

# Effectiveness of Intracameral and Subconjunctival Dexamethasone for Prevention of Postoperative Inflammation in Cataract Surgery

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## ABSTRACT

**Aim:** To determine the effectiveness (in prevention of postoperative inflammation) of intracameral and subconjunctival injection of dexamethasone in patients undergoing cataract surgery.

**Study design:** Comparative/observational

**Place and duration of study:** Department of Ophthalmology, Khawaja Muhammad Safdar Medical College, Allama Iqbal Memorial Teaching Hospital, Sialkot from 1<sup>st</sup> July 2020 to 31<sup>st</sup> December 2020.

**Methodology:** One hundred and forty patients of both genders with age upto 12 years undergoing cataract surgery were included in this study. All the patients were equally divided in to two groups, group I contain 70 patients and received subconjunctival dexamethasone and group II with same number of patients received intracameral injection of dexamethasone. Post-operative inflammation was examined on 1<sup>st</sup> and 3<sup>rd</sup> post-operative day with the help of slit lamp. Findings were compared between both groups.

**Results:** There were 41 (58.57%) males and 29 (41.43%) females in group I, in group II 38 (54.29%) patients were males and 32 (45.71%) were females. Majority of patients in group I and II 40 (57.14%) and 38 (54.29%) had ages 5 to 10 years. In group I postoperative inflammation was found in 16 (22.86%) patients and in group II it was found in 2 (2.86%) patients, a significant difference was observed between both groups with p-value 0.012.

**Conclusion:** Intracameral injection of dexamethasone is very effective than the sub-conjunctival dexamethasone for the prevention of postoperative inflammation in children undergoing cataract surgery.

**Keywords:** Cataract surgery, Intracameral, Sub-conjunctival, Dexamethasone, Post-operative Inflammation

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## INTRODUCTION

Vision impairment due to cataract inflicts 20 million individuals worldwide and represents nearly half the individuals with blindness.<sup>1,2</sup> Since visual impairment from cataracts cannot be corrected by spectacle wear, contact lenses or medical treatment, cataract extraction is the only option for patients to clear optical media. Cataract surgery is one of the most commonly performed and most successful surgical procedures worldwide.<sup>3</sup> As with any intraocular surgery, varying degrees of inflammation occur secondary to mechanical damage from the surgical tissue manipulation and a mild reaction to the foreign intraocular lens (IOL), which may result in significant postoperative inflammation<sup>4,5</sup>. The consequences of postoperative inflammation are cystoid macular edema, increased intraocular pressure, posterior capsular opacification, and protein leakage from the breakdown of the blood-aqueous barrier.<sup>6</sup> Even in uncomplicated cataract surgeries, the inflammatory sequelae may occasionally lead to chronic uveitis and fibrin formation contributing to an undesirable surgical outcome<sup>7</sup>.

Despite the current standard regimen of treatment, the use of postoperative eye drops creates a significant burden on these patients, especially since most postoperative cataract surgery patients are elderly with a limited ability to adhere to this treatment schedule. A study monitoring patient compliance with topical treatment after glaucoma surgery showed that nearly 30% of patients did not adhere to the treatment regimen.<sup>8</sup> The toxicity of

intraocular dexamethasone (DXM) was studied in 1974 in the treatment of inflammatory diseases of the eye by Graham and Peyman.<sup>9</sup> However, in the past two decades, there have been a small number of studies analyzing the use of intracameral DXM in controlling post-cataract surgery inflammation.<sup>10</sup> The present study was conducted to examine the effectiveness of subconjunctival and intracameral injection of dexamethasone for prevention of post-operative inflammation in children undergoing cataract surgery.

## MATERIALS AND METHODS

This comparative/observational study was conducted at Department of Ophthalmology, Khawaja Muhammad Safdar Medical College, Allama Iqbal Memorial Teaching Hospital, Sialkot from 1<sup>st</sup> July 2020 to 31<sup>st</sup> December 2020. A total of 140 patients of both genders with ages up to 12 years undergoing cataract surgery were included in this study. Patients detailed demographics including age and sex were recorded after taking informed written consent from patients' parents/attendants. All the patients were equally divided in two groups, group I comprised 70 patients and received subconjunctival dexamethasone 2mg injection and group II comprised 70 patients received intracameral injection of dexamethasone 0.4mg. Post-operative inflammation was examined on 1<sup>st</sup> and 3<sup>rd</sup> post-operative day with the help of slit lamp. In case of non cooperative children examination was done with microscope under sedation/general anesthesia. Frequency of post-operative inflammation was examined and compare between both groups. All the data was analyzed by SPSS 24. Chi-square test was done to compare the post-

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operative inflammation between group I and II. P-value <0.05 was taken as significant.

**RESULTS**

In group I, 41(58.57%) patients were males and 29(41.43%) were females and in group II, 38(54.29%) patients were males and 32(45.71%) were females. In groups I and II, 40(57.14%) and 38 (54.29%) had ages 5 to 10 years, 18 (25.71%) and 20 (28.57%) patients in group I and II had ages <5 years, 12(17.14%) and 10(14.29%) patients in groups I and II were ages >10 years. No significant difference was observed between two groups regarding age and gender with p-value >0.05 (Table 1).

In group I, postoperative inflammation was found in 16(22.86%) patients and in group II, it was found in 2(2.86%) patients, a significant difference was observed between both groups with p-value 0.012 (Table 2).

Table 1: Demographic information of the patients (n=140)

Variable	Group I	Group II	Total
<b>Gender</b>			
Male	41 (58.57)	38 (54.29)	79 (56.43)
Female	29 (41.43)	32 (45.71)	61 (43.57)
<b>Age (years)</b>			
<5	18 (25.71)	20 (28.57)	38 (27.14)
5 – 10	40 (57.14)	38 (54.29)	78 (55.71)
>10	12 (17.14)	10 (14.29)	22 (15.71)

P>0.05

Table 2: Comparison of postoperative inflammation between both groups (n=140)

Postoperative Inflammation	Group I	Group II	P-value
Yes	16 (22.86)	2 (2.86)	0.012
No	54 (77.14)	68 (97.14)	

**DISCUSSION**

Congenital cataract surgery is directly associated with high rate of postoperative inflammation. Many of studies have been conducted and several treatment modalities have been used to reduce postoperative inflammation in patients undergoing cataract surgery and from the last two decades dexamethasone injection considered very useful for prevention of postoperative inflammation, posterior synechiae<sup>11,12</sup>. Present study was conducted to compare the effectiveness and safety of subconjunctival and intracameral dexamethasone injection for the prevention of postoperative inflammation. In this regard 140 patients undergoing cataract surgery were enrolled and divided equally in to two groups. Male patients were predominant in both groups and overall prevalence was 56.43% and females were 43.57%. Majority of patients in group I and II 40(57.14%) and 38(54.29%) had ages 5 to 10 years. These results showed similarity to many of previous studies in which male patientspopulation was high 55% to 65% as compared to females and the average age of patients was 6.5 years<sup>13,14</sup>.

In present study we found that patients who received subconjunctival injection of dexamethasone had high frequency of postoperative inflammation 22.86% as compared with patients whom were received intracameral

dexamethasone injection 2.86% and the difference between both groups was statistically significant with p-value 0.012. A study conducted by conducted in Pakistan by Afia et al<sup>15</sup> demonstrated that intracameral dexamethasone injection was better and safe for the prevention of postoperative inflammation in patients with cataract surgery, they reported that intracameral group had 4.21% and subconjunctival group had 15.79% frequency of postoperative inflammation. Another study by Gungor et al<sup>16</sup> regarding comparison of intracameral dexamethasone and intracameral triamcinolone for prevention of postoperative inflammation and they reported that intracameral dexamethasone and intracameral triamcinolone acetamide were similarly effective in controlling postoperative inflammation following phacoemulsification.

A meta-analysis by Shah et al<sup>17</sup> regarding effectiveness of intracameral dexamethasone for post cataract inflammation demonstrated that intracameral dexamethasone was safe and effective for the prevention of postoperative inflammation. Elmahdy et al<sup>18</sup> reported that intracameral injection of triamcinolone resulted safe and effective for prevention of post cataract inflammation.

**CONCLUSION**

Intracameral injection of dexamethasone is very effective than the subconjunctival dexamethasone for the prevention of postoperative inflammation in children undergoing cataract surgery.

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