Research Article

Current Trends in Ophthalmology

Surgical Management with Particular Reference to Failure Rate in a Case Series of 1498 Consecutive Cases of Chalazion Incision and Curettage by a Single Practitioner

Cook NJ*

Central Surgery Eye Clinic, Rugby CV21 3SP, UK

***Correspondence:** Nicholas James Cook, Central Surgery Eye Clinic, Rugby CV21 3SP, UK, Tel: +44 1788 574 335; Fax +44 1788 547 693; E-mail: nick.cook@nhs.net

Received: August 18, 2018; Accepted: September 17, 2018; Published: September 21, 2018

Abstract

A series of 1498 consecutive vertical incisions of chalazia was studied by the author to examine the spectrum of epidemiological presentation of chalazia for a population, the failure rate for incision and curettage and how each failure was managed. The number of incisions made in each chalazion was also examined as the author had developed an impression over the years that a better success rate was achieved with more than one incision. Using 3 vertical incisions, the 7.6% failure rate is considerably lower than previous studies in the literature in which only one incision was undertaken. This case series also supports a practical pragmatic approach as to how to manage failure of incision and curettage and questions the need for routine diagnostic biopsy to exclude ocular sebaceous cell carcinoma after first failure in incision and curettage.

Keywords: Chalazion, Incision and curettage, Failure rate, Chalazion surgical rate, Ocular sebaceous carcinoma

Introduction

The author had, over the years 1999 to 2015, developed an impression that the more incisions were undertaken in each individual chalazion, the greater the chance of success. This hypothesis was investigated in this study. Subsequent to the initial case series (1999-2015) the author changed his practice whereby he routinely undertook 3 incisions in each chalazion where the chalazion size allowed, presenting a further series of 351 cases (2016-2017). A review of the literature gives a range of failure rates for Incision and Curettage (I + C) of chalazia. Single series studies with small patient numbers (n = 42-129) indicate failure rates of 13%, 28% and 21% [1],[2],[3]. Meta-Analysis study (264 patients) gives a failure rate of 22% [4]. These failure rates in the literature relate to procedures in which a single incision was undertaken.

Material and Methods

The site of the chalazion was marked prior to anaesthetic injection. Local anaesthesia comprised 5ml subcutaneous injection of Lignocaine 1% with adrenalin in the affected eyelid and 4 drops of tetracaine placed in the inferior conjunctival fornix. The lid was everted using a chalazion clamp, typically with an opening of 7.5mm. One to four vertical incisions (5-6mm long) were made into the tarsal conjunctival plate and a 2mm/3mm double ended curette inserted to break up the loculations with in the chalazion. No antibiotic ointment or drops were applied and no padding of the eye beyond 10 minutes to ensure haemostasis. It is not routine practice in the United Kingdom (UK) to send off histopathological specimens after I + C chalazion and this was not done. Where chalazia were multiple (≥ 3 eyelids affected), incision was usually performed on more than one visit.

Every patient received verbal and written instructions to contact the Primary Care Ophthalmology (PCO) service directly if there were any concerns after surgery, being given both telephone and email contact details. Routine follow up after incision is not undertaken. However patients have immediate free direct open access for review if the chalazion persists. There are no financial or administrative barriers to prevent prompt review at the patient's direct request, either by email or phone call to the eye clinic office. Where a subsequent intervention was required, this was usually a repeat surgical incision and curettage. During 2008 and 2009 trans-conjunctival triamcinolone (10mg/ml. 1ml) injections were used on a few patients (n = 6) as a second line treatment. Every patient record between 1999 and 2015 was examined in order to identify each chalazion surgery undertaken, presenting an initial consecutive case series of 1147 incisions. This allowed an investigation of some of the epidemiological characteristics of patients presenting with chalazia, the incidence of failure of incision and curettage and how the cases of failure were managed. The data was collected looking at the individual failure rate of each chalazion I + C and was not collected looking at the failure rate for each patient. This allows for an analysis that takes into account patients presenting with more than one chalazion. Subsequent to the analysis of the data 1999-2015, a further analysis of patient records 2016-2017 was undertaken to provide a second case series of 351 incisions.

Results

Between 1999 and 2017, 1072 patients presented with chalazia resulting in surgical intervention. Allowing for patients with more than one chalazion, the total number of chalazia incised was 1498 individual chalazia.

The median age was 44.5 years (range 8-91 years). 18 patients were under 16 years of age, with an age range of 8-15 years of age.

Most patients (72%) presented with only a single chalazion. The proportions of chalazia presenting per patient on first visit is shown in table 1.

Duration of presence of each individual chalazion prior to incision is shown in table 2, with a range of 1 month to more than 12 months. Typical presentation to the PCO service is at 2-3 months (n = 809, 54%). However there is a wide variation of time of presentation.

In the initial case series (1999-2015), 1147 chalazia

Cur Tre Ophthal, 1(1): 80-85 (2018)

were seen and surgically managed with number of incisions and resolution and failure rate shown in table 3.

Table 1: Number of chalazia presenting per patient on first presentation.

Number of chalazia	Number of patients presenting
1	772 (72%)
2	217 (20%)
3	53 (5%)
4	21 (2%)
5	5 (0.5%)
6	4 (0.4%)

Table 2: Duration of chalazion prior to incision.

Duration (months)	Number of patients
1	60 (4%)
2	420 (28%)
3	389 (26%)
4	195 (13%)
5	67 (4.5%)
6	120 (8%)
7-Dec	102 (6.8%)
>= 12	145 (9.7%)

After first I + C 1039 chalazia resolved and 108 remained, resulting in an overall failure rate of 9.4%. Where 3 incisions were undertaken, the failure rate was 7.32%.

In this series, 108 patients required a repeat intervention/procedure. Of the 108 cases requiring a second procedure, 94 (87%) resolved after the second procedure [92 cases with repeat I + C, 2 cases with triamcinolone injection].

After the third intervention 9 cases resolved [7 cases after repeat I + C, 2 cases with triamcinolone injection].

After a fourth intervention 2 cases resolved [For patient (1), the treatment sequence was Initial I + C, repeat I + C at 3 months (M), repeat I + C at 2 M, injection triamcinolone at 1M. For patient (2), the treatment sequence was initial I + C, repeat I + C at 3M, repeat I + C at 2M, injection triamcinolone at 1M].

After 2-3 interventions, 3 cases were referred to the Hospital Eye Service (HES) for a second opinion. 2 of these cases underwent biopsy and were confirmed as

Table 3: Resolution and failure rate after first I+C 1999-2015.

Number of incisions made in individual chalazion	Resolution after first I+C	Non resolution after first I+C
1	131 (89.73%)	15 (10.27%)
2	495 (89.03%)	61 (10.97 %)
3	405 (92.68%)	32 (7.32%)
4	8 (100%)	0 (0%)

Table 4: Resolution and failure rate after first I+C 2016-2017.

Number of incisions made in individual chalazion	Resolution after first I+C	Non resolution after first I+C
1	3 (75%)	1 (25%)
2	48 (85.7%)	8 (14.3%)
3	261 (91.9%)	23 (8.1%)
4	7 (100%)	0 (0%)

Table 5: Resolution and failure rate after first I+C for whole series 1999-2017.

Number of incisions in individual chalazion	Resolution after first I+C	Non resolution after first I+C
1	134 (89.3%)	16 (10.7%)
2	543 (88.7%)	69 (11.3%)
3	666 (92.4%)	55 (7.6%)
4	15 (100%)	0 (0%)

chalazion. The third case underwent dexamethasone injection with resolution of the chalazion.

=14) of these patients left the unresolved chalazion well beyond 6 months.

In the second case series (2016-2017), 351 chalazia were seen and surgically managed with the number of incisions and resolution and failure rate shown in table 4.

After first I + C, 319 chalazia resolved, resulting in overall failure rate of 9.1%. Where 2 incisions were undertaken the failure rate was 14.3%. Where 3 incisions were undertaken the failure rate was 8%.

In this second series, 32 patients required a repeat intervention/procedure. Of these 32 cases, 27 (84%) resolved after repeat incision and curettage. After the third I + C, 5 cases resolved.

Table 5 shows the overall resolution and failure rate combining the first series (1999-2015) and the second series (2016-2017), comprising 1498 incisions.

The timing of the second intervention, shown in table 6, depended on when the patient re-presented to the PCO service. Most patients re-presented within one to two months of the first unsuccessful procedure. A minority (n Cur Tre Ophthal, 1(1): 80-85 (2018)

Table 6: Timing of second intervention 1999-2017.

Months after initial I+C	Number of patients
1	2 (1.4%)
2	59 (42.1%)
3	32 (22.9%)
4	20 (14.3%)
5	10 (7.1%)
6	3 (2.1%)
7	9 (6.4%)
8	0 (0.0%)
9	1 (0.7%)
10	2 (1.4%)
12	1 (0.7%)
18	1 (0.7%)

Discussion

Waiting times for the PCO clinic vary between 1 and 4 weeks and have not been over 4 weeks in the clinic's

history. Maintaining such a short waiting time is possible because it is a "diagnose and discharge" service with no long term chronic disease management. General Practitioners are discouraged from sending new onset chalazia as a substantial proportion of new onset chalazia settle spontaneously in the first two months with the simple application of hot compresses or no treatment at all. Previous studies have found a 25-50% resolution with this conservative treatment [5],[6]. A small number of patients in this study (4%), with a chalazion of a month or less duration, underwent I + C. Some of these patients had very large chalazia or an important social event (e.g. wedding) pending that justified the reason for early I + C. Some of these patients chose I + C because they had already taken time off work and did not want to return again if the chalazion persisted on suggested conservative treatment. Outside of this study of 1498 cases, a few patients with a chalazion duration of less than 2 months were seen and advised conservative treatment and never seen again. At the other end of the spectrum, 24.5% of patients had had the chalazion for 6 or more months, indicating that some patients are prepared to put up with inflammatory lid lumps for a considerable time in the hope of natural resolution.

Studies examining reasons for surgical failure are sparse. The reasons for high recurrence rates after chalazion incision could include inadequate curettage of the chalazion cavity, early closure of the incision, and an adjacent smaller chalazion not being identified.

Most ophthalmologists have historically been taught to undertake a single vertical incision into the tarsal plate. However a single chalazion may consist of several cavities (loculations). It might be reasonable to postulate that the more incisions are made, the greater the chance of effective curettage of the whole lesion (including incision of any adjacent smaller chalazia that may not have been identified on clinical examination) with subsequent complete resolution. Beyond the number of incisions undertaken, there was no other difference in surgical technique across these 1498 cases.

The overall failure rate of 9.34% in this consecutive case series of 1498 cases is significantly better than other series reported to date. The reduction of failure rate to 7.3% where 3 incisions are routinely made has not previously been reported.

The number of incisions made is limited by two key factors: (i) the size of the chalazion (ii) the size of the

chalazion clamp used. Some of the smallest chalazia may only accept one incision within its cystic space. The chalazion clamp most commonly used was the smaller one with an "opening" of 7.5mm. Within this 7.5mm opening, there is space for a maximum of 3 incisions. To place 4 incisions, a larger clamp with an opening of > 7.5mm is required. Such a larger sized clamp may be more uncomfortable to use and in some cases the lid may be too short to place the larger clamp.

The surgical rate for I + C chalazion is variable around the UK, partly due to designation as low priority (restricted) procedures in some areas. For the town of Rugby (population 100,000), where there are no restrictions, the surgical rate for chalazia is 87 cases per annum (pa). Extrapolating the Rugby chalazion surgical rate to the UK population (65 million, 2016) would produce a UK surgical chalazion rate of 56,550 pa. Assuming the failure rate of 10.7% (using 1 incision) demonstrated in this study, and then 6051 cases pa would require a second procedure. Assuming a 7.6% failure rate (using 3 incisions) demonstrated in this study, only 4298 cases would require a second procedure.

Knowing the failure rate for a procedure is an integral part of good medical practice and is useful in counselling and consenting patients pre-operatively. Within the UK, chalazion surgery is often left for the most junior surgeon to undertake and in many places is now undertaken by Nurse Practitioners. Difficulty seeing the same practitioner consecutively in large busy NHS hospitals probably means that very few oculoplastic surgical practitioners in the UK know what their failure rate is. Considering that I + C chalazion is the most commonly performed eyelid procedure in the UK, paucity of data about failure rate is regrettable.

Traditionally ophthalmologists have been taught to consider ocular sebaceous carcinoma (OSC) within the differential diagnosis after failure of resolution after I + C chalazion. OSC is a rare tumour that accounts for one in 2000 of cutaneous malignancies [7]. Three quarters of these cases are found around the eye, originating from sebaceous glands within the tarsus, eyelid skin and caruncular surface, presenting as a firm painless lump. The estimated annual incidence of OSC is 0.41 cases per million populations in the UK [8]. Based on a UK population of 65 million (2016), the UK estimated annual incidence for OSC is 27 cases pa. The nodular form of OSC can masquerade as a chalazion that fails to resolve after I + C and lead to a delay in diagnosis. Delay in diagnosis

is of concern due to risk of metastatic spread. Such a delay in diagnosis and treatment for OSC has a significant adverse effect on patient mortality, with a 5 year mortality of 36% with greater than 6 month's history, and 14% if the history is less than 6 months [9]. However there are some additional uncertainties in the correct histopathological interpretations of biopsy specimens. It has been identified that incorrect histopathological interpretations have been reported in 39-77% of cases, and this may be due to tumour rarity, low clinical suspicion and lack of familiarity of pathologists with characteristic histological features of OSC [10],[11],[12].

Ocular oncologists and tertiary hospital oculoplastic ophthalmologists might advocate that every initial I+C failure should be followed by a diagnostic biopsy in order to exclude OSC. However in the present UK National Health Service (NHS), a delay in diagnosis for OSC might be for many different reasons beyond that of deciding not to undertake a biopsy. These include chalazion surgery being excluded from NHS commissioning, long waiting times for assessment within the traditional Hospital Eye Service (HES), long waiting times back into the HES after failure of first I + C. When these key variables are put into the UK chalazion treatment pathway, the question as to whether every failed I + C chalazion needs a biopsy seems irrelevant, given the obstacles in chalazion care described above. Assuming the UK chalazion surgical rate (56,550 pa) and a 9.34% overall failure rate in this series, is it right to arrange 5282 biopsies per annum, after one initial failure of I + C, in order to identify 27 cases of OSC? In this series, there was complete resolution of 98.7% cases after 1-2 procedures and complete resolution of 99.66% of cases after 1-3 procedures. Based on this high resolution rate after 3 procedures and a chalazion surgical rate (56,550 pa), then a decision to defer biopsy until 3 failed incisions would result in only 192 biopsy requests per annum within the UK.

Strengths of this study are large sample size, long term consecutive complete data over 18 years and single practitioner method over the entire period. Limitations of this study are that it was retrospective in nature, was of un-randomised design, did not include histopathological confirmation in the majority of patients and did not look at failure rate in patients according to number of chalazia presenting in each patient. The author did not identify any complications as a result of undertaking 3 incisions rather than one incision.

The reported very low failure rate using 3 incisions is of

significance. If all surgeons changed their practice from one to three incisions, a vast number of patients across the world would not require repeat procedures, thereby saving health care costs, discomfort and inconvenience. Given the large numbers of patients who have an initial failure of I + C in any population and tiny numbers of patients presenting with OSC, the author suggests that the evidence from this comprehensive series might call into doubt the traditional view that immediate biopsy is required after a single failure of incision and curettage.

References

1. 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. *Clinical & Experimental Ophthalmology*. 2007; 35(8):706-712. <http://dx.doi.org/10.1111/j.1442-9071.2007.01617.x>
2. Jackson TL. A prospective study of cost, patient satisfaction, and outcome of treatment of chalazion by medical and nursing staff. *British Journal of Ophthalmology*. 2000; 84(7):782-785. <http://dx.doi.org/10.1136/bjo.84.7.782>
3. Ben Simon GJ, Rosen N, Rosner M, Spierer A. Intralesional Triamcinolone Acetonide Injection Versus Incision and Curettage for Primary Chalazia: A Prospective, Randomized Study. *American Journal of Ophthalmology*. 2011; 151(4):714-718.e1. <http://dx.doi.org/10.1016/j.ajo.2010.10.026>
4. Aycinena ARP, Achiron A, Paul M, Burgansky-Eliash Z. Incision and Curettage Versus Steroid Injection for the Treatment of Chalazia: A Meta-Analysis. *Ophthalmic Plastic and Reconstructive Surgery*. 2016; 32(3):220-224. <http://dx.doi.org/10.1097/IOP.0000000000000483>
5. Perry HD, Serniuk RA. Conservative Treatment of Chalazia. *Ophthalmology*. 1980;87(3):218-221. [http://dx.doi.org/10.1016/S0161-6420\(80\)35250-0](http://dx.doi.org/10.1016/S0161-6420(80)35250-0)
6. Cottrell DG, Bosanquet RC, Fawcett IM. Chalazions: the frequency of spontaneous resolution. *BMJ*. 1983; 287(6405):1595-1595. <http://dx.doi.org/10.1136/bmj.287.6405.1595>
7. McLean IW, Jakobiec F, Zimmerman LE. Tumours of the eye and ocular adnexa. Vol 3. Washington: Maryland Armed Forces Institute of Pathology. *Maryland Armed Forces Institute of Pathology*. 1993; 3:28-35. [http://dx.doi.org/10.1016/S0002-9394\(14\)77914-0](http://dx.doi.org/10.1016/S0002-9394(14)77914-0)
8. Muqit MMK, Foot B, Walters SJ, Mudhar HS, Roberts F, Rennie IG. Observational prospective cohort study

of patients with newly-diagnosed ocular sebaceous carcinoma. *Br J Ophthalmol*. 2013; 97(1):47-51. <http://dx.doi.org/10.1136/bjophthalmol-2012-302443>

9. Ni C, Kuo P. a clinicopathologic study of 156 cases with long-period follow up of 100 cases. *Jpn J Ophthalmol*. 1979;23:388-401. <http://dx.doi.org/10.1017/S0022215100087107>
10. Nelson BR, Hamlet KR, Gillard M, Railan D, Johnson TM. Sebaceous carcinoma. *Journal of the American Academy of Dermatology*. 1995; 33(1):1-15. [http://dx.doi.org/10.1016/0190-9622\(95\)90001-2](http://dx.doi.org/10.1016/0190-9622(95)90001-2)
11. Muqit MMK, Roberts F, Lee WR, Kemp E. Improved survival rates in sebaceous carcinoma of the eyelid. *Eye*. 2004; 18(1):49-53. <http://dx.doi.org/10.1038/sj.eye.6700523>
12. Shields JA, Demirci H, Marr BP, Eagle RC, Shields CL. Sebaceous Carcinoma of the Ocular Region: A Review. *Survey of Ophthalmology*. 2005; 50(2):103-122. <http://dx.doi.org/10.1016/j.survophthal.2004.12.008>

Copyright: © **Cook NJ**. This is an Open Access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.