

# Morphology of pterygium

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**Annotation:** This article details the morphology of pterygium, eastern regional eye care program in eastern Nepal, surgical steps for pterygium removal, amniotic membrane transplantation, procedure pterygium excision with conjunctival autograft.

**Key words:** pterygium, amniotic membrane transplantation, epithelial iron, bilateral pterygia, procedure.

## Introduction:

Clinically, a pterygium is a wing-shaped fibrovascular growth arising from the bulbar conjunctiva onto the superficial cornea. It is composed of a body, which overlies the sclera, and a head, which conforms the leading edge. Stocker's line, an epithelial iron deposition at the advancing edge of the pterygium, is a common clinical feature. Pterygia are most often located in the interpalpebral fissure. A nasal presentation is more frequent, but temporal and even bilateral pterygia have been described. Histopathologically, there is elastotic degeneration of the subconjunctival collagen. Exposure to wind, dust, and a dry climate has been implicated in the development of pterygia.

## Literature analysis and methodology:

Surgical steps for pterygium excision with conjunctival autograft that we have adopted at our hospitals under Eastern Regional Eye Care Programme in the eastern part of Nepal are as follows:

**Anaesthesia:** Peribulbar anaesthesia is preferable over the topical or subconjunctival to avoid pain during operation and to have smooth surgical procedure.

**Pterygium excision:** Pterygium body is excised carefully with conjunctival scissors and the head of pterygium can be removed from cornea by using a 15 degree Bard Parker blade. Tenons and subtenon tissue must be removed carefully as much as possible. Remaining pterygium tissues from over the corneal surface can be removed with a diamond burr.

**Conjunctival autograft preparation:** The conjunctival defect created by pterygium excision should be measured with a caliper and the superior bulbar conjunctiva should be marked by a marker. It is always preferable to use the marker to create exactly the same size of the graft. After marking, a subconjunctival injection of normal saline, around 2 ml, is injected on the superior bulbar conjunctiva to create the conjunctival balloon. A thin layer of conjunctival graft, devoid of tenons and subtenon tissue is prepared.

**Conjunctival grafting:** The thin conjunctival graft is placed with correct orientation on the area of the conjunctival defect created by pterygium excision. The marker helps to identify the correct orientation of the graft. The conjunctival graft can be sutured with the 8'0 Vicryl or 10'0 Nylon sutures or can be glued with fibrin glue. Conjunctival grafting with fibrin glue is a faster procedure and patients complain of less pain in the post-operative period.

**Post-operative management:** Antibiotic and steroid eye drops are given in tapering doses for one month. Many ophthalmologists think that pterygium is a trivial condition for which not much time should be expended in surgery and for which the financial remuneration is low. But the patients want a cure, free of recurrence with good cosmesis after surgery. Pterygium excision with conjunctival autograft with fibrin glue offers a low recurrence rate, good cosmetic outcome with a reasonable speed of the pterygium surgery.

## Results:

Amniotic membrane transplantation has been used after bare sclera technique with a reported recurrence rate of 4% to more than 60%. Currently, the most widely used procedure is pterygium excision with conjunctival autograft. Superior bulbar conjunctiva has been used widely since the early 1980s and is associated with recurrence rate of approximately 2% to 12% along with few complications. In the 1980s, Barraquer introduced

the concept that removal of Tenon's layer may be important in reducing recurrence rate after pterygium removal as the tenon is the main source of fibroblasts.

This was also emphasised by Solomon et al who combined this technique with Mitomycin-C application and amniotic membrane transplantation to achieve a low recurrence rate.<sup>28</sup> A near zero recurrence rate with a good aesthetic result can be achieved by using Pterygium Extended Removal Followed by Extended Conjunctival Transplantation. There is no ideal technique for conjunctival autografting which is safe, fast, easy and inexpensive. Various methods such as sutures, fibrin glue, autologous serum and electrocautery have been used for conjunctival autografting.

#### **Discussion:**

Numerous surgical techniques have been described since the early 1960s, including the bare sclera technique, simple closure with absorbable sutures, sliding flap, rotational conjunctival flap, conjunctival autoplasty, mucous membrane graft, and conjunctival autograft. In addition, adjuvant therapy to some of these techniques may include the use of betatherapy with strontium-90 and antimetabolite therapy with mitomycin C or fluorouracil.

The indications for the surgical excision of a pterygium include continuous or recurrent irritation, decreased visual acuity, and an unsightly appearance. Decreased vision may occur due to an actual invasion of the visual axis, or even a peripheral distortion that induces with-the-rule astigmatism that is hemimeridional on the side of the pterygium. The routine use of videokeratography in the preoperative evaluation of pterygium is beneficial in establishing the degree of visual compromise and in determining an improvement postoperatively.

#### **Conclusion:**

In conclusion, it is important to outline the minimal area of the pterygium body to be respected before excising the head of the pterygium. Once the advancing head is excised, there is a relaxing effect on the nasal conjunctival tissue. This will seemingly increase the area to be removed, and the surgeon may inadvertently end up excising a larger area of conjunctiva than needed, resulting in a larger-than-planned bare sclera defect.

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