EFFECTIVENESS OF TRABECULECTOMY IN PRIMARY OPEN ANGLE GLAUCOMA

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ABSTRACT

Objective: *To analyze the change of intraocular pressure (IOP) brought about by trabeculectomy and to analyze any further changes in intraocular pressure after trabeculectomy during three months follow-up.*

Material and Methods: *Patients who presented to eye department of Khyber Teaching Hospital Peshawar and were diagnosed as primary open angle glaucoma (POAG) and selected for trabeculectomy were included in the study, from 1998 to 2001. History, examination and relevant investigations were performed. All cases of trabeculectomy were analyzed and the follow up period was three months.*

Results: *The total number of patients included for trabeculectomy was 44 and the total trabeculectomies performed were 50 as in six cases, bilateral operations were done. Out of 44 patients, 34 (77.2%) were male and 10 (22.8%) were female. The age of the patients ranged from 43 to 80 years. The pre-operative intra ocular pressure ranged from 12 to 60 mm of mercury. The lower ranged intra ocular pressure was those cases of primary open angle glaucoma that were on maximum medical treatment. The post-operative intra ocular pressure was recorded on 1st and 15th post-operative days, one month after surgery and three months after trabeculectomy. The mean intra ocular pressure on 1st and 15th post-operative days, one month and 3 months after surgery was 10.2, 9.8, 12.55 and 10.7 mm of mercury respectively. Overall 92% cases were declared as complete success.*

Conclusion: *Trabeculctomy is a safe and effective procedure for primary open angle glaucoma.*

Key Words: *Primary Open Angle Glaucoma (POAG), Intraocular Pressure (IOP), Trabeculectomy.*

INTRODUCTION

Glaucoma is one of the leading causes of irreversible blindness and *Primary Open Angle Glaucoma* (POAG) is the most prevalent of all glaucomas affecting individuals over the age of 40 years. [1,2] The different treatment options available for POAG are medical, surgical and laser therapies; all of which are rapidly reshaping. [3-5] Trabeculectomy lowers intraocular pressure (IOP) by the creation of a new channel for aqueous outflow between the anterior chamber and subtenon's space. It involves excision of a small length of the trabecular meshwork, Schlemn's canal and sclera leaving the excised area covered by a superficial scleral flap. The use of a lamellar scleral flap allows a more subtle control of the drainage than in the older operations that create direct access from the anterior chamber to the subconjunctival tissues. Viscocanalostomy [7-9] and other non perforating filtration surgical techniques are the more advanced and modified techniques. Present study was therefore designed as to analyze the change of intraocular pressure (IOP) brought about by trabeculectomy and to analyze any further changes in intraocular pressure after trabeculectomy during three months follow-up.

MATERIAL AND METHODS

This study was conducted at eye department of Khyber Teaching Hospital Peshawar on patients who were diagnosed as primary open angle glaucoma (POAG) and selected for trabeculectomy from 1998 to 2001. Those patients who were 40 years of age or older were included. The exclusion criteria consisted of all cases of angle closure glaucomas, secondary glaucomas and traumatic glaucomas. History, examination and relevant investigations were performed. All patients were subjected to slit lamp examination to exclude any associated ocular disease. Gonioscopy

PREOPERATIVE AND POSTOPERATIVE IOP OF PATIENTS

Duration before & after surgery	Range of IOP (mm Hg)	Mean IOP (mm Hg)	Mode	Median
Pre-op IOP	12 - 60	34.76	30	30
1st Post-op day	3 - 22	10.2	10	10
15th Post-op day	3 - 15	9.8	10	10
1month after surgery	7 - 16	12.55	10	13
3 months after surgery	9 - 15	10.7	10	10

Table 1

was also undertaken. Fundoscopy of all patients was done to know the cup-disc ratio and status of the nerve fiber layer. IOP of all patients was recorded with Goldmann applanation tonometer. Visual fields were analyzed with Goldmann perimeter. After diagnosing the patients as POAG and selecting them for trabeculectomy, they were included in the study. A total of 50 cases of trabeculectomy in 44 patients were analyzed using SPSS system.

RESULTS

The total number of patients included for trabeculectomy was 44. The total trabeculectomies performed were 50 as in six cases, bilateral operations were done. Out of 44 patients, 34 (77.2%) were male and 10 (22.8%) were female. The age of the patients ranged from 43 to 80 years. The pre-op IOP ranged from 12 to 60 mm Hg. The lower ranged IOP were those cases of POAG who were on maximum medical treatment. In this study, 92% cases were declared as complete success, 4% cases needed digital massage to bring the IOP to below 21 mm Hg and 4% cases needed post-operative beta blockers to bring the IOP to below 21 mm Hg. So these 8% cases were declared as partial success. The post-op IOP was recorded on 1 and 15 st th Post-op day, one month after surgery and three months after trabeculectomy. It was found that the drop of in the mean pre- operative IOP level brought by trabeculectomy was 30%.

The IOP recorded is shown in the table 1:

DISCUSSION

Trabeculectomy has an edge over the old drainage procedures such as cyclodialysis, corneoscleral trephine and scleral cautry because trabeculectomy has less chance of complication [10] like shallow anterior chamber, infection and drainage failure. [11-12] As the medical treatment [13-15] of Glaucoma has got limitations, for example, cost, availability, compliance and resistance; trabeculectomy [16] is a better option than medical treatment in many cases. Trabeculectomy also has got its failure and complications, for example, infection [17], shallow anterior chamber [18] and malignant glaucoma. [19] However, in case POAG, Trabeculectomy is a safe procedure and it is effective in over 90% of the cases. After trabeculectomy there is a gradual rise in IOP as time passes. Keeping this trend in mind, the target post-op IOP was kept in the lower limit of normal range i.e. 10 15 mm of mercury for the first 3 months after surgery in this study. In our study the mean IOP was around 10 mm of mercury on the 1 st and 15 th Post-operative day and at the end of 3 rd month. At the end of the 1 month the mean IOP was 12.5 mm Hg. The high IOP at the end of 1 st month was due to the use of topical steroids that were tapered and stopped at the end of the second month, after which the IOP came back to lower value. In this study, 92% cases were declared as complete success, 4% cases needed digital massage to bring the IOP to below 21 mm Hg and 4% cases needed post-op beta blockers to bring the IOP to below 21 mm Hg. So these 8% cases were declared as partial success. The results are comparable to those of Babar TF [20]. In that study out of 46 eyes, the IOP was maintained below 21 mm Hg without medications in 42 eyes (91.3%). But the difference between the two studies is that Baber's study includes all types of primary glaucomas while our study includes only primary open angle glaucoma cases. In another local study on trabeculectomy on all types of glaucoma, the 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. [21] The results also comparable with those of Zaidi AA et al [22]. In that study, the success at 1 month st was 84.4 % without medications. His study included 66 eyes, 33 of which were having POAG, 2 were having neovascular glaucoma and 1 case was that of chronic closed angle glaucoma. The study of Sihota R et al [23] also showed a success rate of 94% in POAG.

CONCLUSION

Trabeculectomy is a safe and effective procedure for primary open angle glaucoma

because it has reduced and maintained IOP in the lower limit of normal range within the study period.

REFERENCES

1. Goldberg I, Glaucoma in the 21st century, Asian Journal Ophthalmol 2000; 2:12.
2. Gayasi M, Amoaku W. Outcome of trabeculectomies without adjunctive antimetabolites. Ghana Med J 2006;40:39-44.
3. Gherghel D, Orgul S, Gugleta K, Gekkieva M, Flammer J. Relationship between ocular perfusion pressure and retrobulbar blood flow in patients with glaucoma with progressive damage. Am J ophthalmol 2000, 130; 597- 8.
4. Grading of the angle, Kanski clinical ophthalmology, 4th edition, 1999, 193-94.
5. The eye MD association, Ophthalmology by American academy of ophthalmology, Lippincot Williams and Wilson publishers, 1999, 106: 1743.
6. Kanski. Clinical ophthalmology; In: Interpretation of gonioscopic findings, 4th edition, 1999:192.
7. Carassa R, Kozlova T, Mermoud A, Palmberg P. Non-perforating filtration surgery; International glaucoma review 1999;1:15.
8. Gilmour DF. Visocanalostomy versus trabeculectomy for primary open angle glaucoma. Eye 2007: {epub ahead of print). Available at, http://www.ncbi.nlm.nih.gov/sites /entrez
9. Yalvac IS, Sahin M. Primary viscocanalostomy versus trabeculectomy for primary open angle glaucoma. J Cataract Refracts Surg 2004; 30:2050-7.
10. Miyake T, Sawada A, Yamamot T. Incidence of disc hemorrhage in open angle glaucoma before and after Trabeculectomy. J Glaucoma 2006;15:164-71.
11. Henkind P, Starita R, Tarrant T. Atlas of Glaucoma. New Rochelle, NY:. Medical Dialogues, 1984: 8-9.
12. Moses RA, Hart WM. Adler's physiology of the eye, clinical application, 8th ed. st. louis, mosby company. 1987: 209-12.
13. Reyes A. Beta blocking agents, Asian Journal Ophthalmol, 1999; 1(4): suppl; 14.
14. Khu PM. Adrenergic agonists. Asian J Ophthalmol1999; 1(4): suppl13.
15. Robert A. Moses; William M Hart, Adler's physiology of the eye, 8th edition, st. louis, mosby company,1987; 226-28.
16. Anand A,Negi S, Khokhar S. Role of early trabeculectomy in primary open angle glaucoma in developing world, Eye.2007;21(1):40-5.
17. Collignon NJ, Collignon-Brach JD. Effect of topical betablockers on human retinal vessels diameters. Int Ophthalmol. 1998;21:199-203.
18. Rojanapongpun P. Surgical management of late leaking blebs. Asian J Ophthalmol 2000;2: 412-14.
19. Benson SE, Mandal K, Bence CV. Is post-trabeculectomy hypotony a risk factor for subsequent failure? BMC Ophthalmol. 2005;5(1):7.
20. Baber TF. An audit of 81 cases of trabeculectomies in primary glaucoma in NWFP. J Med Sci 2000;10:38.
21. Jalal T, Mohammad S. Three years retrospective study of patients undergone Trabeculectomy in Lady Reading Hospital Peshawar. J Postgrad Med Inst 2004; 18(3): 487-94.
22. Zaidi AA. Trabeculectomy: A review and four years follow up. Br J Ophthalmol 1980;64: 438.
23. Sihota R, Gupta V, Agarwal HC. Long term evaluation of trabeculectomy in primary open angle glaucoma and chronic primary angle closure glaucoma in Asian population. Clin Experimental Ophthalmol 2004; 32(1):23-8.

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