ORIGINAL RESEARCH PAPER
Volume - 10 | Issue - 01 | January - 2021 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

RETROSPECTIVE STUDY OF THE PTERYGIUM EXCISION SURGERY

Ophthalmology

Dr. Jigna Patel Assistant Professor in Ophthalmology, M and J institute of Ophthalmology and B J Medical college, Ahmedabad.

Dr. Poonam Sonagra* Ophthalmologist Western Railway Hospital, Sabarmati, Ahmedabad.*Corresponding Author

ABSTRACT

Introduction: A Pterygium is a triangular fibrovascular subepithelial ingrowth of degenerative bulbar conjunctival tissue over the limbus onto the cornea. This degenerative condition usually symptomless, but vision becomes impaired if it progress towards the pupillary area of the cornea. So, pterygium excision needed for to prevent astigmatism, chronic eye irritation and cosmetic disfigurement. The surgical techniques are simple pterygium excision with bare sclera, pterygium excision with conjunctival autograft, adjuvant treatment with mitomycin C or beta irradiation, amniotic membrane patch grafting an peripheral lamellar keratoplasty. In this study we compared three methods of pterygium surgery, pterygium excision with conjunctival autograft, pterygium excision with non bare sclera, pterygium excision with mitomycin c application. These three methods were compared in term of pterygium size, surgery time duration and recurrence rate.**Methods And Material:** One year retrospective comparative study, the data was entered and tabulated in Microsoft Excel 2007. Gender and age distribution of study population, compare the mean of pterygium size, surgery time duration and recurrence rate of pterygium was done by using graph pad software. Study Procedure: Total 52 eye 52 patients were divided into three Group: Group A: 20 patients -Pterygium Excision with Conjunctival Autograft Group B: 17 patients - Pterygium Excision with Non Bare Sclera Group C: 15 Patients – Pterygium Excision with Mitomycin 0.02% application. **Results:** This study was carried out in ophthalmology department of tertiary care hospital. Total 52 patient, out of them 28 (54%) were male and 24 (46%) were female. This study was undertaken in age group between 21 to 80 years of age, prevalence of pterygium was highest among the middle age group 41 to 50 (30.76%) years of age. On Comparing three different surgeries of pterygium mean pterygium size were 2.57mm (group-A), 2.05mm (group-B) and 2.63mm (group-C). Mean Surgery time was found 39.2 min (group-A), 17.41 min (group-B) and 29.73 min (group-C). group-A Pterygium excision with conjunctival autograft required longer surgical time duration as compared to other two groups of surgery. The recurrence rate in group A(5%), group B(17.64%) and group C(6.66%). In our study recurrence of pterygium was higher in group- B and lowest in group A. **Conclusion:** Group A technique had lowest recurrence rate (5%) and longer surgical time (39.2 min), group B technique had highest recurrence rate (17.64%) and shortest surgical time (17.41min) and group C technique had lower recurrence rate (6.66%) and relatively short surgical time (29.73 min) as compared to other techniques. In our study we did not observed any autograft, suture and mitomycin application related complications. Pterygium excision with autograft (group A) and mitomycin C application (group C) had low recurrence rate but to prevent long term complications of mitomycin C like scleral thinning, sclera necrosis, glaucoma, we preferred conjunctival autograft technique. Pterygium excision with conjunctival autograft (group A) technique is simple, safe, effective and had lowest recurrence rate, so we preferred this technique.

KEYWORDS

Pterygium, Conjunctival autograft, Mitomycin C, Non bare sclera.

INTRODUCTION

A Pterygium is a triangular fibrovascular subepithelial ingrowth of degenerative bulbar conjunctival tissue over the limbus onto the cornea.[1]This degenerative condition of the subconjunctival tissues proliferate as vascularised granulation tissue to invade the cornea, destroying the superficial layers of stroma and bowman's membrane, the whole being covered by conjunctival epithelium.[2] In initial stages pterygium tissue is thick and vascular, becomes thin and pale in later stages. When it stop to progress, the formation of dense fibrous tissue and it causes corneal astigmatism.[2] This condition usually symptomless, but vision becomes impaired if it progress towards the pupillary area of the cornea.[2] So, pterygium excision needed for to prevent astigmatism, chronic eye irritation and cosmetic disfigurement.

The surgical techniques are simple pterygium excision with bare sclera, pterygium excision with conjunctival autograft, adjuvant treatment with mitomycin C or beta irradiation, amniotic membrane patch grafting an peripheral lamellar keratoplasty.The blood supply of pterygium is derived from surface of conjunctiva.[3] pterygium excision with bare sclera having higher rate of recurrence.[1] Pterygium excision with conjunctival autograft will cover the defect, decreased fibrovascular growth towards cornea and reducing pterygium recurrence.[4] Mitomycin C is an antimetabolites, antiproliferative and alkylating compound derived from streptomyces Caespitosus.[5]

In this study we compared three methods of pterygium surgery, pterygium excision with non bare sclera, pterygium excision with conjunctival autograft, pterygium excision with mitomycin C application. These three methods were compared in term of pterygium size, surgery time duration and recurrence rate.

METHODS AND MATERIAL

Study Design- Retrospective Comparative Study
Study Duration- 1 Year, august 2019 to August 2020

Inclusion Criteria

1. Pterygium Growth more than 2 mm on the Cornea
2. Patient had Primary Pterygium
3. Patient gave informed and written Consent

Exclusion Criteria:

1. Patient had active Conjunctival and Corneal infection
2. Patient with secondary pterygium.
3. Patient had Corneal Opacity and dry eye syndrome
4. Patients had collagen vascular diseases.
5. Follow up less than 6 months
6. Patients with pseudopterygium
7. Patients with co-existent conjunctival diseases like previous alkali burns, mooren's ulcer etc., which predispose to formation of psudopterygium.

Data Analysis:

The data was entered and tabulated in Microsoft Excel 2007. Gender and age distribution of study population, compare the mean of pterygium size, surgery time duration and recurrence rate of pterygium was done by using graph pad software.

Study Procedure:

Total 52 eye 52 patients were divided into three Group, all pre-operative, intra-operative and post- operative details , records were maintained in case paper and register.

Group A: 20 patients -Pterygium Excision with Conjunctival Autograft
Group B: 17 patients - Pterygium Excision with Non Bare Sclera
Group C: 15 Patients – Pterygium Excision with Mitomycin 0.02% application.

METHODS:

Pre Operative Measures:

Verbal explanation, informed and written consent taken before surgery. Proper history taking, personal history, occupational details, other ocular and systemic disease was rule out before surgery. Whole ocular examination including visual acuity, intraocular pressure, refraction, slit lamp examination, sac syringing was done prior of surgery. Pre-operative topical antibiotic eye drop given to each patient.

Staging of Pterygium in the Caribbean: [6]Five stages of pterygium, based on-location, size, shape, intensity and effect. **Stage 1:** exposure conjunctivitis, **Stage 2:** conjunctival pterygium or pinguecula, **Stage 3:** limbal pterygium, **Stage 4:** corneal pterygium and **Stage 5:** compound pterygium. Lucio Burrato's Clinical Classification of Pterygium[7]: It is based on morphological features of pterygia and involvement of the cornea. There are 3 main clinical types of pterygium according to this classification; **Type I:** Small Primary Pterygium, **Type II:** Advanced primary or recurrent pterygium with no optical zone and **Type III:** Advanced primary or recurrent pterygium with optical zone involvement.

Group- A surgery was undertaken in peribulbar block and group- B, C surgery was done under topical anesthesia. Then eyelid skin painting, cleaning, draping was done in proper manner and eye was exposed by using universal eye speculum. Pterygium size was measured by castrovijjo's caliper.

Surgical Techniques:

(1) Group- A Pterygium Excision With Conjunctival Autograft: pterygium tissue head lifted, dissected and separated from underneath sclera then pterygium tissue excised. Conjunctival autograft taken from piece of superotemporal limbal conjunctival tissue from the same eye and suturing done by vicryl 8-0 suture at the limbus to cover the defect produced by excising the pterygium. Subconjunctival injection of steroid and antibiotic given at the end of surgery. Eye padded for 24hrs with steroid and antibiotic ointment. Conjunctival graft related complications- graft oedema, epithelial cyst, tenon's granuloma, corneoscleral dellen, giant papillary conjunctivitis due to sclera irritation, corneal scaring and recurrence of pterygium.

(2) Group-B Pterygium Excision With Non Bare Sclera:
The pterygium tissue was separated from sclera about half of the distance towards the canthus. Two parallel incision made with scissors to excise as much of pterygium as possible. The head of pterygium is then excised and preserved conjunctiva was sutured with adjacent conjunctiva by using 8-0 vicryl suture. Sub - conjunctival injection of steroid and antibiotic given at the end of surgery. Eye padded for 24hrs with steroid and antibiotic ointment. Recurrence of pterygium commonly noted by this technique.

(3) Group C: Pterygium excision with mitomycin C application:
The pterygium tissue was dissected, head of the pterygium was peeled off from the surface of cornea and subconjunctival fibrous tissue was excised. Then surface of the cornea smoothen by cresent knife. The piece of sponge soaked with 0.02% Mitomycin C was applied in sclera bed for 2 minutes. After removing sponge, scleral area thoroughly irrigated with balanced salt solution. Then preserved conjunctiva was sutured with adjacent conjunctiva by vicryl 8-0 sutures. Sub - conjunctival injection of steroid an antibiotic given at the end of surgery. Eye padded for 24hrs with steroid and antibiotic ointment. Complication - sclera necrosis, scleritis, cataract by this technique.

Post Operative Measures:
Topical antibiotic and steroid eye drop given initially two hourly for 1 week then gradually tapering dose frequency up to 6 week of surgery in each group. Antibiotic eye ointment twice a day for 1 month and lubricating eye drops 4 times a day was given to each group patient. All patients were follow up for examination on 1st, 7th and 30th post operative day and every 2 month till the six month of surgery. All patients had given advice for addition visits when any surgery related complication noted.

RESULTS

This study was carried out in ophthalmology department of tertiary care hospital. In this study total 52 patient were participated and divided into three group as per methods of pterygium excision surgery. In group-A 20 patients, group-B 17 patients and group-C 15 patient. Out of them 28 (54%) were male 10 in group A, 11 in group B, 7 in group C and 24 (43%) were female 10 in group A, 6 in group B, 8 in group C (Figure1, Table 1)

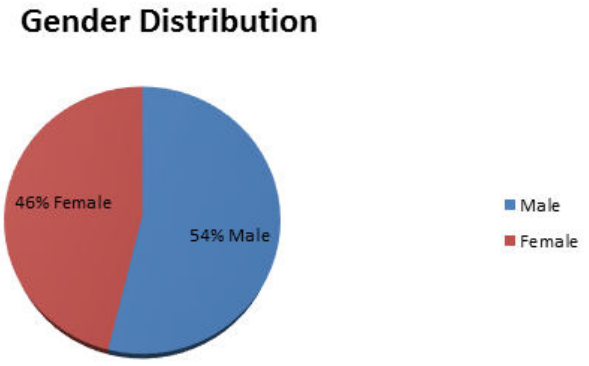

Figure 1: Gender distribution of study population

Table 1: Gender Wise Distribution In Three Group

	Group A	Group B	Group C	Total patients
Male Patients	10	11	7	28
Female Patients	10	6	8	24
Total patients	20	17	15	52

This study was undertaken in age group between 21 to 80 years of age in patient operated for pterygium surgery by three different surgical techniques. The prevalence of pterygium in different age groups were in 21-30 year age group 11.53%, 31-40 year age group 26.92%, 41-50 year age group 30.76%, 51-60 year age group 19.23%, 61-700 year age group 7.69% and 71-80 year age group 3.84%.prevalence of pterygium was highest among the middle age group 41 to 50 years of age. (Figure 2 and 3)

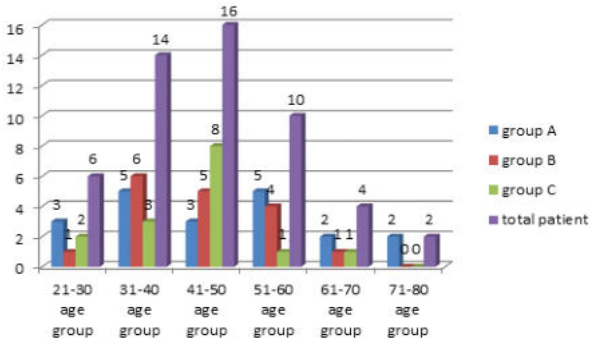

Figure 2: Age Group Wise Distribution Of Study Population

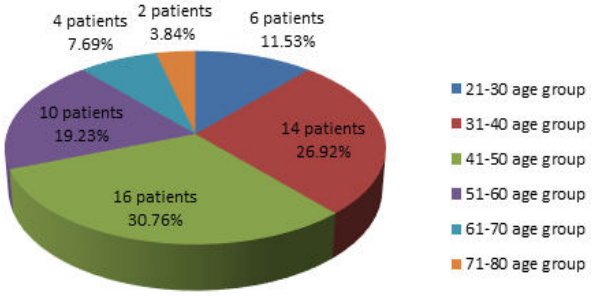

Figure 3: Age Group Percentages Of Study Population

Table 2: A Comparison Between Three Group By Important Variables Of Study

Variables	Group A	Group B	Group C
Mean Pterygium size (mm)	2.57mm	2.05mm	2.63mm
Mean Surgery Time (min)	39.2 min	17.41min	29.73min
Recurrence Rate	5%	17.64%	6.66%

On comparing three different surgeries of pterygium mean pterygium size were 2.57mm in group-A, 2.05mm in group-B and 2.63mm in group-C. Mean Surgery time was found 39.2 min in group-A, 17.41 min in group-B and 29.73 min in group-C. Group-A Pterygium excision with conjunctival autograft required longer surgical time duration as compared to other two groups of surgery. The recurrence rate in Group-A 5%, group-B 17.64% and group- C 6.66% (table 2) In

our study recurrence of pterygium was higher in group- B pterygium excision with non bare sclera.

DISCUSSION

Primary pterygium is a progressive wing shaped growth of tissue located in the palpebral fissure, encroaching on the cornea from the conjunctiva.[8] A true pterygium develops from the bulbar conjunctiva m the interpalpebral area of the eye. It is a degenerative and hyperplastic process, in which conjunctiva actively invades the cornea. Pseudo pterygium is a condition in which the conjunctiva becomes attached to a corneal ulcer or an ulcer near the margin, this is the result of a inflammatory process.[9,10] A true Pterygium is a condition found chiefly in the sunny hot dusty regions of the world, mostly between the Latitude of 37^0 North and South of the Equator.[11] The disease affects mostly nasal conjunctiva, temporal part is less commonly affected and the condition is rarely seen on both sides.

The disease affects mostly adults between 25 and 40 years of age.[12,13,14] It is rare among children. In our study prevalance of pterygium was higher in younger age group below 50 years of age, highest prevalance in 41-50yrs age group. This disease is common in dry sunny climates with sandy soils in parts of Australia, south africa, texas,middle east, south, south-east asia.[2] Ultra violet light exposure probably an aetiological factor.[2]

Farnandes m, sangwan V.S. et al reported pterygium is more often seen in men than in women.[15] This is attributed to the fact that males are exposed to dust and environmental initiates more the than women. In our study 28(54%) patients were male and 24(43%) patients were female.

Pterygium progressing towards the pupillary area results in astigmatism, restriction of ocular motility and cosmetic disfiguring, are the indications of surgical management.[2] Multu FM et al suggested that there are many surgical techniques to treat pterygium, recurrence was observed in some surgical techniques[16] In this study three surgical techniques- pterygium excision with conjunctival autograft, pterygium excision with non bare sclera and pterygium excision with mitomycin c application were evaluate in terms of pterygium size, surgery time, efficacy and recurrence. In our study mean pterygium size in group A 2.57mm, group B 2.05mm and group C 2.63mm.

Koranyi G et al suggested, conjunctival autograft required longer surgery time (18-20 min) than MMC technique (6-22 min).[17] Mean surgical time in our study was in group A was 39.2 min, group B was 17.41 min and group C was 29.73 min. The mean surgical time was shorter in group B pterygium excision with non bare sclera technique and longer surgical time noted in group A pterygium excision with conjunctival autograft.

Seid A and Bejiga A reported that the recurrence rate was higher in bare sclera technique.[18] Sharma A, Gupta A, Ram J reported that pterygium excision with conjunctival autograft technique had recurrence noted between 3.5 to 39 percent.[19] Paracha Q et al suggested that conjunctival autograft technique and intra operative mitomycin have similar surgical outcomes.[20]

In this study recurrence of pterygium was higher 17.64% (3 patient) in group B pterygium excision with non bare sclera. The recurrence rate lower in group A 5% (1 patient), and group C 6.66% (1 patient). In these two techniques in group B and group C we don't kept bare sclera, remaining preserved conjunctiva was sutured with adjacent conjunctiva so relatively lower recurrence rate noted. Conjunctival autografting is effective technique for preventing recurrence but it required longer surgical time.

We had given antibiotic, steroid , lubricant eye drops post operatively, so surgery related, graft related, suture related complications were not observed. All conjunctival and autograft sutures taken by vicryl 8-0 absorble sutures so didn't need to minor surgical procedures for suture removal post operatively. Pterygium excision with mitomycin C 0.02% sponge application reduces re-growth of pterygium tissue by inhibits proliferation of fibroblast. Mitomycin C application was very lowest dose, applied with cotton sponge, wash the affected area by irrigating fluid, so mitomycin related complications like sclera thinning, scleral necrosis, iritis, corneal infection not observed in throughout follow up period.

CONCLUSION

The pterygium is degenerative condition of subconjunctival tissues which proliferate as the vascularised granulation tissue, when it invade the cornea, pupillary area that leads to astigmatisms and causes visual disturbance that required surgical management of pterygium excision. The prevalence of pterygium was higher in middle age group 30 to 50 years of age. Male were more affected than female. In our study mean pterygium size in group A 2.57mm, group B 2.05mm and group C 2.63mm.

On conclusion, group A technique had lowest recurrence rate (5%) and longest surgical time (39.2 min), group B technique had highest recurrence rate (17.64%) and shortest surgical time (17.41min), group C technique had lower recurrence rate (6.66%) and relatively short surgical time (29.73 min) as compared to other techniques. In our study we did not observed any autograft, suture, mitomycin application related complications. Pterygium excision with autograft (group A) and mitomycin C application (group C) had low recurrence rate but to prevent long term complications of mitomycin C like scleral thining, sclera necrosis, glaucoma, we preferred Conjunctival autograft technique. Pterygium excision with conjunctival autograft (group A) technique is simple, safe, effective and had lowest recurrence rate, so we preferred this technique.

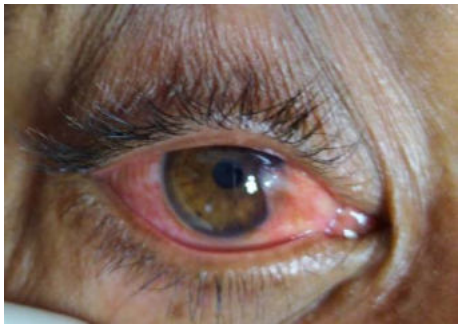

Figure 4: Primary Pteryium

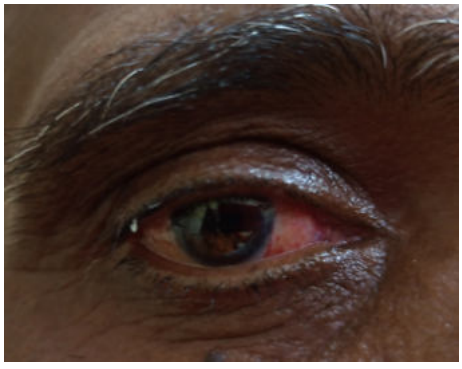

Figure 5: Post Operative Image Of Pterygium Excision

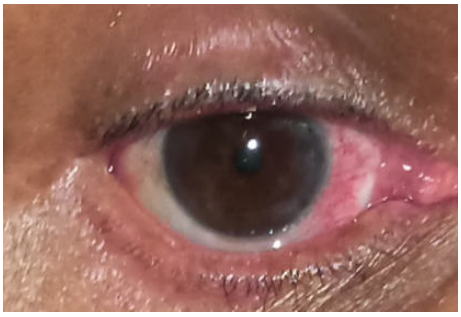

Figure 6: Post Operative Image Of Pterygium Excision

REFERENCES:

1. Jack J Kanski Bred Bowling. Clinical ophthalmology a systemic approach. 7th edition. Chapter-5; conjunctiva; 163.
2. Ramanjit Sihota and Radhika Tandon. Parson's disease of the eye. 21th edition. Chapter-14; Disease of conjunctiva;181-182.
3. Chan CM, Chew PT, Alsagoff Z, Wong JS, Tan DT. Vascular patterns in pterygium and conjunctival autografting: a pilot study using indocyanine green anterior segment angiography. Br J Ophthalmol. 2001; 85: 350-3. [PMID: 11222345] [DOI: 10.1136/bjo.85.3.350]

4. Long T, Li Z. Bare sclera resection followed by mitomycin C and/or autograft limbus conjunctiva in the surgery for pterygium: a Meta-analysis. Int J Ophthalmol. 2015; 8: 1067-73 [PMID:26558227]; [DOI:10.3980/j.issn.2222-3959.2015.05.37]
5. Katircioglu YA, Altiparmak U, Engur Goktas S, Cakir B, Singar E, Ornek F. Comparison of two techniques for the treatment of recurrent pterygium: amniotic membrane vs conjunctival autograft combined with mitomycin C. Semin Ophthalmol.2015;30:3217 [PMID:24506693]; [DOI:10.3109/08820538.2013.874468]
6. Alfred, L., Andrye, M. D. Pterygium staging in Caribbean. Annals of ophthalmology and glaucoma March – April, 1998, 92-94
7. Lucio Buratto, Pterygium surgery 2000.
8. Current ocular therapy – Fraunfelder and Roy
9. Text book of ophthalmology: Kackobie
10. Duanes text book of ophthalmology
11. Rao, S. K., Lekha, T., Mukesh, B. N., Sitalakshmi, G., Padmanabhan, P. Conjunctival limbal autografts for primary and recurrent pterygia: technique and results. Indian J. Opthalmology, 1998; 46: 203-209.
12. Lewallen, S. A. Randomized trial of conjunctival autografting for pteryigum in the tropics. Ophthalmology, 1989, 96: 1612-1614.
13. Tan, D. T. H., Chee, S. P., Dear, K. B. G., Lim, A. S. M. Effect of Pterygium morphology on Pterygium recurrence in a controlled trail comparing conjunctival autografting with bare sclera. Arch. 1997, 115: 1235-1240.
14. Chen, P. P., Ariyasu, R. G., Kaza, V., LaBree, L. D., McConnell, P. J. A randomized trail comparing mitomcyin C and conjunctival autograft after excision of primary Pterygium. Am. J. Opthalmol., 1995; 120, 151-160.
15. Fernandes, M., Sangevan, V. S., Bansal, A. K., Gangopadhyay, N., Sridhar, M. S., Garg, P., Aasuri, M. K., Nutheti, R., Rao, G. N. LVPEI, India; Outcome of Pterygium surgery bt 1988-2001; Eye 2005; 19(11): 1182-90.
16. Mutlu FM, Sobaci G, Tatar T, Yildirim E. A comparative study of recurrent pterygium surgery: limbal conjunctival autograft transplantation versus mitomycin C with conjunctival flap. Ophthalmology. 1999; 106: 817-21. [PMID: 10201608]; [DOI: 10.1016/S0161-6420(99)90172-0]
17. Koranyi G, Artzén D, Seregard S, Kopp ED. Intraoperative mitomycin C versus autologous conjunctival autograft in surgery of primary pterygium with four-year follow-up. Acta Ophthalmol. 2012; 90: 266-70 [PMID: 20528781]; [DOI: 10.1111/j.1755-3768.2010.01936.x]
18. Seid A, Bejiga A. Free conjunctivalautograft in the management of advanced primary and recurrent pterygia. East Afr Med J. 2000; 77: 588-91 [PMID: 12862103
19. Sharma A, Gupta A, Ram J, Gupta A. Low-dose intraoperative mitomycin-C versus conjunctival autograft in primary pterygium surgery: long term follow-up. Ophthalmic Surg Lasers. 2000; 31: 301-7. [PMID: 10928667]
20. Paracha Q, Ayoob M, Dawood Z, Mirza SA. Recurrence rate with use of intraoperative Mitomycin C versus Conjunctival Autograft following pterygium excision. Pak J Med Sci. 2014; 30: 1243-6 [PMID: 25674116]; [DOI: 10.12669/pjms.306.5191