



## The Incidence of Cataracts in Dermatological Patients Using Steroid Creams: Cataract Formation in Users of Steroid Skin Creams

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### KEYWORDS

Steroids,  
Cataract,  
potency,  
duration of use  
of steroid.

### ABSTRACT:

**Background/ Context:** Corticosteroids, despite being a very effective line of treatment for various disorders is known to have a wide range of adverse effects. The use of systemic and topical steroids has been associated with cataract formation, however the ophthalmic side effects of application of steroid on skin away from the face has not been studied in depth. With increasing use of corticosteroids as first line of therapy in treatment of various dermatological conditions, the ocular side effects, if any, of these preparations, cannot be overlooked.

**Aim:** The objective of this study is to investigate the occurrence of cataract in patients who use corticosteroid skin preparations on areas away from the face. Additionally, we aim to examine the relationship between the dosage and duration of steroid therapy and the incidence of cataract development.

**Materials & Methods:** Fifty patients diagnosed with dermatological disorders and receiving treatment with dermatological steroids, excluding the face and periorbital region, for over six months were included in the study group. These patients, aged between 30 and 60 years, were selected for a research study conducted over a two-year period at a tertiary care hospital. Visual acuity, Slit lamp bio microscopy, applanation tonometry and detailed fundus examination using indirect Ophthalmoscope were carried out.

**Results:** Findings revealed a notable increase in cataract occurrence among patients applying dermatological steroids on areas other than the face. Moreover, an extended period of steroid use was associated with a higher incidence of cataract. Nonetheless, further investigation through a larger population-based study is required to explore the connection between steroid potency and cataract occurrence, despite initial studies suggesting a clear correlation between the two.

**Conclusions:** Based on the findings of the study, it is evident that even when steroids are



applied away from the face, there is a notable rise in the occurrence of cataracts. While further research on a larger scale is recommended to confirm these results, the current pilot study highlights the importance of using caution when using seemingly harmless steroid creams, as they can lead to significant adverse effects.

## Introduction

Corticosteroids are among the most frequently prescribed classes of drugs in present day practices. They suppress inflammation and are routinely used in a variety of inflammatory and autoimmune diseases. The effects of corticosteroids are numerous and widespread; however, they have an equally wide range of adverse effects including fluid retention, hyperglycemia, increased susceptibility to infections, peptic ulcerations, osteoporosis, hypothalamus – pituitary axis suppression, behavioral changes and cataracts (1). Steroids have been associated with posterior subcapsular lens opacification due to unknown mechanisms, the severity of which correlates with the dose and duration of steroid therapy (2). It is hypothesized that steroids could induce aberrant differentiation and migration of epithelial cells leading to the posterior subcapsular lens opacification. It is known that typical corticosteroid receptor proteins are present in the lens and lens tissue can form Glucuronide and Sulphate conjugates of Cortisol (3, 4).

Use of both systemic and periorbital corticosteroids for dermatological conditions such as blepharitis and eczema have been associated with raised intraocular pressure and cataract formation (5). However, the ophthalmic side effects of application of steroid on skin away from the face have not been studied in depth. With increasing use of corticosteroids as first line of therapy in treatment of various dermatological conditions, the ocular side effects, if any, of these preparations, cannot be overlooked. This study was undertaken to evaluate the incidence of cataract in patients using skin preparations of corticosteroids away from the face and also to correlate the dose and duration of steroid therapy to incidence of cataract.

## Materials and Methods

**Study area:** Department of Ophthalmology, Venkateshwara Institute of Medical Sciences, Amroha (U.P)

**Study population:** Patients coming to the Eye OPD with dermatological disorders who were being treated with steroid creams.

**Study period:** June 2023 – December 2023.

**Data collection:** June 2023 to March 2024

**Data analysis and Reporting:** March 2024 to June 2024

The study was conducted at Dept. of Ophthalmology, Venkateshwara Institute of Medical Sciences, Amroha (UP) India, on 50 patients with dermatological disorders who were being treated with steroid creams, on sites other than the face and periorbital region, for a period of more than six months. The study group consisted of patients in the age group of 30 – 60 years. The study was conducted over a period of almost one year at a tertiary care hospital. (June 2023 to June 2024)

Patients with a prior history of uveitis and known cases of diabetes mellitus and old trauma were excluded from the study. Patients on concurrent treatment with systemic steroids were also excluded, as were patients who had used a topical steroid for less than six months.

Treatment history, which included dermatological diagnosis, type of dermatological steroid preparation used and duration of use of steroid was recorded.

Ophthalmic evaluation included

- Best corrected visual acuity (BCVA) for distance was recorded using Snellen's chart. Corrected near visual acuity was recorded.
- Slit lamp bio microscopy was undertaken to evaluate anterior segment and lens.
- Applanation tonometry
- Detailed fundus examination using indirect ophthalmoscope.



## Results

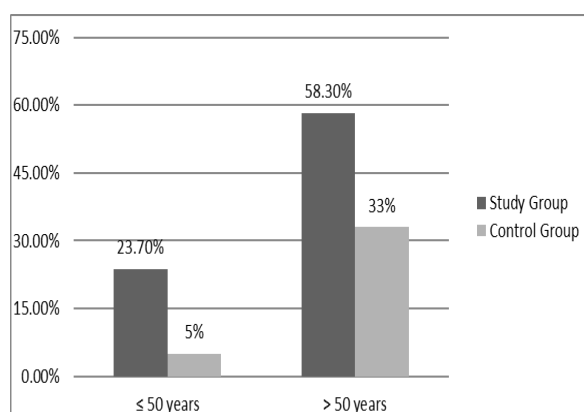
**Table 1: Incidence cataract in relation to class of steroid used**

Class of Steroid used	Number of patients with incidence of Cataract	Percentage (%) of Patients with Cataract	Total number of patients
1	0	0.00%	7
2	11	30.50%	35
3	2	50.00%	4
4	3	75.00%	4

**Table 2: Incidence cataract in relation to duration of steroid usage**

Duration of Steroid usage	Number of patients with incidence of Cataract	Percentage (%) of Patients with Cataract	Total number of patients
≤ 1 years	5	17.24%	29
>1 years - ≤ 3 years	8	53.33%	15
>3 years	3	50%	6

**Figure 1: Incidence of Cataract in the study and control group**



The age distribution revealed that 35 patients (70%) out of 50 were between the ages of 31 years and 50 years.

32% of the study population (17 patients out of 50) were found to have cataract. 9 out of 38 (23.7%) in the age group ≤ 50 years had cataract whereas 7 out of 12 (58.3%) persons in the age group > 50 years had cataract in the study population. This was compared to a control group in which 2 out of 38 (5%) persons in the age group ≤ 50 years had cataract whereas 4 out of 12 (33%) persons in the age group > 50 years had cataract. (Fig.1) Most of the cases (72%) studied were using Class 2 (Moderate potency) steroids, while 12% were using Class 1 (Mild) steroids, 8% Class 3 (Potent) steroids and 8% Class 4 (Very Potent) steroids. As can be seen from Table 1 there was a higher incidence of cataracts in patients using more potent steroids, with 75% (3 out of 4) patients having cataract from the group using Class 4 (Very Potent) steroids and nil (0 out of 6) patients having cataract from the group using Class 1 (Mild). Of the 50 patients evaluated in this study, 29 (58%) patients were on topical steroid for less than 1 years duration and 21 (42%) were on the steroid treatment for more than 2 years. Table 2 shows the distribution of cataract according to duration of steroid use. 5 out of 29 (17.2%) persons using the steroid for ≤ 1 years had cataract whereas those using the drug for between 1 to 3 years and those using the drug for over 3 years showed a similar incidence of cataract of around 50%.

## Discussion

Of the 50 patients examined for this study, 32% were found to have cataract while cataract was detected in only 12% of an age matched control group. The results of this study are corroborated by the studies of Branco et al (6) where application of topical steroid cream for skin ailments was associated with an increased incidence of cataract. The increase in the incidence of cataract in the study population (23.7%) in the age group ≤ 50 when compared to the control group (5%) was statistically significant (Fisher Exact test,  $P=0.0407$ ) but this was not so in the age group > 50 years. This could be because the propensity for cataract formation increases, regardless, over the age of 50 years. However, even in the study population in the age group > 50 years there was a definite increase in the incidence of cataracts (58.3%) when compared to the control group (33%). This study also evaluated the correlation between the incidence of cataract and the potency of steroids used. It was observed that 62.5% of



patients from the group using either Class 3 or Class 4 steroids had cataract whereas only 26.2% of patients from the group using Class 1 and Class 2 steroids had cataract. Results documented in Table 1 indicate there was a higher incidence of cataracts in patients using more potent steroids. However, since the sample size was small, statistical significance could not be calculated. A few studies have been carried out to correlate incidence of cataract with the dose of steroid therapy received but no studies of a similar kind to correlate the potency of the steroid with incidence of cataract have been found in literature. Some studies have shown that severity of posterior subcapsular cataract correlate with the dose of systemic steroid therapy patients receive. (7) It was observed that patients who received < 15mg/day of prednisolone developed fewer lens opacities than patients who received > 15mg/day of prednisolone. However, since no significant studies are currently available on the correlation between potency of steroids and incidence of cataract, it would be advisable to work on a larger population before coming to a conclusion.

The incidence of cataract in relation to the duration of use of dermatological steroid was also a part of this study. 5 out of 29 (17.2%) persons using the steroid for ≤ 1 years had cataract whereas 11 out of 21 (52.4%) persons using the drug for > 1 years had cataract. This difference was statistically significant (Fisher Exact test, P=0.0101). These findings are in agreement of the study conducted by Sevel D et al, where they found that the prevalence of cataract was more in those children treated for eczema with topical steroids for more than 3 years. (8) The present study demonstrates that the incidence of cataract was significantly higher in patients using dermatological steroids away from the face, especially in the below 50 age group. Also prolonged use of the steroid (for > 1years) has been shown to significantly increase the incidence of cataract. The potency of the steroid also correlates with the incidence of cataract; however, a larger population-based study needs to be carried out to definitely prove the relationship.

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