

## INTRALESIONAL TRIAMCINOLONE ACETONIDE INJECTION FOR CHALAZION

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**SUMMARY** – The aim of the study was to evaluate the efficacy of intralesional triamcinolone acetonide injection in primary and recurrent chalazion. The study included 30 patients with primary and recurrent chalazion (37 cases) and 24 patients as a control group. Patients with primary and recurrent chalazion received intralesional injection of 0.1 to 0.2 mL triamcinolone acetonide (40 mg/mL). Control group received intralesional injection of 0.1 to 0.2 mL 0.9% NaCl. Data on the lesion size, including digital color photography, lesion regression or recurrence, and complete ophthalmic examination were recorded at the time of injection and after a week or two until resolution or surgical excision. Success was defined as at least 80% decrease in size with no recurrence. Resolution of the lesion was found in 35 cases after one or two injections, with a mean time to resolution of 15.27±6.12 days. Subcutaneous injection of the steroid triamcinolone acetonide in primary and recurrent chalazion appears to be a simple and efficacious therapeutic option for chalazion.

**Key words:** *Chalazion – drug therapy; Chalazion – surgery; Glucocorticoids – therapeutic use; Ophthalmologic surgical procedures – methods; Triamcinolone acetonide – therapeutics use*

### Introduction

Chalazion is a common eyelid margin disorder manifesting as granulomatous inflammation associated with meibomian gland lipids. Extravasation of meibomian gland components into the surrounding tissue may be responsible for the inflammatory component of chalazion formation<sup>1</sup>. Histopathologic examination of chalazion reveals the presence of many neutrophils, lymphocytes, plasma cells and foreign body giant cells situated around cavities and clefts, which are assumed to be filled with lipid material derived from the meibomian gland<sup>2</sup>. Cytologically, chalazion may be either a mixed cell or suppurating granuloma.

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The prevalence is unknown but it can occur in all age groups. Hormonal influences on sebaceous secretion and viscosity may explain clustering at the time of puberty and pregnancy. Chalazion tends to recur in predisposed individuals. It is more common on the upper eyelid, where an increased number and length of meibomian glands are present.

Chalazion is associated with seborrhea, acne rosacea, chronic blepharitis, high blood lipid concentration (possible risk from increased blockage of sebaceous glands), leishmaniasis, tuberculosis, immunodeficiency, viral infection, and carcinoma. Poor eyelid hygiene is occasionally associated with chalazion, although its causal role needs to be established. The symptoms include irritation, inflammation and cosmetic disfigurement, mechanical ptosis, and corneal astigmatism.

Chalazion usually responds well to treatment, although some people are prone to recurrences. If

chalazion recurs at the same site, biopsy needs to be done<sup>3</sup>. Chalazion is rarely serious, but causes discomfort, sometimes pain, and is cosmetically unappealing, at least transiently. It can be treated conservatively and surgically. Conservative treatment includes eyelid hygiene with warm compresses and antibiotic ophthalmic ointment and systemic tetracycline in case of chronic blepharitis or in patients with acne rosacea. Botulinum toxin has also been applied in some cases<sup>4</sup>. Surgical treatment includes lesion excision and curettage or total excision, intralesional injections of long acting steroids, and CO<sub>2</sub> laser treatment.

## Patients and Methods

This was a retrospective, interventional case series study. Data on all patients (n=30) with primary and recurrent chalazion treated at University Department of Ophthalmology, Sestre milosrdnice University Hospital in Zagreb, Croatia, between January 1, 2005 and June 30, 2007, with intralesional injection of 0.1-0.2 mL (40 mg/mL) triamcinolone acetonide were collected and analyzed. Control group consisted of 24 patients with new or recurrent chalazion that received intralesional injection of 0.1-0.2 mL of NaCl. The injection was placed directly into the lesion by con-

Table 1. Influence of sex, duration, recurrence and second recurrence of chalazia, location, and number of injections

	ILTA	0.9% NaCl	$\chi^2$	P
Sex			0.09	0.761
male	15 (50%)	11 (48.83%)		
female	15 (50%)	13 (54.17%)		
New	21 (56.76%)	11 (48.83%)	0.00	1.000
Not new	16 (43.24%)	13 (54.17%)		
Recurrent	7 (18.92%)	7 (29.17%)	0.38	0.536
Not recurrent	30 (81.08%)	17 (70.83%)		
Second recurrence	9 (24.32%)	4 (16.67%)	0.15	0.694
Not second recurrence	28 (75.68%)	20 (83.33%)		
Right upper eyelid	14 (37.84%)	10 (41.67%)	0.00	0.975
Other locations	23 (62.16%)	14 (58.33%)		
Right lower eyelid	7 (18.92%)	2 (8.33%)	0.59	0.442
Other locations	30 (81.08%)	22 (91.67%)		
Left upper eyelid	8 (21.62%)	8 (33.33%)	0.51	0.473
Other locations	29 (78.38%)	16 (66.67%)		
Left lower eyelid	8 (21.62%)	3 (12.50%)	0.32	0.572
Other locations	29 (78.38%)	21 (87.50%)		
Previous treatment	all	all		
No. of injections	1.3 (1 to 2)	1		
Surgical treatment	2/37 weeks 5.40%	–		

ILTA = intralesional triamcinolone acetonide; previous treatment: topical antibiotic/corticosteroid ointment and drops; Mann-Whitney z test=1.65; P=0.098 (non significant);  $\chi^2$ -test yielded no statistically significant between-group differences according to sex, chalazion duration, recurrence and second recurrence, location and number of injections.

Table 2. Quantitative data on age, duration and time of resolution in triamcinolone acetonide treated group and control group

	ILTA	ILTA	ILTA	0.9% NaCl	0.9% NaCl	0.9% NaCl
	Mean ± SD	Median	Min - max	Mean ± SD	Median	Min - Max
Age* (yrs)	41.47±17.95	40.5	12-77	33.33±13.67	32.0	14-66
Duration** (weeks)	32.95±11.46	30.0	15-60	27.08±9.28	28.0	14-50
Time of resolution (weeks)	15.27±6.12	15.0	0-27	–	–	–

ILTA = intralésional triamcinolone acetonide; \*Mann-Whitney z test=1.65;  $P=0.098$  (non significant); \*\*Mann-Whitney z test=1.85;  $P=0.065$  (non significant); there were no statistically significant between-group differences according to age and duration of chalazion; however, there was no resolution in control group.

junctival or transcutaneous approach. All data were recorded at the time of injection and at different intervals until chalazion resolution or surgical excision.

Success was defined as an 80% to 100% decrease in the size of lesion with no recurrence. Further injection was given at 2 to 4 weeks of previous injection, as needed, if the lesion recurred or minimally regressed (<50%). The patients that declined an injection or did not respond to 2 injections were treated by surgical excision and curettage.

### Statistics

Statistical analysis was performed using Mann-Whitney test to evaluate differences in quantitative data between triamcinolone acetonide treated patients and control group. The following parameters were assessed: influence of age and sex, duration and location of chalazion, number of injections, onset, and time to resolution (Tables 1-3). The  $\chi^2$ -test yielded no statistically significant between-group differences according to age, sex, onset, location and duration of chalazion.

### Results

During the study period, 37 primary or recurrent chalazion cases (30 patients) were treated with intralésional injection of a long lasting steroid at University Department of Ophthalmology, Sestre milosrdnice University Hospital in Zagreb, Croatia. All patients were Caucasians. Unilateral chalazion was present in 23 (66.67%) and bilateral chalazion in seven (23.23%) patients. Twenty one (56.76%) patients were referred for new onset chalazion, seven (18.92%) patients had

primary recurrence and nine (24.32%) patients had second recurrence of chalazion.

The mean duration of the lesion before injection was 32.95±11.46 days. All patients were previously treated with eyelid hygiene and topical antibiotic/corticosteroid eye drops. The mean number of steroid injections was 1.0. Patients received a maximum of 2 injections. After the first injection, the mean time to resolution was 15.21±6.73 days in patients that received a single injection and 17.71±5.31 days in those that received 2 injections.

Clinical response to triamcinolone acetonide injection was similar in cases of new and recurrent chalazion. There was no difference in the number of injections, time to resolution, visual acuity and intraocular pressure. There was no effect of age, sex, and location on treatment outcome.

Two patients underwent surgical treatment for they had no or minimal response to injections. There were no serious complications after triamcinolone acetonide injections.

All 24 control group patients had chalazion on one eye. There were 11 (48.83%) patients with new onset chalazion, seven (29.17%) patients with primary recurrence, and four (16.67%) patients with second recurrence.

Control group patients received only one intralésional NaCl injection, with no resolution seen on six-month follow up (Table 3).

### Discussion

Intralésional injection of long lasting steroid for primary and recurrent chalazion offers the advantages

Table 3. Time to resolution in ILTA treated patients with unilateral and bilateral chalazion

Chalazion	Time to resolution		
	Mean $\pm$ SD	Median	Min-max
Unilateral	15.21 $\pm$ 6.73	15.0	0-26
Bilateral	17.71 $\pm$ 5.31	16.0	10-27

ILTA = intralesional triamcinolone acetonide; Mann-Whitney z test=1.11;  $P=0.288$  (non significant); there was no statistically significant difference in the time to resolution between patients with unilateral and bilateral chalazion.

of complete healing without excision or incision and curettage of the lesion. The lump is usually gone within a mean of 2.17 weeks (15.21 $\pm$ 6.73 days). The procedure causes less anxiety and discomfort than surgical procedure.

Although a number of chalazion (11 cases) had to be treated with second injection, it did not seem to affect the result nor caused any discomfort to patients<sup>5-9</sup>. In our series, there was no eyelid malformation or complication during follow up, although we were aware of all complications of steroid injections that include hypopigmentation, atrophy of the area, corneal perforation and traumatic cataract, and potential exacerbation of bacterial or viral infection, retinal and choroidal vascular occlusion and inadvertent globe penetration. Incision and curettage of chalazion is one of the most common minor operations performed in ophthalmology departments. In practice, we saw that many patients were not prepared to undergo an operative procedure, especially for chalazion that occurs in younger people who may have a substantial psychological aversion to surgery that involves an anesthetic injection plus surgical procedure, as opposed to one injection only. Even when performed in local anesthesia, surgery is longer and more expensive as compared with single injection and may be associated with a more complicated course during and after the surgery<sup>10</sup>.

Some authors suggest that chalazion surgery should not be trivialized and should be treated with the same respect as any other ocular surgery. Surgical excision of chalazion may be effective in large or infected chalazion or in lesions that did not respond to eyelid hygiene, steroid injection, or both.

Previous studies have suggested that intralesional triamcinolone injections, although frequently effective, need to be repeated before complete chalazion

resolution is achieved. Multiple injections would affect convenience and pain induced by treatment. Conservative treatment using topical steroid ointments and drops may theoretically penetrate the chalazion by infiltrating through the conjunctiva into the tarsal plate. This would also inadvertently significantly increase the risk of elevated intraocular pressure in a cohort of patients whose intraocular pressure has not been specifically followed up.

Conservative treatment is unlikely to induce pain but has a significantly lower resolution rate, and the treatment may impact the lifestyle of typically younger busy/employed patients.

Some authors used various concentrations of the drug investigating the efficacy of triamcinolone acetonide in the treatment of chalazion. Ho and Lai used a triamcinolone acetonide concentration of 10 mg/mL<sup>10</sup>, and Simon *et al.*<sup>5</sup> 40 mg/mL, also employed in our study. Goawalla and Lee report on only 0.2 mg/mL dilution to minimize the risk of localized skin depigmentation in a population consisting of at least 50% of Afro Caribbeans or Asians, and did not document any case of this adverse effect in a total of 56 patients<sup>16</sup>. Additional studies investigating how the efficacy of intralesional triamcinolone varies with different concentrations are needed to answer this question. Anterior segment ischemia due to retinochoroidal vascular occlusion immediately after intralesional steroid injection is the most serious complication of intralesional injection of corticosteroid<sup>11</sup>.

Care should be taken of recurrent chalazion that does not respond well to treatment, especially in young, because chalazion can be mistaken for pleomorphic adenoma in the palpebral lobe of lacrimal gland<sup>12</sup>, or eyelid carcinoma masquerading as a chalazion like Merkel cell carcinoma requiring early and aggressive treatment<sup>13</sup>, or sebaceous gland carcinoma<sup>14</sup>.

Our patients were satisfied with the intralesional triamcinolone acetonide injection, and in most cases they preferred repeat injection to surgery. Patient satisfaction with intralesional triamcinolone acetonide injection has also been reported elsewhere<sup>15-18</sup>. In our study, there were no serious complications.

The advantages of triamcinolone acetonide injection are simple administration and ability to treat small children, lesions adjacent to lacrimal point and multiple chalazia. Not needing an eye pad post treatment means that patients can drive and resume their daily activities almost immediately following treatment. Intralesional triamcinolone injections for chalazion have obvious economic and practical advantages for healthcare provider as its cost in time and equipment is a fraction of that for conventional surgical treatment. Intralesional triamcinolone acetonide injections are therefore a good first-time treatment option for uncomplicated chalazion.

## Conclusion

Triamcinolone injection is a method that requires minimal facilities and time, no patch is required and patient compliance is very good, with minimum pain and bleeding. There is no risk of canalicular damage, and multiple chalazia may be injected in the same act if needed. Most patients respond to 1 or 2 injections. It is safe and efficacious in primary and recurrent chalazion.

## References

1. NICOLAIDES N, FLORES A, SANTOS EC, ROBIN JB, SMITH BF. The lipids of chalazia. *Invest Ophthalmol Vis Sci* 1988;29(3):482-6.
2. DHALI WAL U, BHATIA A. A rationale for therapeutic decision-making in chalazia. *Orbit* 2005;24:227-30.
3. CUNNIFFE G, CHANG BY, KENNEDY S, MORIARTY P. Beware the empty curettage! *Orbit* 2002;21:177-8.
4. KNEŽEVIĆ T, IVEKOVIĆ R, PAVIČIĆ-ASTALOŠ J, NOVAK-LAUŠ K, MANDIĆ Z, MATEJČIĆ A. Botulinum toxin A injection for primary and recurrent chalazia. *Graefes Arch Clin Exp Ophthalmol* 2009;247(6):789-94.
5. SIMON BGJ, HUANG L, NAKRA T, SCHWARCZ RM, McCANN JD, GOLDBERG RA. Intralesional triamcinolone acetonide injection for primary and recurrent chalazia: is it really effective? *Ophthalmology* 2005;112:913-7.
6. MUSTAFA TA, ORIAFAGE IH. Three methods of treatment of chalazia in children. *Saudi Med J* 2001;22:968-72.
7. AHMAD S, BAIG MA, KHAN MA, KHAN IU, JANJUA TA. Intralesional corticosteroid injection *vs* surgical treatment of chalazia in pigmented patients. *J Coll Physicians Surg Pak* 2006;16:42-4.
8. KHURANA AK, AHLUWALIA BK, RAJAN C. Chalazion therapy. Intralesional steroids *versus* incision and curettage. *Acta Ophthalmol* 1988;66:352-4.
9. PRASAD S, GUPTA AK. Subconjunctival total excision in the treatment of chronic chalazia. *Indian J Ophthalmol* 1992;40:103-5.
10. HO SY, LAI JS. Subcutaneous steroid injection as treatment for chalazion: prospective case series. *Hong Kong Med J* 2002;8:18-20.
11. JACKSON TL, BEUN L. A prospective study of cost, patient satisfaction, and outcome of treatment of chalazion by medical and nursing staff. *Br J Ophthalmol* 2000;84:782-5.
12. YAĞCI A, PALAMAR M, EĞRİLMEZ S, SAHBAZOV C, OZBEK SS. Anterior segment ischemia and retinochoroidal vascular occlusion after intralesional steroid injection. *Ophthalm Plast Reconstr Surg* 2008;24:55-7.
13. RAMLEE N, RAMLI N, TAJUDIN LS. Pleomorphic adenoma in the palpebral lobe of the lacrimal gland misdiagnosed as chalazion. *Orbit* 2007;26:137-9.
14. RAWLINGS NG, BROWNSTEIN S, JORDAN DR. Merkel cell carcinoma masquerading as a chalazion. *Can J Ophthalmol* 2007;42:469-70.
15. MOUSTAFA B, WIRBELAUER C, HÄBERLE H, HERBST H, PHAM DT. Therapy refractory blepharconjunctivitis in a 90-year-old patient. *Ophthalmologie* 2007;104:889-91.
16. GOAWALLA A, LEE V. A prospective randomized treatment study comparing three treatment options for chalazia: triamcinolone acetonide injections, incision and curettage and treatment with hot compresses. *Clin Exp Ophthalmol* 2007;35:706-12.
17. CHUNG CF, LAI JS, LI PS. Subcutaneous extralesional triamcinolone acetonide injection *versus* conservative management in the treatment of chalazion. *Hong Kong Med J* 2006;12:278-81.
18. SMYTHE D, HURWTIZ JJ, TAYFOUR F. The management of chalazion: a survey of Ontario ophthalmologists. *Can J Ophthalmol* 1990;25:252-5.



## Sažetak

## INTRALEZIJSKA INJEKCIJA TRIAMCINOLON ACETONIDA U LIJEČENJU HALAZIONA

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Cilj studije bio je procijeniti učinkovitost intralezijskog injektiranja triamcinolon acetonida kod primarnog i recidivirajućeg halaziona. U ispitivanje je bilo uključeno 30 bolesnika s primarnim i recidivirajućim halazionom (37 slučajeva) i 24 bolesnika kao kontrolna skupina. Bolesnici s primarnim i recidivirajućim halazionom primili su intralezijsku injekciju 0,1 do 0,2 mL triamcinolon acetonida (40 mg/mL), dok su bolesnici kontrolne skupine primili intralezijsku injekciju 0,1 do 0,2 mL 0,9%-tne NaCl. Podatci o veličini lezije, uključujući digitalnu fotografiju u boji, regresiji ili recidivu lezije te o cjelokupnom oftalmološkom pregledu bilježili su se u vrijeme injektiranja te nakon jednog ili dva tjedna do povlačenja ili kirurškog odstranjenja lezije. Uspješnost je definirana kao najmanje 80%-tno smanjenje veličine lezije bez recidiva. Povlačenje lezije utvrđeno je u 35 slučajeva nakon jedne ili dvije injekcije, srednje vrijeme do povlačenja od  $15,27 \pm 6,12$  dana. Potkožno injektiranje steroida triamcinolon acetonida kod primarnog i recidivirajućeg halaziona pokazalo se jednostavnim i učinkovitom terapijom za halazion.

*Ključne riječi: Halazion – terapija lijekovima; Halazion – kirurgija; Glukokortikoidi – terapijska primjena; Oftalmološki kirurški zahvati – metode; Triamcinolon acetonid – terapijska primjena*

