

# MANAGING PTERYGIUM BY EXCISION AND LOW DOSE MITOMYCIN-C EYE DROPS

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## ABSTRACT

**Background:** Pterygium is a common eye disease with a high recurrence rate after excision. The aim of this study was to compare the results of simple excision and excision followed by instillation of low dose mitomycin-c eye drops.

**Material & Methods:** This was a prospective study conducted in Department of Ophthalmology, DHQ Teaching Hospital, D.I.Khan, from 1<sup>st</sup> August 2004 to 31<sup>st</sup> July 2005. Patients with pterygia attending the out patient clinic were randomly assigned to two groups. Group-1 included 50 patients with 40 primary and 10 recurrent pterygia. Group-2 included 50 patients with 38 primary and 12 recurrent pterygia. Patients in Group-1 were treated by simple excision with bare sclera and cautery (King's method) while those in Group-2 were treated by the same procedure but they were given 0.02% mitomycin-c eye drops thrice a day for two weeks. They were followed for six months and recurrence or any complication was noted.

**Results:** In Group-1, 15(30%) cases recurred. Out of these 11(27.5%) were primary while 4(40%) recurrent pterygia. In Group-2, 2(4%) cases recurred. None of the primary pterygia, while 2(16.7%) recurrent pterygia recurred. In Group-1, 2(4%) cases of granuloma formation and 1(2%) case of conjunctival cyst was noted, while in Group-2, 1(2%) each of scleral necrosis and chronic corneal ulcer were noted.

**Conclusion:** Pterygium excision followed by instillation of 0.02% mitomycin-c eye drops thrice a day for two weeks, is a better and safe method of treatment.

**Key words:** Pterygium, Mitomycin-c, Excision.

## INTRODUCTION

Pterygium has been known as far back as man's record goes. It was difficult to cure 2000 years ago and it is not easy to cure today. Total excision of the lesion was practiced in the ancient times, which still constitutes one of the best methods of treatment. Until the days of Arlt (1950), it was the favorite method of treating pterygia. In 1855, Desmarres SR initiated the concept of shifting the dissected pterygium head to a new position away from the cornea.<sup>1</sup> Later on the barrier concept was introduced. According to this concept grafted tissue acts as a barrier against the passage of new vessels from the conjunctiva into the cornea. Later on the barrier concept was extended to the sclera itself. D Ombrein (1948), Mc Gavic (1949), Sugar (1949) and King (1961) were the proponents of this modification. In 1964 Pico<sup>2</sup> and Alger gave the concept that the source of recurrence is the formation of granulation tissue on the raw corneal and scleral surface. So the most important principle in preventing recurrence is the prevention of new vessels formation in the bared episcleral surface with the use of

cauterization, radiation, laser, or anti-metabolite instillation.

In 1963, Kunimoto and Mori from Japan reported the effects of post-operative use of 0.04% mitomycin-c eye drops to prevent the recurrence of pterygium. Since then it is being used in Japan.<sup>3</sup> But several complications possibly related to mitomycin-c treatment have been reported. Since then different concentrations of mitomycin, 0.04%,<sup>4</sup> 0.1%,<sup>5</sup> and 0.02%<sup>3</sup> have been tried. Mitomycin-c is also being used as a single intra-operative application in different concentrations.

The aim of this study was to compare the results of simple excision of pterygium with excision followed by instillation of low dose mitomycin-c eye drops.

## MATERIAL AND METHODS

This was a prospective study conducted in Department of Ophthalmology, DHQ Teaching Hospital, D.I.Khan, from 1<sup>st</sup> August 2004 to 31<sup>st</sup> July 2005.

Patients with pterygia, both primary and recurrent, attending the out patient clinic, were randomly assigned to two groups. Group-1 included 50 patients with 40 having primary and 10 recurrent pterygia. While Group-2 included 50 patients with 38 primary and 12 recurrent pterygia.

Each patient had a complete ophthalmologic examination of both the eyes. All the information was recorded in a proforma. All surgeries were performed by the principal author in the major operation theatre by using topical and local sub-conjunctival anaesthesia, under the microscope.

Patients in Group-1 were treated by simple excision with bare sclera and cautery (King's method). Post-operatively they were given only topical antibiotic and steroid eye drops for two weeks. Patients in Group-2 were treated by the same procedure but they were given post-operatively 0.02% mitomycin-c eye drops thrice a day for two weeks.

Topical mitomycin-c eye drops were prepared under aseptic conditions by mixing 2 mg mitomycin-c powder in 10 ml of commercially available tear substitutes.

Each patient was followed up on 1<sup>st</sup> and 7<sup>th</sup> post-op day and at one, three and six months. On each visit patients were thoroughly examined on slit lamp for recurrence or any complication.

**RESULTS**

In our study we included 100 eyes of 100 patients, the oldest patient was 70 while the youngest 21 years old. Maximum number of patients were in the age group of 31-40 years and minimum in the age group of 61-70 years. Table-1

**Table-1: Age and sex distribution of patients.**

Age group	Male	Female	Total
21-30	16 (16%)	7 (7%)	23 (23%)
31-40	24 (24%)	5 (5%)	29 (29%)
41-50	17 (17%)	6 (6%)	23 (23%)
51-60	11(11%)	3 (3%)	14 (14%)
61-70	9 (9%)	2 (2%)	11 (11%)
Total	77 (77%)	23 (23%)	100 (100%)

Total number of recurrences in both the methods were 17 (17%). In Group-1, 15 (30%) while in Group-2, 2 (4%) pterygia recurred. (p<.001) Table-2

**Table-2: Results of the two Groups.**

Procedure	No. of cases	Recurrence
Excision with Bare Sclera	50	15 (30%)
Excision with Bare Sclera & Mitomycin-c	50	2 (4%)
Total	100	17 (17%)

In Group-1, 11 (27.5%) recurrences occurred in the primary and 4 (40%) in recurrent pterygia. Table-3

**Table-3: Simple excision (Group-1).**

Nature of Pterygium	No. of cases	Recurrence
Primary Pterygium	40	11(27.5%)
Recurrent Pterygium	10	4 (40%)
Total	50	15( 30%)

Of the 50 patients treated in Group-2 there was no recurrence in case of primary pterygia and only 2 (16.7%) recurrences occurred in recurrent pterygia. Table-4

**Table-4: Excision with mitomycin-c instillation (Group-2).**

Nature of Pterygium	No. of cases	Recurrence
Primary Pterygium	38	0 (0%)
Recurrent Pterygium	12	2 (16.7%)
Total	50	2 (4%)

In Group-1, 3 (6%) complications occurred, 2 (4%) cases of conjunctival granuloma formation and 1 (2%) case of conjunctival cyst. In Group-2, 2 (4%) complications occurred, one (2%) case each of scleral necrosis and corneal non-healing ulcer. Table-5

**Table-5: Complications observed with the two procedures.**

Complication	Simple Excision	Excision with Mitomycin-c
Granuloma formation	2 (4%)	Nil
Scleral necrosis	Nil	1 (2%)
Conjunctival cyst	1 (2%)	Nil
Chronic corneal ulcer	Nil	1 (2%)

**DISCUSSION**

In our study we observed 30% recurrence rate in patients treated by simple excision as compared to only 4% for excision followed by instillation of 0.02% Mitomycin-c eye drops for a period of two weeks. Caliskan et al<sup>6</sup> have also shown a recurrence rate of 4.3% after the 4% Mitomycin-c. Singh et al<sup>5</sup> observed 73% recurrence rate after simple excision while only 1.7% recurrence after simple excision and adjunctive treatment with mitomycin-c. Mahar<sup>7</sup> used 0.02% mitomycin after bare sclera technique twice a day for 5 days and observed 9.4% recurrences.

Hayasaka et al<sup>8</sup> have also documented the efficacy of low dose mitomycin-c (0.02%) in preventing the recurrence of primary pterygium. But Singh et al<sup>5</sup> suggest that 0.02% mitomycin-c is not an optimal dosage to treat pterygia. They recommended 0.04% mitomycin 4 times a day for 10-14 days to achieve this goal. In their study they found no recurrence after the use of 0.04% mitomycin-c drops but found 5% recurrences after treating with 1mg/ml of mitomycin-c.

Most Japanese investigators have reported the efficacy of 0.04% mitomycin-c in reducing the recurrence of pterygia. Hayasaka et al<sup>8</sup> also showed the preventing effect of the drug even if 0.02% mitomycin-c is used twice a day for 5 days.

Kiribuchi<sup>9</sup> used the concentration of 0.01% mitomycin-c. Mastropasqua et al<sup>10</sup> found 12.5% recurrences after the use of 0.02% mitomycin-c for 3 minutes intra-operatively. Hara & Hara<sup>11</sup> said that the use of 0.04% mitomycin-c thrice a day for 03 days may be optimal.

We believe that the use of mitomycin-c 0.02% thrice a day for two weeks may be safe and effective.

Different complications after the use of different concentrations have been reported in the

literature. These range from local irritation by high concentration of mitomycin-c (1.0mg/ml) leading to conjunctival overgrowth and pterygium recurrence.

In our study two cases of granuloma formation and one case of conjunctival cyst formation happened in simple excision with bare sclera and cautery while only one case each of scleral necrosis and chronic corneal ulcer occurred in the group in whom 0.02% mitomycin-c were used post-operatively. Kraut et al<sup>12</sup> also recommended that in case of aggressive severe pterygia post-op mitomycin-c appears to be safe effective and acceptable but good surgical technique, careful observation and long follow up is necessary.

Kaimbo and Kaimbo<sup>13</sup> found 19.4% recurrence and ocular hypertension in patients treated with 0.04% mitomycin-c post-operatively.

Kraut et al<sup>12</sup> used 0.02% mitomycin-c in recurrent pterygia and early complications of 2 wound dehiscence, 7 corneal defects, 5 reported eye discomfort and 2 glaucomas. Chayakul<sup>14</sup> used 0.02% mitomycin-c and had 5 (6%) complications including 3 allergic reactions, 1 granuloma formation and 1 scleral necrosis. Oguzh et al<sup>15</sup> had post-op instillation of 0.02% mitomycin 4 times a day for 7 days and 4 (20%) recurrent rate. 10% patients had superior punctate keratitis and mild anterior chamber reaction. Kambo and Kambo registered 9.8% complications after simple excision, which included 3 cases of conjunctival granuloma and one eye of symblepharon formation.

Other complications found in the literature are scleromalacia, punctual occlusion,<sup>4</sup> scleral ulceration and calcification,<sup>16</sup> secondary glaucoma, corneal perforation, correctopia and sudden onset mature cataract.<sup>17</sup>

**CONCLUSION**

Pterygium excision followed by instillation of 0.02% mitomycin-c eye drops thrice a day for two weeks, is a better and safe method of treatment.

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