



## Surgical Management of Pterygium

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Pterygium is one of the most common eye conditions, affecting a large percentage of the population, especially in subtropical regions. Yet, the pathogenesis of pterygium is still not fully understood. It is generally regarded as an ophthalmoheliosis, i.e., sun-related eye disease, based on numerous studies with strong epidemiologic evidence linking pterygia formation with exposure to ultraviolet and visible light [1]. Recent investigations have demonstrated vimentin-expressing altered limbal cells at the advancing edge of the pterygium. Over-expression of the *p53* tumor suppression gene suggests that UV-B induces mutations as an early event in the development of pterygium by damaging the programmed death (apoptosis) of the limbal cells and over-production of various growth factors [1–3].

For many years the surgical management of pterygium was based on simple excision of the excessive tissue mass overlying the cornea and the adjacent sclera, leaving a wide area of bare sclera. This was done to allow re-epithelization of the cornea by adjacent limbal and corneal cells before the pterygium recurs. However, recurrence of the pterygium was unacceptably high, as much as 80%. Often the recurrence was wider and more extensive than the original mass. Therefore, surgical removal of pterygium was usually reserved only for symptomatic cases such as extension of the pterygium centrally obscuring the visual axis, high astigmatism caused by traction of the cornea, severe irritation and congestion, pain, and tearing.

To improve surgical results two strategies were adopted: the destructive approach – i.e., enhancing the excision effect by radiation and chemotherapy, and the reconstructive approach – namely, transplantation of various tissue grafts.

Mitomycin C, an antiproliferative agent, was found to be the most effective agent when applied for 2–3 minutes. In a study recently published in this Journal, Avisar and colleagues [4] reported on recurrences of pterygium in 5.8% of eyes treated with mitomycin C, as compared to 50.4% and 60.8% recurrence rates in eyes treated by bare sclera and topical application of thiotepa and indoptic, respectively. However, severe complications may occur

following MMC therapy, such as melting of the conjunctiva and sclera and even perforation. Many surgeons still advocate performing MMC therapy only in patients with recurrence or a high risk of recurrence, e.g., with fleshy pterygium tissue. Reconstruction of the limbal barrier by tissue transplantation was also found to be highly effective, reducing the percentage of recurrence rate to a one digit level. Initially it was hypothesized that new limbal cells should be brought from another location to facilitate re-epithelization of the exposed area, however clinical experience has demonstrated that a conjunctival autograft taken from any healthy-appearing site is sufficient to promote rapid healing of the cornea [5]. The study by Varssano and colleagues reported in this issue of the Journal [6] further indicates the low recurrence rate using conjunctival autograft.

Numerous studies compared the efficacy of MMC application versus transplantation of conjunctival autograft. Most of them demonstrated that the two approaches are highly successful and equally effective [7]. Only a few studies combined the two strategies and applied MMC prior to conjunctival transplantation [8]. We used the combined surgery in a small series of cases (50 eyes), and during a one year follow-up did not experience any recurrence of the pterygium or any significant complication (unpublished data).

The new modalities to treat pterygium now offer promise for effective therapy of this common disease. The debate regarding the optimal procedure (MMC application or conjunctival autograft transplantation) continues. Many surgeons are still reluctant to use mitomycin C because of its potentially blinding, even though rare, complications. On the other hand, conjunctival transplantation is a lengthy procedure that doubles or triples surgical time. Nevertheless, simple ("bare sclera") excision has an unacceptable high recurrence rate and should be replaced with the newer surgical techniques, which although more complicated have a significantly higher success rate. Pterygium surgery, previously regarded as a minor simple procedure, is now a more demanding operation but its results are incomparably favorable.

UV-B = ultraviolet B

MMC = mitomycin C

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