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CORNEAL TOPOGRAPHIC CHANGES AFTER PTERYGIUM EXCISION WITH CONJUNCTIVAL AUTOGRAFT VERSUS INTRAOPERATIVE APPLICATION OF TOPICAL MITOMYCIN C

By

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ABSTRACT

Background: Pterygium is a wing-shaped proliferative disease of the conjunctival and the subconjunctival tissues invading the cornea. Its prevalence is reported at 10.2% and occurs in patients ranging widely in age. To reduce the rate of recurrence following surgical treatment of pterygium, various techniques have been applied which include pterygium resection combined with conjunctival auto-graft. Refractive and topographic changes caused by pterygium are reversible after pterygium exision.

Objective: This study was conducted to study corneal topographic changes after pterygium surgery with conjunctival autograft versus pterygium surgery with intraoperative application of topical mitomycin C with bare sclera.

Patients and methods: This randomized controlled study included 30 eyes who were randomly divided into two groups each of 15 eyes; group 1 that included patients underwent pterygium excision with conjunctival autograft and group 2 that included patients underwent pterygium excision with Intraoperative Application of Topical Mitomycin C with bare sclera. The cases were recruited from Ophthalmology Department, Al-Azhar University hospitals, Cairo, Egypt.

Results: In the Conjunctival autograft group, there was non-statistically significant difference found between Preoperative and Postoperative regarding thinnest location thickness and there was statistically significant difference between Preoperative and Postoperative regarding K2 (Decrease), Average K (increase) Coma Aberration (Decrease) and Spherical Aberration and (Decrease) there was highly statistically significant difference regarding Astigmatism, BCVA (improvement) K1 (decrease) and High Order Aberration (decrease). In the mitomycin C group, there was there was non-statistically significant difference found between Preoperative and Postoperative regarding thinnest location thickness but there was statistically significant difference regarding K2 (Decrease) and Average K (increase). And there was highly statistically significant difference regarding BCVA (improvement), K1 (Increase) High Order Aberration (decrease), Coma Aberration (decrease), Spherical Aberration (decrease) and Astigmatism (decrease). All topographic changes caused by pterygium are improved after pterygium surgery either in CAG group or MMC group but astigmatism much improved in MMC group and HOA much improved in CAG group.

Conclusion: Pterygium excision can cause changes in the keratometric and cylindrical power of the anterior corneal surface and axis of astigmatism. The cornea becomes steeper. The changes occur in pterygium exsion with CAG and also with MMC. And so IOL calculation should be avoided in patient with pterygium either for cataract surgery, CLE or ICL implantation.

Keywords: Corneal Topographic Changes, Pterygium Excision, Conjunctival Autograft, Topical Mitomycin C.

INTRODUCTION

Pterygium is a triangular fibrovascular tissue growing over the limbus onto the cornea. It has a worldwide distribution, especially in tropical areas. Pterygium may cause chronic irritation, impaired cosmesis, and decreased vision resulting from growth over the pupillary axis, induced astigmatism, or disruption of the precorneal tear film *(Li et al., 2015)*.

The main indications for pterygium surgery are visual impairment due to either astigmatism or direct invasion of the visual axis *(Razmjoo et al., 2014)*. Multiple different procedures have been advocated in treatment of pterygia. These procedures range from simple excision to sliding flap of conjunctiva with or without adjunctive external beta radiation therapy or use of external agent such as Mitomycin C *(Kareem et al., 2012)*.

Mitomycin C is an alkylating agent that inhibits DNA synthesis. It is unclear whether the loss of endothelial cell count in the early postoperative period was actually due to surgical trauma or MMC application *(Young et al., 2013)*. Mitomycin C (MMC) has long been used by ophthalmologists in the treatment of pterygium *(dos Santos Martins et al., 2016)*.

The use of conjunctival autograft was another popular option with a reported recurrence risk between 6.9 and 21.4% *(Kam and Young, 2019)*. Conjunctival autograft was reported to be effective and better than MMC in pterygium surgery *(Nieuwendaal et al., 2011)*.

Topographic changes after primary pterygium excision were related to pterygium size. Pterygium advancing over the pupillary area required 6 to 12 months for corneal topography restoration, resulting in slow recovery of visual acuity *(Nejima et al., 2015)*. Pterygium surgery was associated with significant changes in front and back corneal surfaces. Eyes with more advanced pterygia achieved higher Surgically induced astigmatism *(Kheirkhah et al., 2012)*.

The aim of the present study was to study corneal topographic changes after pterygium excision with conjunctival autograft versus pterygium excision with intraoperative application of mitomycin C.

PATIENTS AND METHODS

This randomized controlled study included 30 eyes who were randomly divided into two groups each of 15 eyes: Group 1 that included patients underwent pterygium excision with conjunctival autograft, and Group 2 that included patients underwent pterygium excision with Intraoperative Application of Topical Mitomycin C with bare sclera. The cases were recruited from Ophthalmology Department, Al-Azhar University hospitals, Cairo, Egypt.

Inclusion criteria: Both sexes included, patients with primary nasal pterygium, and patients expected to have good visual acuity.

Exclusion criteria: Patients with local ocular diseases, previous eye surgery, previous ocular trauma, patients with autoimmune diseases such as Behcet disease, systemic lupus erythematosus, or sarcoidosis, pseudopterygium, recurrent pterygium, pregnant or breast-feeding

women, and patients with uncontrolled diabetes and hypertension or any other medical condition.

A written informed consent was obtained from all the participants before inclusion in the study. The whole study design was approved by the local ethics committee, Faculty of Medicine, Al-Azhar University.

All patients were subjected to:

A. History taking: General history, ophthalmic history and history of the present illness.

B. Ophthalmic examination:

1- External examination: For detection of any pathology that may affect corneal topography other than pterygium.

2- Assessment of the visual acuity (VA) [Unaided visual acuity and Best corrected visual acuity].

3- Objective and subjective refraction were assisted.

4- Cycloplegic refraction.

5- Slit lamp examination.

6- Measurement of intraocular pressure (IOP): Intraocular pressure was measured using Goldman applanation tonometer.

7- Posterior segment examination using indirect ophthalmoscope and slit lamp biomicroscopy with auxillary contact lens.

8- Topographic assessment by using The Sirius system.

Surgical techniques:

Pterygium excision: (For both groups)

- After draping the patient subpterygium anesthesia with 4% lignocaine containing 1: 10 000 adrenaline was used for most patients.
- The head of the pterygium was dissected from the cornea starting 0.5 mm in front of the head toward the sclera using a No 15 Bard-Parker blade, then the pterygium was separated and excised with spring scissors.
- The subconjunctival Tenon's tissue was separated from the overlying conjunctiva, undermined, and excised extensively.
- A bipolar cauterization was done for the bleeders. A rectangular area of bare sclera of about 4–6 mm was created to receive the graft.

Group A: A conjunctival autograft 0.5 mm larger than the bare sclera was dissected and excised from superotemporal bulbar conjunctiva including stem cells from the limbus. This area was later closed with a continuous suture of 10/0 nylon. The graft was then sutured to bare sclera with interrupted 10/0 nylon suture.

Group B: The sclera was left bare and we applied MMC by means of standardized size sponge soaked in MMC (concentrations 0.02% and 2 min duration) . After that, the sclera was washed with balanced salt solution. The application site was then irrigated with at least 150 ml balanced salt solution.

Postoperative care for both groups. A mixed antibiotic and steroid eye drops and ointment were prescribed for the patient for 2 weeks. Any irritating sutures were removed after 2 weeks.

Any fibrovascular growth invading the cornea seen by slit lamp examination was considered as a recurrence and excluded from our study.

Statistical analysis:

The collected data were coded, processed and analyzed using the SPSS (Statistical Package for Social Sciences) version 22 for Windows® (IBM SPSS Inc, Chicago, IL, USA). Data were tested for normal distribution using the Shapiro Walk test. Qualitative data were represented as frequencies and relative percentages. Chi square test ($\chi 2$) to calculate difference between two or more groups of qualitative variables. Quantitative data were expressed as mean ± SD (Standard deviation). Independent samples t-test was used to compare between two independent groups of normally distributed variables (parametric data). P value < 0.05 was considered significant.

RESULTS

There was non-statistically significant difference found between two groups regarding Demographic data (age, sex, residence and occupation) **(Table 1)**.

Table (1): Comparison between studied groups regarding demographic data

		MMC	Conjunctival autograft	P-value
		No.= 15	No.= 15	
Age	Mean ± SD	45.40 ± 12.65	45.13 ± 9.55	0.949
	Range	26 – 65	24 – 60	
Sex	Female	5 (33.3%)	7 (46.7%)	0.456
	Male	10 (66.7%)	8 (53.3%)	
Residence	Rural	8 (53.3%)	10 (66.7%)	0.456
	Urban	7 (46.7%)	5 (33.3%)	
Occupation	Indoor Outdoor	6(40%) 9(60%)	4(26.7%) 11(73.3%)	0.439

There was non-statistically significant difference found between preoperative and postoperative regarding thinnest location thickness and there was statistically significant difference regarding preoperative and postoperative regarding K2 (decrease), average K (increase) coma aberration (decrease) and spherical aberration and (decrease), there was highly statistically significant difference regarding astigmatism, BCVA (improvement) K1 (decrease) and high order aberration (decrease).

There was non-statistically significant difference found between preoperative and postoperative regarding thinnest location thickness but there was statistically significant difference regarding K2 (decrease) and average K (increase) and there was highly statistically significant difference regarding BCVA (improvement), K1 (increase) high order aberration (decrease), coma aberration (decrease), spherical aberration (decrease) and astigmatism(decrease) **(Table 2)**.

Table (2): Comparison between pre-operative and post-operative regarding BCVA, K1, K2, average K, thinest location thickness high order aberration, coma aberration, spherical aberration and astigmatism in conjunctival autograft and MMC group

		Preoperative No.= 15	Postoperative No.= 15	P-value
Conjunctival autograft				
BCVA	Mean ± SD	0.50 ± 0.11	0.91 ± 0.07	0.000
	Range	0.3 – 0.7	0.8 – 1	
K1	Mean ± SD	39.81 ± 3.39	42.42 ± 2.24	0.001
	Range	35.41 – 42.7	38.57 – 45.2	
K2	Mean ± SD	44.79 ± 2.39	43.83 ± 1.72	0.009
	Range	42.16 – 47.89	41.68 – 46.6	
Average K	Mean ± SD	41.54 ± 2.16	43.37 ± 2.09	0.016
	Range	38 – 44.79	40 – 46	
thinnest location thickness	Median	490	487	0.595
	IQR	488 - 517	485 - 513	
High Order Aberration	Mean ± SD	4.93 ± 1.25	2.20 ± 0.55	0.000
	Range	1.86 – 6.9	1.43 – 2.87	
Coma Aberration	Mean ± SD	1.25 ± 0.51	1.12 ± 0.57	0.051
	Range	0.52 – 2.34	0.43 – 2.04	
Spherical Aberration	Mean ± SD	0.97 ± 0.36	0.80 ± 0.31	0.054
	Range	0.55 – 1.78	0.37 – 1.29	
Astigmatism	Mean ± SD	3.51 ± 2.02	1.93 ± 0.66	0.009
	Range	(0.84 – 6.5)	(0.6 – 3)	
MMC				
BCVA	Mean ± SD	0.46 ± 0.11	0.90 ± 0.12	0.000
	Range	0.3 – 0.6	0.7 – 1	
K1	Mean ± SD	41.07 ± 2.29	42.73 ± 1.28	0.001
	Range	37.9 – 43.52	40.37 – 43.75	
K2	Mean ± SD	45.58 ± 1.24	44.47 ± 0.74	0.014
	Range	43.95 – 47.66	43.68 – 45.6	
Average K	Mean ± SD	42.54 ± 1.16	43.19 ± 1.22	0.042
	Range	41.1 – 44.3	41.2 – 44.5	
thinnest location thickness	Median	507	506	0.595
	IQR	485 - 516	482 - 519	
High Order Aberration	Mean ± SD	4.20 ± 2.17	2.39 ± 1.06	0.000
	Range	1.43 – 7.9	1.04 – 3.8	
Coma Aberration	Mean ± SD	1.14 ± 0.21	0.78 ± 0.23	0.005
	Range	0.84 – 1.45	0.49 – 1.05	
Spherical Aberration	Mean ± SD	1.05 ± 0.13	0.87 ± 0.24	0.001
	Range	0.75 – 1.19	0.4 – 1.12	
Astigmatism	Mean ± SD	3.62 ± 2.19	1.38 ± 0.36	0.000
	Range	(0.5 - 6.5)	(0.5- 2.4)	

There was non-statistically significant difference found between two groups regarding BCVA, K1, K2 and average K preoperative and postoperative **(Table 3)**.

Table (3): Comparison between studied groups regarding BCVA, K1, K2 and average K preoperative and postoperative

		MMC	**Conjunctival autograft**	**P-value**
		No.= 15	**No.= 15**	
BCVA Preoperative	Mean ± SD	0.46 ± 0.11	0.50 ± 0.11	0.217
	Range	0.3 – 0.6	0.3 – 0.7	
BCVA Postoperative	Mean ± SD	0.90 ± 0.12	0.91 ± 0.07	0.359
	Range	0.7 – 1	0.8 – 1	
Preoperative:				
K1	Mean ± SD	41.07 ± 2.29	39.81 ± 3.39	0.241
	Range	37.9 – 43.52	35.41 – 42.7	
K2	Mean ± SD	45.58 ± 1.24	44.79 ± 2.39	0.264
	Range	43.95 – 47.66	42.16 – 47.89	
Average K	Mean ± SD	42.54 ± 1.16	41.54 ± 2.16	0.127
	Range	41.1 – 44.3	38 – 44.79	
Postoperative:				
K1	Mean ± SD	42.73 ± 1.28	42.42 ± 2.24	0.643
	Range	40.37 – 43.75	38.57 – 45.2	
K2	Mean ± SD	44.47 ± 0.74	43.83 ± 1.72	0.195
	Range	43.68 – 45.6	41.68 – 46.6	
Average K	Mean ± SD	43.19 ± 1.22	43.37 ± 2.09	0.776
	Range	41.2 – 44.5	40 – 46	

There was non-statistically significant difference found between two groups regarding the postoperative high order aberration and spherical aberration and there was nearly statistically significant difference found between two groups regarding coma aberration and astigmatism (improvement was better in MMC group) **(Table 4)**.

Table (4): Comparison between studied groups regarding high order aberration, coma aberration, spherical aberration and astigmatism preoperative and postoperative

		MMC	Conjunctival autograft	P-value
		No.= 15	No.= 15	
Preoperative:				
High Order Aberration	Mean ± SD	4.20 ± 2.17	4.93 ± 1.25	0.266
	Range	1.43 – 7.9	1.86 – 6.9	
Coma Aberration	M:ean ± SD	1.14 ± 0.21	1.25 ± 0.51	0.444
	Range	0.84 – 1.45	0.52 – 2.34	
Spherical Aberration	Mean ± SD	1.05 ± 0.13	0.97 ± 0.36	0.456
	Range	0.75 – 1.19	0.55 – 1.78	
Astigmatism	Mean ± SD	3.62 ± 2.19	3.51 ± 2.02	0.888
	Range	(0.5 - 6.5)	(0.84 – 6.5)	
Postoperative:				
High Order Aberration	Mean ± SD	2.39 ± 1.06	2.20 ± 0.55	0.558
	Range	1.04 – 3.8	1.43 – 2.87	
Coma Aberration	Mean ± SD	0.78 ± 0.23	1.12 ± 0.57	0.061
	Range	0.49 – 1.05	0.43 – 2.04	
Spherical Aberration	Mean ± SD	0.87 ± 0.24	0.80 ± 0.31	0.535
	Range	0.4 – 1.12	0.37 – 1.29	
Astigmatism	Mean ± SD	1.38 ± 0.36	1.93 ± 0.66	0.067
	Range	(0.5- 2.4)	(0.6 – 3)	

There was non-statistically significant difference found between two groups regarding thinnest location thickness preoperative and thinnest location thickness postoperative **(Table 5)**.

Table (5): Comparison between studied groups regarding thinnest location preoperative and thinnest location thickness postoperative

Thinnest location thickness		MMC	Conjunctival autograft	P-value
		No.= 15	No.= 15	
Preoperative	Median	507	490	0.870
	IQR	485 - 516	488 - 517	
Postoperative	Median	506	487	0.595
	IQR	482 - 519	485 - 513	

MW: Mann Whitney U test.
NS: p-value > 0.05 is considered non-significant.

This table shows axis change between pre-operative and post-operative in the two groups, the changes were anti-clockwise in all cases and although there was no statistically significant difference (p-value > 0.05) between studied groups as regard axis change, the change was more in MMC group **(Table 6)**.

Table (6): Axis change in the two groups and comparison between studied groups as regard axis change
With clockwise take (-) sign and anti clockwise take (+) signe

		MMC	Conjunctival autograft	P-value
		No.= 15	No.= 15	
Axis change	Mean	18.8	14.6	0.424
	±SD	11.2	16.9	

DISCUSSION

In the current study, there was non-statistically significant difference found between two groups regarding Demographic data (age, sex, residence and occupation). In the current study, there was no statistically significant difference found between two groups regarding BCVA preoperative and there was no statistically significant difference found between two groups regarding BCVA postoperative.

This came in accordance with *Kam and Young (2019)* who reported that there was no significant difference in terms of the mean values of unaided visual acuity and correct visual acuity were examined using Kruskal-Wallis rank tests between cases in the cases included in their study (CAG group, MMC group and combined groups).

In the current study, there was a statistically significant difference found between Preoperative and Postoperative regarding BCVA in the cases underwent CAG and also in the cases who used MMC ($p< 0.001$)

This agreed with *Welson et al. (2020)* who reported that there was highly statistically significant improvement in the mean uncorrected visual acuity from 0.44±0.21SD preoperatively to 0.62±0.18SD postoperatively ($p < 0.001$) and a highly statistically significant difference in the mean logMAR visual acuity as it was decreased from 0.43±0.28 SD preoperatively to 0.34±0.23 SD postoperatively ($p < 0.001$).

According to *Ziada (2015)* the results after 6 months postoperatively were correction in the BCVA from (0.6-0.8) with mean of ±SD 0.44±0.13 to (0.8-1.0) with mean of ±SD 0.84±0.21, which is statistically significant and agree with *Errais et al. (2010),* and *Oltulu et al. (2013),* who found that BCVA was evaluated on 20 eyes with pterygium before and 3 months after successful excision and conjunctival autograft surgery, BCVA was 0.73+/-0.20 preoperatively and 0.89+/-0.16 postoperatively.

In the current study, there was a statistically non-significant difference found between the two groups regarding K1, K2 and average K preoperative and also postoperative.

In the current study, there was a statistically high significant difference found between Preoperative and Postoperative regarding K1 and there was a statistically significant difference found between Preoperative and Postoperative regarding K2 and average K in the cases underwent CAG (p= 0.001, 0.009 and 0.016) and also in the cases who used MMC (p= 0.001, 0.014 and 0.042).

This agreed with *Ozdemir and Adnan (2010)* who showed that the Total mean corneal refractive power was 42.51 ± 1.99 D at the preoperative period, 43.95± 1.58 D at the postoperative early period, and 43.89 ± 1.80 D at the postoperative late period (P= .014) which was statistically significant.

This agreed with *Errais et al. (2010),* who evaluated 20 eyes with pterygium before and 3 months after successful excision and limbo-conjunctival autograft surgery, Corneal spherical power was 41.65+/-3.29 D (mean +/- SD) preoperatively and 44.58+/-1.55 D postoperatively.

While *Ziada (2015)* showed that the mean (average) keratometric power of the cornea changed from 42.6±1.33 SD to 43.77±0.95 SD, which was statistically insignificant.

This agrees with *Oltulu et al. (2013)* who included 21 eyes of 21 patients with primary pterygium before and 2 months after pterygium excision using conjunctival autograft technique, the mean refractive power was 42.59 ± 3.44 D preoperatively and 43.72 ± 2.07 D postoperatively.

In the current study, there was no statistically significant difference found between the two groups regarding preoperative topographic astigmatism (p= 0.888) and also postoperative (p=0.067).

In the current study, there was highly statistically significant difference found between Preoperative and Postoperative regarding topographic astigmatism in the cases underwent CAG and also in the cases who used MMC (p= 0.009 and 0.000).

This came in agreement with *Welson et al. (2020)* who found a highly statistically significant improvement in the mean cycloplegic astigmatism from -4.00±3.01 SD preoperatively to -1.39±1.33 SD postoperatively ($p < 0.001$) and also there was a highly statistically significant improvement in the mean topographic astigmatism from -5.17±4.08 SD preoperatively to -2.20±2.31 SD postoperatively ($p < 0.001$).

Our results partially agreed with *Ziada (2015)* who showed that anterior corneal astigmatism changes were statistically insignificant in group A (pterygium excision with bare sclera technique plus MMC application for 3 minutes at site of excision) P=0.272, and significant in groups B (with CAG) P=0.033 and C (pterygium excision with limbal/conjunctival auto graft) P=0.019.

In our study there was change in stigmatism axis between pre-operative and post-operative in the two groups, the changes were anti-clockwise in all cases and there was no statistically significant difference (p-value > 0.05) between studied groups as regard axis change, and the change was more in MMC group, mean 18.8 ±SD 11.2 in MMC group and with mean 14.6 ±SD 16.9 in CAG group.

Our results agreed with *Ozdemir et al. (2010)* who showed that Astigmatism was 81.25% with-the-rule at the preoperative period, 43.75% oblique and 37.50% against-the-rule at the postoperative early period, and 62.50% with-the-rule at the postoperative late period.

In the current study, there was no change found between Preoperative and Postoperative regarding thinnest location thickness in the cases underwent CAG and also in the cases who used MMC but the cornea become steeper after surgery

Our results agreed with *Ziada (2015)* who showed that in all groups, corneal thickness changes were statistically insignificant.

In the current study, there was highly statistically significant difference (decrease) found between Preoperative and Postoperative regarding HOA (p=0.000) and statistically marginal significant difference found between Preoperative and Postoperative regarding spherical aberration (p=0.054) and coma aberration (p=0.051) in the cases underwent CAG.

I noticed that in only two cases in CAG group there was slightly increase in coma aberration and spherical aberration.

On the other hand, there was highly statistically significant difference (decrease) found between Preoperative and Postoperative regarding spherical aberration (p=0.001), coma aberration (p=0.005) and HOA(p=0.000) in the cases who used MMC.

Our results partially agreed with *Ozgurhan (2015)* who showed that HOA and coma aberration decreased significantly ($p<0.05$) and the mean spherical aberration was not significantly changed at postoperative compared with preoperative ($p>0.05$) in patient underwent pterygium exesion with CAG

Our results partially agreed with *Omar et al. (2016)* who showed that HOA (p=0.001) and coma aberration (p=0.003) decreased significantly and the spherical aberration was not significantly changed at postoperative compared with preoperative as 63 eyes of fifty patients with primary pterygium underwent pterygiam excision with CAG and intraoperative application of Mitomicin C.

In the current study, although there was statistically non-significant difference found between the two groups regarding post-operative HOA and astigmatism the resolving of HOA was more in CAG group than MMC group and resolving of astigmatism was more in MMC group than CAG group.

So, in pterygium cases with high astigmatism are better treated by pterygium excision with intraoperative application of MMC, and in pterygium cases with high HOA are better treated by pterygium excision with CAG.

In our experience, intraoperative MMC was safe, less time-consuming when compared to autograft surgery, and had the advantage of preserving normal conjunctiva for future glaucoma surgery. However, concerns over the potential complications associated with MMC may have limited its use.

CONCLUSION

- Patient with pterygium that inducing astigmatism and HOA had benefit from surgical removal of the pterygium.

- Pterygium excision can cause changes in the keratometric and cylindrical power of the anterior corneal surface and axis of astigmatism. The cornea becomes steeper. And so IOL calculation should be avoided in patient with pterygium either for cataract surgery, CLE or ICL implantation.
- As the axis af astigmatism changes after pterygium excision, implantation of toric iol in any patient suffer from pterygium should be avoided till removal of the pterygium.
- This study can predict topographic changes and the mean corneal power change after pterygium excision in cases presenting with pterygia and need urgent IOL calculation as in traumatic dislocated lens, In conjuction with vitrectomy for retinal detachment, Intumescent cataract or hypermature cataract.
- There was a statistically significant improvement in corneal aberrations and in both refractive and topographic astigmatism after the operation as compared with the preoperative values in both the CAG group and MMC group and the degree of change of astigmatism was higher in the MMC group and the degree of HOA change was higher in CAG group.

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التغيرات الطبوغرافية للقرنية بعد استئصال الظفرة مع استخدام رقعة من الملتحمة مقابل استخدام عقار ميتوميسين ج الموضعي أثناء العملية

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خلفية البحث: الظفرة مرض تكاثرى على شكل جناح يصيب أنسجة الملتحمة وتحت الملتحمة تغزو القرنية. تم الإبلاغ عن انتشاره بنسبة 10.2 ٪ ويحدث في المرضى الذين تتراوح أعمارهم على نطاق واسع. لتقليل معدل العلاج الجراحي التالي للظفرة، تم تطبيق تقنيات مختلفة تشمل استئصال الظفرة جنبًا إلى جنب مع التطعيم الذاتي في الملتحمة. تحدث تغيرات انكسارية و طبوغرافية نتيجة لوجود الظفرة و بسبب التدخل الجراحي لإدارتها تستعيد القرنية طبيعتها إلى حد كبير.

الهدف من البحث: دراسة التغيرات الطبوغرافية للقرنية بعد جراحة استئصال الظفرة مع استخدام رقعة من الملتحمة مقابل استئصال الظفرة مع استخدام ميتوميسين ج.

المرضى وطرق البحث: تضمنت هذه الدراسة التحليلية المستقبلية علي ثلاثين عينا مصابة بمرض الظفرة، تم تضمينهم من قسم طب وجراحة العيون بمستشفيات جامعة الأزهر. وتم تقسيمهم عشوائيًا إلى مجموعتين لكل منهما 15 عينًا. المجموعة 1 التي تضمنت المرضى الذين خضعوا لعملية استئصال الظفرة مع استخدام رقعة من الملتحمة والمجموعة 2 التي شملت المرضى الذين خضعوا لعملية استئصال الظفرة مع التطبيق أثناء العملية لميتوميسين ج.

نتائج البحث: لم يكن هناك فروق ذات دلالة إحصائية في حدة البصر قبل الجراحة، أو المعلومات الطبوغرافية القرنية بين الحالات في المجموعتين. لم يكن هناك فرق معتد به إحصائيا في حدة البصر بعد العملية الجراحية، أو المعلمات

الطبوغرافية القرنية بين الحالات في المجموعتين. كانت درجة التغيير في اللابؤرية أعلى في مجموعة الميتوميسين مقارنة بالمجموعة الأخرى و كانت درجة التحسن في الانحرافات البصرية العليا في مجموعة استئصال الظفرة مع استخدام رقعة من الملتحمة أعلى من مجموعة الميتوميسين. كان هناك تغير في محور اللابؤرية في المجموعتين و على الرغم من أن الاختلاف بين المجموعتين لم يكن ذا دلالة إحصائية إلا أنه كان أكثر في مجموعة الميتوميسين.

الاستنتاج: يمكن أن يسبب إستئصال الظفرة تغيرات في قياس القرنية والقوة الأسطوانية لسطح القرنية السابقة ومحور اللابؤرية، تصبح القرنية أكثر حدة. ولذلك يجب تجنب حساب العدسة داخل العين في المرضى الذين يعانون من الظفرة سواء من أجل جراحة الساد أو زراعة العدسة داخل العين.

الكلمات الدالة: التغيرات الطبوغرافية للقرنية، إستئصال الظفرة، طعم ذاتي الملتحمة، ميتوميسين ج الموضعي.