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M MED RESEARCH REPORT

TREATMENT OF CHALAZIA : A COMPARISON BETWEEN INCISION AND CURETTAGE AND INTRALESIONAL METHYLPREDNISOLONE INJECTION

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TREATMENT OF CHALAZIA : A COMPARISON BETWEEN INCISION AND CURETTAGE AND INTRALESIONAL METHYLPREDNISOLONE INJECTION

Herman Roodt

A research report submitted to the Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, in partial fulfillment of the requirements for the degree of Master of Medicine in Ophthalmology.

Johannesburg, 2007

DECLARATION

I, Herman Roodt, declare that this research report is my own work. It is being submitted for the degree of Master of Medicine (Ophthalmology) at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other university.

_____

_____ day of _____ 2007

The work reported in this dissertation was carried out at the St John Eye Unit of the Chris Hani Baragwanath Hospital (St John) and at the Eye Unit of the Helen Joseph Hospital (Helen Joseph), Johannesburg, South Africa.

DEDICATION

To my parents, Andre and Gail:

Thank you so much for all the years of love and support.

ETHICS APPROVAL

The project was approved by the Human Research Ethics Committee (Medical) at the University of the Witwatersrand.

Clearance certificate number: M050916

PRESENTATIONS ARISING FROM THIS STUDY

The results of this study were presented at the annual congress of the Ophthalmological Society of South Africa (OSSA) in Cape Town, March 2007.

Title: Treatment of chalazia: A comparison between incision and curettage and intralesional methylprednisolone injection.

Presenter: Herman Roodt

ABSTRACT

Purpose

The study was conducted to compare intralesional methylprednisolone acetate 40 mg/ml (Depo-Medrol) injection with incision and curettage in the treatment of chalazia.

Method

A prospective, interventional clinical study was conducted. Seventy-seven patients that met the inclusion criteria and gave informed consent were randomized to receive either intralesional methylprednisolone injection or incision and curettage. Patients were followed up at two weeks and at one month, and the treatment was repeated when indicated.

Results

Seventy-three patients completed the study. At two weeks, after one treatment, there was a significant difference in outcome ($p = 0.002$) between the two groups: 10 (27%) chalazia resolved after intralesional methylprednisolone injection and 23 (64%) after incision and curettage. At one month however, there was no statistical difference ($p = 0.223$) in outcome between the two groups: resolution occurred in 24 patients (65%) after intralesional methylprednisolone injection, and in 28 patients (78%) after incision and curettage. In cases that were successfully treated at one month, 58% required a second treatment with intralesional injection, which was significantly more ($p = 0.020$) than the 18% with incision and curettage. In both groups, the initial chalazion size and duration did not significantly influence the outcome of treatment. The average time to perform intralesional injection (39 seconds) was significantly quicker ($p = 0.000$) than the average time for incision and curettage (2 minutes 46 seconds). In 3 out of 37 injected patients, a slight subcutaneous methylprednisolone deposit was visible at one month.

Conclusion

Incision and curettage remains the gold standard in the treatment of chalazia, but intralesional methylprednisolone (Depo-Medrol) injection is an useful alternative treatment modality.

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PREFACE

I first became interested in treating chalazia with corticosteroid injections when an article was presented at our journal club where a group of patients in America were effectively treated with intralesional triamcinolone 40 mg/ml injection.

With triamcinolone not being readily available at St John, I wondered if I could not use an alternative corticosteroid. A Pubmed search revealed a study from Poland where methylprednisolone 40 mg/ml (Depo-Medrol) injection was used.

Depo-Medrol is readily available at St John, and I decided in future to give patients with chalazia a treatment option with intralesional Depo-Medrol injection. This treatment seemed to work quite well, and I thought it would be a good idea to do a formal study to determine its effectiveness in our patients.

I then discussed the idea with Professor Carmichael who suggested that it would be best to compare intralesional injection with incision and curettage, which is regarded by most ophthalmologists as the gold standard in the treatment of chalazia.

This is the first randomized controlled trial where intralesional methylprednisolone injection was compared with incision and curettage in the treatment of chalazia.

1.0 INTRODUCTION

A chalazion or meibomian cyst (Figure 1.1) is a benign eyelid nodule that is commonly treated by ophthalmologists and general practitioners.

Figure 1.1: Left upper lid chalazion



A chalazion is caused by blockage of the meibomian gland orifices, which open on the lid margins behind the eyelashes. Blockage is most often caused by underlying obstructive meibomian gland dysfunction,[1] but can also be caused by subepithelial scarring in cicatricial conjunctivitis. Stagnation of meibomian gland secretions leads to the formation of this chronic, sterile, lipogranulomatous inflammatory eyelid nodule. The granuloma usually contains epithelioid and giant cells, but lymphocytes, neutrophils and eosinophils may also be present.

Apart from cosmetic disfigurement, a chalazion can also cause irritation, discomfort, corneal astigmatism and mechanical ptosis.

Treatment options include excision, incision and curettage, intralesional and extralesional corticosteroid injection and conservative therapy with hot compresses, eyelid hygiene and antibiotics.

This study was done to compare intralesional methylprednisolone acetate 40 mg/ml (Depo-Medrol) injection with incision and curettage in the treatment of chalazia. In a number of previous comparative studies, intralesional triamcinolone injection as well as incision and curettage proved to be effective treatment modalities for chalazia. [2; 3; 4; 5; 6] Chalazia in a group of Polish patients were previously effectively treated with intralesional methylprednisolone injection. No adverse effects were reported in this study.[7]

Methylprednisolone is a corticosteroid that is commonly used to treat inflamed joints and various inflammatory skin lesions. A chalazion is a sterile, inflammatory eyelid nodule, and for this reason is sensitive to the anti-inflammatory effect of corticosteroids. Methylprednisolone was chosen because it is a corticosteroid that is, unlike triamcinolone, readily available at our hospitals. Incision and curettage is the conventional method of treatment for chalazia, and is regarded by most ophthalmologists as the standard surgical management and gold standard of treatment. Other treatment modalities should be compared with this method.

2.0 LITERATURE REVIEW

Corticosteroid injection for the treatment of chalazia was first used in 1964.[8] Since then, various clinical trials have investigated the use of corticosteroid injection in the treatment of chalazia.

Intralesional triamcinolone injection compared with incision and curettage

In a number of previous studies, intralesional triamcinolone injection was compared with incision and curettage.[2; 3; 4; 5; 6]

Jacobs [2] reported a 60% cure rate after a single incision and curettage procedure and an 8.7% cure rate after a single intralesional triamcinolone hexacetonide injection (5 mg/ml, 0.05 – 0.2 ml).

Watson [3] reported a 90% cure rate with incision and curettage and a 77% cure rate with intralesional injection of triamcinolone acetonide (10 mg/ml, 0.02 – 0.2 ml). Of the surgically treated cases, 27% required a second procedure while 54% of cases treated with injection required a second procedure.

Khurana [4] reported an 88% cure rate with incision and curettage and a 61% cure rate with intralesional triamcinolone acetonide injection (10 mg/ml, 0.02 – 0.2 ml) for chalazia up to 7 mm in diameter. The larger chalazia (8 – 12 mm in diameter) did not respond to intralesional triamcinolone injection but were effectively treated with incision and curettage.

Mustafa [5] reported a cure rate of 75% after a single treatment with incision and curettage. The cure rate was the same after a single triamcinolone acetonide 5 mg/ml injection.

Prasad [6] also reported a similar cure rate with these two methods - 75% after triamcinolone acetonide injection (20 mg/ml, 0.2 ml) and 76% after incision and curettage.

Intra and extralesional triamcinolone injection

Intralesional triamcinolone injection (0.05 - 0.5 ml, 5 – 40 mg/ml) has been used with success in 76% - 92% of cases within 2 - 4 weeks.[9; 10; 11; 12] After a single injection the cure rates were 60% and 41%.[9; 12]

Ho [13] investigated the use of extralesional triamcinolone injection, and reported a 54% cure rate after one injection and a 90% cure rate after two injections.

The duration [9; 10; 13] and size [13] of the chalazia did not significantly influence the outcome of treatment. Of the patients that were successfully treated, 33% - 44% needed a second or third injection.[9; 11; 12; 13]

Intralesional methylprednisolone injection

Kaminska [7] treated chalazia of a 2 week to 6 year duration with intralesional injection of methylprednisolone acetate 40 mg/ml (Depo-Medrol). The size of the chalazia varied between 3 mm and 20 mm. Thirty chalazia (52%) resolved after one injection and 86% after a second injection given 2 weeks later. No complications occurred.

Intralesional dexamethasone injection

Gercowicz [14] used intralesional dexamethasone (4 mg/ml) and reported an 83% cure rate for chalazia of a duration of less than 3 months. Two to three injections were given and resolution occurred over a 2 - 3 week period. Chalazia older than 3 months showed a poor response to treatment.

Verdeaux [15] reported a 38% success rate one week after a single injection of dexamethasone phosphate. No further injections were given in this trial. The authors concluded that corticosteroid injection was more effective in acute forms of chalazia.

Possible adverse effects of corticosteroid injection

Corticosteroid injection is considered to be a safe and effective form of treatment, but adverse effects after treatment have been reported. Small subcutaneous white deposits were visible in 2 of 23 patients after transconjunctival intralesional injection.[2] Yellow deposits at the injection site occurred in 2 of 12 cases after transcutaneous intralesional injection.[5] A yellow eyelid deposit developed at the injection site in 1 of 17 cases after transcutaneous intralesional injection.[12] Skin depigmentation at the injection site occurred in 2 out of 48 patients after extralesional injection.[13]

Crystalline or insoluble corticosteroid preparations ("Depo" forms) may be more likely to cause permanent dermis atrophy than soluble aqueous corticosteroid preparations. Skin changes are almost always temporary, and the appearance of the skin returns to normal within several months.[12]

Other rare complications that have been reported are retinal and choroidal vascular occlusion [16] and corneal penetration.[17] Increased intraocular pressure after subconjunctival corticosteroid administration has also been reported.[18]

Advantages of corticosteroid injection

Advantages include the following:

- It is a quick, cheap and simple procedure.
- Unlike incision and curettage, no special instruments are required. Minimal bleeding occurs and there is no need to apply an eye pad. Bilateral cases can conveniently be treated at the same visit. Investigators report that patients experience no greater pain than with a local anaesthetic injection.[12]
- It may be a more suitable treatment modality for multiple small chalazia, marginal chalazia and those near the lacrimal drainage system. There is a low risk of damaging eyelid structures.
- For some patients it may be a less frightening treatment option that will cause them less distress and discomfort.
- Surgery can be avoided.

Incision and curettage

Kaimbo [19] treated 30 chalazia in African patients with incision and curettage, and achieved a 100% cure rate. A successful outcome was defined as a decrease in chalazion size to less than 1 mm. Recurrence was seen in 3% of cases at 5 weeks.

3.0 PATIENTS AND METHODS

A prospective clinical study was conducted. Seventy-seven consecutive patients, that met the inclusion criteria and gave informed consent, were randomized to receive either intralesional methylprednisolone acetate 40 mg/ml (Depo-Medrol) injection or incision and curettage. As the patients presented they received the next available study file. Patient files are numbered consecutively. Patients that received a study file with an odd last number were given intralesional injection while patients that received a file with an even last number were given incision and curettage.

All chalazia older than one month, without signs of infection and without a history of previous treatment (except conservative treatment) were included in the study. The patients were recruited at St John and at Helen Joseph from January 2006 to July 2006. Patients were followed up at two weeks and at one month. Treatment was repeated after two weeks if the chalazion was not cured. A chalazion was defined as cured if there was no visible external lesion after treatment. If treatment was unsuccessful at the second follow-up visit at one month, the patient was offered the alternative method of treatment.

Duration and possible previous treatment of the chalazia were documented. Lesion size was measured with a caliper along the largest diameter of the lesion and the chalazion was charted on a drawing of the eyelids. The patients were examined for possible associated acne rosacea. Lesion size, visual acuity and intraocular pressure were

measured before treatment and at follow-up visits. Digital colour photographs were taken at each visit. The time taken to perform each procedure was measured with a stopwatch. Patients were monitored for skin changes and other possible complications of treatment.

Technique of intralesional methylprednisolone injection (see Figure 3.1)

Figure 3.1: Intralesional methylprednisolone injection



The conjunctiva was anaesthetized with oxybuprocaine 0.4% (Novesine) drops. The conjunctival surface of the chalazion was then exposed by everting the eyelid or pulling the eyelid away from the globe with the aid of a cotton wool bud or finger. Next the chalazion was injected with 0.05 - 0.2 ml (2 – 8 mg, depending on lesion size) methylprednisolone acetate 40 mg/ml (Depo-Medrol) through the conjunctival surface with an insulin syringe. To avoid injury to the globe, the needle was always angled away from the globe when inserting the needle. There was no need to apply an eye pad after the procedure.

Technique of incision and curettage (see Figure 3.2)

Figure 3.2: Incision of a chalazion



Oxybuprocaine 0.4% (Novesine) drops were instilled into the fornix, and the eyelid around the chalazion was infiltrated with a 2% lignocaine solution. Incision and curettage was done through a vertical conjunctival incision with the aid of a chalazion clamp, no.11 surgical blade and a curette. Chloramphenicol ointment and an eye pad were applied after the procedure. Analgesia and topical chloramphenicol ointment were prescribed.

Main outcome measures

These were the following:

- Cure rate with each method at two weeks and one month after treatment
- Lesion size after treatment
- Number of treatments required for resolution
- Influence of initial lesion size on outcome of treatment
- Influence of lesion duration on outcome of treatment
- Average time taken to perform each of the two procedures
- Complications

Statistical testing

Sample size: From the literature it was assumed that a 90% success rate could be obtained using incision and curettage and a 60% cure rate for the injection group was considered feasible. The study was powered at 80% to detect a significant difference between the proportions of successful outcome in the groups with an α level of 0.05 and β of 0.2. The group size needed to be 38 in each group.

The following approach was used in selecting statistical tests:

A level of significance of p less than or equal to 0.05 was considered significant.

Before a Student's t-Test (t test) was used the data were subjected to a Chi-square (non-parametric) goodness-of-fit test and where the distribution was non-normal a non-parametric test was used.

Continuous variables were compared using t tests (Aspen-Welch if variance was not equal) for normally-distributed data or a two-sample Kolmogorov-Smirnov test where the data were not normally distributed. A Wilcoxon two-sample rank-sum (Mann-Whitney U) test was used where there was a non-normal distribution of data but variances were equal.

For categorical data, a Chi-squared test was done followed by a two-sample test of proportions where necessary.

Logistic regression was done with the outcome of resolution at 2 weeks and resolution at 4 weeks controlling for initial chalazion size and testing all continuous and categorical variables for associations with resolution. Explanatory variables tested included initial size of chalazion, treatment method, age of patient, gender, number of treatments and duration of chalazion before treatment.

Statistics were performed using the statistical software Stata version 8 (Stata Corporation, College station, Texas, USA).

4.0 RESULTS

Seventy-three patients completed the study, while 4 were lost to follow-up. Thirty-seven patients received intralesional injection and 36 patients received incision and curettage. Patient age ranged from 16 to 67 years with an average age of 34.5 years. There was no significant difference in the mean age of males (34 years, 30 patients) compared with females (34.9 years, 43 patients). Thirty-seven chalazia were previously treated with conservative therapy while 36 cases did not receive any previous treatment. None of the chalazia was injected or incised before entering the study.

Table 4.1 contains demographic data of the two groups.

Table 4.1: Demographic data of the two study groups

	Intralesional methylprednisolone injection	Incision and curettage	p-value
Number of patients	37	36	
Average age	32.7	36.4	0.190 [a]
Gender: male female % male	 15 22 40.5	 15 21 41.7	 0.922 [b]
Race: African Mixed Caucasian	 35 1 1	 34 2 0	 0.978 [b]
Average initial chalazion size in mm	8.5	10.2	0.004 [a]
Average chalazion duration in months	7.4	5.4	0.277 [c]

Note:

a = t test with equal variances

b = two-sample test of proportions

c = t test with unequal variances

The two groups were similar for number of patients, age, gender, race and average duration of the chalazia. The average initial chalazion size was smaller (p = 0.004) in the intralesional injection group (8.5 mm) than in the incision and curettage group (10.2 mm). Table 4.2 contains treatment results for the two groups.

Table 4.2: Treatment results for the two study groups

	Intralesional methylprednisolone injection	Incision and curettage	p-value
Resolution at two weeks	10 (27%)	23 (64%)	0.002 [b]
Resolution at one month	24 (65%)	28 (78%)	0.223 [b]
Chalazia that required two treatments to resolve	14 (58%)	5 (17.9%)	0.020 [b]
Average time in seconds to perform procedure	39	162	0.000 [c]

Note:

b = two-sample test of proportions

c = t test with unequal variances

At two weeks, after one treatment, the cure rate was significantly higher ($p = 0.002$) with incision and curettage. At one month however, there was no statistical difference in outcome ($p = 0.223$) between the two groups. In the successfully treated cases, a significantly higher number ($p = 0.020$) of chalazia required a second treatment with intralesional injection. The average time taken to perform intralesional injection was significantly shorter ($p = 0.000$) than the average time taken to perform incision and curettage. The following figures show successful as well as unsuccessful outcomes with the two methods.

Figure 4.1: A cure after intralesional injection



Figure 4.1 A

Patient 21: Right upper lid chalazion



Figure 4.1 B

Patient 21: Two weeks after treatment

Figure 4.2: A cure after incision and curettage



Figure 4.2 A

Patient 8: Left upper lid chalazion

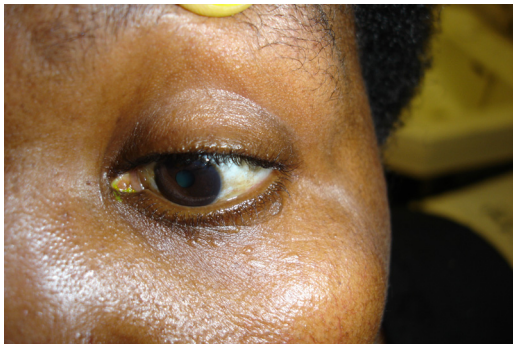


Figure 4.2 B

Patient 8: Two weeks after treatment

Figure 4.3: An unresolved chalazion after intralesional injection

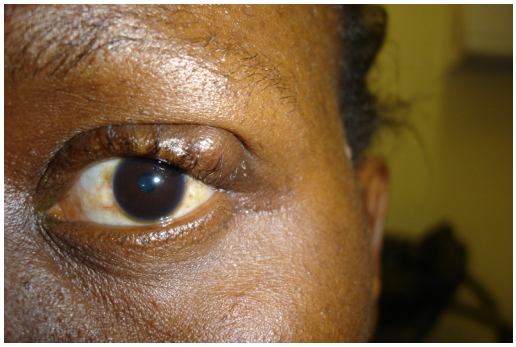


Figure 4.3 A

Patient 5: Left upper lid chalazion



Figure 4.3 B

Patient 5: Chalazion smaller but not completely resolved after two injections

Figure 4.4: An unresolved chalazion after incision and curettage

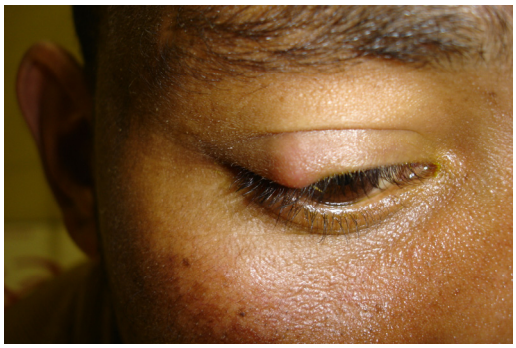


Figure 4.4 A

Patient 66: Right upper lid chalazion

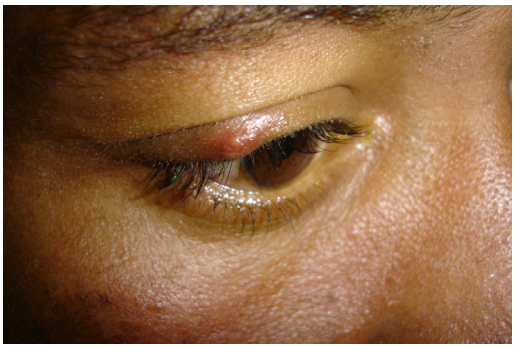


Figure 4.4 B

Patient 66: Chalazion not completely resolved at month 1

Table 4.3 contains additional data for the two study groups. As the initial chalazion sizes were different between the two groups, this represents a confounder in the relationship between outcome (resolution) and various factors such as time to resolution and number of treatments required. To control for the effect of initial size of chalazion, logistic regression was performed and appears after the 'Cure rates according to chalazion size' results.

Table 4.3: Additional results for the two study groups

	Intralesional methylprednisolone injection	Incision and curettage
<u>Average initial chalazion size in mm</u>		
Resolution at two weeks	8.00	10.15
Resolution at one month	8.00	10.30
No resolution	9.46	9.75
<u>Unsuccessful outcomes</u>		
Average initial chalazion size in mm	9.46	9.75
Average chalazion size in mm, week 2	6.62	6.25
Average chalazion size in mm, month 1	5.46	7.00
<u>Successful outcomes that needed two treatments</u>		
Average initial chalazion size in mm	8.00	11.00
Average chalazion size in mm, week two	5.57	8.00
<u>Average chalazion duration in months</u>		
Resolution at two weeks	10.4	5.2
Resolution at one month	7.5	5.6
No resolution	7.3	4.8
<u>Average age</u>		
Resolution at two weeks	28.6	36.4
Resolution at one month	32.8	37.1
No resolution	32.5	34.0
<u>Percentage males</u>		
Resolution at one month	10/24 (41.7%)	11/28 (39.3%)
No resolution	5/13 (38.5%)	4/8 (50.0%)

In both groups, the average initial chalazion size and duration did not appear to influence the outcome of treatment at two weeks or one month.

The mean size of chalazia in the intralesional injection group that did not resolve became less after treatment. There was on average a 30% decrease in chalazion size after one injection and a 42% decrease in size after two injections.

Chalazia that did resolve with a second injection on average became 30% smaller after one injection. This was the same as for chalazia that did not resolve.

Chalazia in the incision and curettage group that did not resolve also became smaller after treatment. There was on average a 36% decrease in mean chalazion size after one procedure and a 28% decrease in size after two procedures.

Age and gender did not appear to have an influence on the outcome of treatment in both groups.

No patients had associated acne rosacea.

Table 4.4 contains cure rates for small, medium and large chalazia.

Table 4.4: Cure rates according to chalazion size

	Small: < 7 mm		Medium: 7-10 mm		Large: > 10 mm	
	Intra-lesional injection	Incision and curettage	Intra-lesional injection	Incision and curettage	Intra-lesional injection	Incision and curettage
Number	9	3	21	17	7	16
Resolution at two weeks	3 (33%)	3 (100%)	5 (24%)	10 (59%)	2 (29%)	10 (63%)
Resolution at one month	7 (78%)	3 (100%)	13 (62%)	12 (71%)	4 (57%)	13 (81%)

There was no statistically significant difference in outcome at two weeks or one month between small, medium and large chalazia in both groups (two-sample test of proportions).

Logistic regression

For resolution at 4 weeks: After controlling for initial size, incision and curettage was more effective than injection (Odds ratio 2.1, p=0.178) while the two larger size categories, medium (Odds ratio 0.3, p=0.196) and large chalazia (Odds ratio 0.4, p=0.339) were less likely to resolve than small chalazia.

For resolution at 2 weeks: After controlling for initial size, incision and curettage was more effective than injection (Odds ratio 5.1, p=0.003) while the two larger size categories, medium (Odds ratio 0.4, p=0.248) and large chalazia (Odds ratio 0.4, p=0.278) were less likely to resolve than small chalazia.

To summarize; logistic regression showed that after controlling for the confounder, initial size of chalazion, resolution at 2 weeks was significantly better using incision and curettage. It was also better at 4 weeks and larger chalazia were less likely to resolve although with the current group size these were not statistically significant.
There were no other associations found with resolution.

Complications

In both groups the visual acuity and intraocular pressure remained stable after treatment. In 3 out of 37 injected chalazia, a slight subcutaneous methylprednisolone deposit was visible at one month after treatment. There were no other complications of treatment in both groups.

5.0 DISCUSSION

The cure rate of 78% at one month with incision and curettage is in keeping with previous reports,[5; 6] but is lower than in a recent report where a 97% cure rate was achieved for 30 chalazia in African patients.[19]

The cure rate of 65% at one month with intralesional methylprednisolone acetate 40 mg/ml injection is lower than the cure rate of 86% that was reported in the previous study where intralesional methylprednisolone acetate 40 mg/ml was used in Caucasian patients.[7] It is also lower but comparable to the 80% cure rate in a previous report where intralesional triamcinolone 40 mg/ml was used in Caucasian patients.[9]

Intralesional methylprednisolone injection in the treatment of chalazia has not previously been evaluated in African patients. In a study where intralesional triamcinolone 5 mg/ml was used to treat 25 chalazia in African patients,[11] the cure rate of 76% was higher but comparable to the cure rate in this study. A similar number of patients needed a second intralesional injection before resolution occurred.

The cure rates with methylprednisolone injection at two weeks and one month are in general comparable to cure rates that were obtained with triamcinolone in previous studies. Possible reasons for different cure rates in different studies include racial

differences, a different concentration of medication used and a different definition of a successful outcome.

In contrast to a previous report,[4] the average initial chalazion size in both groups did not significantly influence the outcome of treatment. This is in agreement with another report. [13] The initial chalazion size was, however, significantly different between the two groups; the incision and curettage group had a larger initial size (10.2mm) than the injection group (8.5mm).

As initial size of the chalazion was a potential confounder, this was controlled for during logistic regression. This showed that incision and curettage was more likely to resolve the chalazion at 2 weeks (odds ratio 5.1) and also at 4 weeks (odds ratio 2.1). It also confirmed that resolution was less likely with the larger chalazions.

As reported in previous studies,[9; 10; 13] the average duration of chalazia in the injection group did not influence the outcome of treatment. The same was true for the incision and curettage group.

In both groups, patient age and gender did not influence the outcome of treatment. This is in keeping with a previous report. [9]

No complications of treatment occurred in the incision and curettage group. In 3 out of 37 injected patients, a slight subcutaneous methylprednisolone deposit was visible at one

month. These deposits were hardly noticeable and not a concern for the patients. In keeping with a previous report,[7] other possible complications of methylprednisolone injection like skin atrophy, skin depigmentation and increased intraocular pressure were not observed in this study.

Patients with acne rosacea often have associated obstructive meibomian gland dysfunction and recurrent chalazia.[1] In a previous study in Caucasian patients,[9] 31 patients (20%) with chalazia had associated acne rosacea. In this study where most patients were Africans, there were no cases with associated acne rosacea.

Intralesional injection was significantly quicker to perform than incision and curettage. It took on average 39 seconds to perform intralesional injection, compared to 2 minutes and 42 seconds for incision and curettage. These times exclude the time it took to prepare for the procedures. It is quicker to prepare for intralesional injection, and time is also saved after the procedure because there is no need to apply an eye pad or to prescribe medicine. In keeping with previous studies, [3; 9; 11; 12; 13] two intralesional injections were often required to obtain a cure rate similar to that of incision and curettage. Although two injections will still be quicker to perform than one incision and curettage procedure, more patients treated with intralesional injection will have to return to the hospital for a second treatment. Although follow-up was good at our hospitals, it may be more problematic in rural areas where transport is not always readily available and many patients live further away from a hospital. Intralesional injection does not give an immediate cure which makes it a less attractive treatment option for some patients.

Both intralesional methylprednisolone injection and incision and curettage are cheap procedures, and there is not a significant difference in cost between these two treatment modalities. Both procedures are in general easy to perform. Some chalazia were more difficult to inject than others. There was marked resistance to injection in some of the cases. The amount of resistance to injection most likely correlates with the rigidity of the tarsal plate and the amount of fibrous tissue that surrounds the chalazion.[6] With more surrounding fibrous tissue or less granulomatous change in the tarsal plate there will most probably be more resistance to injection. In this study, most chalazia expanded readily with injection and were not difficult to treat. In some cases however, resistance to injection necessitated deeper placement of the needle with resultant extralesional or subcutaneous injection of the methylprednisolone.

Leakage of methylprednisolone from the injection site or a meibomian gland orifice was also encountered in some of the cases. This may have caused subtherapeutic amounts of methylprednisolone in some chalazia.

Some chalazia contained no removable granulomatous tissue. Instead, a thickened and inflamed tarsal plate was present. Incision and curettage is usually not effective in these cases and an immediate intra or extralesional injection can be considered if no granulomatous tissue can be removed using incision and curettage. Chalazia treated with incision and curettage were generally not suitable for a second procedure at two weeks, due to the lack of removable granulomatous tissue. A chalazion that does not resolve

after a technically successful incision and curettage procedure may be well suited to injection to treat the residual swelling.

If a chalazion does not respond to treatment, a tissue biopsy of the lesion should be examined histopathologically to exclude a sebaceous gland carcinoma. [20]

The amount of pain experienced with intralesional as well as local anaesthetic injection was quite variable between patients. Some reported only slight discomfort while others experienced considerable pain.

In this study, the final follow-up visit was at one month and recurrence rates with the two treatment modalities were not investigated. In previous studies, recurrence after intralesional triamcinolone 5 mg/ml injection occurred in 4,5% [10] and 17% [11] of cases. Recurrence after successful incision and curettage occurred in 3% of cases.[19] Another limitation of this study was the absence of a conservative therapy treatment group. A 77% and 25% cure rate have been reported after conservative therapy with hot compresses, lid scrubs and topical antibiotics.[21; 22]

Possible considerations for future research would be to investigate the efficacy of conservative therapy for chalazia in our patient population and to follow patients up for a longer period of time. This may reveal possible recurrences after treatment and cases that may possibly resolve with more time or more than two injections.

6.0 CONCLUSION

In this study, both intralesional methylprednisolone injection and incision and curettage proved to be safe and effective treatment modalities for chalazia. The results largely reflect the outcome in African patients, which comprised 95% of the study patients.

Although intralesional injection was a simpler procedure, incision and curettage was a more effective method and remains the gold standard in the treatment of chalazia. This was also shown using logistic regression and controlling for the initial size of chalazia.

However, intralesional methylprednisolone injection is an useful alternative method that some patients may prefer over incision and curettage. It is a repeatable procedure and may be especially useful in cases that are not ideally suited to incision and curettage, for example multiple small chalazia and cases with chronic diffuse meibomitis where there is a thickened, inflamed tarsal plate with no removable granulomatous tissue. Intra or extralesional injection may also be useful to treat persistent residual swelling after a technically successful incision and curettage procedure. An injection would be contra-indicated if the chalazion shows any signs of infection or pus formation and also if the patient requires a quick cure.

Incision and curettage is the procedure of choice for chalazia that are infected or contain liquefied granulomatous tissue. It should also be done for chalazia that do not resolve after repeated injections and for patients that require an immediate cure.

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8.0 ADDENDUM

Inclusion criteria

- Clinical diagnosis of a chalazion or multiple chalazia
- Duration more than one month
- No clinical signs of infection
- Informed consent obtained

Exclusion criteria

- Previous treatment with surgery or injection