

# Treatment of chronic fistula-in-ano using commercial fibrin glue

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## ABSTRACT

**Objective:** To ascertain the effectiveness of commercially available fibrin glue in closing fistulae in ano.

**Methods:** A prospective nonrandomized trial was performed on 19 patients admitted to King Khalid University Hospital (KKUH), Riyadh, Kingdom of Saudi Arabia during the period December 2000 to November 2001. Two of the patients had multiple fistulae making a total of 21 fistulae. Patients were prepared preoperatively and managed postoperatively according to a preplanned protocol. The fistulae were injected with fibrin glue after curettage. Follow-up visits were scheduled for one week, one month, 3 months, and one year later.

**Results:** Nineteen patients received fibrin glue injections for their 21 fistulae in ano. Three patients were lost to follow up.

Fourteen out of 18 (78%) fistulae had successful closure. Two of 4 unsuccessful patients reported symptomatic improvement in terms of decreased secretions, itching and pain. There has been no evidence of incontinence or complications related to the use of fibrin glue in this procedure.

**Conclusions:** A healing rate of 78% of chronic fistula-in-ano by treatment with commercial fibrin glue is promising. However, it needs substantiation by increasing the number of patients and prolonging the follow up duration. This procedure is easy for the surgeon to learn and perform. The procedure avoids complications associated with fistulotomy both for the patient and the surgeon.

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Fistula in ano is a common surgical problem. Approximately 25% of patients with anorectal sepsis end up with a fistula.<sup>1</sup> It may also be associated with specific diseases such as Crohn's disease or tuberculosis. Complications from surgical treatment for fistula-in-ano can be devastating.<sup>2</sup> Therefore, many techniques for its repair have been reported.<sup>3</sup> Over the last 2 decades, fibrin glue has been used extensively by surgeons for treatment of various conditions.<sup>4</sup> First reported in 1944 by Cronkite et al, fibrin glue is biological glue made up of fibrinogen and its multiple components.<sup>5</sup> It acts by supporting angiogenesis, fibroblast proliferation and collagen production.<sup>6</sup> The objective of our study is to ascertain the effectiveness of commercially available fibrin glue in closing fistula in ano.

**Methods.** We carried out a prospective non-randomized trial, which was conducted for one year. Nineteen patients with 21 low fistula-in-ano underwent fibrin glue treatment. All patients were managed as inpatients. Preoperatively they were prepared by being on liquid diet for 2 days. They received cleansing enema twice before procedure. Cefuroxime (1.5 gms) and metronidazole (500 mg) were given intravenously on induction. The procedure was carried out under general or spinal anesthesia. After examination under anesthesia in lithotomy position, the fistula was probed gently to identify both openings. The tract was curetted. Fibrin glue (Tisseel® Kit, Immuno AG, Vienna, Austria) was injected and gauze was placed on external opening. Postoperatively the patients were

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kept on liquid diet for 2 days. They received oral Cefuroxime (250mg twice daily) and metronidazole (500mg three times a day) for one week.

**Results.** Out of 19 patients, there were 14 males (74%). The age range was 21-60 years (mean 36 years). The majority of patients had symptoms for 24 months. Thirteen (68%) patients had previous surgery for fistula in ano; namely, they had recurrent fistula in ano. The length of fistulae ranged from 2-7 cm (mean 3 cm). Three fistulae had pus in tract at the time of instillation of fibrin glue. The range of follow up was 2-12 months (mean 8 months). A patient was considered cured if subjectively he or she felt so and if on examination there was no sign of fistula. No immediate complication was noticed in any patient. Three patients were lost to follow up. Fourteen out of 18 patients (78%) had complete healing of their fistulae. Length of fistula or presence of pus at the time of procedure did not effect the healing. Two patients out of 4 who did not heal reported symptomatic improvement.

**Discussion.** Complications following surgical repair for fistula in ano can be devastating for patients. Flatus incontinence may be a minor complication for the surgeon but could be very embarrassing for the patient.<sup>7</sup> Therefore, it is prudent to look for other ways for treating anorectal fistulas.

Fibrin glue, after its initial introduction by plastic surgeons to stick skin grafts, did not gain popularity. The reason was inability to store its different components.<sup>8</sup> Improvement in methods of its preservation of its components has revived interest in this substance. Over the years, many papers have been published of its use by different specialties of surgery. Commercial fibrin glue is a mixture of 2 components.<sup>4</sup> Component one is a fibrinogen solution, which is made by mixing fibrinogen, and aprotinin, which is a protein to stabilize fibrinogen. Component 2 is a thrombin solution, which is made by mixing thrombin and calcium chloride. Each component is aspirated into specialized syringes. The final glue is delivered through dual syringe system that results in mixing of 2 components at the point of delivery.

Use of Fibrin glue in the treatment of anorectal fistulae was first reported in the early 1980's<sup>9,10</sup> with reasonable results. Although our study has a limited number of patients and relatively short follow up, its results compare favorably with other reported results (Table I). Reports have also been published recently where this procedure was carried without preparation, as an out patient under local anesthesia.<sup>11</sup> More experience with this modality of treatment should enable us to achieve good results with no preparation and as an out patient modality.

It is still debated whether it can cure all types of fistulae (low and high), or those associated with

**Table 1** - Comparison of healing of anorectal fistula with fibrin glue.

Author	Type of glue	N of patients	Success rate (%)
Venkatesh KS et al <sup>6</sup>	Autologous	30	(60)
Abel ME et al <sup>8</sup>	Autologous	10	(60)
Chan KH et al <sup>11</sup>	Commercial	10	(60)
Park JJ et al <sup>12</sup>	Commercial	29	(68)
Cintron JR et al <sup>13</sup>	Autologous	26	(81)
Tinay OE et al	Commercial	18	(78)

underlying disease.<sup>8</sup> The length of fistula or presence of pus in tract also theoretically seems to affect the outcome.<sup>12</sup> These variables did not affect outcome in our study.

In conclusion, this unique method of treatment is easy for the surgeon to learn and perform. The patient avoids the risk of complications associated with fistulotomy both for the patient and the surgeon.

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