

Intralesional Triamcinolone Acetonide Injection for Primary and Recurrent Chalazia: Is It Really Effective?

Guy J. Ben Simon, MD, Lynn Huang, BS, Tanuj Nakra, MD, Robert M. Schwarcz, MD, John D. McCann, MD, PhD, Robert A. Goldberg, MD

Purpose: To evaluate the safety and efficacy of intralesional triamcinolone acetonide (TA) injection in primary and recurrent chalazia.

Design: Retrospective, interventional, consecutive case series.

Participants: One hundred forty-seven patients with primary or recurrent chalazia (155 cases) treated at the oculoplastic clinic at the Jules Stein Eye Institute between January 1, 2000, and December 31, 2003.

Methods: Patients received an intralesional injection of 0.1 to 0.2 ml TA (40 mg/ml). Data regarding lesion size, including digital color photography, lesion regression or recurrence, and complete ophthalmic examination, were recorded at the time of injection and at different intervals until resolution or surgical excision. Success was defined as at least an 80% decrease in size with no recurrence. If the lesion recurred or regression was minimal (<50%), further injections were given as needed. Patients who declined injection or who did not respond to 2 to 3 injections were referred for surgical excision and drainage.

Main Outcome Measures: Lesion size, clinical resolution, time to resolution, recurrence, and complications.

Results: Most of the patients received 1 injection (93 patients; 60%) or 2 injections (31 patients; 20%) with resolution of the lesion (more than 80% decrease in size), with an average time to resolution of 2.5 weeks. Patients who did not respond to 2 injections were more likely to fail treatment (minimal or no regression), to respond to further injections, or to undergo surgical excision and drainage ($P = 0.0001$, chi-square test). Patients with blepharitis required more injections to resolution (2 ± 1.3 vs. 1.4 ± 1 ; $P = 0.05$, independent samples t test). Intraocular pressure and visual acuity remained stable after treatment. No complications, such as visual loss, subcutaneous fat atrophy, or skin depigmentation changes, were noted with steroids injections; assuming a complication rate of 2%, our power was adequate to rule out these complications.

Conclusions: Intralesional TA injection in primary and recurrent chalazia is effective in achieving lesion regression. Most cases resolve with an average of 1 to 2 injections. Chalazia that fail to respond to 2 or 3 injections are more likely to benefit from surgical excision. It may be considered as a first treatment in cases where diagnosis is straightforward. *Ophthalmology* 2005;112:913–917 © 2005 by the American Academy of Ophthalmology.

Chalazion is a common eyelid disease caused by plugged meibomian glands and chronic lipogranulomatous inflammation.¹ It can affect individuals of all ages and may cause local eye symptoms such as irritation and inflammation and cosmetic disfigurement. Larger lesions can induce mechanical ptosis and corneal astigmatism.² It may be self-limited in 25% to 50% of cases and can be cured or improved with medical treatment within 1 to 3 months.³

Treatment methods include eyelid hygiene with warm compresses and antibiotic ophthalmic ointment and systemic tetracycline in cases with chronic blepharitis or in patients with acne rosacea. Surgical treatments include steroids injections, CO₂ laser treatment, lesion excision, and curettage or total excision.^{3–13}

Several investigators have studied the effect of intralesional or subcutaneous steroid injection in the treatment of chronic chalazion with reported success and resolution in 50% to 95% of the cases. Injection is considered a simple and effective treatment, although serious adverse effects have been reported.^{14–16}

The purpose of the present study was to evaluate the safety and efficacy of intralesional triamcinolone acetonide (TA) in cases of primary or recurrent chalazia in 155 consecutive cases.

Patients and Methods

This was a retrospective, interventional, consecutive case series. Data regarding all patients diagnosed with primary or recurrent chalazia in the ophthalmic plastic service at the Jules Stein Eye Institute between January 1, 2000, and December 31, 2003, who received an intralesional injection of 4 to 8 mg TA (0.1–0.2 ml of 40 mg/ml) were collected and analyzed. The injection was placed directly into the lesion from a conjunctival approach, or sometimes in the immediately adjacent subconjunctival space (the rigid tarsal

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From the Jules Stein Eye Institute and Department of Ophthalmology, David Geffen School of Medicine at UCLA, Los Angeles, California.

Correspondence to Guy J. Ben Simon, MD, Jules Stein Eye Institute, 100 Stein Plaza, Los Angeles, CA 90095-7006. E-mail: simon@jsei.ucla.edu.

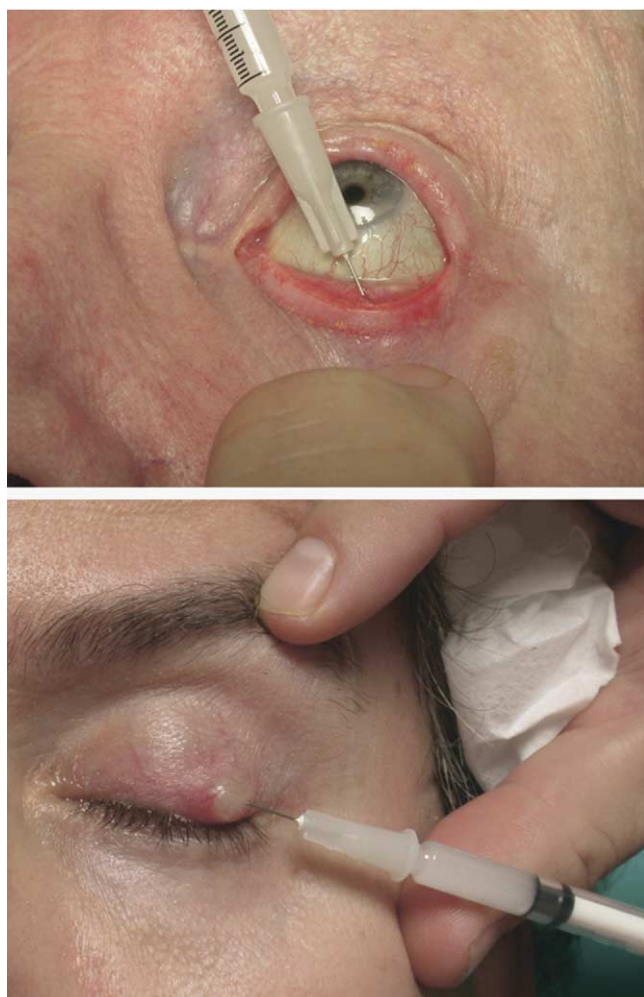


Figure 1. Intralesional triamcinolone acetonide injection for eyelid chalazion. **Top,** Transconjunctival approach. **Bottom,** Transcutaneous approach.

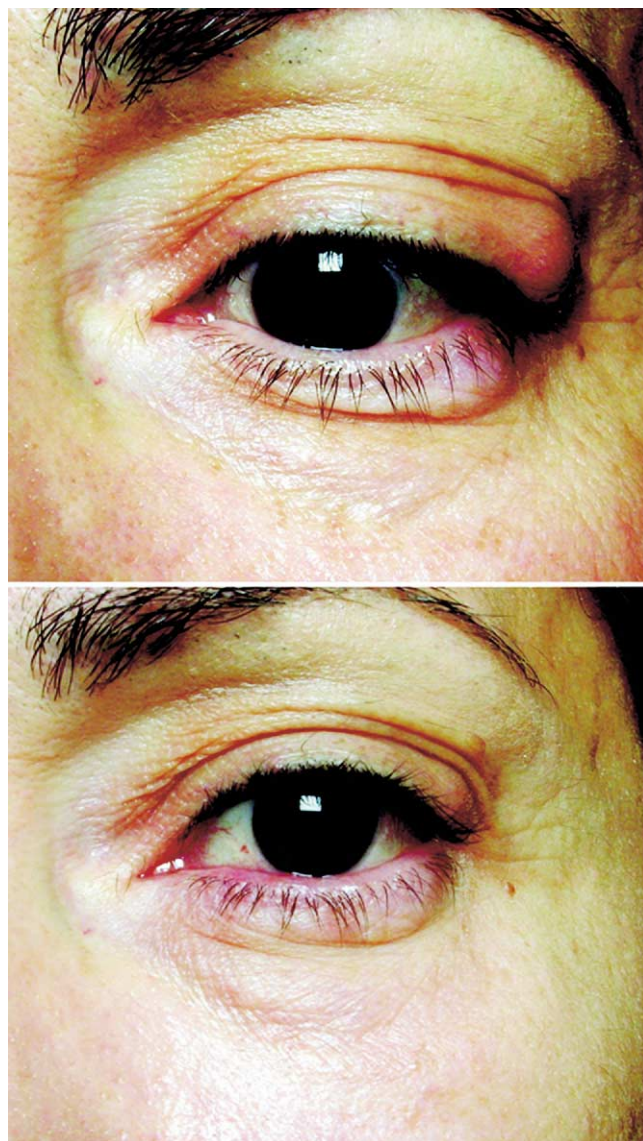


Figure 2. **Top,** Patient with left upper lid and left lower lid chalazia. **Bottom,** Complete resolution of both lesions 2.5 weeks after a single injection of triamcinolone acetonide.

conjunctiva can be difficult to inject, and the soft conjunctiva just adjacent to the tarsus therefore is used frequently; Fig 1). Data regarding lesion size and location, including digital color photography, lesion regression or recurrence, and complete ophthalmic examination results, were recorded at the time of injection and at different intervals until resolution or surgical excision. The study was approved by the local institutional review board.

Success was defined as an 80% to 100% decrease in size with no recurrence (Fig 2). If a lesion recurred or minimally regressed (<50%; Fig 3), further injections were administered as needed at intervals of 2 to 4 weeks after the previous injection. Patients who declined an injection or who did not respond to 2 to 3 injections were referred for surgical excision and drainage. In general, patients who did not respond to 2 or 3 TA injections were offered surgical excision and drainage. Surgeries were performed under topical anesthesia (1–2 ml lidocaine 2% with 1:100,000 epinephrine) in a procedure room. The study complied with the policies of the local institutional review board.

Statistical Analysis

Statistical analysis was performed using the paired samples *t* test to evaluate preinjection and postinjection data such as visual acuity and intraocular pressure. A Pearson bivariate correlation was used

to examine the influence of age, the duration of chalazion, the number of injections, and the time to resolution. An independent sample *t* test was used to evaluate differences in gender, primary versus recurrent lesion, and presence of acne rosacea or blepharitis on clinical outcome (steroid response and time to resolution). The chi-square nonparametric test was used to examine the likelihood for surgery in patients who did not respond to TA injections. Statistical analysis was carried out with Microsoft Excel XP¹⁷ and SPSS programs.¹⁸

Results

One hundred fifty-five consecutive chalazion cases (147 patients, 8 of whom had bilateral disease) were treated in the oculoplastic clinic. Demographics of the study population are summarized in Table 1. Nearly all patients were white. Most of the patients were



Figure 3. Patient with (top) right lower lid chalazion and (bottom) partial remission (<50%) 2.5 weeks after a single injection of triamcinolone acetonide (TA). The chalazion resolved 2 weeks after a second injection of TA.

referred with new-onset chalazion. Thirty percent of cases were primary or secondary recurrence after a previous episode. Mean duration of the lesion was 3.5 months. Blepharitis was a common finding: 62% of the cases had coexisting blepharitis (anterior or posterior). Acne rosacea was prevalent in 20% of cases; these patients were older (mean age, 50 years), but this was not statistically significant ($P = 0.07$, independent samples t test).

More than half of the patients were treated previously with eyelid hygiene (baby shampoo or warm compresses), and one third were treated with topical antibiotic ointment. Ten percent underwent previous excision of the lesion.

The mean number of steroids injections was 1.8 (± 1.2), with a range of 1 to 7 injections per lesion. Patients received a maximum of 3 injections before being referred for surgery, unless the patient declined surgical excision and preferred further injections. Most of the patients received 1 injection (93 patients; 60%), 2 injections (31 patients; 20%), or 3 injections (19 patients; 12.3%; Table 2). The mean decrease in size of the chalazion was 83% ($\pm 32\%$) after the first injection, with a mean time to resolution in patients who received a single injection of 2.2 weeks (± 1.6 weeks). Patients who did not respond to 2 TA injections were more likely to experience nonresolution with further injections ($P = 0.0001$, chi-square test). These patients were more likely to benefit from surgical excision and drainage.

Table 1. Demographics of 147 Patients with Primary or Recurrent Chalazia (155 Lesions) Treated with Triamcinolone Acetonide Injection at the Jules Stein Eye Institute, 2000–2003

Characteristic	Value
No. Eyes (patients)	155 (147)
Gender	
Male	80 (54%)
Female	67 (46%)
Age (years) (\pm SD; range)	45 (± 17 ; 11–91)
Duration of chalazion (mos) (\pm SD; range)	3.5 (± 3.2 ; 1–24)
Location	
RUL	44 (28.4%)
RLL	33 (21.3%)
LUL	40 (25.8%)
LLL	38 (24.5%)
Onset	
New	103 (67%)
Recurrent	26 (16.5%)
Second recurrence	26 (16.5%)
Blepharitis [†]	96 (62%)
Acne rosacea [‡]	31 (20%)
Previous treatment	
Lid hygiene	98 (63%)
Antibiotics*	43 (28%)
Excision	16 (10%)
Follow up (mos) (\pm SD; range)	10.8 (± 12.4 ; 3–51)

LLL = left lower lid; LUL = left upper lid; RLL = right lower lid; RUL = right upper lid; SD = standard deviation.

*Topical antibiotic ointment.

[†]Blepharitis was diagnosed based on clinical evidence of stagnation of the meibomian gland secretions, with dilation of the acini and ductules of the meibomian glands, and formation of semisolid or solid plugs near the orifices of the glands.

[‡]Acne rosacea was diagnosed based on clinical signs of central facial erythema, telangiectasia inflammatory papules, and pustules, with or without associated rhinophyma.

Clinical response to TA injection was similar in cases of new and recurrent chalazia, and no difference was found in the number of injections, the percentage decrease, and the time to resolution (independent sample t test). Patients with anterior or posterior blepharitis tended to receive more injections than patients without blepharitis (2 ± 1.3 vs. 1.4 ± 1 ; $P = 0.05$, independent samples t test); they also achieved a lesser decrease in size, but this was not statistically significant ($P = 0.08$). Such a relation was not prevalent, however, in patients with acne rosacea, who showed a response to steroid injections similar to that of patients without acne rosacea. Gender also did not seem to influence treatment outcome.

No correlation was found between age, duration of chalazion, number of injections, and time to resolution (Pearson bivariate correlation). A similar success rate was achieved in men and women, patients with or without blepharitis, and patients with or without acne rosacea (independent samples t test). Visual acuity and intraocular pressure remained stable after steroid injection (paired samples t test).

Sixteen patients (10%) underwent surgical excision of the chalazion because of little or no response to steroids. They received an average of 2.5 injections (± 1.4 injections) before surgery and achieved a mean reduction of 50% ($\pm 38\%$) in chalazion size. Patients who responded to steroids received an average of 1.5 injections (± 0.7 injections; $P = 0.007$, independent samples t test) and had an average decrease of 80% ($\pm 40\%$) in chalazion size ($P = 0.04$).

Table 2. Treatment Outcome: Injection of Triamcinolone Acetonide for Primary or Recurrent Chalazia in 147 Consecutive Patients (155 Lesions) at the Jules Stein Eye Institute in a 4-Year Period

	Value
Number of injections*	
1	93 (60%)
2	31 (20%)
3	19 (12.3%)
4	6 (3.9%)
5	3 (1.9%)
6	2 (1.3%)
7	1 (0.6%)
Average number of injections (\pm SD)	1.8 (\pm 1.2)
Decrease in size (\pm SD; range)	75% (\pm 33%; 0%–100%)
Time to resolution (wks; \pm SD; range)	2.7 (\pm 2.2; 0.5–13.5)
Surgery (no. of patients)	16 (10.3%)
Preoperative and postoperative VA	20/25; 20/25 (ns)
Preoperative and postoperative IOP (mmHg)	9; 14 (ns)

IOP = intraocular pressure; ns = not significant; SD = standard deviation; VA = visual acuity.

Lesion size was graded using digital photographs; resolution was defined as at least 80% decrease in size with no recurrence.

*Patients received injection of triamcinolone acetonide 0.1–0.2 cm³ of 40 mg/ml.

No complications, such as decreased visual acuity or loss of vision, increased intraocular pressure, subcutaneous fat atrophy, or depigmentation changes, were noted with the volume and concentration of steroids injected in the current study.

Discussion

We have found that TA injections for primary and recurrent chalazia result in resolution or near resolution after an average of 2.5 weeks in more than 80% of cases. A single injection was sufficient in more than half of the patients, and these patients showed an even faster response. No adverse effects were attributed to TA intralesional injection. A paradigm of our decision tree is shown in Figure 4. In the absence of a control group in the current study, it is important to emphasize that our guidelines merely represent our clinical experience, and the efficacy of triamcinolone acetonide injection versus spontaneous remission cannot be evaluated.

Our finding is in line with earlier studies in which steroid injection resulted in a 50% to 95% success rate and in clinical remission of the chalazion.^{4–6,8} Others report an even higher rate of resolution after 1 to 3 injections, regardless of the duration and consistency of the lesion.^{5,6} However, several investigators report a higher success rate with more extensive surgical treatment. Prasad and Gupta¹² compared subconjunctival total excision with incision, curettage, and intralesional steroid injection. They found a higher success rate with total excision (94%) compared with incision, curettage, and injection (75%). A concern has been raised regarding the efficacy of injections in larger chalazia that may have shown a better response to incision and curettage.⁸

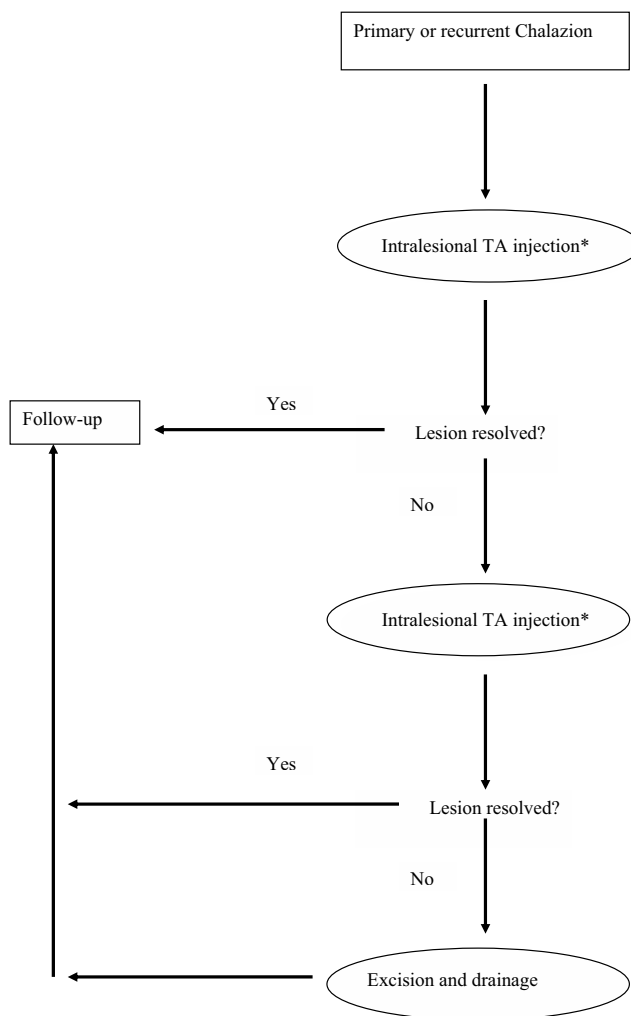


Figure 4. Treatment flow diagram for primary and recurrent chalazion. *TA = triamcinolone acetonide (0.1 ml [40 mg/ml]; injections may be repeated 2 or 3 times).

Several issues make surgery a less favorable option for many patients, especially in the younger age group; for instance, patients may have substantial psychological fear of surgery as opposed to medical treatment or an injection.¹³ Certainly, as a recent survey by a Canadian group suggests, chalazion surgery should be treated with the same respect as any other operation.¹¹ Surgery, even when performed under local anesthesia, is longer and more expensive as compared with a single injection and may be associated with a more complicated course, both during and after surgery. Many surgeons prefer to patch the eye for 24 hours after excision, whereas this is not necessary after steroid injection. If the incision is placed on the eyelid skin, a visible scar may develop. Surgical excision of chalazia may be effective in large or infected chalazia or in lesions that did not respond to eyelid hygiene, steroid injection, or both.⁵

Serious complications of intralesional steroid injection have been described, such as retinal and choroidal vascular occlusion¹⁴ and inadvertent globe penetration, which can necessitate anterior segment surgery.¹⁵ There was even a

case of delayed postinjection hemorrhage in an elderly hypertensive patient.¹⁶ Serious complications, however, are rare and more commonly include skin depigmentation at the injection site. Depigmentation changes are described in a minority of patients.⁶ For that reason, we prefer to use subconjunctival injection rather than transcutaneous injection in patients with darker skin.

In general, our patients were satisfied with the TA injection, and in most cases, they preferred repeated injections to surgery. Other advantages of TA injection include the simplicity of the procedure, the ability to treat small children who would not tolerate longer surgery, the ability to inject lesions near the lacrimal punctum, and its use as an alternative to surgery in cases of multiple small and marginal chalazia, where surgery may result in permanent functional and aesthetic defects. This technique also may be convenient for physicians other than ophthalmologists. A repeat injection is easy and, in most cases, would be accepted by patients as opposed to more surgery.

In summary, we have found that intralesional TA injection is safe and effective in primary and recurrent chalazia. Most of the patients respond to 1 to 2 injections. If they fail to respond to 2 or 3 injections, surgery would be the reasonable next step.

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