Title: Combined Treatment Approach to Chronic Anal Fissure with Associated Anal Fistula

Running head: Chronic Anal Fissure with Anal Fistula

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Text word count: 1674

Abstract word count: 250

Tables: 1

Figures: 2

Key words: Anal Fistula, Fissure in Ano, Fissure-fistula

Disclosure Statement

This is the author manuscript accepted for publication and has undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record. Please cite this article as doi: [10.1111/ans.14292](https://doi.org/10.1111/ans.14292)

There are no disclaimers or conflicts of interest to declare.

There is no funding or relevant financial relationships to report

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Combined Treatment Approach to Chronic Anal Fissure with Associated Anal Fistula

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Abstract

Background- Anal fistula in association with chronic anal fissure (fissure-fistula) is infrequently described. Recognising this association and managing both components may help prevent some treatment failures seen with chronic anal fissure. This study aims to report on the outcomes of twenty consecutive patients with fissure-fistula managed with fistulotomy and injection of botulinum A toxin.

Methods- The study is a retrospective, observational study, assessing the success of symptom resolution following fistulotomy with botulinum A toxin, in patients identified as having a chronic anal fissure with associated anal fistula. The study included all patients with this condition treated with combination treatment by a single surgeon at a tertiary care hospital between January 2013 and January 2016.

Results- Twenty patients with fissure-fistula treated with fistulotomy and botulinum toxin A were identified. The median cohort age was 44 years (range 25-78), with a predominance of males (80%) and posterior fissure position (80%). The most common presenting symptoms were anal pain (70%), rectal bleeding (55%), anal discharge (35%) and anal pruritus (35%).

Mean follow-up was 10.5 weeks and all patients who attended follow up appointments reported resolution of symptoms. There were no cases of incontinence and none of the cohort required further surgical intervention for the condition.

Conclusion- Chronic anal fissure with associated anal fistula can be successfully managed with fistulotomy and injection of botulinum toxin A. Further studies would be helpful in determining if recognition and management of the fistula component in isolation with fistulotomy is as effective as fistulotomy plus botulinum A toxin.

Introduction

Anal fistula in association with chronic anal fissure (fissure-fistula) is not frequently described in the literature^{1,2}. The mechanism by which an anal fistula develops from a fissure is thought to be due to healing of the distal extent of the fissure with formation of a skin bridge allowing fecal matter to track deep to it (**Figure 1**)^{3,4}. The exact aetiology for chronic anal fissure is unknown however the most commonly accepted theory is ischaemia^{5,6}. There are small numbers of recent observational studies that challenge the idea that chronic anal fissure is due to ischaemic ulceration^{3-5,7}. One such proposed theory is that a fissure may persist due to

underlying submucous or intersphincteric sepsis. In this situation the hypertonicity of the internal sphincter may be the result of infection or inflammation within the sphincter, rather than the cause of the fissure^{4, 5}. Identification and management of a fistula in association with a chronic fissure may more effectively resolve patient symptoms than a treatment modality that focuses purely on the fissure. We present a series of patients found to have a fissure-fistula managed with fistulotomy and botulinum toxin A injection.

Methods

A retrospective, observational study was performed of patients identified as having a primary chronic anal fissure with associated fistula-in-ano at the time of examination under anaesthesia. All patients with the condition treated by a single surgeon, at a single hospital with fistulotomy and botulinum toxin A, between January 2013 and January 2016, were included. Cases were identified from a prospectively documented personal surgical logbook with subsequent examination of computerised case notes (Genie v8.9.3). Ethical approval for the study was obtained through the hospital Human Research Ethics Committee.

Results

Twenty consecutive patients were identified with a fissure-fistula during the specified research period. The median age of the cohort was 44 years (range 25-78), with 80% of patients being male. None of the patients had known inflammatory bowel disease, two patients had

coeliac disease and two patients were taking disease modifying medication for rheumatoid arthritis. The most common presenting symptoms were anal pain (70%), rectal bleeding (55%), anal discharge (35%) and anal pruritus (35%). Nine patients (45%) had a previously documented anal fissure as part of their surgical history. At operation the majority of patients had a posterior fissure-fistula (80%). Thirteen patients had excision of either a fibro-epithelial anal canal polyp or external skin tag associated with the fissure and confirmed as such on histopathology with no diagnostic features of inflammatory bowel disease. All twenty patients underwent a fistulotomy with concurrent botulinum toxin A injection into the intersphincteric space bilaterally at a total dose of 50 units. Eighteen patients were noted to have involvement of the internal anal sphincter with the remaining two patients having subcutaneous fistula tracts only. Patients were followed up for an mean of 10.5 weeks, with all patients who had follow up (80%) well at the end of the review period. None of the patients required further surgical intervention for the fissure-fistula and there were no cases of incontinence reported. The patient demographics, presenting symptoms and operative management are summarised in **Table 1**.

Discussion

Approximately 3.3% of anal fistula cases are thought to originate from anal fissure⁸. Anal fistula in association with anal fissure has been described as early as 1973, when Parks recommended palpating the fissure bimanually for induration and examining the base of the fissure for the presence of an internal opening⁹. The frequency with which fissure-fistula occurs

is thought to be under reported or un-recognised as there are some studies that report more than 80% of chronic fissure cases associated with a fistula^{7, 10}. In our own series fissure-fistula accounted for 51% of all fissure operations performed during this time period. At operation the internal opening of the fistula was noted to be more caudal than a standard cryptoglandular fistula-in-ano and the fistula tract usually coursed deep to a skin tag. The external opening was often very narrow, requiring a lacrimal probe for identification rather than a Lockhart-Mummery probe. The internal anal sphincter was involved to a minor degree in almost all of the patients. An intraoperative view of a fissure-fistula is shown in **Figure 2**.

This study is limited by its retrospective nature and therefore has no predetermined follow up period. Ideally follow up should be long enough to allow the botulinum toxin A to lose effect and include a clinical examination to ensure resolution of the fistula. However this study serves as a basis for future prospective series with appropriate follow up.

Chronic anal fissure occurs most commonly in the posterior midline and it has been shown that there is a relative reduction in blood flow in that position¹¹. A chronic anal fissure is one that persists beyond 6-8 weeks and usually shows features of chronicity including a hypertrophied anal papilla at cranial end of the fissure, a sentinel tag at its caudal aspect and exposed internal anal sphincter muscle within the base of the fissure¹². A small number of studies have now challenged the belief that chronic anal fissure is the result of ischaemia, with

perianal sepsis proposed as an alternative theory^{3-5, 7}. Instead deep fissures may erode into the sphincter fibres with the hypertonicity of the internal sphincter postulated to be a bystander effect, due to infection and inflammation rather than the cause of the fissure⁴. The spectrum of sepsis associated with anal fissure includes abscesses within the intersphincteric space, subcutaneous tracts extending from the caudal end of the fissure which may progress to a submucous anal fistula and finally inter-sphincteric and even low trans-sphincteric fistulae^{3, 5}.

Pelta et al. reported on 109 patients with chronic anal fissure with associated subcutaneous tract at the caudal aspect of the fissure⁴. Patients underwent subcutaneous fissurotomy or laying open of the tract. Symptomatic resolution was achieved in 98.2% of patients and only 2 patients required repeat surgery for persistent symptoms. Naldini et al. assessed 172 patients with chronic anal fissure using endo-anal ultrasound. The presence of a chronic abscess was demonstrated in 112 (65.1%) patients. Fifty-two percent of patients were found to have an intersphincteric fistula and 17% a low transphincteric fistula⁵. A third study by Wittmer et al. presented a series of 216 patients that underwent surgical treatment for their chronic anal fissure. There was clinical evidence of an underlying fistula in 96.3% of patients. The conclusion was that chronicity of the anal fissure was perpetuated in most cases due to a fistula with a local inflammatory reaction, therefore proposing en-bloc fissurectomy and fistulectomy as appropriate treatment¹⁰. Finally a case report by Deen-Molenar presented a

patient who developed posterior anal abscess, which originated from an internal fistula opening in a fissure¹³.

The treatment of a chronic anal fissure is challenging with options including topical treatments such as glyceryl trinitate and nifedipine, intra-muscular injection with botulinum toxin A (either within the intersphincteric groove or directly into the internal anal sphincter) and finally surgical options such as fissurotomy, fissurectomy, lateral sphincterotomy and cutaneous advancement flap. In 2017 Stewart et al published “Clinical Practice Guidelines for the Management of Anal Fissures”¹². Lateral internal sphincterotomy was recommended as the treatment of choice for chronic anal fissure based on level 1A evidence. A Cochrane review in 2011 found similar results, concluding that open and closed partial lateral internal sphincterotomy were equally efficacious¹⁴. It is important to note however that some European centers have abandoned this procedure in the belief that it is overtreatment⁷. Furthermore topical treatments aimed at reducing the hypertonicity of the sphincter complex and even sphincterotomy do not manage the fistula component, nor do they address the hypertrophied anal papilla or sentinel skin tag, which often result in a symptomatic lump or feeling of incomplete defecation, as reported in 45% of our cohort^{7, 15}.

All of the patients in this study received botulinum toxin A injection in addition to fistulotomy. Botulinum toxin A alone does not treat the fistula component of the fissure and

similarly, although the fistulotomy addresses the anal fistula, it does not completely address anal sphincter hypertonicity. The decision to use botulinum toxin A is based on the observation that that fistulotomy for a fissure-fistula divides internal anal sphincter (if involved in the fistula) more distally than a standard lateral sphincterotomy. There are no specific studies comparing fistulotomy with and without botulinum toxin A in the setting of a chronic anal fissure. Recently a prospective cohort study by Barnes et al. assessed the safety, efficacy and long-term outcome of the combination of fissurectomy and botulinum toxin A injection for chronic anal fissure¹⁶. After a single treatment there was resolution of symptoms in approximately 60% of patients with 100% of patients symptom free after 2 treatments. During our search for patients with fissure-fistula four additional patients were identified who were managed with fistulotomy only as they were not consented for botulinum toxin A injection prior to examination under anaesthesia. All four had resolution of symptoms despite absence of botulinum toxin A. This suggests that treatment of the fistula component alone in the presence of a fissure-fistula may be may be all that is required. Future studies comparing fistulotomy alone with fistulotomy and botulinum A toxin in patients who present with a fissure-fistula would be required to make an evidence based conclusion.

Conclusion

The association between chronic anal fissure and anal fistula is under reported, possibly due to under-recognition. Symptoms of anal discharge in addition to fissure symptoms may

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suggest the presence of an associated fistula. In these patients recognition and management of the fistula component of the fissure-fistula will likely be more effective than pharmacological and surgical treatments that address only the hypertonic internal anal sphincter. Chronic anal fissure with associated anal fistula can be successfully managed with fistulotomy and injection of botulinum toxin A. In a subset of patients it may be the presence of a fistula that may be driving the chronicity of the fissure. Further studies would be helpful in determining if recognition and management of the fistula component in isolation with fistulotomy is as effective as fistulotomy plus botulinum A toxin.

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Figure 1. Anatomy of Fissure-Fistula Tract

Figure 2. Intra-operative view of fissure-fistula with internal opening (upper arrow), sentinel skin tag (middle arrow) and external opening (lower arrow)

Table 1. Characteristics of Patients with Fissure/Fistula

PR- Per Rectum

Demographics			Operative management		
Age	Sex	Symptoms	Surgical Procedure	Site of fistula	Follow-up (weeks)
33	M	PR bleeding Anal pain	Fistulotomy Botulinum toxin A	Anterior	24.5
44	M	PR bleeding Anal pain Pruritus ani	Fistulotomy Botulinum toxin A Excision of skin tag	Posterior	2
41	M	Anal pain	Fistulotomy Botulinum toxin A	Anterior	2.5
38	F	PR bleeding Anal lump	Fistulotomy Botulinum toxin A Excision of skin tag	Posterior	11.5
78	M	Anal pain	Fistulotomy Botulinum toxin A Excision of skin tag	Posterolateral (8 o'clock)	6.5
48	M	Anal pain Pruritus ani	Fistulotomy Botulinum toxin A	Posterior	N/A
52	M	PR bleeding Anal pain	Fistulotomy Botulinum toxin A	Posterior	37.5

			Excision of skin tag		
41	M	Anal discharge	Fistulotomy Botulinum toxin A Excision of skin tag	Posterior	5
25	M	PR bleeding Anal pain Anal discharge Anal lump	Fistulotomy Botulinum toxin A Excision of skin tag	Posterior	6.5
47	F	Anal pain Pruritus ani	Banding of haemorrhoids Fistulotomy Botulinum toxin A Excision of anal polyp	Posterior	2.5
50	F	PR bleeding Pruritus ani Anal lump	Fistulotomy Botulinum toxin A Excision of skin tag	Posterior	17
44	M	Anal pain	Fistulotomy Botulinum toxin A	Posterior	8.5
51	M	PR bleeding Anal pain Pruritus ani Anal discharge Anal lump	Fistulotomy Botulinum toxin A Excision of skin tag	Posterior	N/A
44	M	PR bleeding Anal discharge Pruritus ani	Fistulotomy Botulinum toxin A	Anterior	18.5
29	M	PR bleeding Anal pain Pruritus ani	Fistulotomy Botulinum toxin A	Posterior	N/A
37	M	PR bleeding Prolapsing skin tag	Fistulotomy Botulinum toxin A Excision of anal polyp	Posterior	N/A

56	F	PR bleeding Anal discharge Anal lump Feeling of incomplete defecation	Fistulotomy Botulinum toxin A Excision of skin tag	Posterior	30
74	M	Anal pain Anal discharge Anal lump	Fistulotomy Botulinum toxin A	Posterior	9
44	M	Anal pain Anal lump	Fistulotomy Botulinum toxin A Excision of skin tag	Posterior	7
67	M	Anal pain, Anal lump Anal discharge	Fistulotomy Botulinum toxin A Excision of skin tag	Posterior	20.5

ANZ Fissure-Fistula Figure 1.png

ANZJ Fissure-Fistula Figure 2.png

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Title:

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Date:

2018-07-01

Citation:

FitzDowse, A. J., Behrenbruch, C. C. & Hayes, I. P. (2018). Combined treatment approach to chronic anal fissure with associated anal fistula. ANZ JOURNAL OF SURGERY, 88 (7-8), pp.775-778. <https://doi.org/10.1111/ans.14292>.

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