

Three methods of treatment of Chalazia in children

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ABSTRACT

Objective: This is a pilot prospective study undertaken to compare 3 methods of chalazion treatment, namely intralesional triamcinolone acetonide injection, incision and curettage and the combination of incision, curettage and intralesional triamcinolone acetonide injection.

Methods: Twenty-six pediatric age patients with 36 chalazia were divided into 3 groups of 12 chalazia each. The first group received intralesional triamcinolone acetonide 5 mg/ml injection, the 2nd group was treated by simple incision and curettage and the 3rd group was treated by incision, curettage and intralesional triamcinolone acetonide injection on the same session.

Results: In the first group, after 2 weeks from receiving intralesional suspension of triamcinolone acetonide injection, 9/12 (75%) of the chalazia had resolved. Two chalazia resolved after 2 weeks from the 2nd injection and one resolved after a 3rd injection. In spite of improvement, 3 patients complained of either recurrence or development of new adjacent lesions. Two patients had yellow deposits at the site of transcutaneous injections. In the 2nd group, 9/12 (75%) lesions resolved after the first

surgery, and the other 3 lesions responded to repeated surgery. Recurrence or appearance of new lesions adjacent to the old one was noticed in 2 cases after approximately one month from resolution. In the 3rd group, resolution was found in all patients 12/12 (100%) after 2 weeks, and neither recurrence nor complications were faced.

Conclusion: The 3 procedures were safe, effective and convenient. Intralesional corticosteroid injection is a good procedure for children, patients with allergy to local anesthesia, chalazia close to the lacrimal drainage system and it is convenient for physicians other than ophthalmologists. Incision and curettage is recommended for patients with infected chalazia. Combined incision, curettage and intralesional corticosteroid injection is more convenient for patients with large, recurrent and multiple chalazia.

Keywords: Chalazion, intralesional corticosteroid injection, incision, curettage.

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Eyelid chalazion is one of the most common eyelid lesions encountered in general ophthalmology practice. It is considered to be one of the benign tumors of the eyelid.¹ It normally presents as a cosmetically disfiguring firm nodular mass extending from the tarsus either anteriorly toward the skin or posteriorly toward the conjunctiva.² Although, most of the chalazia are located on the tarsus, they may locate extratarsally.³ Large lesions of the upper eyelids can cause a decrease in vision secondary to induced astigmatism

or hyperopia due to central corneal flattening. Pathologically, it is a chronic lipogranulomatous inflammation of the eyelid secondary to retention of meibomian gland secretion, caused by obstruction of the glands. Histologically, chalazion, described as an epithelioid granuloma,⁴ is composed predominantly of corticosteroid-sensitive histiocytes, mononuclear granulocyte cells, lymphocytes, plasma cells, polymorphonuclear cells and eosinophils.⁵ It is frequently seen in association with meibomian gland dysfunction.⁶ The treatment is medical, by frequent

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daily use of hot compresses, surgical incision and curettage and in some cases intralesional corticosteroid injection. This is a pilot study comparing 3 methods of treatment of chalazia in children, namely intralesional triamcinolone acetonide injection, incision and curettage and the combination of incision, curettage and intralesional triamcinolone acetonide injection. The study was carried out in the eye clinic at Prince Rashid Bin Al-Hasan Military Hospital, Irbid, Jordan.

Methods. During the period from January to December 2000, a prospective comparative pilot study was carried out on 26 pediatric age patients, 13 (50%) males and 13 (50%) females (36 chalazia), who had presented to our eye clinic asking for the treatment of one or more eyelid mass lesions. They were prospectively assigned to one of the intralesional triamcinolone acetonide 5 mg/ml injection, simple incision and curettage, or incision, curettage and intralesional triamcinolone acetonide injection groups using a random numbers table. Our criteria for diagnosis of chalazion was as follows: First, the history of rapid onset of painful inflamed mass that had reached a stationary size for more than 2 months. Second, the clinical appearance and location of the lesion. For all patients, a full and careful ocular history and examination was carried out, including the size, location and duration of the chalazion before and after the treatment. Patients with history of irradiation were excluded from the study. For uncooperative patients and those under the age of 13 years, the procedures were carried out under mask anesthesia. The patients were divided into 3 groups of 12 chalazia each. The first group received intralesional triamcinolone acetonide 5 mg/ml injection, the 2nd group was treated by simple incision and curettage and the 3rd group was treated by incision, curettage and intralesional triamcinolone acetonide 5mg/ml injection on the same session. Under complete sterile conditions the techniques were as follows: First group: After diluting triamcinolone acetonide with normal saline to a concentration of 5 mg/ml, we drew up the suspension into a 1-ml tuberculin syringe fitted with a 27 or 30 gauge size 5/8 inch needle. We approached the lesion either transcutaneously or transconjunctivally. In the latter approach, a chalazion clamp was placed gently around the mass grasping the full thickness of the eyelid, which was then everted. A volume of 0.05 to 0.2 ml of the suspension was introduced into the center of the lesion. Before injecting, aspiration for blood was performed and during injection excessive force was avoided. The clamp, if used, was then removed. Second group: The conjunctival sac is well anesthetized, and the lid with regional injection of anesthesia, the lid everted with a clamp and at the point of greatest discoloration a vertical incision is made through the palpebral conjunctiva with a sharp

scalpel. Any semi-fluid contents, which may be present escape and the walls of the cavity are thoroughly scraped with a small sharp spoon. Antibiotic eye ointment is instilled, the clamp is removed and the eye is patched for 2 hours. Third group: First simple incision and curettage followed by intralesional triamcinolone acetonide 5mg/ml injections transconjunctivally into the wall of the chalazion. The lesions were approached through the conjunctiva in the 2nd and 3rd groups. Post-operatively, all patients received topical antibiotic for 3 days and were re-evaluated at 2 week intervals for 2 months. If the lesion had not disappeared or decreased in size to 1 mm or less in diameter on subsequent visits, the same procedure carried out primarily was repeated. The follow up periods extend from 2-6 months according to the results.

Results. Twenty-six children were involved in the study, 13(50%) males and 13(50%) females (36 chalazia). Four cases were lost to follow up and were excluded, 3 in the first group and one in the 2nd group. The age ranges from 3-16 years and the mean age was 9.5 years. The right eyelid was involved in 19 (53%) cases, and the left in 17 (47%) cases. The chalazia were localized in the upper eyelid in 23 (64%) cases, and less frequently in the lower eyelid 13 (36%) cases. Ten patients had 2 chalazia, 3 of them had bilateral involvement of the upper eyelids and 7 had involvement of the upper and lower eyelids either unilaterally or bilaterally. The size of the chalazia ranged from 3-8 mm and the mean size was

Table 1 - The clinical features of the first group.

Sex	Age	Size of chalazion (mm)	Location of chalazion (mm)	Duration of chalazion (mm)	Follow-up (months)
F	16 yrs	7	R, U	2	6
		5	R, Lo	2	6
F	7 yrs 2 mths	5	L, U	2	4
M	3 yrs	4	L, U	2	6
F	15 yrs	6	L, Lo	4	6
M	12 yrs 4 mths	5.5	R, U	4	4
M	13 yrs	6	L, U	2	5
		4	R, Lo	2	5
F	11 yrs 4 mths	8	L, U	2	5
M	7 yrs	3.5	R, U	3	3
		4.5	L, U	3	3
F	6 yrs	7	R, U	3	5

F - female; M - male; yrs - years; mths - months;
R - right; L - left; U - upper; Lo - lower

Table 2 - The clinical features of the 2nd group.

Sex	Age	Size of chalazion (mm)	Location of chalazion (mm)	Duration of chalazion (mm)	Follow-up (months)
M	9 yrs	6	L, U	3	4
		5	R, Lo	3	4
F	8 yrs 2 mths	4	R, U	4	3.5
		3	R, Lo	4	3.5
F	6 yrs	3	L, Lo	2	2
F	5 yrs 3 mths	4	R, Lo	2	2
M	4 yrs 3 mths	6	L, U	2	4
M	7 yrs 1 mth	5	R, U	2	5
		4	L, U	3	5
M	8 yrs 7 mths	5	R, U	3	4.5
		4.5	R, Lo	3	4.5
F	9 yrs	5	L, Lo	2	3

F - female; M - male; yrs - years; mths - months;
R - right; L - left; U - upper; Lo - lower

Table 3 - The clinical features of the 3rd group.

Sex	Age	Size of chalazion (mm)	Location of chalazion (mm)	Duration of chalazion (mm)	Follow-up (months)
M	10 yrs	6	R, U	3	6
		4	R, Lo	5	6
F	11 yrs	5	R, U	2	4.5
		7	L, U	3	4.5
F	14 yrs 2 mths	3.5	L, U	2	5
		3.5	L, Lo	2	5
M	13 yrs	4	L, Lo	3	3
M	12 yrs 6 mths	4	L, U	2	2
F	12 yrs	7	L, U	2	3
F	12 yrs 2 mths	8	R, U	2	2
M	8 yrs	5	R, U	2	2
M	6 yrs	6	R, Lo	2	2

F - female; M - male; yrs - years; mths - months;
R - right; L - left; U - upper; Lo - lower

5.1 mm. Two female patients had past history of surgical treatment of chalazia, both of them were above the age of 14 years and they had evidence of meibomian gland dysfunction. The duration of the lesions, at the time of presentation, ranged from 2-5 months with a mean of 2.6 months. In the first group, 9 patients were involved in the study, 4 (44%) males and 5 (56%) females. The ages ranged from 3 to 16 years. The sizes of the chalazia range from 3.5 to 8 mm. The upper eyelids were involved in 9 (75%) cases and the lower eyelids in 3 (25%) cases. Duration of the chalazia before presentation ranged between 2 to 4 months and the follow up period extended from 3 to 6 months (Table 1). After 2 weeks from receiving intralesional suspension of triamcinolone acetonide injection, 9/12 (75%) of the chalazia had resolved in 2-4 weeks duration. Another 2 chalazia resolved after 2 weeks from the 2nd injection and the 3rd one resolved after a 3rd injection. In spite of improvement, 3 patients complained of either recurrence or development of new adjacent lesions. Two had meibomian gland dysfunction and had history of surgical treatment of chalazia, both were females aged 16 and 15 years. The 3rd patient was a 6 year old girl with history of recurrent blepharitis and family history of elevated serum cholesterol. Two patients had yellow deposits at the site of transcutaneous injections, which resolved over a period of 3-6 months, and a few patients had burning sensation. In the 2nd group, 8 patients were involved, 4 (50%) males and 4 (50%) females, the youngest patient was 4 years and 3

months old and the oldest was 9 years old. The sizes of the lesions range between 3 and 6 mm. The chalazia were distributed equally between the upper and the lower eyelids and they were present for 2 to 4 months before treatment. The follow up period after surgery extended from 2 to 5 months (Table 2). Nine out of 12 (75%) lesions resolved after the first surgery, and the other 3 lesions responded to repeat surgery after 2 weeks. Recurrence or the appearance of new lesions adjacent to the old one was noticed in 2 cases approximately one month from resolution. A 9 year old male and a 6 year old female had a history of treatment of recurrent blepharitis by hot compresses and topical antibiotics combined with steroids. In the 3rd group, 9 patients were included, 5 (56%) males and 4 (44%) females. Their ages ranged between 6 years and 14 years, 2 months. The smallest chalazion was 3.5mm and the largest one was 8 mm in size, 2 thirds were in the upper eyelids and one 3rd in the lower eyelids. The lesions were present for 2 to 5 months before treatment and they were followed up for 2 to 6 months (Table 3). Resolution was seen in all patients 12/12 (100%) after 2 weeks, and neither recurrence nor complications were faced. After 2 months, if recurrence did not occur the patient was released.

Discussion. The treatment of chalazia consists of frequent daily use of warm compresses, eyelid hygiene, and topical anti-inflammatory medications in the acute inflammatory phase. Antibiotic therapy may be necessary in case of a secondary bacterial

infection. If these measures fail, then surgical incision and curettage or intralesional corticosteroid injection may be necessary. However, the steroid therapy is most effective when the chalazion has not been secondarily infected. If this has already happened surgery is the method of choice.⁷ Intralesional steroid injection for the treatment of chalazion was described first by Leinfelder 1964,⁸ since then many studies proclaimed the efficacy of intralesional corticosteroid injection.^{5,7,9} Our study compared 3 methods of chalazion treatment: Intralesional triamcinolone acetonide injection, surgical incision and curettage and the combination of incision curettage and intralesional triamcinolone acetonide injection at the same session and we found that all procedures were effective and safe in the treatment of chalazion; however, the combination of both surgery and steroid injection at the same session was associated with more favorable results.

In the first group, intralesional triamcinolone acetonide injection was an effective, safe and rapid form of treatment. All patients displayed prompt and lasting resolution within 2 weeks after 1, 2 or 3 injections. We encountered 3 cases in which the lesion had recurred or another lesion had developed adjacent to it. Two cases had history of meibomian gland dysfunction and this might explain the recurrence as chalazia are frequently seen in association with meibomian gland dysfunction,⁶ and both were in the age of puberty and at this age hormonal disturbances are present that affect the production of lipids. The 3rd had history of blepharitis and family history of elevated serum cholesterol, which increases the incidence of recurrences as cholesterol is considered a major component of chalazia contents. Two patients developed yellow deposits at the site of the transcutaneous injection and the possibility of this complication can be minimized by transconjunctival injection. Both of them, fortunately, disappeared over a period of 3-6 months. Three patients complained of burning sensation, that could be avoided by giving submuscular local anesthesia prior to intralesional corticosteroid injection. There were no serious complications such as prolonged increase in intraocular pressure, atrophy of the orbital fat,⁵ depigmentation of the overlying skin,¹⁰ vascular occlusion or visual loss.¹¹ Insoluble, crystalline "depot" form of corticosteroids have been associated with local atrophic changes and increased likelihood of micro-embolization,⁵ to minimize these complications we used a soluble aqueous preparation and we avoided excessive force during injection. Giving local anesthesia decreased discomfort. Post-operatively we did not need to patch the eye.

In the 2nd group, simple surgical incision and curettage were carried out. All the lesions resolved after the 2nd surgery and 9/12 (75%) resolved after the first. This method was safe, simple and effective but it was more time consuming and precautions

should be taken to avoid damage to the lacrimal drainage system. The eye may need a patch for about 2 hours post-operatively and need close follow up to detect scar formation at the site of the incision. In this group we did not face any complication apart from the appearance of another lesion either at the same site or adjacent to it in 2 cases within 2 weeks after resolution. Both had history of treatment of recurrent blepharitis by hot compresses and topical combination of antibiotic and steroids. Blepharitis can lead to meibomian gland dysfunction, which can consequently cause chalazion and this might explain the recurrences in our cases.

In the 3rd group, a small incision and curettage were carried out followed by intra-lesional triamcinolone acetonide injection into the wall of the chalazion. Carrying out incision and curettage, at first, decreased the size of the lesion promptly and created more space for the steroid injection. Intralesional triamcinolone acetonide injection facilitated the complete resolution of all chalazia and the results were very encouraging 12/12 (100%). However, this method of treatment might be associated with more complications than the other 2 methods and should be restricted to selected lesions such as recurrent, large and multiple chalazia.

Goenvall¹² found that chalazia most often involve the upper eyelids, and in our study we found that 64% of the lesions were in the upper eyelids. This can be explained by the presence of more meibomian glands in the upper eyelid than the lower eyelid. Chalazion is considered to be the most common periocular lesion to masquerade sebaceous gland carcinoma of the eyelid.¹³ The mean age of patients with sebaceous gland carcinoma is between 57 and 68 years.^{13,14} To minimize this possibility, we selected our patients in the pediatric age, as it is apparently a rare event and, not infrequently appears to be associated with prior radiotherapy¹⁵ and those patients were excluded.

Finally, we recommend another study be carried out with a bigger sample to support our findings. The 3 procedures we undertook were safe, effective and convenient, but from our experience we recommend the following: 1. As it is easy, simple, quick and effective, intralesional corticosteroid injection is a good procedure for children, patients with allergy to local anesthesia, or chalazia close to the lacrimal drainage system and it is convenient to physicians, other than ophthalmologists. 2. Incision and curettage is recommended for patients with infected chalazia. 3. Combined incision, curettage and intra-lesional corticosteroid injection is more convenient for patients with large, recurrent and multiple chalazia. 4. Because combined incision, curettage and intra-lesional corticosteroid injection might be associated with more complications it is better carried out after the failure of the other 2 methods.

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