Original Article

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Trabeculectomy and Trabecular Aspiration to Treat Pseudoexfoliation Glaucoma: A Randomised Control Trial

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Abstract

Objective: To find the effectiveness of trabecular aspiration in reducing (IOP) Intraocular pressure in patients with pseudoexfoliation syndrome. *Materials and Methods:* The patients with pseudoexfoliation glaucoma visiting ophthalmology Outpatient department of R.L. Jalappa hospital were taken for this study. 44 patients out of 56 patients came for the followup. The patients were consecutively segregated into 2 groups. Group 1 underwent trabecular aspiration and Group 2 underwent trabeculectomy. Trabecular aspiration was done with trabecular aspiration probe directed against trabecular meshwork at 6 o' clock position. Suction pressure between 100 to 200 mm Hg was applied over 5 to 6 clock hours. Trabeculectomy was done in group 2 patients. In this technique a fistula was created to allow aqueous outflow from anterior chamber to subtenons space under guard of scleral flap. It is a prospective randomised control trial. Both the group patients were followed for 1 week, 2 weeks,1 month, 2 months and 3 months. Intraoperative and postoperative complications like hyphaema,shallow anterior chamber were noted. *Results:* The mean IOP was 16.27 mm Hg and 12.6 mm Hg in Group 1 and Group 2 respectively on first postoperative day. The p value of < 0.001 showed IOP was statistically significant between the two groups. First postoperative week showed mean IOP 16.18 mmHg in group 1 and 12.36 mm Hg in group 2. p value being <0.001 showed the difference between IOP in two groups was statistically significant even upto three months. *Conclusion:* The IOP reduction was more in trabeculectomy group than trabecular aspiration group. Complications such as hyphaema and shallow anterior chamber were seen in trabeculectomy group.

Keywords: Trabecular aspiration,Trabeculectomy

Introduction

Pseudoexfoliation glaucoma is associated with exfoliation syndrome which is characterized by greyish white flecks on pupillary border.It is the most common open angle type with blockage of the trabecular meshwork by exfoliation material and pigments [1,2]. Assuming that the main pathogenic factor in pseudoexfoliation glaucoma is obstruction of filtering pores of trabecular meshwork which becomes increasingly clogged by deposits of pigments and exfoliation material,a surgical procedure relieving the uveal meshwork of its debris should be reasonable and effective [3]. Trabeculectomy as filtering procedure is used for pseudoexfoliation glaucoma [4,5].

Objective

To find the effectiveness of trabecular aspiration in reducing intraocular pressure in patients with pseudoexfoliation glaucoma

Materials And Methods

Forty-four (44) patients out of 56 patients with pseudoexfoliation glaucoma came for follow up.Consecutively patients were segregated into two groups. Group 1 patients underwent trabecular aspiration and Group 2 patients underwent trabeculectomy. This is a prospective randomized control trial.

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Inclusion Criteria

Patients with pseudoexfoliation glaucoma

Exclusion Criteria

1. High grade cataract
2. Glaucoma other than pseudoexfoliation glaucoma
3. Diabetes Mellitus
4. Hypertension
5. History of uveitis
6. History of herpetic keratitis
7. Ocular trauma
8. Previous intraocular surgery.

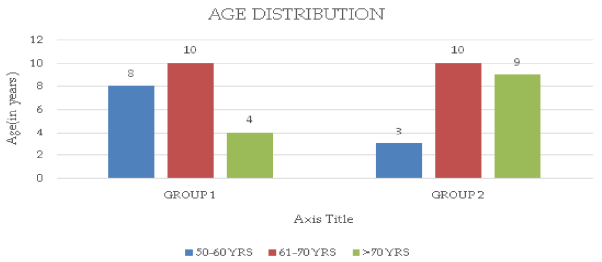
Each group underwent preoperative evaluation like measurement of Best corrected visual acuity (BCVA). Distant vision was recorded by Snellens chart. Visual field analysis was done using Humphrey visual field analyser, intraocular pressure was measured by Goldmann applanation tonometry, gonioscopy was done by using Goldmann single mirror. Fundus evaluation was done using +90 Dioptreslit lamp biomicroscopy. All patients underwent routine random blood sugar level examination. Treatment before surgery included oral Acetazolamide 250 mg,mannitol infusion if necessary in few patients. All surgeries were performed by a single surgeon under peribulbar local anaesthesia. Digital pressure for 10-15 mins was applied and prophylactic antibiotic ciprofloxacin 0.3% eye dropsfour times per day was given topically one day before surgery. Trabecular aspiration was performed in all Group 1 patients under the operating microscope.Under aseptic precautions 1% hydroxy methyl cellulose viscoelastic substance was injected into the anterior chamber through sideport at 9′0 clock region. The trabecular aspirator with aspiration probe 400 µ introduced into the anterior chamber through a clear corneal incision at 12′0 region and directed against the trabecular meshwork in 6′0 position aspirating 5 to 6 clock hours inferiorly.Suction pressure was maintained for 100- 200 mm Hg during the procedure. The wound was closed with 10-0 monofilament nylon suture. The remaining viscoelastic was evacuated by gentle irrigation with basal salt solution which also served to reform the anterior chamber. 0.5 ml of 50 mg gentamycin mixed with 2mg dexamethasone was injected in subconjunctival space. Informed consent were taken from all the patients. Trabeculectomy was done in Group 2 patients. Under peribulbar anaesthesia limbal based conjunctival peritomy was done. 4mm x 5mm superficial scleral flap was made at 11-12′0 region superiorly and extended little towards the cornea. The inner scleral flap of triangular shape 2mmx3mm was excised along trabecular meshwork. Broad based iridectomy was done.Superficial scleral flap was closed by 10-0 vicryl at three sites. Conjunctiva was closed with 10-0 nylonsuture. Through paracentesis balanced salt solution was pushed into the anterior chamber to see the elevation of bleb.0.5 ml of 50 mg gentamycin with 2 mg dexamethasone was given to all patients subconjunctivally at the end of surgery. After the surgery the two groups were followed accordingly 1st week, 2nd week, 1 month and 3 months. Many of the patients did not turnup for 6th month followup, hence duration of followup was only for 3 months after surgery.

Results

Age of the patients ranged from 56 to 83 years and 60 to 85 years in Group 1 and 2 respectively. (Table 1 and Graph 1)

Table 1: Age Distribution

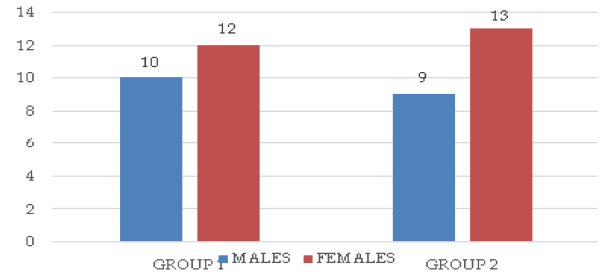
Age	Group 1	Group 2
50-60	8	3
61-70	10	10
>70	4	9



Graph 1:

Table 2: Sex Distribution

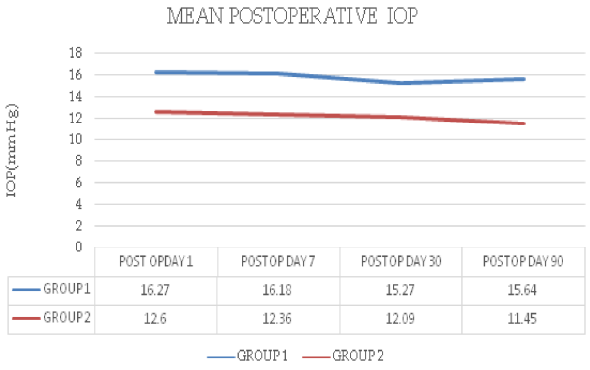
	Group 1	Group 2
Males	10	9
Females	12	13



Graph 2:
Group 2 consists of 10 males and 12 females and group 2 consists of 9 males and 13 females (Table 2 and Graph 2)

Table 3: Group Statistics

	Groups	N	Mean	Std. Deviation	Std. Error Mean	P-Value
Pre OP IOP	Trabecular Aspiration	22	31.64	4.170	.889	< 0.001
	Trabeculectomy	22	13.09	3.006	.641	
Post Op Iop Day 1	Trabecular Aspiration	22	16.27	2.492	.531	< 0.001
	Trabeculectomy	22	12.64	3.230	.689	
Post Op Iop At 1 Week	Trabecular Aspiration	22	16.18	2.039	.435	< 0.001
	Trabeculectomy	22	12.36	2.871	.612	
Post Op Iop At 1 Month	Trabecular Aspiration	22	15.27	2.354	.502	< 0.001
	Trabeculectomy	22	12.09	2.266	.483	
Post Op Iop At 3 Months	Trabecular Aspiration	22	15.64	2.279	.486	< 0.001
	Trabeculectomy	22	11.45	2.324	.496	



Graph 3:

Statistical analysis was done by Student t test. The mean IOP was 16.27 mm Hg and 12.6 mm Hg in Group 1 and Group 2 respectively on first postoperative day. The p value of < 0.001 showed IOP was statistically significant between the two groups. First postoperative week showed mean IOP to be 16.18 mmHg in group 1 and 12.36 mm Hg in group 2. P value being <0.001 showed the difference between IOP in two groups was statistically significant. One month postoperatively the mean IOP was 15.27 mm Hg in group 1 and 12.09 mm Hg in Group 2. p value of <0.001 showed the intraocular pressure in Group 2 statistically significant than group 1. At the end of postoperative three months the mean IOP was 15.64 mm Hg in group 1 and 11.45 mm Hg in group 2. P value of <0.001 suggests that IOP is statistically significant between Group 1 and 2 (Table 3, Graph 3).

Table 4:

Complications	group		Total
	Trabecular Aspiration	Trabeculectomy	
Hyphaema	0	2	2
NIL	22	19	40
Shallow Ac	0	1	1
Total	22	22	44

Two patients had hyphaema and shallow AC (Anterior chamber) in Group 2 (Table 4).

Discussion

Secondary pseudoexfoliation glaucoma is more common in kolar district and commonly causes open angle glaucoma. Pseudoexfoliation debris blocks trabecular meshwork pores which impedes aqueous outflow.

Postoperative problems like fibrin deposition, uveitis, cataract, synechiae formation, pupillary block, vitreous loss, hyphaema, shallow anterior chamber are seen more in trabeculectomy group. Trabecular aspiration is a new concept in nonfiltering surgery in pseudoexfoliation glaucoma. The main advantage of trabecular aspiration over trabeculectomy is that it facilitates the aqueous outflow in conventional drainage system rather than creating a fistula. The high vacuum aspirates the intratrabecular pseudoexfoliate materials and clears the obstructive pathology for drainage of aqueous humor.

In our study we would have studied the post-operative IOP variation between 2 groups upto 2 years, since the patients are noncompliant for regular followup we noted the IOP upto 3 months.

Though the IOP on trabecular aspiration is more when compared to trabeculectomy group, topical antiglaucoma medication was not given in group 1 as the IOP was within the range.For hyphaema cases, Acetazolamide 250 mg BD and Timolol 0.5% BD were given for initial one week. There was no corneal haze, choroidal effusion in both the groups. 1 case had shallow anterior chamber on first postoperative day in Group 2 and formed on fourth postoperative day. We considered success or failure according to individualized target pressures and not on the basis of uniform IOP cut off. In this context, success rate is taken into account that the absolute IOP reducing capacity will be always higher in filtering procedure than in non filtering procedure.

Conclusion

The IOP reduction was more in trabeculectomy group than trabecular aspiration group. Complications such as hyphaema and shallow anterior chamber were seen in trabeculectomy group.

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