

Original Research Article

Efficacy of cyanoacrylate glue in anal fistulas

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ABSTRACT

Background: Fistula in ano is a common problem. Surgical techniques such as fistulectomy, fistulotomy were associated with complications like excessive bleeding, infection, recurrence etc. The employment of cyano acrylate glue is one of the newer promising techniques. The aim of this study was to evaluate the efficacy of cyanoacrylate glue in the treatment of anal fistulas.

Methods: Study was conducted on patients with fistula-in-ano admitted to various surgical units in hospitals attached to Bangalore Medical College and Research Institute from November 2016 to May 2018. A total of 30 patients fulfilling the criteria were included in the study. Under spinal anesthesia, patients were posted for the procedure. Post operatively the patients were examined every 2 weeks for the first 2 months, and then once every 3 months. If the fistula failed to heal with primary treatment at a 4-week interval, a second glue treatment was performed. Post-treatment the success of the procedure was assessed by the incidence of infection and recurrence.

Results: Twenty two patients got healed with primary application with stoppage of any discharge from the fistulous track. Two patients required one more application, and one patient required fistulotomy. One patient developed complex fistulas and had to be treated with colostomy and fistulectomy. 4 patients developed purulent discharge after application of glue and were treated with IV antibiotics and healed completely.

Conclusions: Cyanoacrylate glue can be offered as a sphincter sparing alternative to fistulectomy in patients with anal fistulas.

Keywords: Anal fistula, Cyanoacrylate glue

INTRODUCTION

Anal fistula remains a cause of concern not only because of risk of recurrence, but also because of the danger that the treatment will render the patient permanently incontinent.¹ A study by Lunnis et al have shown that even a minimal division of anal sphincter muscle during a fistulotomy can be associated with changes in fecal continence.² Given these results investigators have thus sought simpler sphincter muscle sparing techniques to treat fistula in ano.³ Recent procedures like cutting seton, mucosal advancement flaps, combined seton and double flap have been described, however they have been

associated with pain, discomfort, long postoperative stay periods and increased morbidity.

Conventional fistula surgery techniques have their place, but new technologies such as fibrin glues and the anal fistula plugs offer an alternative approach, with initial studies reporting good success rates.⁴

Success rate of fibrin glue has dwindled from 80% to 50% in recent studies. However, fibrin glue requires expert to prepare it and is thus not popular.

Cyanoacrylate glue, which is used as a skin adhesive, can obviate problems with fibrin glue because it is economical and is available in readymade tubes with long shelf life.⁵

Objectives

The aim and objective of this study was to evaluate the efficacy of cyanoacrylate glue in the treatment of anal fistulas.

METHODS

30 patients in age range of 22-62 years which included 23 males and 7 female patients with fistula in ano were enrolled for our prospective study conducted in Victoria Hospital and Bowring and Lady Curzon hospital attached to Bangalore Medical College And Research Institute from period of November 2016- May 2018.

Permission for the study was obtained from the ethical committee. The patients were explained in detail about the procedure, its advantages and disadvantages and their written informed consent was taken. Patients with Crohns disease, rectovaginal fistula were excluded on the basis of medical history, clinical and anatomical assessment.

A detailed clinical history of the patients was taken, and a digital rectal examination was done to assess the fistula in ano. Then all the patients were subjected to sonofistulogram to confirm the presence of anal fistula, its internal and external openings and the complexity of the fistulous tract.

Preoperatively, patients were given oral ciprofloxacin and oral metronidazole for 5 days. On the day before the procedure, patient was given enema.

In the operative room, the patient was placed in lithotomy position, and the peri-anal skin was first cleaned and draped. Under spinal anesthesia, proctoscopy was done following DRE. The internal and external openings were carefully identified, and the track was thoroughly washed with normal saline. Internal opening was closed with Polyglactin. Cyanoacrylate glue was injected through 8-F infant feeding tube till the glue appears at the internal opening indicated by bubbling at the internal opening. Then the infant feeding tube was gradually withdrawn whilst injecting the glue so that all the tract was filled with cyanoacrylate glue. Bidigital pressure was applied both at the internal and external opening for 3 minutes. Polymerization of the glue occurred in within 30 s during which patients felt a little discomfort in the form of heat.

After 1 day of the procedure patients were discharged with advice of oral antibiotics and analgesics. The patients were also adviced to avoid strenuous physical activities for 7 days and multiple daily sitz bath was recommended.

Post operatively the patients were re-examined every 2 weeks for the first 2 months, and then once every 3 months. If the fistula failed to heal with primary treatment at a 4-week interval, a second glue treatment was performed. Post-treatment the success of the procedure was assessed by the incidence of infection and recurrence.

Source of data

Patients of both sexes with a diagnosis of anal fistula admitted in department of General Surgery, BMCRI and hospitals attached to BMCRI.

Study design: Prospective interventional study.

Study place: Hospitals attached to BMCRI (Victoria Hospital).

Study period: November 2016- May 2018.

Sample size: It is a hospital based study of 30 patients.

RESULTS

30 patients were enrolled for our study of which 23 were males and 7 were females with the male: female ratio being 3.2:1. The mean age at diagnosis was 38 years. There were no complaints of preoperative incontinence in any of the patients.

22 (73.3%) patients healed with first sitting of cyanoacrylate glue application and remained symptom free at the end of 18 months.

4 patients had recurrence of fistula in ano.

2 patients required a second sitting of cyanoacrylate glue application, one at 4 week of follow-up and another at 8 week of follow-up. Both of them remained symptom free after the end of 18 months. Cumulative healing percentage after second application of cyanoacrylate glue was 80%.

However 1 patient showed recurrence of fistula in ano even after 2 sittings of glue application and was thus treated with fistulotomy.

1 patient developed complex fistulas after 2 sittings of glue instillation and hence colostomy and fistulectomy was done.

4 patients developed purulent discharge at the external opening approximately after 4-8 week of glue application and had to be treated with IV Ceftriaxone and IV metronidazole. They completely healed thereafter and remained symptom free at the end of 18 months.

None of the patients presented with any features of intolerance to the glue after glue application. The results are summarised in Table 1.

In Table 1, the percentage of patients completely healed with first application of cyanoacrylate glue was 73.3%. The cumulative healing percentage after second glue application was 80%. Thereby proving that cyanoacrylate glue is a good alternative to fistulectomy.

Table 1: Summary of the results.

Total number of patients	30
Number of males	23
Number of females	7
Mean age at diagnosis	38 years
Patients with simple anal fistulas	25
Patients with complex anal fistulas	5
Patients who developed recurrence after first application of glue	4
Patients required a second application of glue	2
Patients who developed infection after first sitting	4
Percentage of patients healed with first glue application	73.3%
Patients who completely healed after second glue application	24
Cumulative healing percentage after second application of cyanoacrylate glue	80%

DISCUSSION

Fistula in ano is one of the commonly encountered surgical problems.⁶ Appropriate treatment of fistula in ano is based on 3 tenets: 1) control of sepsis, 2) closure of fistula, 3) maintainance of continence.⁷

The classic techniques described throughout history and which carries worldwide popularity is fistulotomy.

However a study by Van Tets et al concluded that impaired continence is not uncommon after anal fistulotomy.⁸ Fistulotomy done for simple low fistulas reported incontinence to flatus in upto 50% of the cases.² After fistulotomy, permanent gas incontinence is a source of great anxiety and embarrassment in social situations.⁹ Moreover fistulotomy wounds take prolonged time to heal, causing the patient discomfort and distress as well as contour defects around the anus.³

Over the last two decades, many sphincter preserving procedures have been described with the common goal of minimising injury to the anal sphincters. The anal fistula plug is safe but modestly effective long term with success rate of 24-88%. The failure maybe due to its extrusion from the fistula tract. FiLaC and video assisted anal fistula treatment procedures are expensive and are yet to be assessed.¹⁰

Over the past 20 years, fibrin glue treatment for anal fistulae has become increasingly popular.¹¹ A study done by Lindsey et al concluded that no advantage was found for fibrin glue over fistulotomy for simple fistulas, but fibrin glue healed more complex fistulas than conventional treatment and with higher satisfaction.¹²

A study done by Cirocchi et al concluded that fibrin glue did not show any advantage over fistulotomy in terms of recurrence and anal incontinence.¹³

Cyanoacrylate glue is a straw coloured and clear liquid, contained in ready to use vials, usually stored at 4°C. On contact with biological tissues in a moist environment, it polymerises to create a thin elastic film of high tensile strength, thereby adhering the tissues. It begins solidification within 2 seconds and completes the process in 60-90seconds.¹⁴

In our study, the healing rate after primary application of cyanoacrylate was 73.3% and cumulative healing rate after 2 sessions of cyanoacrylate glue application was 80%.

Our results were comparable to a study by Barilleri et al where they had a healing rate of 71.4% with one sitting of cyanoacrylate glue application.¹⁴ The overall healing rate of fistula in ano with more than one application of cyanoacrylate glue was 90%.

Our results were also comparable to a study by Jain et al where 20 patients with fistula in ano were administered cyanoacrylate glue.⁵ They concluded that a healing rate of 85% occurred with primary instillation of cyanoacrylate glue and a cumulative healing rate of 95% with more than one application occurred.

CONCLUSION

Cyanoacrylate glue is cost effective, safe and hence can be offered as an alternative to fistulectomy in patients with low anal fistula and simple fistula. However to prove its efficacy further, larger samples need to be evaluated.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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