standard enucleation technique was carried out in all patients. Orbital implant or dermofat grafts were done in some patients. The whole eyeball was sent for histopathological analysis. The results were then analyzed. The aetiology of enucleation was then confirmed and its nature determined.

Results

During a period of three and half years, 70 eyes were enucleated. Male patients involvement was almost double [44 (62.85%) males versus 26 (37.14%) females]. Right eye involvement was seen in 38 (54.28%) cases and left eye in 32 (45.71%). The most common age affected was children in 36 (51.42%) cases and 17 years and above in 34 (48.57%) cases. The common indication for enucleation was retinoblastoma in 30 (42.85%) eyes in paediatric age group and choroidal melanoma in 12 (17.14%) eyes and painful blind eye in 8 (11.42%) eyes in adults as given in Table-1. The various orbital implants used along with enucleation are illustrated in Figure-1.

Among the orbital implants the most common complication encountered was erosions in 7 (21.87%) eyes, excessive discharge in 5 (15.62%) eyes and severe pain in 2

Table-1: Indications for Enucleation (n = 70).

Age	Indications	No. of Eyes	Percentage
Pediatric group (0 – 16 years)		36	51.42
	Retinoblastoma	30	42.85
	Painful blind eye	4	5.71
	Disfiguring blind eye	2	2.85
Adult group (17 years & above)		34	48.57
	Choroidal melanoma	12	17.14
	Painful blind eye	8	11.42
	Phthisis bulbi	6	8.57
	Disfiguring blind eye	3	4.28
	Sympathetic Ophthalmia	3	4.28
	Squamous cell carcinoma of conjunctiva	2	2.85

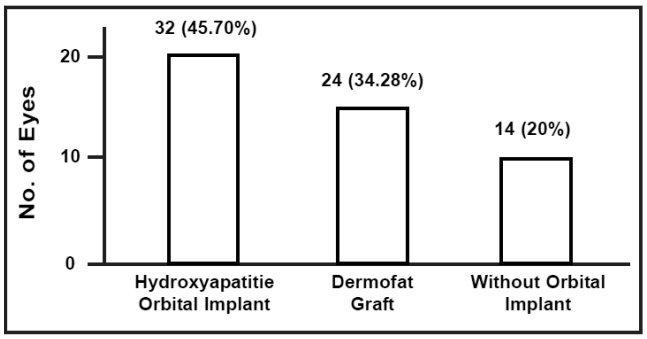

Figure-1: Orbital Implants used.

(6.25%) eyes. In eyes which had enucleation without implant, orbital haemorrhage and edema occurred in 5 (35.71%) eyes, enophthalmos in 4 (28.57%) eyes and contracted socket in 3 (21.42%) eyes.

Discussion

Enucleation is an approach used for unresponsive end stage ocular disease often resulting in blind, painful or cosmetically unacceptable eyes. Gunalp et al[4] reviewed the clinicopathological data on 3506 enucleations performed over a period of 50 years from 1945-1995. Robin[5] carried out a population based study and demonstrated that the annual incidence of enucleation for all causes is about 3 to 5 per 100,000. Scat et al[6] carried out an epidemiological study of the aetiology of enucleation. 3246 globes were examined over a 70 years period from 1925-1995. In our study 70 eyes were enucleated for various reasons.

Gassler et al[7] traced the clinical findings, the indications for enucleation and the histopathological diagnoses from 817 eyes. There were 433 males and 384 females. In the study by Vemuganti et al males outnumbered females in a ratio of 1.85:1 (98 males, 53 females).[1] Similar male predominance is also given by other authors.[8,9] In our study too males were affected more [62.85% versus 37.14%] than females.

In our study 51.42% of patients were children and the remaining were adults and above 17 years of age. This is similar to the study by Vemuganti et al in a tertiary eye care centre in India where the median age was 8 years and children below 15 years of age constituted 85.2% of cases that underwent enucleation.[1] In Gunalp et al's clinicopathological study the 0 - 9 years age group was most frequently affected, accounting for 29.7% of the cases. Patients aged less than 30 years constituted 53.6% of all enucleation.[4] Similarly in Obuchowska et al[9] study patients aged less than 30 years constituted 83.8% of all enucleations for trauma.

Tanuj et al[10] carried out a retrospective comparative case series, comparing outcomes of enucleation and evisceration. The most common indication for enucleation were choroidal melanoma in 57%, blind painful eye in 17%, trauma in 10% metastasis in 7% and conjunctival melanoma, microphthalmos and retinoblastoma in 3% each. Ocular trauma was the most frequent cause of enucleation (36%), followed by malignant tumour (20.7%), glaucoma (19.6%), phthisis bulbi (9%) and endophthalmitis (8.1%) in Obuchowska et al study,[9] while in Vemuganti et al[1] study from India, Gunalp et al[4] study from Turkey and Scat et al[6] study from France for enucleation, tumours top the list (49%, 33.8% and 32% respectively). In our set up too intraocular tumours were the most common cause for enucleation and consisted of retinoblastoma in 42.85%, choroidal melanoma in 17.14%, painful blind eye in 11.42%, phthisis bulbi in 8.57%, disfigured blind eye in 4.28%, sympathic ophthalmic in 4.28% and squamous cell carcinoma of conjunctiva in 2.85%.

In our study enucleation with hydroxyapatite orbital implant was used in 45.71%, with dermofat graft in 34.28% and enucleation without implant in 20%. Viswanathan et al[11] evaluated current clinical practice in the United Kingdom in the management of the anophthalmic socket. Only 53% Consultant Ophthalmologists did enucleations or eviscerations. Orbital implant after primary enucleation was done in 92%. Porous orbital implants in 55% as their first choice and in 42% of cases acrylic was used. Fifty seven percent wrapped the implant after enucleation, using salvaged autogenous sclera (20%), donar sclera (28%) and synthetic vicryl or Mersilene mesh (42%). Similarly Su and Yen[12] carried out a similar study and reported that the high density porous polyethylene implant was the most frequently used orbital implant (42.3%), followed by hydroxyapatite (25.9%) and non-porous alloplastic

implants (25.7%). Hornblass, Biesman and Eviatar 13 evaluated the current techniques of enucleation after surveying 5,439 intraorbital implants. Hydroxyapatite orbital implant was most commonly used.

In our study implant erosion was the most common complication in 21.87%, excessive discharge in 15.62% and severe pain in 6.25%. In Tanuj et al's[10] study of 32 enucleations, implant exposure was seen in 12.5%, and pyogenic granulomas, symblepharon and cicatricial entropion in 3.1% each. In Su and Yen study[12] the most common complications encountered for unpegged implants were exposure (3.2%) and infection (0.4%). For pegged implants, the most common complications reported were pyogenic granuloma (13.7%), exposure (5.7%) and discharge (5.7%). In Viswanathan et al's[11] study 14% of respondents reported implant exposure for each type of procedure and extrusion was reported by 4% after enucleation and 3% after evisceration.

Conclusion

Males are the usual victims of enucleation especially in paediatric age group and young adults. The most common indications being intraocular tumours like retinoblastoma in children and choroidal melanoma in adults and elderly, followed by painful blind eye and phthisical eyes. Implant erosion is the most common complication seen.

Awareness at the level of primary health care providers, paediatricians and general practitioners should be promoted to identify the disease process at an early stage and facilitate early intervention measures that could result in eye & vision salvage.

Further improvements in therapeutic and diagnostic techniques is desirable with the possibilities of early diagnosis and intervention. If achieved enucleation may become rare being replaced by conservative management.

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