Original article

Influence of Phacoemulsification on Intraocular Pressure in the Eye after Trabeculectomy

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Abstract

Aim: The aim of this study was to question whether there is a difference in the change of intraocular pressure (IOP) between three groups of participants, achieved by phacoemulsification after trabeculectomy, considering the height of IOP at beginning. As well as whether there is a decreased necessity for topical antiglaucoma (ATG) medications.

Participants and methods: Study was conducted on 26 participants submitted to cataract surgery after trabeculectomy at the Clinic for Eye Diseases in Osijek (January 2017 - December 2019). IOP values were noted at day zero, seventh day, after a month and six months after patients underwent cataract surgery with phacoemulsification; also, number and type of topical medications.

Results: Historic cohort study included 26 patients (19 women, 7 men). Statistically significant decrease of IOP was noticed from day zero and six months after (Friedman's test, $P < 0.001$). Significant difference was in measured value of IOP at day zero and the first day (Friedman's test, $P < 0.05$). No statistically significant difference was in participant groups according to IOP (Marginal Homogeneity test, $P = 0.06$).

Conclusion: Trabeculectomy alone and trabeculectomy combined with phacoemulsification, are justified procedures to achieve a decrease in the IOP value and its regulation with subsequent possibility of decrease in usage of local ATG therapy. Phacoemulsification after trabeculectomy ensures an additional decrease of the IOP.

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Introduction

Glaucoma is the second most common cause of blindness in the world (1). 2 % of the population over the age of 40 suffers from glaucoma leading to diminution of the quality of life of those who have been affected with glaucoma, but it is also an important socio-economic issue. The term glaucoma stands for several diseases with different etiologies, but with the common consequences of the progressive and irreversible deterioration of the eye nerve and retinal nerve fibers, with pertaining visual field loss (2–7). This state needs to be urgently recognized to start, as soon as possible, with the treatment of patients and to prevent irreversible structural changes (1). All types of glaucoma can end up with a complete loss of sight (8).

The diagnostics are being performed with several methods: applanation tonometry, fundus examination, visual field examination (perimetry), and gonioscopy. Glaucoma can be divided into primary and secondary glaucoma, but also open-angle and closed-angle glaucoma. The most common risk factor is increased IOP, but there are numerous other risk factors (2,9).

The treatment depends on the type of glaucoma; nevertheless, the aim is the same – to prevent the progression of the disease, to prevent the damage to the eye nerve. The primary concept is diminution of the IOP because this is the main causing factor which can be achieved by reducing the production of the aqueous humor or by making the draining of the aqueous humor easier (2). Nowadays, numerous methods are used: conservative (local therapy), laser, and surgery. Conservation treatment consists of glaucoma medication, selective laser trabeculoplasty, and Nd: YAG laser iridotomy. Surgical approach is based on creating an alternative passage to drain the aqueous humor – trabeculectomy, implantation of drainage implants or cyclodestructive procedures, which are palliative methods of treatment (2).

Normal IOP values in healthy subjects vary between 10 and 21 mmHg (16 ± 2,5 mmHg). Goldmann applanation tonometry is a gold standard method for measuring the IOP (2).

Cataract describes a medical condition in which the lens, which is usually transparent, becomes opaque (2). It can be congenital or achieved. The most common type of cataract is senile cataract which occurs in elderly patients due to substance exchange (10), especially in those patients with metabolic diseases, i.e., diabetes. Cataract leads to decreased visual acuity, the occurrence of monocular double images, and glare with the appearance of altered refraction (2).

The usual way of treating a cataract is a surgery. This procedure could be performed intracapsular or extracapsular. The consequential state is known as pseudophakia. Methods that could be used are extracapsular extraction of cataract, phacoemulsification (lens extraction using the ultrasound), and "femtosecond" laser (the most recent method where an incision is being performed on cornea followed by capsulorhexis and shredding of lentil masses). Despite all the existing methods, phacoemulsification remains the gold standard and primary surgical approach in the treatment of the cataract (2).

The objectives of this study were to question whether there is any difference in the change of IOP between the groups of study participants, achieved by phacoemulsification after trabeculectomy, considering the height of IOP at the beginning; as well as to question if there is a decreased necessity for topical ATG medications after the phacoemulsification has been performed in those eyes which were precedingly submitted to trabeculectomy and divided into groups.

Patients and Methods

Patients

The historical cohort study (11,12) was conducted at the Clinic for Eye Diseases of the Clinical Hospital Center Osijek in the period from January 2017 to December 2019.

This study was conducted on 26 adult subjects of both sexes who were submitted to phacoemulsification after trabeculectomy in Clinic for Eye Diseases of Clinical Hospital Centre Osijek, 7 of them were men and 19 were women.

All the patients who had intraoperative or postoperative complications, as well as all those who subsequently had any surgical procedure, whether on anterior or posterior segment of the eye, were excluded from the study.

Methods

Goldmann applanation tonometry is the gold standard for measuring of the IOP during ophthalmological check-up, as well as the most common way of measuring of the IOP (2).

Patients were divided into three groups, depending on the values of the measured IOP and whether local therapy had been used or not:
Group A: IOP > 21 mmHg
Group B: IOP > 18 mmHg and IOP ≤ 21 mmHg
Group C: IOP ≥ 15 mmHg and IOP ≤ 18 mmHg

Patients with IOP value < 15 mmHg, which is a normal value, would have also been considered, since they would be a control group.
IOP values, as well as the number and the type of local therapy, were noted at day zero, the seventh day, after a month and six months after the patient underwent cataract surgery with phacoemulsification.
Categorical values had been demonstrated with absolute and relative frequencies. The differences between categorical variables from day zero and after six months were tested with Marginal Homogeneity Test. Normality of the distributions of numerical variables was tested with the Shapiro-Wilk Test. Numerical data were described by the median and limits of the interquartile range. The differences between IOP by measuring were tested with Friedman's Test (Post hoc Conover) (13). All P values were two-sided. The significance level was set to Alpha = 0.05. MedCalc Statistics Software version 19.1.7 was used for statistical analysis. (MedCalc Software Ltd, Ostend, Belgium; https://www.medcalc.org; 2020).

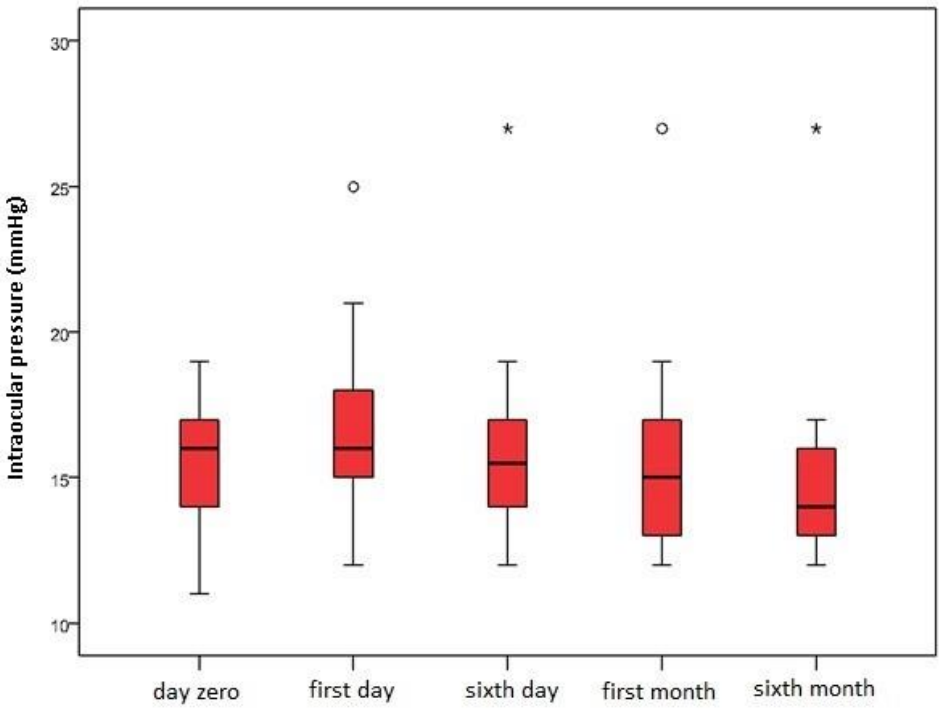

Figure 1. Values of intraocular pressure according to the day of measuring

Results

This study was conducted on 26 subjects who underwent cataract surgery after trabeculectomy at the Clinic for Eye Diseases, Clinical Hospital Centre Osijek, where 7 (27 %) of them were men, and 19 (73 %) were women. The median age of the subjects was 75 years (interquartile range from 71 to 76 years), ranging from 64 to 79 years.

After the surgery, subjects were measured for IOP and a significant reduction was observed from day zero to six months (Friedman Test, P < 0,001).

There are statistically significant differences between the values of the IOP on day zero and the value of the first day and comparing the value of the IOP of day zero with the values after six months. If we compare with the values of IOP on the first day, significantly lower values were observed after one and six months (Figure 1).

The values achieved by IOP after the seventh day are significantly higher than after six months, as well as those values achieved after the first month (Table 1).

Table 1. Intraocular pressure values by measurements

	Median (interquartile range) (mmHg)	Lowest and highest pressure (mmHg)	P*
Day 0	16 (14 – 17) ǂ	11 – 19	
Day 1	15,5 (14,75 – 18) ǂ	12 – 25	
Day 7	15,5 (13,75 – 17,25) §	12 – 27	**<0,001**
Month 1	15 (13 – 17)‖	12 – 27	
Month 6	14 (13 – 16)	12 - 27	

*Friedman test (Post hoc Conover)
ǂat the P < 0.05 level, there is a significant difference in IOP day 0 vs. day 1; day 0 vs. 6 months
ǂat the P < 0.05 level, there is a significant difference in IOP on day 1 vs. month 1; day 1 vs. month 6
§at the P < 0.05 level, there is a significant difference in IOP on day 7 vs. 6 months
‖at the P < 0.05 level, there is a significant difference in IOP 1st month vs. 6 months

According to the values of IOP on day zero and after six months, we divided the subjects into groups according to the pressure value.

There is no significant difference in the distribution of subjects considering the IOP values (Table 2)..

Table 2. Distribution of subjects according to values of intraocular pressure on day zero and after six months

		Number of respondents on day 0					P*
		IOP ≤ 15 mmHg	15 mmHg < IOP ≤ 18 mmHg	18 mmHg < IOP ≤ 21 mmHg	IOP > 21 mmHg	Total	
After 6 months	IOP < 15 mmHg	11	6	0	0	17	0,06
	15 mmHg < IOP ≤ 18 mmHg	0	8	0	0	8	
	18 mmHg < IOP ≤ 21 mmHg	0	0	0	0	0	
	IOP > 21 mmHg	0	0	1	0	1	
	Total	11	14	1	0	26	

*marginal homogeneity test

Local glaucoma medications before surgery were used by 20 (77 %) subjects, and the number of medications did not change after the surgery. One or two medications therapies are used by 8 (31 %) subjects, and three therapies by 4 (15,4 %) (Figure 2).

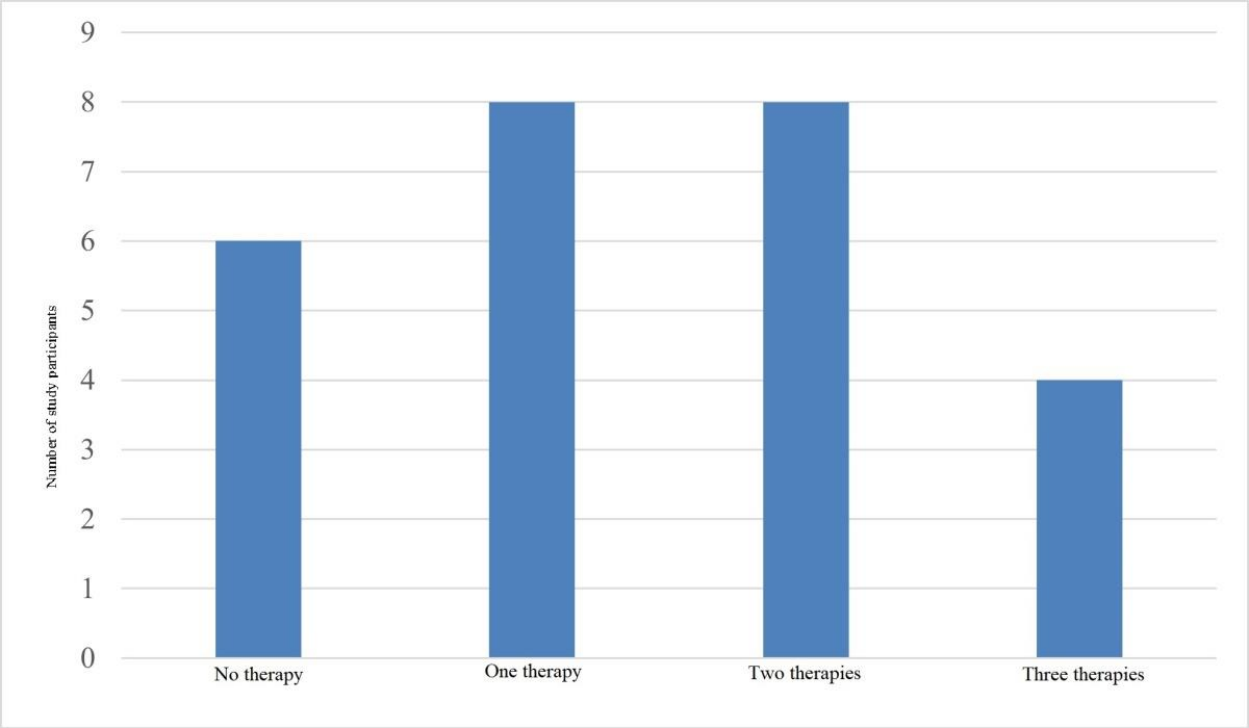

Figure 2. Distribution of subjects according to the number of local ATG medication therapy (before and after the surgery)

Discussion

Glaucoma is a chronic degenerative disease with the possibility of an asymptomatic onset. By studying the influence of phacoemulsification on the IOP in the eye after the trabeculectomy was performed; we can determine the level of efficacy of this kind of therapy on patients who suffer from both cataracts and glaucoma. Nevertheless, this review enables us to achieve certain knowledge about whether this combination leads to a reduction in the quantity of used local antiglaucoma (ATG) therapy.

In 2020, Carolan, Liu, Aleweeff et al. conducted a study about patients who suffered from glaucoma and were submitted to phacoemulsification, which was published in the USA. IOP values were observed and noted after phacoemulsification was performed. IOP values of another group of patients who were not submitted to phacoemulsification, but also suffer from glaucoma, were also followed. The results came back showing a clear reduction in the IOP value in those patients who were submitted to phacoemulsification and were suffering from glaucoma. Although there was a decrease in the values of the IOP one day after the surgical procedure was performed, the greatest difference between the values of the IOP was most clearly recognizable starting from the first month after the surgical procedure was performed. In this case, IOP values have decreased for 0,99 mmHg from 16,50 mmHg in the average patient submitted to surgery and have increased for 0,22 mmHg from 16,49 mmHg in the average non-surgical patient. In comparison to our study, in which we have also noted a decrease in the values of the IOP after phacoemulsification, they clearly described a reduction in the IOP from 1 to 2 mmHg if the preoperative value of the IOP was lesser than 20 mmHg (14).

Another study, in this case conducted by Rodrigues, de Mn Silva, Modesto et al. was published in 2018 and has observed changes in the values of the IOP before and after the

phacoemulsification was performed. Patients older than 18 years, with IOP values lesser than 21 mmHg and without any other ocular disease were included in this study. IOP values were measured right before phacoemulsification was performed and 30 days after the performance. A total of 182 eyes were included. In comparison to preoperative values of IOP, where average values were 16,0 ± 3,3 mmHg, postoperative values have decreased 13,44 ± 3,31 mmHg. Their study concluded with the statement that there was a statistically significant correlation between the preoperative IOP value and the value of the IOP in the postoperative period, due to phacoemulsification as a surgical procedure which is also a correlation to our conclusion (15).

A study conducted in the USA by Wong, Radell, Dangda et al. from 2013 and 2018 and published in 2020 examined the impact of phacoemulsification on the IOP values of patients who were previously submitted to implantation of glaucoma drainage implants. A total of 45 patients (51 eyes) were included. The decrease of the IOP values after the phacoemulsification was performed was statistically significant one week after, P = 0,031 (16). Compared to our study, a decrease in the IOP values was also noted right after the phacoemulsification was performed and was present further on.

Whether the phacoemulsification, as a single procedure, could decrease the level of IOP was examined by Armstrong, Wasiuta, Kiatos et al. in a study conducted in the United Kingdom and published in 2017. They have concluded that the impact of the lowering of the IOP could last up to 36 months. They have observed six studies which followed IOP measurement for three years and reported that in half of these studies a significant decrease in the IOP values was noticed, whereas in the other half there was no lowering of the IOP. They have also reported a statistically significant decrease in the number of used topical ATG medications. The reduction was presented with 0.57, 0.47, 0.38, and 0.16 medications for each patient of glaucoma medication 6, 12, 24, and 36 months after the phacoemulsification was performed (17). When compared to our study, this systematic review has successfully shown the reduction in used ATG therapy as well as decrease in the values of postoperative IOP, whereas our study only provided us with the decrease of postoperative IOP, but the number of medications stayed equal to preoperative state.

A Korean study published in 2019, conducted by Baek, Kwon, Park and Suh reviews the influence of surgical procedures on long-term values of the IOP. IOP values of those patients were followed for at least 12 months. 754 patients were included in this research, whereof 106 suffered from glaucoma, and 648 of them did not have glaucoma in their anamnesis. All included patients were at least 18 years old and were submitted to phacoemulsification combined with the implantation of intraocular lens (IOL). Patients whose preoperative IOP was 22 mmHg, have also been submitted to this surgical procedure. 12 months after the phacoemulsification was performed on patients suffering from glaucoma, diminution in IOP values from 1,08 ± 3,79 mmHg (P = 0,656) was noted. On the other hand, at the same time, after the phacoemulsification was performed on patients who did not suffer from glaucoma, a diminution in IOP was 1,03 ± 3,72 mmHg. A greater decrease was noted in younger patients (P < 0,001), although the mechanism of decrease has still not been cleared out. Generally observed, the greatest decrease in IOP values was noted two weeks after the performance of a surgical procedure and it gradually diminished throughout the next two years. Therefore, they have emphasized the importance of regular check-ups on a long-term basis, as well as, if preoperative IOP is increased in younger patients with glaucoma, phacoemulsification as a proper way for controlling the IOP value in those types of patients (18).

Aside from the mentioned study, Chen, Lin, Junk et al. in 2014 counted in different types of researches which dealt with the impact of phacoemulsification on values of the IOP of those patients who have been suffering from primary open-angle glaucoma (POAG), also including patients with normal IOP values, with the anamnesis of pseudoexfoliation glaucoma (PXG) or primary closed-angle glaucoma

(PACG), who were previously submitted to an ATG therapy. They have been using between 1,5 and 1,9 medications. Patients, who were participants of this study, have not been submitted to surgical procedure to control glaucoma, neither previously nor during this study. A conclusion that has been made has summarized that phacoemulsification leads to a small or moderate decrease of IOP values. Also, there is a decrease in the number of used ATG therapy (referring to patients with POAG, PXG, and PACG, who were using between one and two medications for glaucoma regulation before this study was conducted). At last, it was stressed out that performing trabeculectomy six months or a year after the phacoemulsification was performed, in the following patients, was quite rare (19).

Furthermore, a study conducted in Italy, published in 2015, conducted by Longo, Uva, Reibaldi et al. also points out the long-term effect in the regulation of IOP values in the eye which was previously submitted to trabeculectomy and later to phacoemulsification. The aim was to determine factors that could have an impact on changes in IOP values. This study was conducted on 108 eyes firstly submitted to trabeculectomy and secondly to phacoemulsification. The Control group consisted of 108 eyes which have not been submitted to phacoemulsification. Followed were the IOP values, the necessity of ATG therapy (medications or surgery), and time limitations during which glaucoma was controlled without therapy. ATG therapy has been prescribed if the IOP was higher than 18 mmHg. During a trabeculectomy, mitomycin-C (MMC) was used (20). In contrary to our study, this study has shown a significant increase in average IOP values in the group submitted to phacoemulsification (1,7 ± 4,3 mmHg), but also in the control group (2,3 ± 4,3 mmHg) (in both cases $P < 0,001$). One of the conclusions was that, if MMC is used before trabeculectomy, a higher rate of success is guaranteed followed by lesser usage of ATG medications after the surgery ($P < 0,001$). As well as, if the distance between the trabeculectomy and phacoemulsification is enhanced ($P = 0,007$) and, if the primary IOP value is low ($P = 0,042$) (20).

A study conducted in Switzerland by Töthenberg-Harmsa, Wachtla, Schweier, Funk and Kniestedt published in 2017, considered long-term IOP values, when phacoemulsification and trabeculectomy were performed in one single procedure (which is a difference considering our study), but also when phacoemulsification was used along with the excimer laser during trabeculectomy. The first combination led to the decrease of IOP values from 22,8 mmHg to 13,0 mmHg, along with the usage of two different ATG therapies one year after the surgical procedure. Furthermore, four years after the surgery, IOP value was 14 mmHg and therapy was no longer used. The second combination led to a decrease of IOP values from 19,0 mmHg to 15,0 mmHg. Further usage of two types of ATG medications was needed a year after the surgery was performed, and the value of 14 mmHg was achieved four years after the surgery was performed along with the usage of one ATG medication. Although both combinations are useful in correcting and decreasing the IOP values, they have concluded that, if target values of the IOP are average values, it would be more appropriate to combine phacoemulsification and excimer laser with trabeculectomy. On the other hand, if the targeted values of the IOP are low, it is justified to use the combination of phacoemulsification and trabeculectomy (21). Even during our research, it was clearly noticeable that phacoemulsification combined with trabeculectomy successfully decreases values of IOP, especially six months after. The only difference was that, in our study, there was no decrease in the number of used ATG medications.

A study conducted in the USA and published in 2016 by Song, Ramanthan, Morales et al. was based on determining the IOP value, as well as risk factors in patients with PACG who were submitted to trabeculectomy during which MMC was used, whether they were already submitted to phacoemulsification, or they would be in the future. Out of 33 participants, this study was conducted on 44 eyes submitted to

phacoemulsification. Control IOP value was determined 12 months later. An average value of the IOP was decreasing, starting from 21,3 ± 7,9 mmHg to 12,2 ± 3,9 mmHg 12 months later (P < 0,001). A significant reduction in the number of medications was noted (P < 0,001) (26). On the other hand, even though there was a decrease in IOP values in our study, there was no reduction in the number of ATG medications (22).

In 2002, a study by Klenimann, Katz, Pollack et al. was conducted on 90 patients, and precisely 102 eyes that were submitted to a combination of procedures (phacoemulsification and trabeculectomy), while only 30 patients, or precisely 33 eyes were submitted to trabeculectomy alone. In both groups there was a significant decrease in preoperative IOP values from 21,5 ± 5,8 mmHg to 14,73 ± 3,44 mmHg after the surgery (P = 0,0001). The decrease in IOP values was 31,5 %. In comparison, the group only submitted to trabeculectomy and started with IOP values from 24,2 ± 7,5 mmHg to 12,46 ± 3,86 mmHg after the surgery (P = 0,0001) (23). A significant decrease in IOP was present in our research as well, six months after the phacoemulsification was performed. In a study conducted by DeVience, Chaudhry and Saeedi it was also concluded that, if the preoperative level of the IOP is relatively high (P < 0,001), followed by a lens positioned more anteriorly (P < 0,05) along with a longer phacoemulsification time (P < 0,05), an expected postoperative IOP value should be more successfully decreased (24).

In comparison to our study, some studies have examined results on eyes which were submitted to, not only trabeculectomy, but also the combination of procedures (both phacoemulsification and trabeculectomy). This study was published in Japan by Takihara, Inatani, Ogata-Iwao et al. in 2014, with the aim to determine the effect of trabeculectomy with MMC on the eyes with natural lens and on the eyes earlier submitted to phacoemulsification and insertion of IOL in the posterior chamber. An including criterion was also the IOP ≥ 22 mmHg, three months before trabeculectomy, despite ATG therapy. The total count of participants was 64. This research was concluded with a statement that, trabeculectomy on eyes with artificial lenses and preoperative values of the IOP < 21 mmHg or IOP < 18 mmHg, turned out to be less successful than to be performed on the eyes with normal lenses. Although the IOP was significantly reduced in both cases, after six months it was obvious that the IOP in the eyes with an artificial lens was increased (13,9 ± 5,4 mmHg), in comparison to the normal lens (10,7 ± 4,2 mmHg) (P = 0,03) (25). Other study guided by Vinod, Gedde, Feuer et al. had a goal to examine the most common ways of surgical approaches of the American Glaucoma Society. In addition, it was also confirmed that trabeculectomy along with the usage of MMC was the most used incision surgical technique, no matter if the surgery was performed alone or as a combination with phacoemulsification (26).

In a study conducted by Ahmadzadeh, Kessel, Subhi and Bach-Holm and published in the year of 2021, a comparison of the IOP values after a combined procedure of phacoemulsification and trabeculectomy was presented, as well as values measured when only phacoemulsification was used as a surgical procedure. Their study has shown that, no matter which method was used, the postoperative IOP should decrease, and the value of the postoperative IOP would not differ between the procedures. However, the prevalence of complications which were observed was significantly lower if the combined procedure was used as the main surgical approach (P = 0,01), followed by the improvement of the quality of visual acuity (P = 0,03) (27). The results ended up being similar to results presented in our study, as well as the fact that the number of used ATG medications has not changed after the procedure was performed. In comparison to our study, they have also followed their patients 12 months after the procedure was performed, whereas our study followed the patients six months after the surgical procedure.

A study conducted by Arimura, Iwasaki, Orii et al. published in 2021, has compared whether trabeculectomy followed by phacoemulsification or trabeculectomy combined with phacoemulsification would

result with a better outcome. A total of 141 patients were included in this study, of which 48 were submitted to trabeculectomy followed by phacoemulsification and the rest of patients, 93 of them, underwent a trabeculectomy combined with phacoemulsification. Their study had shown that, depending on the preoperative IOP, a better chance for a successful outcome is when the values of preoperative IOP are higher than 15 mmHg. During their study, patients were divided into three groups – group A (IOP > 21 mmHg), group B (IOP > 18 mmHg) and group C (IOP > 21 mmHg). The results have shown that the prevalence of a successful outcome is significantly higher for those patients submitted to trabeculectomy followed by phacoemulsification and were represented for each group. Statistically significant values have differed depending on the groups - group A (P = 0,02), group B (P < 0,01) and group C (P < 0,01). On the other hand, lower incidence of a successful outcome was noticed when patients were younger, but also when trabeculectomy was combined with phacoemulsification which led to a poorer visual acuity (P < 0,01). Although, directly after the surgical procedure was performed an increase in the visual acuity was noticed – their study has shown that it was only temporary. This improvement in visual acuity has disappeared five years after this surgical procedure was done (28). In comparison to our study, which only observed those patients who were submitted to phacoemulsification, after they were primarily submitted to trabeculectomy and were later on followed in order to collect the IOP values throughout the time of six months, the similarity could be seen in the groups of patients they have observed - precisely their IOP values, where they have also observed successfulness of combined procedures of trabeculectomy and phacoemulsification on those type of patients.

Even though there is a variety of results around the world, until this moment, different studies have pointed out the possibility of using both trabeculectomy alone, as well as combining trabeculectomy with phacoemulsification, with the aim of ensuring the additional decrease and regulation of the IOP value and the possibility of decrease in the number of used ATG therapy. At last, it is important to stress out that, there was no division of patients according to the glaucoma type; moreover, patients who were included were the ones who met primarily set conditions.

Conclusion

Based on the conducted research and obtained results, the following several conclusions can be drawn. There is a significant reduction in intraocular pressure after phacoemulsification surgery. In addition, there is a significant difference in the measured value of intraocular pressure on day zero and the value of the first day, and there is also a significant difference comparing the values of intraocular pressure on day zero with the values after six months. Finally, the values of intraocular pressure are significantly lower if we compare the values of intraocular pressure measured on the first day with the values measured after one month, and after six months.

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Competing interests. None to declare.

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Utjecaj fakoemulzifikacije nakon trabekulektomije na očni tlak

Sažetak

Cilj: Ciljevi istraživanja bili su ispitati postoji li razlika u promjeni intraokularnog tlaka (IOT-a) između tri skupine ispitanika dobivena fakoemulzifikacijom nakon trabekulektomije, s obzirom na visinu početnog IOT-a te postoji li smanjenje potreba za lokalnom antiglaukomskom (ATG) terapijom.

Ispitanici i metode: Istraživanje je provedeno na 26 ispitanika kojima je učinjena operacija katarakte nakon trabekulektomije na Klinici za očne bolesti u Osijeku (od siječnja 2017. do prosinca 2019). Ispitanici su podijeljeni u tri skupine, ovisno o visini izmjerenog IOT-a, s lokalnom medikamentoznom terapijom ili bez nje. Bilježene su vrijednosti IOT-a nulti dan, sedmi dan, nakon mjesec dana i šest mjeseci od operacije te broj i vrsta lokalne medikamentozne terapije.

Rezultati: Povijesno-kohortna studija uključila je 26 bolesnika (19 žena, 7 muškaraca). Nakon provedene fakoemulzifikacije nađeno je statistički značajno smanjenje IOT-a od nultog dana do šest mjeseci (Friedmanov test, $P < 0,001$), značajna razlika u izmjerenoj vrijednosti IOT-a nultog dana i vrijednostima prvog dana (Friedmanov test, $P < 0,05$). Nema značajne razlike u raspodjeli ispitanika s obzirom na vrijednosti IOT-a (test marginalne homogenosti, $P = 0,06$).

Zaključak: Opravdana je uporaba samostalnog zahvata trabekulektomije te kombiniranog zahvata trabekulektomije s fakoemulzifikacijom radi postizanja sniženja i regulacije vrijednosti IOT-a te potom mogućnosti smanjenja broja upotrijebljene ATG terapije. Fakoemulzifikacija nakon trabekulektomije osigurava dodatno sniženje IOT-a.