Original Article

Trabeculectomy: A Long Term Follow-up of 455 Cases

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Purpose: To evaluate the outcome and complications of trabeculectomies performed at two tertiary care hospitals.

Material and Methods: A prospective case series of 455 cases of trabeculectomies performed at the Civil Hospital and Lyari General Hospital Karachi from 2000 to 2006. The preoperative and postoperative ocular data of 150 eyes in 120 patients is evaluated.

Results: Average follow-up period was 36.2 months with a minimum of 3 months and maximum of 60 months. Only 33% completed follow –up of at least two years so included in the analysis. Success, defined by a postoperative IOP ≤ 21 mm Hg or a decreased postoperative IOP of at least 25% from preoperative pressure if the preoperative IOP was already ≤21 mm Hg, was observed in 121 eyes (82.6 %) at last follow-up without any medication. Notable complications included hyphema of more than 5 days duration in 11(7.3%), Shallow anterior chamber in 6(4.7%), hypotony in 7(4.7%), Choroidal detachment in 2(1.3%), uncontrolled intraocular pressure, requiring further intervention, in 7(4.7%) and endophthalmitis in 1(0.7%). At 2 year follow-up cataract formation was observed in 32(21.7%) cases.

Conclusions: Results of this study suggest that the outcomes of trabeculectomies performed in this region have a high success rate, comparable with previous studies in the literature. Rates of complications are overall similar to those found in the published literature. Poor follow-up and non affordability for drugs makes trabeculectomy as a method of first choice.

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Trabeculectomy, introduced by Cairns[1] in 1968 and modified by Watson[2] in 1970 is still a gold standard for the surgical management of various types of glaucoma. It is successful in controlling the intraocular pressure without many of the serious operative and postoperative complications. In our working conditions it becomes a procedure of first choice because of poor follow-up, low socioeconomic status and non-affordability to the cost of medical treatment.

Purpose of our study is seeing the efficacy, document the complications and compare our results with those reported in the literature.

MATERIAL AND METHODS

All patients undergoing trabeculectomy at the department of Ophthalmology Dow University of Health Sciences and Sindh Government Lyari General Hospital and Civil Hospital Karachi from January 1997 to December 2006 inclusive, and who were available for follow-up for at least two years , were studied. A total of 120 patients (150 eyes) were included in the study. Informed consent was obtained from all participants before entry into study. They were divided into various glaucomatous groups based on the preoperative clinical and gonioscopic appearance (Table 1). Four groups accounted for 80% of cases (Table 1): primary open angle, acute angle closure, chronic angle-closure and normal tension glaucoma's.

TECHNIQUE

The surgical procedure is based on that described by Watson. Most of the operations were performed by the author under microscope. The operations were carried out under local anesthesia in adult and under general anesthesia in pediatric patients. A 4-0 silk superior rectus bridle suture was placed under direct visualization. In most cases a limbus based conjunctival flap was fashioned and in a few cases fornix based flap was made. Homeostasis was maintained with a wet field cautry avoiding the conjunctival flap. A 4x4 mm superficial rectangular or triangular scleral flap was fashioned and dissected well into the clear cornea at the surgical limbus, a paracentesis tract was made if high intraocular pressure is anticipated, a deep sclerotomy of 1x3 mm was performed and a window was created by Vannas scissor. Peripheral iridectomy was performed. Scleral flap was sutured with 10-0 Nylon and conjunctival flap wit 8-0 silk sutures. A sub-conjunctival injection of 2 mg betamethasone and 20 mg of gentamycin was given and a light pad and shield was applied. The patients were discharged on third or fourth day with following post operative medications:

- Atropine1% eye drops twice daily.
- Ofloxacin eye drops four times a day.
- Dexamethasone eye drops four times a day

FOLLOW UP

Patients were called for follow up weekly for one month then monthly for six months and then every six months to record visual acuity, IOP, and document any complication.

Data was analyzed by SPSS (V-11) for Windows.

RESULTS

There were 356 patients (455 eyes) in this study (Table 1) but only 120 patients with 150 (33%) eyes were available for follow up for at least two years. Average follow-up period was 36.2 months with a minimum of 3 months and maximum of 60 months. Age ranged from 3 months to 73 years with a mean of 42.6 years. Seventy five (62.5%) were males while forty five (37.5%) were females (Fig. 1). Eighty eight (58.7%) had primary open angle glaucoma, twenty three (15.3%) had primary angle closure glaucoma, congenital glaucoma accounted for 12(8%) cases, other type of glaucoma's were aphakic 4(2.7%), pseudophakic 3(2%), steroid induced 2(1.3%), normal tension 8(5.3%), neovascular 3(2%), glaucoma capsulare 4 (2.7%) and angle recession 3(2%).(Table 2).

Table 1: Preoperative diagnosis of glaucomas

Types	**Frequency n (%)**
Aphakic glaucoma	10 (2.2)
Steroid induced glaucoma	4 (0.88)
Congenital glaucoma	22(4.83)
Glaucoma capsulare	10 (2.2)
Normal tension glaucoma	20(4.38)

Neovascular glaucoma	12(2.63)
Primary angle closure glaucoma	77(16.94)
Pseudophakic glaucoma	12(2.64)
Primary open angle glaucoma	278(61.1)
Traumatic glaucoma	10 (2.2)
Total	455 (100)

Mean preoperative intraocular pressure was 30.4 mm of Hg. the results of this study at 12 months post operatively revealed that out of the 150 eyes 83 (55.3%) achieved a pressure of 15 mm of Hg or less. In addition 38(25.3%) eyes achieved a pressure between 15 and 21 mm of Hg. Total success rate without any medication was found to be 80.6%. While in 29 (19.3%) eyes pressure remained above 21 mm of Hg. (Table. 3).

Sub conjunctival drainage of aqueous is indicated by bleb formation. In our study good bleb was apparent in 131(87.3%) eyes (Fig. 2) while shallow or absent bleb was present in 19(12.7%) eyes (Table 4).

Short term minor complications includes anterior uveitis in 7 (4.7%), hyphema of more than 5 days duration in 11(7.3%), shallow anterior chamber in 6(4.7%), hypotony in 7(4.7%), choroidal detachment in 2(1.3%), uncontrolled pressure in 7(4.7%) and endophthalmitis in 1(0.7%). At 2 year follow-up cataract formation was observed in 32(21.7%) cases (Table 5).

Table 2: Type of glaucomas available for follow-up

Types	**Frequency n (%)**
Aphakic glaucoma	4 (2.7)
Steroid induced glaucoma	2 (1.3)
Congenital glaucoma	12 (8.0)
Glaucoma capsulare	4 (2.7)
Normal tension glaucoma	8 (5.3)
Neovascular glaucoma	3 (2.0)
Primary angle closure glaucoma	23(15.3)
Pseudophakic glaucoma	3 (2.0)
Primary open angle glaucoma	88(58.7)
Traumatic glaucoma	3 (2.0)
Total	150(100)

Table 3: Intraocular pressure at last follow-up

IOP Range	**Frequency n (%)**
Below 10 mm of Hg	4 (2.7)
11-15	79(52.7)
16-21	38(25.3)
22-25	17(11.3)
Above 30	12 (8.0)
Total	150(100)

Table 4: Type of blebs at last follow-up

Bleb type	**Frequency n (%)**
Cystic	15(10)
Good bleb	116(77.3)
No bleb	13(8.7)
Shallow bleb	6(4.0)
Total	150(100)

Table 5: Post operative complications

Complications	**Frequency n (%)**
No complication	77 (51.3)
Anterior uveitis	7 (4.7)
Cataract formation	32(21.3)
Choroidal detachment	2 (1.3)
Endophthalmitis	1(.7)
Hypotony	7(4.7)
Hyphema	11(7.3)
Shallow anterior chamber	6 (4.0)
Uncontrolled pressure	7 (4.7)
Total	150(100)

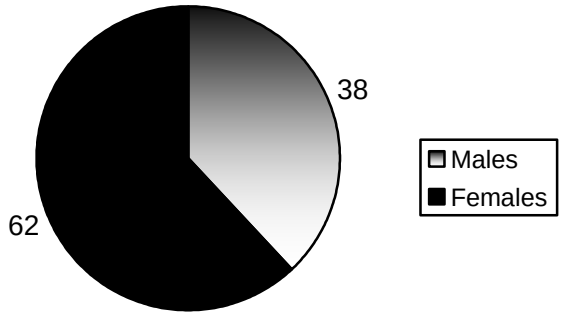

Fig. 1: Sex distribution

Fig 2: Left eye six months after trabeculectomy. Arrow showing good drainage bleb.

DISCUSSION

Mean age in our study is 42.6 years which is less than reported in other studies (49.4)[3] and (60.9)[4]. The intraocular pressure was normalized in 121(80.6%) of eyes without the addition of any therapy. These results are consistent with those reported by many previous authors (84 %) [5, 6]. Hypotony (IOP<10 mmHg) of more than one moth duration was reported in 4.7% of 150 eyes which is lower than reported (9.9%) in other series[7].

The incidence of hyphema of more than 5 days duration is 7.3% in this series. Other authors have reported an overall incidence of hyphema more than reported in this series[8]. The incidence of cataract after classic fistulising procedures has been reported to be 66% in a recent study after a follow up of 36 months.

This study included all types of cataracts classified according to the LOCS III (Lens Opacity Classification System III) Classification[9]. The incidence of cataract in this series producing a decrease in visual acuity of more than 2 Snellen's lines is 21.7%. This lower incidence is due to the fact that we included only those patients who asked for visual rehabilitation due to cataract formation. Other complications reported in this series are shallow anterior chamber, anterior uveitis, choroidal detachment and uncontrolled intraocular pressure had almost same incidences reported in other series[10,11]. One case (0.7%) developed chronic endophthalmitis. this complication has not been reported in many series[3,5,8]. One thing that deserve worth mentioning is a poor long term follow up. Only 33% patients were available at 2 years of follow up. This could be due to social and economical situations prevailing in this region.

CONCLUSION

In summary, it appears from this study, that trabeculectomy is an important surgical procedure in the treatment of glaucoma. It is a procedure with serious complications but in our society it might be a procedure of first choice.

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