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Comparing The Outcomes of Micro-Pulse Diode Laser Therapy vs Pharmacological Treatment in POAG

Nimra Shahzad[1], Saleh Shah[2], Muhammad Aleem Sabir Khan[3], Ayesha Asif[4], Mishal Armia[5], Dr. Arsalan Babar[6], Sibgha Naseem[7]

[1,3,4,5,7] Clinical Optometrist, MS Rehabilitation Science, Faculty of Allied health Science, Superior University Lahore, Email: nimrashahzad70@gmail.com, maleemsabirkhan@gmail.com, ayeshaasif4481@gamail.com, mishalarmia@gmail.com, sibghakhan62@gmail.com
[3] ORCID: 0009-0007-7161-9985
[2] Assistant professor, Faculty of Allied health science, Superior University Lahore, Email: salehshah83@gmail.com
[6] Senior Registrar Eye, Allied Hospital Fsd. MBBS, MS(Ophth) (UHS), CHPE (FMU), MCPS (CPSP), Email: eyedoc342@gmail.com

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Abstract

Glaucoma is progressive optic neuropathy often due to high eye pressure, leading to permanent vision loss if untreated. It is typically symptoms less in early. The primary treatment for glaucoma is lowering IOP. Pharmacological treatment remains the first line treatment; however poor patients' compliance long-term dependency limits its effectiveness. Micro-pulse transscleral cyclophotocoagulation has developed as an insignificantly invasive laser therapy with promising consequences. To compare the effects of micro-pulse transscleral cyclo-coagulation laser with pharmacological drops in lowering IOP. To compare the patient compliances in both groups. A randomized control trail was conducted at Allied hospital for 6 months using a random sample technique. Total 50 patients diagnosed with glaucoma were enrolled and randomly allocated into two groups, each with 25 patients. Group A received micro-pulse transscleral cyclophotocoagulation while Group B was treated with timolol 0.5%. The study followed single blind design where participants were unaware of their treatment allocation group. Baseline IOP and VFQ were recorded before any intervention and follow-up measurements were taken at 1st week, 4 week and 6 months. The Shapiro-Wilk test was applied to assess the normality of data. Statistical analysis was performed by SPSS 27. After applying Shipro-Wilk test all variables showed p values greater than 0.005 the data were considered normally disturbed. Within group analysis showed statistically significant reduction in IOP and improvement in VFQ scores in Group A from baseline to all follow-up visits ($p<0.001$), demonstrating continuous enhancement over time. In Group B, both IOP and VFQ scores showed initial improvement however, no significant more changes were observed after 4 weeks. Across the group comparison showed that Group A achieved greater reduction in IOP and improvement in VFQ scores compared to group B, moreover patient compliances was better in Group A as compared to Group B**.** The study concluded that (MP-TSCPC) showed better and consistent results in reducing IOP and better patient compliances as compared to timolol 5 % drops in glaucoma patients.

Key Words: Pharmacological, Visual Acuity, Laser, Glaucoma, Timolol

Introduction

Glaucoma is worldwide leading cause of blindness. In 2013 the number of people with glaucoma

was approximately 64.3 million, increasing to 76.0 million in 2020 and 111.8 million in 2040. Glaucoma is optic neuropathy that is associated with increased intra ocular pressure and peripheral loss of vision. Generally, it is asymptomatic until its last stage [1]. Glaucoma is the complex eye disease in which IOP is increased that may move towards vision loss. It is irreversible cause of blindness and have many types included primary-open-angle (POAG) and Angle- closure glaucoma [2]. Glaucoma is considered if intra-ocular pressure is <21mmHg. High IOP relates with increased blood pressure [3] there are main 2 types of glaucoma, Primary and Secondary. There is more subdivision of glaucoma depending upon their main types. Primary glaucoma includes the Primary Open-angle and primary closed-angle. Secondary included the lens-induced, uveitic glaucoma, neovasular, traumatic, steroid-induced, and pigmented and pesudoexfoliation glaucoma. Moreover, other types include the Congenital, normal-tension and ocular hypertension [4]. Primary Closure-Angle glaucoma in which iris block the eye s drainage angle and preventing fluid from draining causes damage to optic disc and loss of vision. It usually occurs in shallow interior chamber with lens pushing and angle crowding. It mostly occurs in hyperopic patients and woman. It mostly occurs in Asia. Goinoscopy, optical coherences tomography and ultrasound bio microscopy are the basic diagnostic tools. Many anti-glaucoma drops and surgery are the available treatment for POAG [5]. Secondary glaucoma occurs due to any other cause like any eye injury trauma and systemic issue which in result increased the IOP damage to optic nerve and functional defects are seen. It arises from laser surgery inflammatory cells accumulate, debris deposition and mechanical deposition in this type IOP is reduced by managing the underlying cause [6].

Normal tension glaucoma is low tension type in which optic neuropathy beings with glaucomatous vision changes but somehow normal IOP. IN this type the patient optic disc starting showing changings shows sing of ischemia due to atherosclerosis and vascular insufficiency. In these patients there are high prevalence of migraine and other autoimmune diseases. These patients have more chances of neuro-retinal rim thinning inferiorly and infero temporal then POAG. Visual field defects are more focal and deeper [7]. Steroid-induced glaucoma is occurring in individuals with glucocorticosteriod effect. This effect can increase the intra-ocular pressure. It typically developed after some weeks and months use of topical and per-ocular use of steroids [8]. The glaucoma that is cause due to extra growth of vessels on iris is called neo-vascular glaucoma. This can lead synnechial closure of angle and increased IOP. It mainly occurs due to ischemia, diabetic retinopathy central artery occlusion and vein occlusion [8]. Gonioscopy is a diagnostic tool for accessing glaucoma. It is the technique for viewing the iridocornal angle. Goniolesnes are used to view the angle. [9]. The most conventional treatment of glaucoma included the use of pharmacological drop and trabeculoplasty for lowering IOP Despite of all treatment topical drugs still first line of treatment in glaucoma [10]. Timolol 0.25% use twice a day and 0.5% use one time in day maintain normal IOP [11]. Regular use of drops causes many issues. They can induce pain allergy delayed healing, punctate keratitis and disturbances of lacrimal secretions. It are also important to be aware of local problems as they are responsible for poor patient compliance. Beta-blocker drops can cause bronchospasm syncope etc. Problems may also occur with other class of drugs used topically [12]. MPTCP has good results in different types of glaucoma. MPTCP not only shown better results in reducing IOP, moreover due to laser patients have less dependency on drops and have better compliances. Their primary outcomes are to decreased patients' dependency on anti-glaucoma drugs. However, it shows improved results in POAG and Secondary glaucoma. MPTCP is safe effective and considered most reliable treatment for glaucoma [13].

Methodology

This was a single blind Randomized Controlled Trial study conducted at Allied Hospital, Faisalabad for 6 months after BASAR approval. **N**on-probability random sampling technique was

applied. Sample size calculated from g* power 3.1.9.7(n=50) [8].(8) The inclusion criteria consisted of adult males and females aged 40-60 years, individuals with primary open-angle glaucoma were included. Both genders were involved. Patients more than 21mmhg was considered, and individuals capable of providing written informed consent [14]. Potential participants were excluded if they presented with Any past glaucoma surgery or ocular trauma. Patients with media opacity. Patients with any systemic disease [14]. This study was conducted at outpatient department of Allied Hospital under the observation. Total 50 individuals aged 40-60 years were nominated using a random sampling technique. All individuals were pre-diagnosed of Open-angle glaucoma were selected according to inclusion and exclusion criteria. Informed consent was obtained from all individuals. The data collection procedure was started after assessment of the IOP by air puff tonometer from the population. People who had IOP increased from 21mmhg were included for this study. Patients were divided into 2 groups; Group A was assigned laser treatment and group B patients were used drops timolol for reducing IOP. In both groups IOP (tonometer) and their QOL (VF25- questionnaire) were checked before the starting of treatment. Group A patients were being received MPTSL therapy for 90 seconds on and off in affected eye. After the therapy VFQ-25 score and IOP was again measured at different follow-ups. In group B after using the drops twice a day QOL Performa and IOP was accessed. For best results participants were assigned 3 follow-ups for both groups. Values of IOP and Performa score were compared after every 1 week 4 week and 6 months, moreover patient compliances and comfort ability were also compared.

Results

A total of 50 patients were included in the study and were equally distributed into 2 groups. 25 participants were included in each group A laser and group B drops. The baseline demographic and clinical characteristics of both groups were comparable. The mean IOP in group A was 13.16±6.14mmHg, while in group B it was 31.56±3.87mmHg indicating no any significant differences at the start of study. Similarly, the baseline questionnaire VFQ score was identical in both groups, recorded as 64.44±7.74 showing the same level of visual functional impairment before intervention. This baseline comparability ensured that any subsequent differences observed between the groups could be given to the treatment modalities rather than pre-existing variations. The changes in IOP were assessed at multiple follow-up intervals including 1 week, 4 week and 6 months to evaluate both the short-term and long-term effectiveness of the interventions. In the laser group a consistent and progressive reduction in IOP was observed throughout the study period. The mean IOP decreased from 31.16±6.14mmHg at baseline to 26.60±5.45 mmHg at 1 week, followed by a further decline to 21.64±4.48 mmHg at 4 weeks and at last reaching to 17.00±3.66 mmHg at 6 months This demonstrates clinically significant reduction over time. In contrast the drops group showed an initial reduction in IOP from 31.56±3.87 mmHg at baseline to 26.56±3.58mmHg at 1 week however at 6 months the mean IOP slightly increased to 25.12±3.32 mmHg, suggesting a reduction that was less sustained compared to the laser group. Statistical analysis revealed that the differences between groups was not significant at start but from 4 weeks to 6 months it become significant ($p<0.001$). These findings clearly indicate that laser treatment is more effective and maintain long-term reduction in IOP. Visual function outcomes, as measured by the VFQ score were evaluated at baseline, 1 week, 4 weeks and at 6 months. The laser group showed steady and marked improvement in VFQ over the time. The mean VFQ score increased from 64.44±7.74 to 68.56±7.58 at 6 months. The differences between the group became significant at 4 weeks and at 6 months ($p<0.001$). Within the group analysis more supported these findings demonstrating that both groups experienced statistically significant changes over time, however the improvement was more in laser group. Increased VFQ score over time also indicated patient's

better compliances in laser group The results suggest that laser therapy can be considered a more reliable and efficient option in the management of long-term IOP enhances visual functions and better patient compliance. The age range of both groups was 40 to 60 years, indicating comparable demographic character tics. The mean baseline IOP was 31.16±6.14 mmHg in laser group and 31.56±3.874 mmHg in drops group. This showed nearly equal pressure level before treatment. Similarly, the VFQ score ranged from 50 to 75 in both groups with equal mean of 64.44±7.741 presented same visual function at baseline. Overall both groups were well matched in term of demographic ensuring better comparison of both treatments.

Table 1: Age, Intra-ocular pressure, and VFQ

Descriptive Statistics				
Study Group		**Minimum**	**Maximum**	**Mean ± Std. Deviation**
GROUP A: Laser	Age	40	60	50.00±5.77
	IOP	22	42	31.16±6.149
	VFQ	50	75	64.44±7.741
GROUP B: Drops	Age	40	60	50.00±5.77
	IOP	25	39	31.56±3.874
	VFQ	50	75	64.44±7.741

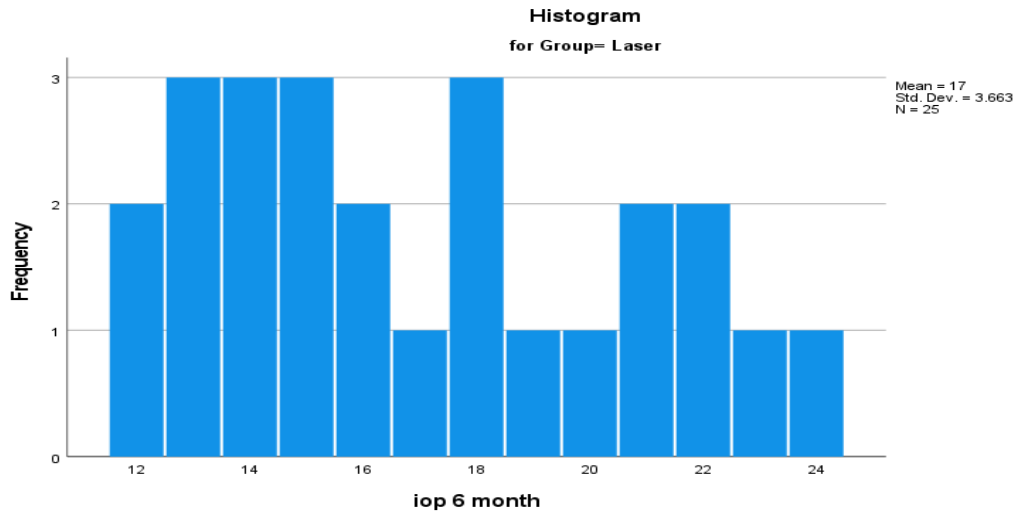

Fig 4.1: Histogram of IOP in group A at 6 months

The histogram for group A shows that IOP values at 6 months are properly distributed and normal. Most values lie between 14 and 20mmHg, centered on a mean of 17mmHg indicating controlled and consistent IOP levels. The distribution appears symmetric with no issues. The study suggests low variability and stable treatment response.

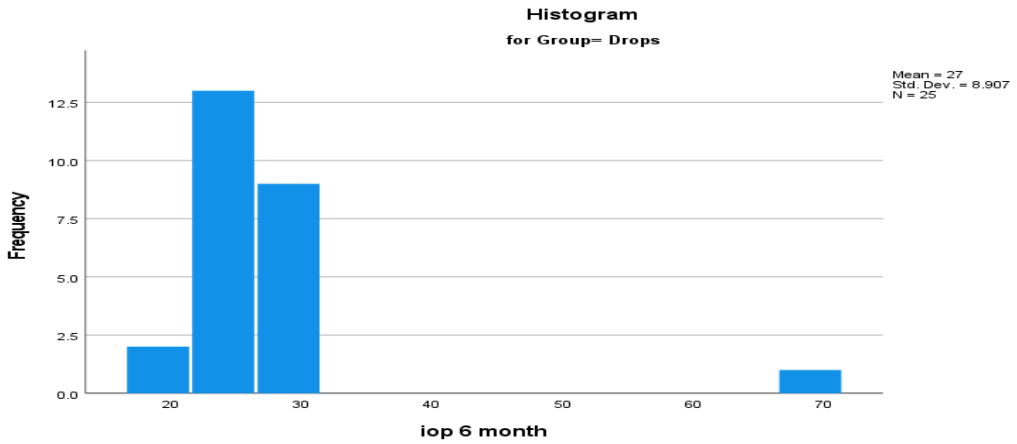

Fig 4.2: Histogram of IOP in group B at 6 months

The histogram for group B demonstrates a positively skewed distribution of IOP values at 6 months. While most values cluster between 20 to 30 mmHg, there is a noticeable extreme value around 70mmHg indicating the presences of an outlier. The mean IOP is higher with large deviation of (8.907), reflecting greater variability and less consistent control of IOP in Group B.

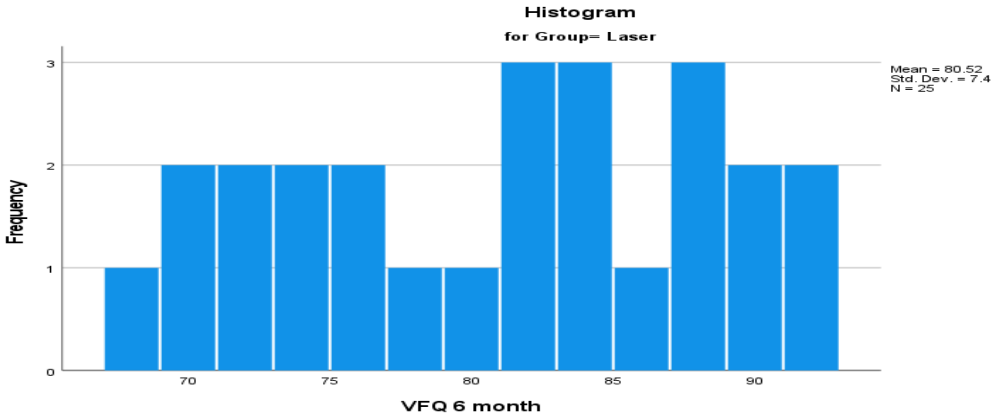

Fig4.3: Histogram of VFQ score in group A at 6 months

The histogram shows the VFQ scores after 6 months in laser group A. Most of the scores fall within the range of about 75 to 90. It is showing that the majority of patients experienced good visual function at 6-month follow-up. The average mean score is 80.52 and the SD is 7.4. . It is indicating that distribution appears balances, without any asymmetrical shape suggesting normal pattern.

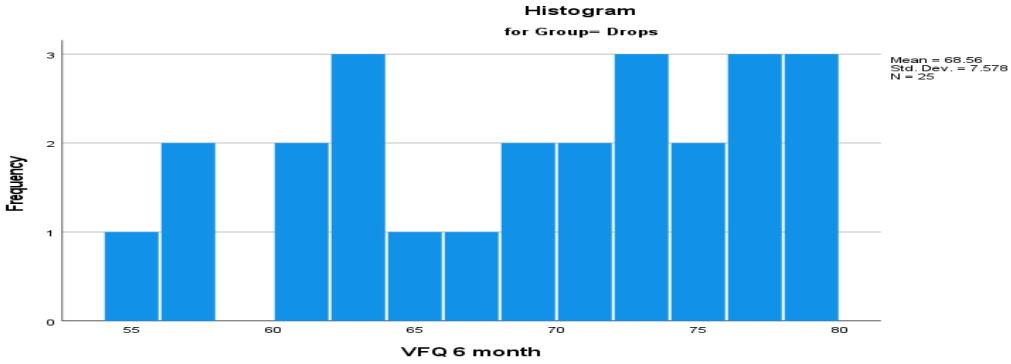

Fig 4.4: Histogram of VFQ score in group B at 6 months

The histogram shows the VFQ in group B at 6 months. The scores are mainly spread between 60 and 80, indicating that most patients achieved moderate visual function outcomes. The mean scores are 68.58 with SD of 7.578, suggesting a moderate level of variability among the participants. The distribution appears uneven with more values concentrated toward the higher side, indicating asymmetry.

Table 2 Gender Distribution

Study Group		**Frequency (N)**	**Percent (%)**
Group A laser	**Male**	17	68.0
	Female	8	32.0
	Total	25	100.0
Group B Drops	**Male**	20	80.0
	Female	5	20.0
	Total	25	100.0

This table shows that total 25 people were taken from which 17 were male and 8 were females included in the study. The sample was taken by non-purposive sampling method. Total 68% of male were involved. This also shows grapes.

Table 3: Affected Eye of both groups

Study Group		Frequency	Percent
Group A laser	OD	13	52.0
	OS	12	48.0
	Total	25	100.0
Group B drop	OD	13	52,0
	OS	12	48.0
	Total	25	100.0

From 25 patients 13 were right eye and 12 left eyes in both groups. It shows complete detail about the study which eye and how many people involved

Table 4: Normality Test Statistics

Tests of Normality				
Study Group		**Shapiro-Wilk**		
		Statistic	**Df**	**Sig.**
Group A Laser	Baseline IOP	0.956	25	0.337
	Baseline VFQ	0.941	25	0.152
Group B Drops	Baseline IOP	0.973	25	0.712
	Baseline VFQ	0.941	25	0.152

The Shapiro–Wilk test was applied to assess the normality of IOP and VFQ scores in both study groups (n = 25 each). The test showed that all the variables values were >0.05 so the data were normally distrusted. Therefore, parametric test was applied for analysis.

Table 5: Comparison of IOP time within group

	GROUP A		GROUP B	
	Mean ± Std. Deviation		**Mean ± Std. Deviation**	
Baseline IOP	31.16±6.14		31.56±3.87	
IOP 1ST Weeks	26.60±5.45		29.10±3.80	
IOP 4 Weeks	21.64±4.48		27.90±3.95	
IOP 6 MONTHS	17.00±3.66		26.40±4.05	
	Mean Difference (I-J)	**Sig.**	**Mean Difference (I-J)**	**Sig.**
Baseline vs. 6 months	-14.16*	< 0.001	-5.16*	< 0.001
1st week vs. 6 months	-9.60*	< 0.001	-2.70*	< 0.001
4 Weeks vs. 6 months	-.4.64*	<0.001	-1.50	0.441

In group A the mean IOP showed a consistent and significant reduction over time. The baseline IOP (31.16±6.14) decreased to 26.60±5.45 at 1st week, 21.64±4.48 4 week, and further to 17.00±3.66 at 6 months. Pairwise comparison demonstrated that reduction from baseline to 6 months (mean differences=-14.16) 1st week to 6 months (-9.60) , and 4 week to 6 months (-4.64) were all statically significant (p<0.001). This indicates a strong and progressive improvement in IOP within group A over the study period.

In group B IOP also decreased over time from baseline (31.56±3.87) to 26.56±3, 58 at 1st week, 24.40±3.36 at 4 week and 25, 12±3.32 at 6 months. The comparison between baseline and 6 months, as well as 1st week and 6 months showed significant changes (p<0/001). However the comparison between 4 weeks and 6 months (mean differences=-0.633) was not significant (p=0.441). This suggests that although there was initial reduction in IOP, the improvement plateaued after 4 weeks with no more significant changes up-to 6 months.

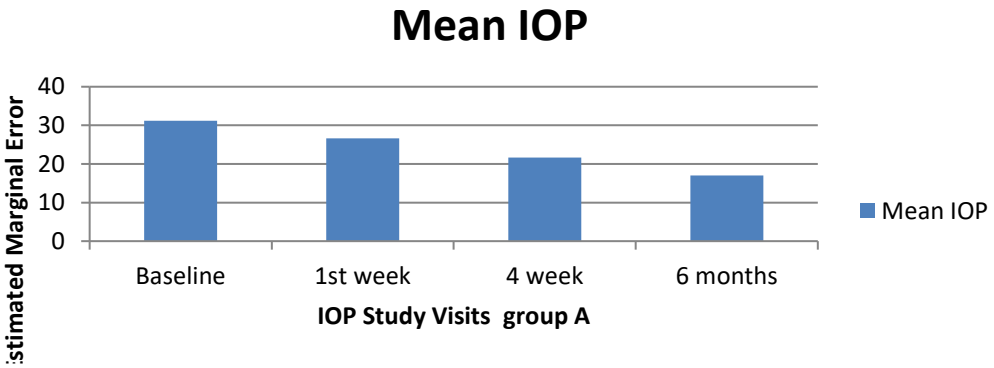

Fig 4.9: Within Group A comparison of IOP at follow-ups

The figure shows the change IOP within group A overtime. At baseline, the mean IOP was highest 30mmHg. A reeducation was observing as early as the 1st week (26-27mmHg), follow by more increase at 4 week 21mmHg by 6 months. This mean IOP reaches its lowest value of 17.00 mmHg. This progressive decline indicates consistent and sustained reduction in IOP within group A over the study period demonstrated the effectiveness of treatment over time.

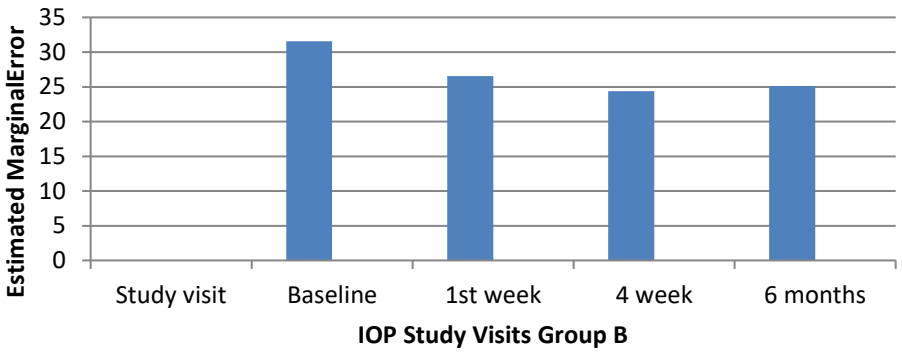

Fig 4.10: Within Group B comparison of IOP at follow-ups

The figure illustrates the change in mean IOP within group B over different study visit. At baseline the mean IOP was highest 32mmHg. A reduction was observed at the 1st week 27mmHg followed by more slight decrease at 4 weeks 25mmHg however, at 6 months mean IOP shows a slight increase 26mmHg compared to the 4 weeks value. Overall, although there is an initial reduction in IOP from baseline the trend is not consistently decreasing over time. This indicates that the treatment effect in group B is less stable with some fluctuations observed during the follow-up period**.**

Table 6: VFQ within group

	GROUP A		**GROUP B**	
	Mean ± Std. Deviation		**Mean ± Std. Deviation**	
Baseline VFQ	64.44±7.74		64.44±7.74	
VFQ 1ST Weeks	68.32±7.89		67.44±7.70	
VFQ 4 Weeks	75.40±8.08		69.64±7.54	
VFQ 6 MONTHS	80.52±7.40		68.56±7.58	
	Mean Difference (I-J)	**Sig.**	**Mean Difference (I-J)**	**Sig.**
Baseline vs. 6 months	16.08*	< 0.001	4.12*	< 0.001
1st week vs. 6 months	12.20*	< 0.001	1.08*	< 0.001
4 Weeks vs. 6 months	5.12*	<0.001	-1.08	0.441

The table presents the change in VFQ- 25 scores within each group over time. In group A the mean VFQ increasing steadily from baseline (64.44±7.74) to 6 months (80.52±7.40) indicating the continuous improvement in visual function. The mean differences between baseline, 1st week, 4 weeks when compared to 6 months are all statistically significant (p<0.001) showing that the improving in this group consistent and significant throughout the study group.
Similarly, in group B the VFQ also improves from baseline (64.44±7.74) to 6 months (68,56±7.58) but the increase is smaller. The differences between baseline VS 6 months and 1st week VS 6 month are statistically significant (p<0.001) indicating some improvement over time however this comparison between 4 week and 6 months is not statistically significant (p=0.441), suggesting that most of the improvement occurs early and then stabilizes. Overall both groups showing improvement within themselves but the change is more better and continuous in group A.

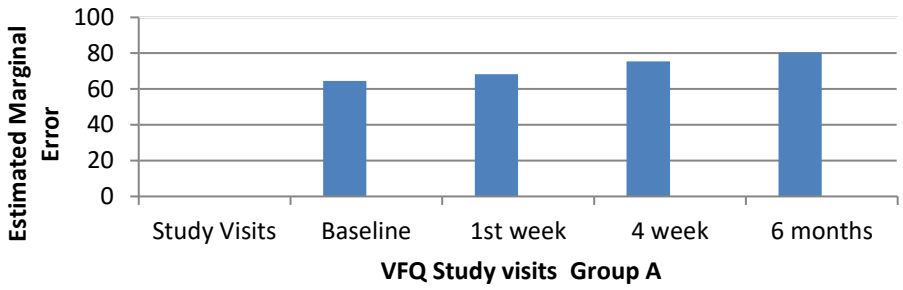

Fig 4.11: Within Group A comparison of VFQ at follow-ups

The bar chart shows the progression of VFQ-25 in group A in different study visits. The scores start from mid-60s at baseline then gradually increase at 1st week 4 week. By 6 months the vfq-25 reaches its peak indicating improvement over time

Overall, this trend suggests that laser treatment leads to slow enhancement in visual function, with continuous gains observed throughout the study period and the best outcomes achieved at 6 month.

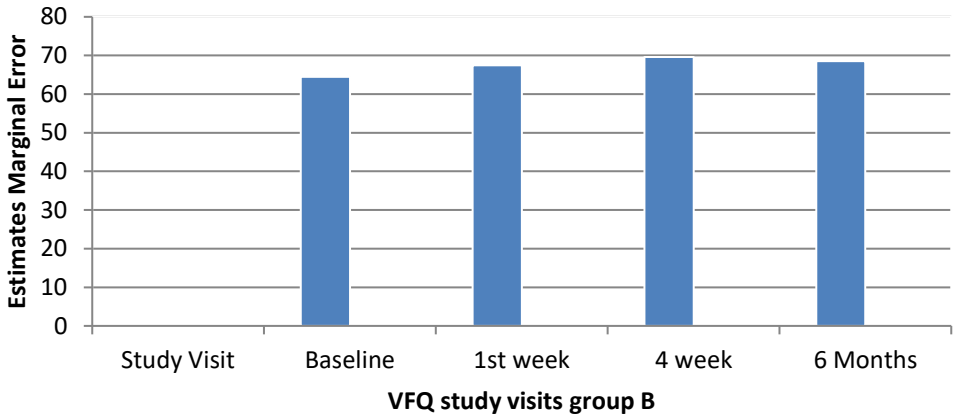

Fig 4.12: Within Group B comparison of VFQ at follow-ups

The bar chart illustrates the change in VFQ-25 in group B over different study visits. The score at baseline is around the mid-60s, followed by gradual rise in 1st week and further increase at 4 weeks, where it reaches the highest value. This indicates a slow improvement in patients' visual function during starting period, at 6 months there is reduction compared to 4 week. Overall, the findings suggest that treatment with drops leads to moderate improvement in visual function but with poor patient's compliances

Table 7: Comparison of IOP and VFQ across Study Groups

Study Group			IOP(mmHg)	VFQ-25 Score	P-Value
GROUP A: Laser	Baseline	Mean	31.16	64.44	0.041’
		Std. Deviation	6.14	7.74	
	1st Weeks	Mean	26.60	68.32	<0.001
		Std. Deviation	5.45	7.89	
	4 Weeks	Mean	21.64	75.40	
		Std. Deviation	4.48	8.08	
	6 months	Mean	17.00	80.52	
		Std. Deviation	3.66	7.40	
GROUP B: Drops	Baseline	Mean	31.56	64.44	0.041
		Std. Deviation	3.87	7.74	
	1st Weeks	Mean	26.56	67.48	<0.001
		Std. Deviation	3.58	7.70	
	4 Weeks	Mean	24.40	69.64	
		Std. Deviation	3.36	7.54	
	6 Months	Mean	25.12	68.56	
		Std. Deviation	3.32	7.58	

The graph compares IOP and VFQ-25 between two study group (laser VS drops) over the time. In Group A the mean IOP shows a smooth and marked reduction from baseline 31.16mmHg to 6 months 17.00mmHg. The VFQ-25 score slowly improves from 64.44 to 80.52. This indicates that laser treatment not only effectively lower IOP but also significantly enhances patients quality of life and better patient compliances. In contrast Group B (Drops) demonstrates a modest reduction in IOP from 31.56 mmHg at baseline to 25.12mmHg at 6 months with smaller improvement in VFQ scores (64.44 to 68.56). Somehow, there is some improvement, but less as compared to laser group. The change in laser group also reach statistical significance <0.001 over time.

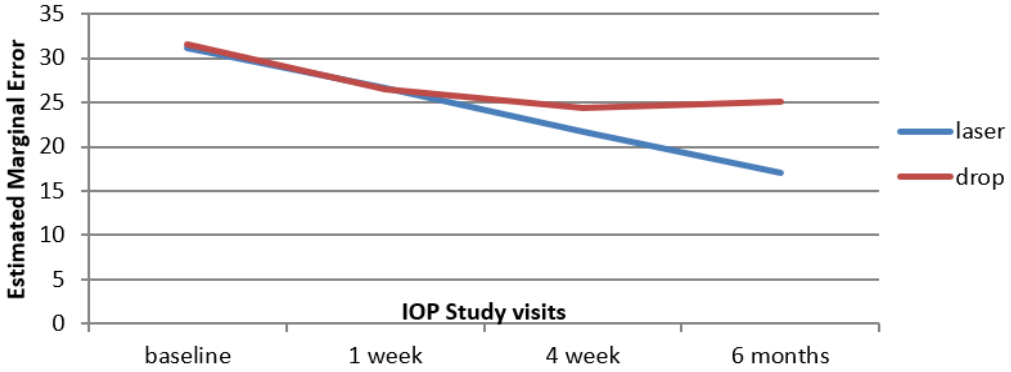

Fig 4.13: Comparison of Laser vs. Drops IOP in both groups over time

The line graph illustrates contrasting trends between the two groups over time. For IOP, both groups start at similar baseline levels 31mmHg but group A shows a continuous and a marked reduction in IOP reaching around 17mmHg at 6 months. Group B shows an initial reduction up to 4 weeks, followed by increase at 6 months, suggesting less stable long-term control. The length of red line showed group A was better in IOP control.

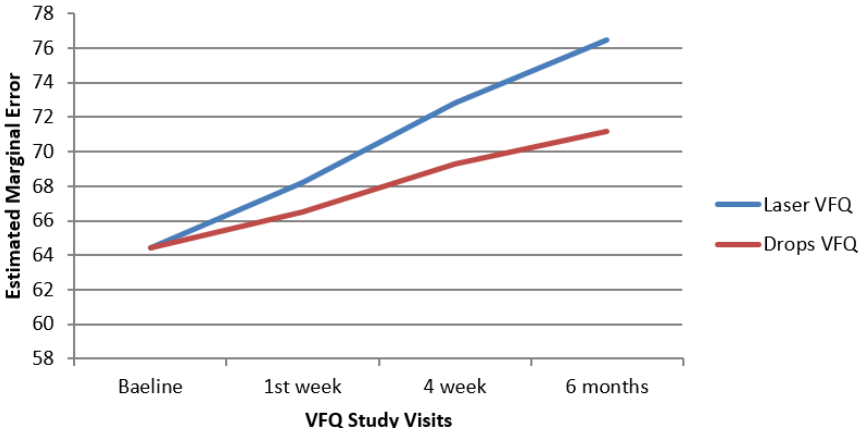

Fig 4.14: Comparison of Laser vs. Drops IOP in both groups over time

The line graph demonstrates that both groups showed improvement in VFQ scores over time However, group A showed more consistent increased compared to group B . In group A , VFQ scores rose steadily from 64 at baseline to around 77 at 6 months indicating significant enchantment in visual function and quality of life . On the other hand group B showed a gradually but less mark improvement, increasing from 64 to 71 at 6 months. The wider gap between 2 lines over the time highlights the better effectiveness of laser treatment in improving patient compliances compared to topical therapy.

Discussion

The RCT study was based on the dieses of glaucoma and their new treatment options. MPTSCPC and pharmacological both conservative and new treatment were compared together. A complete 6-month follow-up had taken for this research. In this research IOP, and VFQ score all were compared for both groups. Both treatments were effective in lowering IOP but laser was better results and better patients' compliance then pharmacological group. Kanadani et al. conducted study in 2025 on outcomes and success predictors of micro-pulse in patients with glaucoma. This was non-comparative interventional case series consisted of 79 eyes with follow-up of 12. In this study the mean IOP was reduced from 31mmhg to 17 mmhg at the last follow-up with<0.01, Similar to this the current study of consisted of 50 patients on camping the effect of MPDLT with Pharmacological drops. The RCT single blind study demonstrated that there was effective result of lowering IOP in laser with mean and SD of 16.08±3.40 at 6 month of laser. The p value was <0.001[15]. Jason Bacharch et al. accompanied a study to compare omnidenepag VS Timolol in glaucoma. It was 3 phases randomized double-masked study. the primary aim to compare both drops together for lowering IOP. The IOP lowering range of OMID remains constant -5.6 to -5.9 bit in timolol it changed 6.1 to 7.0 in 12 months and had long term benefits. The current study was done to evaluate the effect of laser over the drops with follow-up of 6 months. This was single blind study with applied measuring repeated anova. The mean was 31mmhg to 25 mmhg with p value<0.001. The study suggested that timolol was effective in maintain normal IOP [16].

Motor Issika et al. conducted a study in 2023 on evaluating the efficacy of micro-pulse TSCPC on glaucoma patients. The study was prospective included 31 eyes. All patients were given the therapy. The mean pre IOP was 42.3±5.2mmhg and after 9 month was 16.9±1.9mmhg. The study concluded laser was safe. In current study total 50 patients were included for laser. The pre mean and SD of IOP was -.600±.764 and post IOP after 6 months was -.120±.726 with p<0.001. The study suggested that laser is effective and safe [17]. Lorenz K et al. lead study in which compare

the effect of brinzolamide 1% and timolol 0.5% in glaucoma patients. 47 patients were included. The mean IOP reduction of 5.4mmHg and p<0.001. This was decreased in 12 weeks. No significant differences were observed from 1st to 12 weeks. In this study 50 patients were divided into 2 groups drop and laser each. The mean IOP was 25.40±3.60 at 6 months' p value <0.001. The study was effective for reducing IOP in 6 months. Both studies were showed that timolol effective in lowering IOP [18]. Sara Hooshmand et al. performed study on glaucoma in 2022 to evaluate the safety and efficacy of MP-TSCPC. 34 of 67 eyes were included for this laser and followed for 6 months. All treatment was performed using the laser power of 2000 to 2250mW duration of 100-200s. IOP reduction was observed. The mean IOP at 6 months was 18.2±-5.4. In recent study total 50 patients were involved the current study was also conducted to observed the effect of MPTSCPC 120s on IOP for 6 months. The study was also observed the patient compliance within the laser procedure. The laser was given to the patients for 120s t 810nm wavelength at half hemisphere of sclera the mean IOP at 6 months was 16.80±3.40. Both the studies concluded that laser was safe and shows remarkable in reducing IOP [19].

The study conducted by Murali Ariga et al. in 2021 to assessed the efficiency and protection of micro-pulse trans-scleral diode laser cyclophotocoagulation in glaucoma. A prospective short study was carried out with small sample of 55 eyes in glaucoma All eyes gad VA IOP baseline at 1st week and 3 months. The current study was worked on the same laser but it was RCT and long study of 6 months. In both studies VA IOP were involved. Both studies concluded that MP-TSCPC was safe and effective for glaucoma. Patients IOP and number of topical medications were also reduced with better patient compliance [20].

Fahmeeda Murtaza et al. in 2024 worked on MP-TSCPC in non-incisional eyes with ocular hypertension and POAG .The aim of this study to investigate the efficacy of MP-TSCPC on non-incisional with variety of POAG patients .In this Retrospective cohort study eyes excluded if any incisional procedure performed expect cataract surgery .On this patient the laser ranges 900 to 2500mW were performed .Total 153 out of 93 eye were included in 3 stages of glaucoma OHT n=22 , early POAG n =46 , moderate n=35 severe POAG n=50 . The initial IOP was18.37±4.67mmHg mean IOP reduction by last visit was p<0.001 OHT p=0.003 early p<0.001, moderate p=0/022, severe p=0.015. Overall, 52.9% attain reduction in IOP from baseline data There was worse in VA due to cataract mean difference=0.11±0.36 log MAR p=0.11. In this process the topical medications remain unchanged. In the last follow-up more reduction in IOP was reported p=0.344. The current study was also worked on the laser and drops comparatively. In this study 50 patients were involved at the age of 40-60 years. The study was included 6-month long follow-ups for better result. The mean IOP was 17mmHg at 6 months Both studies were showed that MP-TSCPC is safe and effective in non-incisional eye with OHT and POAG [21].

Conclusion

The study concluded that Micro- pulse trans-scleral cyclophotocoagulation (MPTCP) showed better results in reducing IOP and better patient compliances as compared to timolol 0.5% drops in glaucoma patients.

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