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# SUCCESS OF PTERYGIUM SURGERY WITHOUT CONJUNCTIVAL AUTOGRAFT AND NON USE OF MMC ON PATIENTS (RURAL & URBAN)

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## ABSTRACT

A pterygium is a triangular shaped lump of tissue, an elevated superficial chronic lesion of the bulbar conjunctival tissue which grows from the conjunctiva (the thin membrane that covers the white of the eye) onto the cornea (clear central part of the eye). It is characterized by epithelial hyperplasia and elastotic degeneration. Also have invasive characteristics, including dysplastic expression, local invasiveness, and a high recurrence rate. The tumor-like characteristics of pterygium are expressed when reproliferation occurs after excisional surgery. A pterygium can occur in both eyes, usually on the nasal side of the eye. The exact cause of a pterygium is unknown, but they are strongly associated with exposure to ultraviolet radiation and hot dry environments. It can vary from small atrophic quiescent lesions to large aggressive rapidly growing fibro vascular lesions that can distort the corneal topography and in advanced cases they can obscure the optical center of the cornea. Pterygium can cause a significant alteration in visual function in advanced cases and may be inflamed resulting in redness and ocular irritation. Although various surgical procedures, including adjunctive treatments, have been proposed for the treatment of pterygium, recurrence remains a significant problem after surgical excision. **Aim:** To evaluate success of a newer simple method of Pterygium surgery without conjunctival auto graft and non use of MMC. **Material & Methods:** This is a Hospital based retrospective cross sectional case study, performed at Pacific Institute of Medical Sciences (PIMS), Udaipur (Rajasthan, India) of patients (belonging to rural or urban area) operated at Eye Department during May 2015 to Feb 2017. All patients were attending eye OPD having Pterygium and consenting for surgery. The patients were continuously followed up for treatment (mean follow-up period was from 12 to 18 months) and also observed for recurrence of the Pterygium. Statistical analyses were used for further critical conclusions. **Results:** There were 86 males and 114 females aged between 17 years to 85 years with average age 51.4 years with 14.3 standard deviation. Incidentally there were 200 eyes (either right or left) equally for treatment. **Conclusion:** In general Conjunctival autograft surgery alone for primary and recurrent pterygium is effective and safe in reducing the recurrence rate of pterygium. But the success results of this study pterygium surgery without Conjunctival autograft and non usage of MMC on patients gives similar results without sacrificing conjunctiva from other site in the eye.

**KEYWORDS:** Pterygium, Conjunctiva.

## INTRODUCTION

A pterygium (pronounced te-ri-gi-um) is a triangular shaped lump of tissue, which grows from the conjunctiva (the thin membrane that covers the white of the eye) onto the cornea (clear central part of the eye).[1] The pterygium word is derived from Greek word 'pterygion' means wing. A pterygium is an elastotic degeneration of the conjunctival tissue and hyalination of the sub-epithelial tissue resulting in a triangular fibro vascular outgrowth from the conjunctiva encroaching on the cornea which can occur in both eyes, usually on the nasal side of the eye.[2]

The exact cause of a pterygium is unknown, but they are strongly associated with exposure to ultraviolet radiation and hot, dry environments more in people working in rural areas such as farmers, laborers, welders, factory workers etc.

Pterygium is an elevated, superficial, external ocular mass that usually forms over the perilimbal conjunctiva

and extend onto the corneal surface. The worldwide incidence of pterygia appears to be increased in areas within 36 degrees north and south of the equator, popularly known as the pterygium belt.[3] Hirst (2003) 4 explained Other possible causes include hereditary factors such as the protein p53 oncogene, a marker for the pterygium gene seen among families, and dry eyes due to abnormalities in the tear film causing proliferation of cells for new growth.[4] Furthermore, the limbal predilection may be explained by the phenomenon of peripheral light focusing, in which incidental light passes through the anterior chamber and is focused at the distal (nasal) limbus where limbal stem cells (LSCs) reside.[5]

Pterygia are classified according to translucency in three different types such as Atrophic pterygium it is a fleshy conjunctival mass where episcleral vessels are unobscured, then other one Intermediate pterygium is where episcleral vessels are partially obscured and lastly Fleshy pterygium is where episcleral vessels are completely obscured by the conjunctival mass. When the lesion progresses to involve the central cornea, it causes significant astigmatism, obstruction of the visual axis, and corneal scarring.[6]

The oldest description of conjunctival autograft for pterigium surgery performed in sixties. The cut and paste technique for pterygium surgery was first reported by Kenyon et al. Pterygium surgery with conjunctival autograft remains the gold standard for reducing recurrence after its initial description.[7,8]

Recurrence rates are consistently reported in the 5-10% range. The reasons for surgery could be cosmetic, better visual acuity, irritation in eyes, inflammation or recurrence from any earlier eye surgery done elsewhere. These may cause vision loss secondary to proximity to the visual axis or due to astigmatism, eye movement restriction, atypical appearance, progressive growth, and cosmetic concerns.[6]

In preventing recurrence among patients who underwent simple pterygium excision, adjunctive therapies (e.g. beta-irradiation and thiotepa application) are no longer now used because of serious complications. Mitomycin-C (MMC) is an antibiotic-antineoplastic drug that alkylates DNA and produces crosslink, inhibiting DNA synthesis. In 1994, MMC was introduced as an adjunct therapy in treating recurrent pterygium.[4,9]

There are some research studies comparing the efficacy of conjunctival autograft (CA) alone versus CA with intra-operative MMC as an alternative pterygium treatment. This study determined the recurrence rate of pterygium without CA and without MMC in the treatment of primary and recurrent pterygium.[10]

Current theories regarding pathogenesis includes U.V. light exposure, chronic conjunctival inflammation, elastodysplasia, elastodystrophy, stem cell aplasia and dry-eye.[11] Pterygium could be considered a local limbal cell deficiency. Overall, prevalence rates ranges from 0.7% - 31% in various populations around the world.[12]

## MATERIALS & METHODS

This study was conducted at Pacific institute of medical sciences (PIMS), Umarda, Udaipur. There were total 200 cases and most of the patients were from rural area and few were from urban area. The subjects were farmers, stone mine laborers and mine workers. They were operated at Eye Department during August 2015 to March 2017. In this study, we evaluated a simple method of pterygia surgery.

The inclusion criteria for case study of all these patients for surgery was based on symptoms like visual disturbance , irritation, inflammation, cosmetic and recurrence after previous pterygium surgery done elsewhere

The other data were also collected such as age, gender, address, occupation, any past history, any health related cases, any earlier surgery etc. The images of patient's cornea were recorded for baseline comparison and their consent was taken prior to surgery. Patients were divided in three age groups as Group1, Group 2 and Group 3; any patient with recurrent complaint was also included in respective age group.

There are 5 different types of surgeries for removal of the pterygium patients such as Conjunctival autograft with sutures (CAG-s) or fibrin glue (CAG-g), conjunctival rotational flap (CRF), or amniotic membrane transplantation with either suture (AMT-s) or with glue (AMT-g) and various research study conducted.

The surgeries were performed as per following steps and shown in Figure -1.

1. Dissect pterygium from cornea.
2. Cut conjunctiva only upto growing edge on cornea
3. Dissect conjunctive from sub conjunctival tissue and separate sub conj. tissue from episcleral tissue and muscle sheaths.
4. Pull this fibrous tissue to expose fatty tissue in medial canthus and cut through the fatty tissue.
5. Suture the free end of conjuntiva at the limbus or apply glue.

**Diagram description**

1. Dissect pterygium from cornea.
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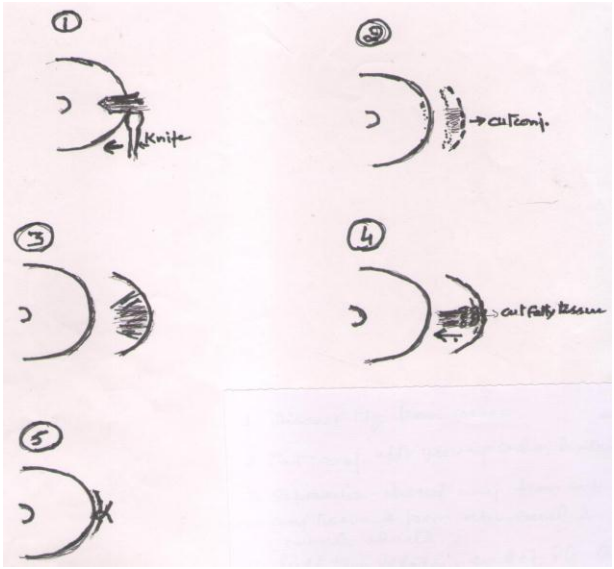


**Figure 1: Steps during operation.**

The patients were prescribed medicine and spectacle corrections. The patients were continuously followed up for treatment (follow-up period was minimum of 12 months) and also observed for recurrence of the Pterygium. Statistical analyses were used for further critical conclusions. Consent of ethical committee of institute was obtained prior to the start of study. The size of pterygium ranged from minimum of 2.0 mm on cornea to extending partly on the pupillary area.

## OBSERVATION TABLE

**Table 1: Demographic Data for Study.**

| Characteristics | Age (in years) | | |
|---|---|---|---|
| | Group1 | Group2 | Group3 |
| | < 25- 44 | 45 - 64 | 65 - > 84 |
| Average | 34.5 | 53.3 | 70.6 |
| Std. Dev | 5.7 | 6.4 | 5.4 |
| **Gender** | | | |
| Male | 25 | 38 | 23 |
| Female | 35 | 59 | 20 |
| **Eyes** | | | |
| Number | 60 | 97 | 43 |
| Left | 31 | 49 | 20 |
| Right | 29 | 48 | 23 |
| Recurrent | 10 | 3 | - |

## RESULTS

Recurrence was seen in 13 cases i.e. pterygium recurring and encroaching on cornea more than 1 mm post op. Recurrence was usually seen after 1 to 2 months post operation. Maximum recurrence was in age group below 40 years 10 cases. None of the cases that were operated for recurrent pterygium had a second recurrence.

### Complications

The only complication observed was a conjunctival cyst at the pterygium dissection site in 8 cases. Which were excised and sent for histopathology and the report is Cuboidal epithelium and eroded squamous epithelium; stroma shows edematous fibrous tissue and infiltration of moderate to intense acute inflammatory cells. Possibly foreign body reaction to some surgical or swab debris left inadvertently from the swabs used for cleaning the surgical area.

## CONCLUSION

Out of two hundred cases recurrence was seen in only 13 cases, of which none was from the recurrent group. One significant point noted was that recurrence was more in patients from younger age group.

Hence we can safely say that this is a very simple method of pterygium surgery, without sacrificing conjunctiva from other site in the eye and comparable results with pterygium excision and conjunctival autograft.

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**Disclosure:** The authors have no proprietary interest in any of the products mentioned in the study. (Previously both authors were working together at PIMS (Pacific Institute of medical sciences) Udaipur during the period of study.)

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