THREE YEARS RETROSPECTIVE STUDY OF PATIENTS UNDERGONE TRABECULECTOMY IN LADY READING HOSPITAL PESHAWAR

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ABSTRACT

Objective: To know the effect of trabeculectomy on controlling intra ocular pressure (IOP) and thus glaucoma progression and the final visual outcome of the patient.

Material and Methods: A descriptive study of trabeculectomies performed for different types of glaucoma, during a period of three years (from Jan. 2000 to Dec. 2002) in Ophthalmology Unit of Postgraduate Medical Institute, Lady Reading Hospital, Peshawar was carried out. Trabeculectomies performed on all ages were included. A proforma was made showing name, age, sex, file number and diagnosis. Preoperative and postoperative visual acuity and I.O.P. recorded. Any postoperative complication was also noted. The use of Mitomycin-C was also noted which was restricted only to failed trabeculectomy and younger patients.

Results: Trabeculectomy was performed on 232 eyes of 191 patients. About 85% of patients were above 40 years of age. The most common type of glaucoma was open angle glaucoma accounting for 51.31% with male predominance followed by angle closure glaucoma 40.32% with female predominance. Congenital glaucoma and steroid induced glaucoma were present in 4.71% and 3.66% of patient respectively and these were present in younger patients. Mitomycin-C was used in 10.78% patients. Visual acuity after trabeculectomy remained unchanged in 69.86%, improved in 17.35% and deteriorated in 12.79%. Postoperative IOP below 15 mmHg was found in 72.41% showing a good success rate, 23.7% patient has IOP between 16-20 mmHg and only 3.88% patient had IOP above 20mmHg. Shallow anterior chamber after trabeculectomy was found in 27.59% and hyphema in 6.47% both of which usually relieved in few days after conservative therapy. Postoperative endophthalmitis was not noted in any case.

Conclusion: Trabeculectomy is still one of the most used approaches for surgical reduction of IOP. Primary trabeculectomy is a better method for cases in which a larger reduction in IOP is the aim of the treatment, especially in glaucoma patients who can not afford costly medicines, having poor compliance and still having high IOP despite maximum tolerable anti glaucoma medication

Key words: Trabeculectomy, Glaucoma, Filtering procedure.

INTRODUCTION

Glaucoma is the second leading cause of vision loss in the world after cataract. The number of people with primary glaucoma in the world by the year 2000 was estimated at nearly 66.8 million, with 6.7 million suffering from bilateral blindness[1]. Glaucoma can be treated medically as well as surgically. The most common surgery from glaucoma is trabeculectomy. As glaucoma is chronic and sometimes life long disease. It is important to know the effect of trabeculectomy on controlling the disease progression and the final visual out come of the patient.

Trabeculectomy is said to be associated with a decrease in number of medications needed to control disease progression[2].

In this study we tried to see the effects of trabeculectomy on our glaucoma patients. This is a descriptive study in which we included all cases of trabeculectomy done during three years (Jan. 2000 to Dec. 2002) in our unit. Trabeculectomy is a drainage operation, which lower intra ocular pressure (IOP) by creating a new channel for aqueous out flow between the anterior chamber and subtenon space. It is an effective and low cost procedure as compared to medical therapy of glaucoma, which is life long, costly and also depends on the compliance of patient. The pressure lowering effect of trabeculectomy is also greater than medical therapy. Trabeculectomy was introduced by Cairns in 1968 [3,4] and is now the surgery of choice for glaucoma patients.

Both glaucoma specialist and comprehensive ophthalmologist perform trabeculectomy. Trabeculectomy is defined as filtering operation by creation of a fistula between the anterior chamber of the eye and sub-conjunctival space, through a sub scleral excision of a portion of the trabecular meshwork. A fistula is indeed created to create a communication between the anterior chamber and the veins draining the subconjunctival space, but little if any of the trabecular meshwork is excised. The ostomy is created in the posterior and peripheral aspect of the cornea, anterior to the meshwork. Although some anterior meshwork may be removed in some patients, peripheral keratectomy would be a more accurate term.[5] When medical or laser treatments are insufficient to reduce IOP, it becomes necessary to create an outflow tract of lower resistance. Creating the fistula is not technically difficult. The difficult portion of the surgery is keeping the fistula open as long as possible, and maintaining just the right amount of resistance of flow to maintain an acceptable IOP. The history of this procedure first centers on the simple creation of the fistula, and has shifted increasingly to the development of methods to maintain the opening as long as possible.

The recent developments in glaucoma surgery have been chemical rather than physical by using antimetabolites during

surgery to keep fistula open as long as possible to prevent early failure of trabeculectomy. Mitomycin-C and 5- fluorouracil are used for this purpose but there is danger of ocular hypotony and increased incidence of postoperative infection. Over the past decade, use of antimetabolite drugs has become routine.

MATERIAL AND METHODS

We have carried out a descriptive of trabeculectomies done in Eye Unit PGMI/ LRH Peshawar for last three year i.e. Jan. 2000 – Dec. 2002. All trabeculectomies done for POAG, PACG, secondary glaucoma, congenital glaucoma, steroid induced glaucoma are included in this study. A proforma was made where patient is name, age, sex, address, file number and the diagnosis was also recorded. Preoperative and Postoperative visual acuity at least 30 days after operation recorded. Preoperative and postoperative IOP also recorded. Any complication like hyphema, shallow anterior chamber and postoperative infection recorded. The use of Mitomycin-C was also recorded, however in this study we used mitomycin-C only in young patients and failed trabeculectomy. Trabeculectomy was performed under local anaesthesia except in children. We used IOP reduction as a measure of surgical success like other studies done to evaluate their success rate[6].

RESULTS

In a period of three years trabeculectomy was performed on 232 eyes of 191 patients Table-1 shows age / sex distribution of patients presented to our unit for trabeculectomy. Male to female ratio was approximately 1:1. About 85% patients undergoing trabeculectomy were above 40 years of age showing increased prevalence of glaucoma with advancing age. 9.42% were below 20 years and these included mostly congenital glaucoma. Only 5.76% patient have age range between 21-40 and their glaucoma was mainly due to topical steroid use for their allergic eye disorders.

Patients operated for trabeculectomy had open angle glaucoma in 51.31% with male predominance (Table-2), angle closure angle glaucoma in 40.32% with female predominance, congenital glaucoma 4.71% with female predominance and steroid induced glaucoma 3.66% with male predominance.

Visual out come in these patients after one month of trabeculectomy is shown in Table-3. Visual acuity remained unchanged after trabeculectomy in 69.86% of cases, while it improved in 17.35% and deteriorated in 12.79%. Improvement in visual acuity is usually seen in patients who have been admitted with angle closure glaucoma in acute attack. The most common complica-

AGE/SEX DISTRIBUTION (n = 191)

Age in years	Male	Female	Total	Percentage
0-20 yr	11	7	18	9.42
21 -40 yr	7	4	11	5.76
41- 60 yr	41	55	96	50.26
Above 60 yr	38	28	66	34.56
Total patients	97	94	191	100%
Percentage	50.78	49.22	100%	

TABLE – 1

TYPE OF GLAUCOMA (n = 191)

Type	Male	Female	Total	Percentage
Open angle glaucoma	55	43	98	51.31
Angle closure glaucoma	32	45	77	40.32
Cong. glaucoma	3	6	9	4.71
Steroid induced G	7	0	7	3.66
Total patients	97	94	191	100

TABLE – 2

tions seen after trabeculectomy were shallow anterior chamber (AC) and hyphema (Table-4). Shallow anterior chamber was found in 27.59% patients mostly it was due to excessive filtration. Seidal test was negative in these patients. Some patients with shallow anterior chamber had choroidal detachment also. The incidence of shallow AC was same in trabeculectomy with or without mitomycin-C. The patients recovered with pressure bandage and oral acetazolamide treatment and only few required anterior chamber reformation. Hyphaema was found in 6.47% patient. It was mild and did not require any further intervention. No case was recorded with postoperative infection.

In this series of study the use of mitomycin-C was restricted only to young patients and for failed trabeculectomy Mitomycin-C was used only in 10.78% of patients. It is noted in this study that incidence of shallow AC is same as that of simple trabeculectomy and there is effective lowering of IOP also.

Postoperative IOP was checked 30 days after trabeculectomy (Table-5). In 72.41% of patient the postoperative IOP was up to 15 mmHg. 23.71% patient had IOP ranging between 16-20 mmHg and only 3.88% of patient has IOP above 20 mmHg. So it shows that trabeculectomy is still good, safe and cheaper method to reduce IOP adequately especially in cases of non-compliance. Moreover it is noted that medical therapy for glaucoma treatment reduces the success rate of trabeculectomy.

DISCUSSION

Trabeculectomy has remained the most commonly performed filtering procedure for glaucoma. There has been debate regarding the timing of trabeculectomy in glaucoma

VISUAL OUTCOME

(219 Eyes, excluding 13 eyes of children whose visual acuity could not be assessed)

Visual Acuity	Pre Operative	Post Operative		
		Same	Deteriorated	Improved
6/6 - 6/18	51	33	18	0
6/24 -6/60	53	35	8	10
Below 6/60	115	85	2	28
Total	219	153	28	38
Percentage	100%	69.86%	12.79%	17.35%

TABLE – 3

INCIDENCE OF COMPLICATIONS (232 EYES)

	No. of Eyes	Percentage
Shallow anterior chamber	64	27.59
Hyphema	15	6.47
Post operative infection	0	0

TABLE – 4

patients. Advocates of primary surgery report success rates of approximately 90%,[7,8] and an additional benefit of this approach may be the avoidance of visual field loss whilst attempting to control glaucoma medically. Moreover trabeculectomy is associated with a decrease in number of medications needed to control disease progression.[2] However, in most cases surgery is considered only where maximal medical treatment has failed to halt disease progression[9]. Amongst patients who have received long term medical treatment prior to surgery, the success rates of trabeculectomy tend to be lower, ranging from 45% to 93%.[10] Subconjunctival fibroblasts play a critical role in scarring and treatment failure in glaucoma filtration surgery. Long term prior treatment with adrenaline and miotics has been shown to be associated with increased numbers of inflammatory cells and fibroblasts in the conjunctival and episcleral tissues and higher failure rates for trabeculectomy[11]. Filtering surgery is less successful in younger patients with glaucoma than in older patient with glaucoma[12,13] because of severe postoperative inflammatory response. Fibrosis at the level of episclera and the subconjuntival space is the most common cause of failure after trabeculectomy.[14,15] Minimizing surgical trauma is desirable to prevent postoperative scarring. The use of antifibroproliferative agent like 5-fluorouracil and mitomycin-C may improve the surgical prognosis. However mitomycin-C is reported to be better than 5-fluorouracil as it effectively reduces IOP, decreases dependence on post operative anti glaucoma therapy and decreased corneal toxicity[16,17,18].

We have used mitomycin-C only in 10.78 %. These patients were young or they had already undergone trabeculectomy earlier. Some authors recommend use of mitomycin-C in all cases but higher rate of complications in these patients have been reported like bleb leak, hypotony, blebitis, endophthalmitis and choroidal haemorrhage[21]. In this study it is seen that 72.41 % patients achieved IOP around 15mmHg therefore routine use of mitomycin-C can not be considered appropriate as other studies also recommended the same .[19,20] In another study intra operative antimetabolite are used in only 6.4% cases.[6]

In this study it is also noted that glaucoma is a disease of adult age as 85% of trabeculectomies were performed in patients above the age of forty years. It is therefore recommended to check IOP of all eye patients above 40 years of age to detect glaucoma at an early stage. In this study the

POSTOPERATIVE IOP AFTER 30 DAYS (232 EYES)

IOP	Male	Female	Total	Percentage
≤ 15 mmHg	89	79	168	72.41
16 -20 mmHg	28	27	55	23.71
> 20 mmHg	5	4	9	3.88
Total	122	110	232	100

TABLE – 5

USE OF MITOMYCIN-C (232 EYES)

Year	Used	Not Used	Total
2000	0	68	68
2001	6	57	63
2002	19	82	101
Total	25	207	232
Percentage	10.78%	89.22%	100%

TABLE – 6

common types of glaucoma were open angle glaucoma (51.31%) and angle closure glaucoma (40.32%). Trabeculectomy does not improve the vision and therefore patient should be informed about this that it is necessary to prevent further deterioration of vision. In this study 69.86% showed no change in their visual acuity after trabeculectomy while 12.79% showed deterioration in their vision. In 17.35% vision improved, but these patients presented with acute glaucoma whose vision were temporarily deteriorated because of sudden rise of IOP and not due to optic nerve damage. Chronic glaucoma results in progressive visual field loss ultimately leading to blindness. The clinical manifestations of this process are characteristic optic disc and visual field changes. Most treatment modalities, including trabeculectomy aim to reduce IOP. In this study the decision to operate was most frequently based on IOP. Although evidence of progressive field and optic disc changes contributed to the decision to operate in many cases, they came second to absolute IOP. It would appear that IOP is the most influential factor when deciding to list a patient for trabeculectomy.[22]

Primary trabeculectomy in a newly diagnosed case of glaucoma,[23] has been advocated as it avoids visual field loss whilst attempting to control glaucoma medically[24] and is more successful than delayed trabeculectomy.[25,26] This study showed good IOP control after trabeculectomy. 72.41% patients had postoperative IOP up to 15 mmHg. In the national survey of trabeculectomy an IOP less than 16 mmHg was achieved in 54.6%.[6] A mean final IOP of 14.4mmHg (13.6-17.1mmHg) has been reported in other studies.[27,28] Studies of primary trabeculectomy, where trabeculectomy is the initial treatment of glaucoma, rather than trabeculectomy after medical treatment has failed, report success rates of approximately 98%.[29,30] But in these studies the target IOP was below 21 mmHg. In our study 96.12% patients showed IOP below 20 mmHg after trabeculectomy.

The most frequent complications in our study were shallow anterior chamber and hyphaema. Shallow anterior chamber was present in 27.59% of patients which is nearly same (23.9%) as reported in another study,[31] however only 14.2% patients showed shallow anterior chamber in another study. [32]
Hyphema occurred in 6.47% of patients in our study while in other studies it is reported 10.5%[32] and 24.6%[31] respectively.

CONCLUSION

Open-angle glaucoma is one of the leading cause of blindness in adult age so it should be our routine to check IOP of patients above forty years of age attending eye OPD for any reason so that glaucoma could be detected and treated before its later stages, thus preventing blindness. To date, the approach to treatment aims to reduce the intra ocular pressure (IOP) in hopes of reducing the progression of visual field (VF) loss. In measuring the effect of treatment, physicians are increasingly recognizing that the treatment approach, whether medical or surgical, can affect an individual patient's quality of life as can the disease itself.

Trabeculectomy is still one of the most used approaches for surgical reduction of IOP. Patients with better visual acuity at baseline tends to have better visual acuity after trabeculectomy therefore it is recom-

mended to do an early trabeculectomy when possible.

Our study suggests that primary trabeculectomy is a better method for cases in which a larger reduction in IOP is the aim of the treatment, especially in glaucoma patients who can not afford costly medicines, having poor compliance and still having high IOP despite maximum tolerable anti glaucoma medication.

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