



## Different patterns of glaucoma management in South Punjab.

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**ABSTRACT...** **Objectives:** Glaucoma is the most common blinding condition in South Punjab of Pakistan and its management is a challenge due to illiteracy and lack of financial resources. **Study Design:** Randomized Clinical Trial. **Setting:** Department of Ophthalmology Nishtar Hospital Multan. **Period:** June 2016 - June 2018. **Material & Methods:** We have randomly selected patients on the basis of Cup to Disc ratio and applied randomized clinical trial of both medical and surgical modalities of glaucoma management to observe the visual outcomes in terms of Intraocular pressure and Cup to disc ratio. **Results:** The vision survival of trabeculectomy in pseudophakics was 88.77% while only 9.8% was the survival rate of trabeculectomy in phakics. 90% of 31 phakic patients who underwent trabeculectomy failed. Similarly patients on 3 IOP lowering drugs had 70% vision survival rate out of 260 patients treated. Patients with C-D ratio 0.8 had maximum failure rate of 69% out of 78 patients in which medical treatment failed. **Conclusion:** Trabeculectomy significantly reduced the intraocular pressure in patients in which pharmacological treatment failed. The success rate of trabeculectomy among pseudophakics is high. In Phakics, when only Trabeculectomy is done, success rate is low. When trabeculectomy and clear lens extraction is done simultaneously, the success rate is slightly higher. When trabeculectomy is done after clear lens extraction, the success rate is highest. In case of Cataract, cataract extraction and trabeculectomy when done simultaneously, show low success rate. When trabeculectomy was done after cataract extraction, shows highest success rate.

**Key words:** Glaucoma, Management, South Punjab, Trabeculectomy.

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## INTRODUCTION

Glaucoma by definition is basically a chronic and progressive optic neuropathy which is caused by a group of ocular conditions which leads to the damage of optic nerve with loss of visual functions.<sup>1,2</sup> The most common known risk factor is increased IOP (normal is 12-22 mmHg). The modern goals of glaucoma management are to prevent glaucomatous optic nerve damage, preserve visual field defects of the patient and finally the total quality of life with minimal side effects of medications or the surgical procedures.<sup>3-5</sup>

Glaucoma is a 4<sup>th</sup> leading cause of blindness according to a survey done in Pakistan in 2007. Which showed that glaucoma if not managed properly can easily lead to the top blinding conditions in Pakistan.<sup>6</sup> As awareness

of glaucoma, its complications and treatment is still an issue in the region due to illiteracy, lack of financial resources and motivation among patients.<sup>7</sup> All these factors are the reason of glaucoma being a Silent killer of vision in our society which makes glaucoma management more challenging and crucial for saving vision.<sup>8</sup>

## MATERIAL & METHODS

We screened 500 patients irrespective of gender and age over 2 years (from June 2016 - June 2018) period for their Cup to Disc ratio. Then we randomly assigned medical and surgical treatment modalities to patients and followed the outcomes. We linked the results with lenticular status of the patient i.e. phakic or pseudophakic. We also recorded the results of patients who underwent trabeculectomy as well as cataract surgery in a single sitting.

**Inclusion Criteria**

1. Cup to disc ratio 0.7-0.9.

**Exclusion Criteria**

Includes

1. C-D ratio less than 0.7
2. Already undergone surgery for IOP control.
3. Lost to follow up

“Success or Survival” means the recovery of visual acuity and “Failure” means the deterioration of vision to non perception of light, inability to decrease C-D ratio and attain target IOP.

Target IOP was <12mmHg

We also recorded if the subjects had prior knowledge about their ailment, if they had previous medical record which included their previous investigations, treatments and further plans. Patients were followed according to their CD ratio, target IOP and lenticular status (i.e. phakic or pseudophakic). To remove the Observer bias, we restricted the surgeon number to one. We used Microsoft excel for data analysis. Following is graphical and tabular presentation of observed outcomes.

Moving on, only 410 patient had proper follow up for the study, of which 150 were managed by surgery and 260 were managed by pharmacotherapy

Based on patients with proper follow up, we planned following procedures and observed the outcome

**RESULTS**

**Surgical Management Outcomes**

Cupping	Patients	Percentage
0.70	215	43%
0.80	107	21%
0.90	178	35%

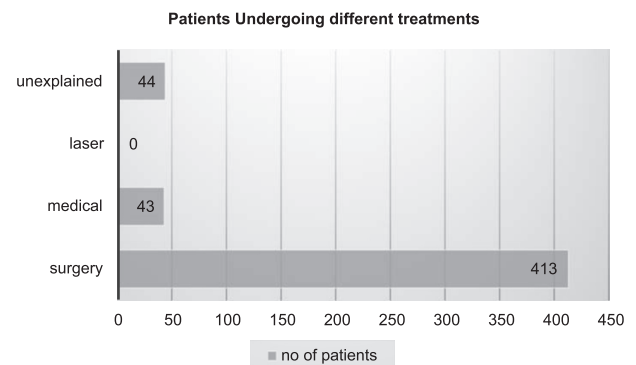
**Table-I. Patients with glaucoma by cup to disc ratio n=500**

Investigation	Patients	Percentage
IOP record	330	65.47%
Visual Field	88	17.46%
OCT	43	8.53%
CCT	43	8.53%

**Table-II. Patients having previous investigation records.**

Glaucoma Cases	No of Patients
Known cases	291
Recently diagnosed	209

**Table-III. Known status of glaucoma patients**



**Figure-1. Patients having different plans of treatment previously.**

Treatment	Number of Patients	Percentage
Surgically by Trabeculectomy	150	36.58%
Pharmacologically	260	63.41%
Total	410	100%

**Table-IV. Number of patients undergoing two management plans n=360**

Cup to Disk Ratio	Number of Patients	Percentage
0.9	82	54.66%
0.8	37	24.66%
0.7	31	20.66%
Total	150	100%

**Table-V. Number of patients with certain cup to disk ratio undergoing Trabeculectomy n=150**

We categorised 150 trabeculectomy patients into three groups

- Group 1: Pseudophakics (N=52), (who already have undergone cataract surgery before taking part in our study) had trabeculectomy

with success\* of 88.77 %.

- Group 2: Phakics (N=59), out of these patients 31 undergone only trabeculectomy with success of only 9.86%. 22 undergone combined clear lens extraction and trabeculectomy with success of 50 %. 6 patients underwent clear lens extraction first and then trabeculectomy later with success of 83.33%.
- Group 3: Cataractus (N=39), out of these 12 undergone combined cataract extraction and trabeculectomy with success of 25%. 27 undergone first cataract extraction and later trabeculectomy with success of 70.37%.

**Medical Management Outcomes**

Patients on drugs were divided based upon the number of drugs they were advised. Their overall outcomes were recoded.

**DISCUSSION**

This study is somewhat similar to the study of Wishart and Atkinson, who recommended cataract extraction surgery as the first procedure in eyes of the patient with cataract and primary angle

closure glaucoma, rather than combined cataract and filtering surgery together.<sup>9</sup> The study of James C and Bobrow also supports our study. It shows that after an average of 87 months of follow-up of cataract extraction and IOL implantation reduced IOP by 4.4 mmHg. After almost 80 months of follow-up of cataract extraction surgery, IOL implantation, and trabeculectomy reduced IOP by 8.2 mmHg. But they also used medications for the treatment along with surgery.<sup>10</sup> Study of Salmon shows that those Phakic patients who had undergone just trabeculectomy without earlier removal of lens, one third of the patients required a second surgical procedure (either a second trabeculectomy or a cataract extraction) within 3 years of.<sup>11</sup> Some studies suggest only Lens extraction to be effective in lowering intraocular pressure in PACG and has even been advocated as an alternative to filtration surgery in select cases as a result.<sup>12-14</sup> Doing glaucoma surgical procedure alone may accelerate the cataract formation, which means the patient would be in need of cataract surgery soon in future. Performing cataract extraction surgery alone may decrease the intraocular pressure (IOP) independently<sup>15,16</sup>,

Lenticular Condition	Procedure	Survived	Failed	Total
Pseudophakics	Trabeculectomy	42 (88.77%)	10 (19.23%)	52
Phakics	Only Trabeculectomy	3 (9.86%)	28 (90.32%)	31
	Simultaneous Clear Lens Extraction & Trabeculectomy	11 (50%)	11 (50%)	22
	Clear Lens Extraction & Later Trabeculectomy	5 (83.33%)	1 (16.67%)	6
Cataract	Simultaneous Cataract Extraction & Trabeculectomy	3 (25%)	9 (75%)	12
	Cataract Extraction & Later Trabeculectomy	19 (70.37%)	8 (29.63%)	27
Total		83 (55.33%)	67 (44.67%)	150

**Table-VI. Outcome of different procedures done under different lenticular conditions n=150**

Number of Drug(s)	Number of Patients	Total Survived	Total Failed	Total
1	31 (18.46%)	182 (70%)	78 (30%)	260 (100%)
2	55 (27.69%)			
3	124 (54.23%)			

**Table-VII. Outcome of patients undergoing pharmacological treatment (n=260)**

Cup to Disk Ratio	Number of Patients	Percentage
0.7	7	9.52%
0.8	55	69.84%
0.9	16	20.63%

**Table-VIII. Number of patients with respect to their cup to disk ratio in which pharmacological treatment failed n=78**

but this is variable, especially in poorly controlled glaucoma with severe visual field defects.<sup>13</sup> There is inconclusive research evidence of an increased risk of complications while doing combined surgery over cataract surgery alone, and the information about long-term outcomes (follow-up of five years or more) is unavailable.<sup>17,18</sup>

In study of glaucoma cases, the diagnosed cases are less than the known cases

**Cup to disc ratio** , **IOP** record, **visual field** and other parameters should be studied for treatment and control of glaucoma

Different medical and surgical procedures should be studied.

The prognosis of surgical procedures are discussed whereas the Pharmacological treatments are not studied with the different survival rate

Glaucoma should be studied with other endocrinal systemic and local disorder in correlation with ocular congenital and acquired disorders

Congenital and acquired Glaucoma should be studied separately with different parameters and treatments

## CONCLUSION

Trabeculectomy significantly reduced the intraocular pressure in patients in which pharmacological treatment failed.

The success rate of trabeculectomy among pseudophakics is high.

In Phakics, when only Trabeculectomy is done, success rate is low. When trabeculectomy and clear lens extraction is done simultaneously, the success rate is slightly higher. When trabeculectomy is done after clear lens extraction, the success rate is highest.

In case of Cataract, cataract extraction and trabeculectomy when done simultaneously, show low success rate. When trabeculectomy was done after cataract extraction, shows highest

success rate.

The success rate of only trabeculectomy is higher among pseudophakics as compared phakics.

The success rate of trabeculectomy done after lens extraction shows higher success rate in phakics as compared to cataract patients.

Trabeculectomy should be done after the removal of cataract to achieve higher success rates.

Those patients with cup to disk ratio of 0.8 show highest rate of pharmacological treatment failure.






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## REFERENCES

1. Mantravadi AV, Vadhar N. **Glaucoma**. Primary care. 2015; 42(3):437-49.
2. Michelessi M, Lucenteforte E, Oddone F, Brazzelli M, Parravano M, Franchi S, et al. **Optic nerve head and fibre layer imaging for diagnosing glaucoma**. The Cochrane database of systematic reviews. 2015 (11):Cd008803.
3. Thomas R, Loibl K, Parikh R. **Evaluation of a glaucoma patient**. Indian Journal of Ophthalmology. 2011; 59(7):43-52.
4. Noecker RJ. **The management of glaucoma and intraocular hypertension: Current approaches and recent advances**. Therapeutics and clinical risk management. 2006; 2(2):193-206.
5. Parikh R, Parikh S, Navin S, Arun E, Thomas R. **Practical approach to medical management of glaucoma**. Indian Journal of Ophthalmology. 2008; 56(3):223-30.
6. Dineen B, Bourne R, Jadoon Z, Shah SP, Khan MA, Foster A, et al. **Causes of blindness and visual impairment in Pakistan. The Pakistan national blindness and visual impairment survey**. British journal of ophthalmology. 2007; 91(8):1005-10.
7. Butt NH, Ayub MH, Ali MH. **Challenges in the management of glaucoma in developing countries**. Taiwan journal of ophthalmology. 2016; 6(3):119-22.
8. Farooq S, Jaffar S, Kausar A. **Determinants of glaucoma awareness in urban punjab**. Pakistan Armed Forces Medical Journal. 2015; 65(5):591-4.

9. Wishart PK, Atkinson PL. **Extracapsular cataract extraction and posterior chamber lens implantation in patients with primary chronic angle-closure glaucoma: Effect on intraocular pressure control.** Eye (London, England). 1989; 3 ( Pt 6):706-12.
10. Bobrow JC. **Cataract extraction and lens implantation with and without trabeculectomy: An inpatient comparison.** Transactions of the American Ophthalmological Society. 1998; 96:521-56.
11. Salmon JF. **The role of trabeculectomy in the treatment of advanced chronic angle-closure glaucoma.** Journal of glaucoma. 1993; 2(4):285-90.
12. Sommer A, Tielsch JM, Katz J, Quigley HA, Gottsch JD, Javitt J, et al. **Relationship between intraocular pressure and primary open angle glaucoma among white and black Americans.** The Baltimore Eye Survey. Archives of ophthalmology (Chicago, Ill : 1960). 1991; 109(8):1090-5.
13. Bojkian KD, Chen PP. **Intraocular pressure after phacoemulsification in open-angle glaucoma patients with uncontrolled or marginally controlled glaucoma and/or with severe visual field loss.** Journal of glaucoma. 2018; 27(2):108-14.
14. Gunning FP, Greve EL. **Lens extraction for uncontrolled angle-closure glaucoma: Long-term follow-up.** Journal of cataract and refractive surgery. 1998; 24(10):1347-56.
15. Hayashi K, Hayashi H, Nakao F, Hayashi F. **Effect of cataract surgery on intraocular pressure control in glaucoma patients.** Journal of cataract and refractive surgery. 2001; 27(11):1779-86.
16. Tham CC, Kwong YY, Baig N, Leung DY, Li FC, Lam DS. **Phacoemulsification versus trabeculectomy in medically uncontrolled chronic angle-closure glaucoma without cataract.** Ophthalmology. 2013; 120(1):62-7.
17. Zhang ML, Hirunyachote P, Jampel H. **Combined surgery versus cataract surgery alone for eyes with cataract and glaucoma.** The Cochrane database of systematic reviews. 2015 (7):Cd008671.
18. Masis M, Mineault PJ, Phan E, Lin SC. **The role of phacoemulsification in glaucoma therapy: A systematic review and meta-analysis.** Survey of ophthalmology. 2018; 63(5):700-10.

**AUTHORSHIP AND CONTRIBUTION DECLARATION**

Sr. #	Author(s) Full Name	Contribution to the paper	Author(s) Signature
1	Rashad Qamar Rao	Main investigator and operating surgeon, Study design setting and final data review and work approval.	
2	Wamiq Mehmood	Author contributed in data analysis and collection.	
3	Raza Ali	Author contributed in data analysis and collection.	
4	Akifa Abbas	Data collection and literature review.	
5	Waseem Sajjad	Data collection and literature review.	
6	Afifa Batool	Data collection and literature review.	