

Incision and Curettage of Large Chalazion V/S Intraleisional Steroid Application

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Abstract

Background: Chalazion, a common benign eyelid lesion caused by chronic inflammation of a blocked meibomian gland, often requires intervention for larger or recurrent lesions. Incision and curettage (I&C) and intraleisional steroid injections are common treatment methods, each with distinct advantages and challenges. This study aims to compare the efficacy, safety, and patient satisfaction of these treatments to guide clinical decision-making. **Objective:** To evaluate and compare the effectiveness and safety of triamcinolone acetonide (TA) injection, methylprednisolone acetate (Depo) injection, and I&C in the treatment of large chalazia. **Methodology:** A total of 60 patients with recurrent chalazia were randomly assigned to three treatment groups: TA injection, Depo injection, or I&C. Patients were followed up at 1, 2, and 6 weeks post-treatment. The primary outcome was the complete resolution of the chalazion, defined as an 80% reduction in size with no recurrence. **Results:** The demographic characteristics, including age and gender, showed no significant differences between groups. The overall success rate for all treatments was 95%, with only 5% of patients in each group experiencing incomplete resolution. A single injection group showed higher success rates (27 successful cases) compared to the two-injection group (13 successful cases), with a statistically significant difference ($p < 0.05$). Resolution rates improved over time, with 95% complete resolution achieved by 6 weeks in all groups. However, there were no significant differences in resolution rates between groups at any time point ($p > 0.05$). **Conclusion:** This study supports that both steroid injections and I&C are highly effective treatments for recurrent chalazions, achieving a 95% success rate. Single injections were more effective than multiple injections. While the resolution rates improved over time, no significant differences were observed between treatment groups. These findings suggest that either treatment option can be selected based on patient preference, with I&C remaining an effective choice for more persistent cases.

Keywords: Chalazion, Incision and Curettage, Intraleisional Steroid Injection, Triamcinolone Acetonide.

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INTRODUCTION

Chalazion, a common benign eyelid lesion, results from the chronic inflammation of a blocked meibomian gland. While many small chalazia resolve spontaneously or respond to conservative treatment, larger lesions often require intervention. Two commonly employed methods for managing large chalazia are incision and curettage (I&C) and intraleisional steroid injection. Each approach has distinct advantages and challenges, prompting ongoing debate about their relative efficacy and safety in clinical practice [1-3].

Incision and curettage involves creating a small incision on the inner eyelid to drain the contents of the

chalazion, followed by scraping the cystic walls to prevent recurrence. This method is highly effective, particularly for large or long-standing chalazia, as it ensures complete removal of the inflammatory material. However, it is a minor surgical procedure, requiring local anesthesia and post-operative care, which may deter some patients [4, 5].

Intraleisional steroid injection, on the other hand, is a minimally invasive procedure that involves injecting corticosteroids directly into the chalazion. This method can reduce inflammation and promote lesion resolution without the need for an incision. It is often preferred for patients who are averse to surgery or have contraindications to surgical procedures. However, its

success may be variable, particularly in large or recurrent chalazia, and it carries risks such as skin depigmentation and elevated intraocular pressure [6, 7].

Comparative studies of these two techniques have shown differing outcomes based on lesion size, duration, and patient preference. While I&C is typically associated with higher success rates, particularly for larger lesions, intralesional steroid injection offers the advantage of a quicker, less invasive procedure with minimal downtime. Balancing these considerations is essential for individualized patient care [8-11].

The choice of treatment also depends on the availability of resources and expertise. I&C may require specialized instruments and a sterile environment, whereas intralesional steroid injections can often be performed in outpatient settings. Additionally, patient education and follow-up are crucial to monitor outcomes and manage any complications.

Objective

This study aims to compare the efficacy, safety, and patient satisfaction associated with incision and curettage versus intralesional steroid injection for large chalazia, providing insights to guide clinical decision-making and optimize patient outcomes.

METHODOLOGY

Patients and Settings

This prospective, interventional clinical study was conducted at Southern Medical College & Hospital, Chattagram, Bangladesh from January 2023 to February 2024. A total of 60 patients who met the inclusion criteria were randomly assigned to receive either methylprednisolone acetate 40 mg/ml (Depo-Medrol), triamcinolone acetonide 2mg (0.1ml), or undergo incision and curettage (I&C) by the same ophthalmologist. Informed consent was obtained from all participants after thoroughly explaining the experimental nature of the therapy. The study included 20 patients for each treatment group: the first group received DEPO-Medrol injection, the second group received TA injection, and the third group underwent I&C. Patients were followed up at one, two, and six weeks after treatment. If the chalazion persisted, topical combined steroids and antibiotics were administered, along with the use of hot compresses. Complete resolution was defined as an 80% reduction in the size of the chalazion with no recurrence.

Study Procedure

Chalazion diagnosis was based on a detailed ocular history and examination, including visual acuity,

intraocular pressure, chalazion size (measured with a ruler), location, and duration, before and after treatment. Possible complications such as skin changes, drug deposition, intraocular pressure (IOP) changes, ecchymosis, and fat hypertrophy were recorded. All procedures were performed in a minor operating room under sterile conditions. In the DEPO and TA groups, topical anesthesia was applied, and a mixture of TA or DEPO with 1% lidocaine (10 mg/ml) was injected intralesionally using a 29-gauge insulin syringe (0.2 ml injected, depending on the chalazion size and resistance). The eye was patched for 1 hour post-injection. In the I&C group, local anesthesia was achieved by injecting 1 ml of 2% lidocaine into the eyelid using a 26-gauge needle. The eyelid was everted with a chalazion clamp, and a single vertical incision was made to curette the chalazion material. After curettage, a combination of corticosteroid and antibiotic ointments was applied, and the eye was bandaged for 24 hours.

Inclusion and Exclusion Criteria

Inclusion Criteria:

Patients aged 14 to 50 years, male and female, with chalazia present for more than one month or with a history of recurrence following previous surgery.

Exclusion Criteria:

Patients with infected chalazia accompanied by pre-septal cellulitis, patients older than 50 years, patients under 12 years of age, those with glaucoma, and patients with hypersensitivity to local anesthetics.

Statistical Analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS version 23.0; IBM Corporation, Armonk, NY, USA) and presented as frequencies and mean \pm SD. A p-value of ≤ 0.05 was considered statistically significant.

RESULTS

The demographic characteristics of the study group showed no significant differences between the three treatment groups (TA, Depo, and I&C). The study included 60 patients, with 22 males (36.7%) and 38 females (63.3%). In the TA group, 8 males (40%) and 12 females (60%) were enrolled, while the Depo and I&C groups consisted of 7 males (35%) and 13 females (65%) in each group. The age of patients ranged from 14 to 46 years, with mean ages of 28.05 ± 10.2 years for the TA group, 29 ± 9.7 years for the Depo group, and 29.05 ± 7.06 years for the I&C group. Statistical analysis revealed no significant differences in gender distribution ($p > 0.05$) or age between the groups ($p > 0.05$).

Table-1: Demographic status of the study group

Demographic Variable	TA Group (n=20)	Depo Group (n=20)	I&C Group (n=20)	Total (n=60)	p-value
Gender					
Male	8 (40%)	7 (35%)	7 (35%)	22 (36.7%)	p > 0.05
Female	12 (60%)	13 (65%)	13 (65%)	38 (63.3%)	
Age (Mean ± SD)	28.05 ± 10.2	29 ± 9.7	29.05 ± 7.06	-	p > 0.05
Age Range (years)	14–46	14–46	14–46	14–46	

The overall success rate for all treatment groups (TA, DEPO, and I&C) was identical, with 95% of patients in each group achieving complete resolution of

their condition. Only 5% of patients in each group experienced incomplete resolution, indicating a high level of effectiveness across all treatments.

Table 2: Overall Success Rates for All Groups

Items	TA	DEPO	I&C
Success	95%	95%	95%
Failed (Incomplete Resolutions)	5%	5%	5%

The success rate was higher in the group receiving one injection, with 27 cases showing successful outcomes, compared to 13 cases with two injections. The difference in success rates between the

two groups was statistically significant, with a p-value of less than 0.05. This suggests that a single injection may be more effective in achieving successful outcomes compared to multiple injections.

Table 3: Success rate and number of injections

Item	1 injection	2 injections	P value
Cases number	27	13	< 0.05

The correlation between time and resolution showed improvements across all treatment groups (TA, DEPO, and I&C) at each time point. At 1 week, the resolution rates were 40% for the TA group, 50% for the DEPO group, and 30% for the I&C group. By 2 weeks, the resolution rates increased to 90% for both the TA and

DEPO groups, and 85% for the I&C group. At 6 weeks, the resolution rates reached 95% for all groups. Despite these improvements, the differences in resolution across the groups at each time point were not statistically significant, with p-values greater than 0.05.

Table 4: Correlations Between Time & Resolution

Items	1 Week	2 Weeks	6 Weeks	P-value
TA	40%	90%	95%	> 0.05
DEPO	50%	90%	95%	> 0.05
I&C	30%	85%	95%	> 0.05

DISCUSSION

The demographic characteristics of the study group revealed that there were no significant differences in terms of gender and age distribution across the three treatment groups (TA, Depo, and I&C), consistent with other studies on recurrent chalazion treatments. Our study enrolled 60 patients, of which 22 were male (36.7%) and 38 were female (63.3%). The gender distribution across the three groups was relatively balanced, with 40% males in the TA group, 35% in both the Depo and I&C groups. Similar studies have also reported no significant differences in gender distribution when comparing different chalazion treatments [12]. Furthermore, the age range of 14-46 years and the mean age across groups (28.05 ± 10.2 years for TA, 29 ± 9.7 years for Depo, and 29.05 ± 7.06 years for I&C) align with other studies where the patients were predominantly young adults, with no statistical significance in age between treatment groups. This lack of demographic bias

is essential for ensuring that the treatment efficacy observed is not influenced by patient characteristics.

In terms of treatment effectiveness, our study found that all three methods—TA, Depo, and I&C—yielded identical success rates of 95%, with only 5% of cases showing incomplete resolution. These results are consistent with findings in similar studies reported comparable success rates for triamcinolone injections and I&C [11]. However, other studies found slight variations in the effectiveness of steroid injections compared to surgical intervention [13]. This variation could be attributed to factors such as the severity of the chalazion or the duration of treatment, although our study's results do not show such differences. Our findings underscore that both steroid injections and surgical treatment options are highly effective in the management of recurrent chalazions.

The analysis of the success rates based on the number of injections revealed that a single injection was more effective than two, with 27 successful cases following one injection and only 13 successful cases after two injections. This result is in agreement with several studies that suggest the potential for over-treatment with multiple injections, which could lead to increased risk of complications such as skin thinning or fat atrophy [14]. Our study's statistically significant difference ($p < 0.05$) between one and two injections emphasizes the importance of minimizing the number of injections to avoid unnecessary side effects while still achieving high efficacy in treatment.

The resolution of chalazions over time was assessed at 1, 2, and 6 weeks, with the resolution rates showing improvement in all treatment groups. At 1 week, the TA group had a resolution rate of 40%, the Depo group had 50%, and the I&C group had 30%. By 2 weeks, both the TA and Depo groups reached a resolution rate of 90%, while the I&C group achieved 85%. Finally, at 6 weeks, the resolution rate for all three groups was 95%. Although the resolution rates improved over time, there were no statistically significant differences between the groups at any of the time points ($p > 0.05$), indicating that the time to resolution is largely independent of the treatment method. These findings are consistent with the study who reported similar trends in resolution rates for steroid injections and I&C, where both treatments showed high efficacy by 6 weeks, though no significant time-based differences were observed [15].

Our study's results also contribute valuable insights into the timing of resolution following different treatments. The rapid improvement observed by 2 weeks, particularly in the steroid-treated groups (TA and Depo), suggests that these injections are more effective at reducing inflammation and promoting chalazion resolution faster than I&C. However, the fact that all three treatment methods eventually achieved a high resolution rate of 95% by 6 weeks supports the notion that I&C remains a highly effective treatment, particularly for larger or more persistent chalazions.

CONCLUSION

In conclusion, our study demonstrates that both triamcinolone acetonide (TA) injection, methylprednisolone acetate (Depo) injection, and incision and curettage (I&C) are highly effective treatments for recurrent chalazions, with all three methods achieving a 95% success rate. There were no significant differences in gender, age distribution, or treatment efficacy between the groups. Additionally, a single injection yielded better outcomes compared to multiple injections. Resolution rates improved over time, with 95% of patients showing complete resolution by 6 weeks. These findings support the use of both steroid

injections and I&C as effective treatment options, with minimal risk of recurrence and good patient outcomes.

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