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Role of Fibrin Glue in Management of Perianal Fistula in Assiut University Hospital

TAREK A. MOSTAFA, M.D.; MOSTAFA A. ABD AZIZ, M.D.; AHMED M. ALI, M.D. and MOHAMED B. NOAMAN, M.Sc.

The Department of General Surgery, Faculty of Medicine, Assiut University, Assiut, Egypt

Abstract

Background: A fistula-in-ano is an abnormal hollow tract or cavity that is lined with granulation tissue and that connects a primary opening inside the anal canal to a secondary opening in the perianal skin; secondary tracts may be multiple and can extend from the same primary opening.

Patients and Methods: In our study we had 40 patients who were complainingof fistula in ano (high and low perianal fistula). They were evaluated in the post-operative period for the complications as recurence, sphincteric disturbance, post-operative abscess and post-operative pain from June 2016 till May 2017 in the General Surgery Department in Assiut University Hospital.

Results: After injection of 40 cases of perianal fistula it was found that 5 cases out of 16 cases of high perianal fistula (31.2%) developed recurrence of their fistulas tract, while 11cases did not develop recurrence (69.8%) after 6 moths follow-up. On the other hand 5 cases of low perianal fistula out of 24 cases (20.8%) developed recurrence of their fistulas with 19 cases (79.2%) that did not develop recurrence their fistulous tract after 6 months follow-up. Other complication noticed in this study was post-operative abscess and reported in 3 cases only (7.5%). There was no post-operative incontinence or post-operative pain or bleeding reported in this study.

Conclusion: Injection of fibrin glue in aperianal fistula is simple, easy and safe technique with lower rate of complication as loss of sphincteric function, post-operative pain, intra operative bleeding and post-operative wound infection. This technique can be repeated even at the out patient clinic.

Key Words: *Fibrin glue – Perianal fistula.*

Introduction

A FISTULA-IN-ANO is an abnormal hollow tract or cavity that is lined with granulation tissue that connects a primary opening inside the anal canal to a secondary opening in the perianal skin. Secondary tracts may be multiple and can extend from the same primary opening.

Correspondence to: Dr. Mohamed B. Noaman,
E-Mail: mohamed badre7490@Gmail.com

Most fistulas are thought to arise as a result of cryptoglandular infection with aresultant perirectal abscess the abscess represents the acute inflammatory event, whereas the fistula is representative of the chronic process. Symptoms generally affect quality of life significantly, and they range from minor discomfort and drainage with resultant hygienic problems of sepsis.

Historical references indicate that Louis XIV of France was treated for an anal fistula in the 18 th century. Salmon established a hospital in London (St. Mark's) devoted to the treatment of fistula-in-ano and other rectal conditions [1].

In the late 19th and early 20th centuries, prominent surgeons, such as Goodsall and Miles, Milligan and Morgan, Thompson, and Lockhart-Mummery, made substantial contributions to the treatment of anal fistula. These surgeons offered theories on pathogenesis and classification systems for fistula-in-ano [2]. Treatment of fistula-in-ano remains challenging [3]. No definitive medical therapy is available for this condition, though long-term antibiotic prophylaxis and infliximab may have a role in recurrent fistulas in patients with Crohn disease. Surgery is the treatment of choice, with the goals of draining infection, eradicating the fistulous tract, and avoiding persistent or recurrent disease while preserving the sphincteric functions [4].

Patients and Methods

Across sectional study included 40 patients with perianal fistula (high and low) after getting their consent to be treated at Assiut University Hospital.

Duration of the study: 12 months from June 2016 to May 2017.

Out come of the study:

1- Primary out come: Is to asses role of fibrin glue in decreasing recurrence rate of perianal fistula.

2- *Secondary out come:* Is to asses role of fibrin glue in decreasing post-operative pain and disturbed sphincteric function.

Exclusion criteria:

HIV positive patient, patients with rectovaginal fistula, fistulas with chronic cavities and acute sepsis and patients were not willing undergo this type of treatment.

Inclusion criteria:

All patients with perianal fistula (high and low) were in the age group between 20 to 60 years old.

History is taken from the patients as regards age, complaint and if the perianal fistula is recurrent or denovo.

Then all patients are inspected per rectally looking for the external opening and examined per rectally looking for the internal opening which was palpated as pitting or induration then the tract can be assessed whether it extend above or below ano rectal ring. Per rectal examination with anoscopy or digital examination can detect all low perianal fistulas (where the internal opening lied below the ano rectal ring).

Diagnosis of high perianal fistula (internal opening above ano rectal ring) required fistulogram [5] in which the dye enhanced the internal opening and appeared in the rectum. It is also helpful in detection of any cavities and number of tracts.

MRI could be done in only few patients because of high cost and poor affordability. MRI helpful in detection high perianal fistula and number of tracts [6].

Pre-operative antibiotic:

This has been used both to eradicate perineal sepsis, which is associated with recurrence in the conventional treatment of fistulae [7] and because certain bacterial species seem capable of lysing fibrin seal in vitro [8]. Antibiotics have been administered either pre-operatively, intra-operatively and/or post-operatively, and either parenteraly, enterally, locally to the fistula tract.

Under spinal anesthesia with the patient in the lithotomy position external and internal opening of the perianal tract were identified.

The fistulous tract is curetted and irrigated with normal saline. All investigators performed mechanical cleansing of the tract. Some also performed chemical cleansing with hydrogen peroxide, this may be important as antibiotics fail to prevent abscess formation secondary to bacteria trapped in fibrin clots [9].

Befor instillation of the fibrin glue the internal opening of perianal tract must be closed.

Closure of the internal opening seems a sensible part of treatment. It not only prevents fibrin glue from migrating out of the fistula tract into the anal canal or rectum, but also allows the glue to be inserted under some pressure to fill any secondary tracts. Methods of occlusion of the internal opening include digital compression whilst instilling the glue [6], covering the opening with vaseline gauze and simple stitch closure.

Instillation of fibrin glue:

Necessarily, there is uniformity in description of glue instillation. After identification of both the internal and external openings, and tract cleansing the glue is instilled.

The individual components are mixed and warmed, then drawn up into two syringes (syringe 1: Fibrinogen, factor XIII, aprotinin, and fibronectin; syringe 2: Thrombin and calcium chloride solution), which are subsequently placed in a two-syringe clip, which shares a common plunger.

A plastic double-lumen-Y-connector joins the two syringes. The trunk of the Y-shaped connector is then connected to a single lumen catheter, which is inserted into the tract, and if the internal opening has been left open, until the tip can be seen at the internal opening.

On injection, the components mix at the tip of the catheter to form fibrin glue. Slow withdrawal of the catheter at instillation is performed and visualization of the glue should occur, if the internal opening is patent at this opening, and in all cases at the external opening.

Once the glue is set the procedure is complete; it takes 3-5 minets for the fibrin glue to adhere firmly to the surrounding tissue and 10min to reach 70% of its maximum strength (full strength occurs after 2 hours).

Post-operative dietary restrictions and antibiotic:

Pre-operative mechanical bowel preparation and post-operative diets restricted to liquid intake for 24-48h [6] have been used to avoid early bowel

movement, minimize anal canal disturbance, and thus avoid early fibrin plug extrusion. The patients must be on oral antibiotic for five days.

Follow-up:

The patients were followed-up in the post-operative period at the first week, at the first month, at three months and at six moths done in the out patient clinic.

The data were analyzed using SPSS statstical soft ware. Quantitative values with normal distribution expressed as mean ± SD deviation. Qualitative values expressed as percentage of total number of cases. The student *t*-test and Chi-square testwere used in the analysisof the statistical differences, p-values ≤0.05 was accepted as significant.

Results

Age group:

It was found also that 12 cases (30%) were in the age group between. 20-40 years and 28 cases (70%) were in the age group between 40-60 years.

Post-operative complication:

After injection of 40 cases of perianal fistula it was found that 5 cases out of 16 cases of high perianal fistula (31.2%) developed recurrence of their fistulas tract while 11 cases did not develop recurrence (69.8%) after 6 moths follow-up.

On the other side 5 cases of low perianal fistula out of 24 cases (20.8%) develop recurrence of their fistulas with 19 cases (79.2%)were not develop their fistulas tract after 6 months follow-up.

Another complication noticed in this study was post-operative abscess reported in 3 cases only (7.5%). There was no post-operative incontinence or post-operative pain or bleeding reported in this study.

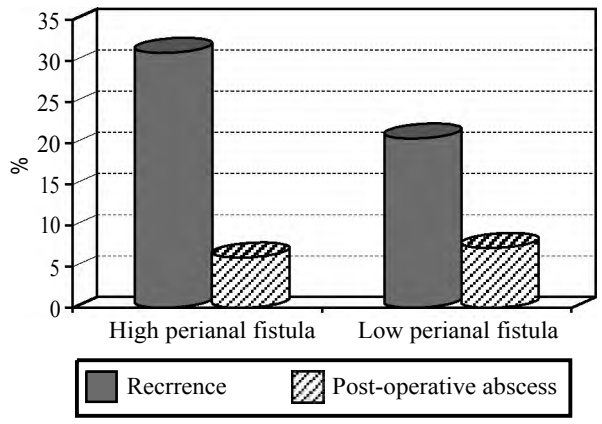

Fig. (1): Complication cases relationship.

Table (1): Age group-cases number relationship.

Parameter	Number of cases	Percentage (%)
20-40 years	12 cases	30
40-60 years	28 cases	70

Table (2): Post-operative complication-cases number relationship.

Parameter	Number of cases	Percentage (%)
Recurrence:		
High perianal fistula	5 cases	31.2
Low perianal fistula	5 cases	20.8
Post-operative abscess:		
High perianal fistula	1 case	6.2
Low peianal fistula	2 cases	8.3
Incontinence:	No cases	0
Post-operative pain	No cases	0
Post-operative bleeding	No cases	0

Discussion

Management of anal fistulas is notoriously one of the most difficult problems to deal with in coloproctological surgery [12]. Traditional treatments, including the use of cutting setons and advancement flap repairs, have been shown to be effective in promoting fistula healing. However, these methods have also been related to significant rates of sphincter impairment and anal incontinence.

Over the last 2 decades, fibrin glue injection has been investigated as a potential first-line therapy for anal fistula. This treatment modality is appealing because it carries no risk of incontinence associated with division of sphincter muscles. It is safe and easy to perform, avoids open perineal wounds, and does not interfere with future surgical treatments if necessary [11]. The efficacy of the fibrin glue injection, however, remains in question. While some authors have reported healing rates as high as 85%, others failed to obtain any long-term healing (0%) using the technique [13]. These discrepant results are likely due to differences in complexity and etiology of the fistulas included in each series. There are also significant variations in the length of post-operative follow-up among the published reports.

In the present study, we tried to exclusively address the efficacy of the fibrin glue treatment in patients with anal fistulas of cryptoglandular origin and fistula due to Chron's disease in addition to recurrent cases after failure of other surgical techniqes. These specific inclusion criteria may, in part, explain the low success rate (69-80%) that we obtained with the fibrin glue treatment, since

our surgical technique does not differ from techniques used by other authors **[12]**.

In contrast, other authors have achieved higher rates of success in treatment of cryptoglandular fistulas **[13]**. In the largest published series to date, Cintron et al., **[10]**. Reported a healing rate for cryptoglandular fistulas of 63%, compared with 35% for fistulas of other etiologies, with a mean follow-up of 1 year. Although no study has been able to demonstrate a statistically significant difference in healing rates according to fistula etiology **[14]**. It is generally agreed that anal fistulas associated with Crohn's diseases more liable for recurrence.

In our study 40 patients were included with 16 cases with high perianal fistula and 24 cases with low perianal fistula most of them of cryptoglandular in origin (36 cases) and Chron's disease (4 cases).

In our series 25% of the fistula recurrences were observed within 6 months of treatment. None of our patients presented a fistula recurrence after 6 months of follow-up. Fibrin glue injection proved to be a very safe treatment. As in previous published studies, there were no treatment-related complications in our study or adverse effects on subsequent treatments.

In this series, fibrin glue treatment for cryptoglandular anal fistulas achieved a sucscess rate ranging from (69% in high cases and 80% in low cases). This result calls into question the use of fibrin glue as a first-line treatment for these patients. Several unfavorable aspects have to be taken into account when other method is chosen, including monetary costs, health resources, potential anesthetic risks, surgeon's time, time off from work and need for at least 1-year of postoperative follow-up. Therefore, it seems justifiable to use fibrin glue as routine first surgical approach for complex anal fistulas at this time.

However, because this treatment is safe and does not compromise future surgical treatments **[11]**. It might exceptionally have a limited role in selected very complex cases in which sphincter impairment is highly anticipated. In this situation, patients should be clearly warned about success rate expected with the procedure and the potential need of subsequent treatments.

At this time there is no consensus in the literature about the efficacy of fibrin glue injection in the treatment of cryptoglandular anal fistulas.

Conflicts of interest:

No conflict of interest has been declared.

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دور غراء الفيبرين فى علاج الناسور الشرجى

الناسور الشرجى هو عبارة عن آنبوبة تتكون من نسيج ليفى توصل ما بين داخل القناة الشرجية إلى المنطقة التى تحيط بفتحة الشرج. والناسور الشرجى ينتج فى معظم الحالات نتيجة لخراج فى المنطقة التى تحيط بالشرج يتم تصريفه سواء كان بالطريقة الجراحية آو تلقائيا دون آى تدخل جراحى. كما توجد عدة آسباب آخرى للناسور الشرجى منها إلتهابات مزمنه بالقولون والقناة الشرجية منها بعض الآورام التى تصيب المستقيم العلاج الكيماوى والإشعاعى وغيرها.

ومن آعراض الناسور الشرجى وجود فتحة خارجية للناسور فى المنطقة التى تحيط بفتحة الشرج يكتشفها المريض بالإضافة إلى آن هذه الفتحة يخرج منها بعض الإفرازات الصديدية التى تزعج المريض وإصابة بالحساسية فى هذه المنطقة بالإضافة إلى الآلم المصاحب إلى هذه الإفرازات. والناسور الشرجى يمكن آن يكون ناسور شرجى علوى آو سفلى متشعب آو غير متشعب يحدث لآول مرة آو مرتجع.

ويتم تشخيص الناسور الشرجى عن طريق الفحص الإكلينيكى وعن طريق بعض الفحوصات التى تجرى للمريض. فعن طريق الفحص الإكلينيكى يتم فحص المنطقة التى تحيط بفتحة الشرج للبحث عن الفتحة الخارجية للناسور ثم بعد ذلك يتم عمل فحص شرجى للمريض للوصول إلى الفتحة الآخرى للناسور وتحديد ما إذا كان هذا الناسور علوى آم سفلى.

فى حالة عدم وجود الفتحة الداخلية للناسور عن طريق الفحص الشرجى فهذا يرجع من كونه ناسور شرجى علوى ويحتاج إلى الفحص تحت تآثير التخدير للوصول إلى الفتحة الداخلية للناسور فى حالة تعذر ذلك فإنه يتم اللجوء إلى إجراء الفحوصات التى تحدد نوعية الناسور الشرجى علوى آم سفلى.

من آمثلة هذه الفحوصات إجراء آشعة بالصبغة على الناسور الشرجى حيث يتم حقن صبغة فى الفتحة الخارجية للناسور ومتابعة خروجها من الفتحة الداخلية للناسور على جهاز الآشعة لتحديد موقع الفتحة الداخلية ولكن هذه الطريقة يصاحبها بعض الآخطاء والنتائج غير دقيقة بنسبة عالية.

ولذلك فإن آشعة الرنين المغناطيسى على الناسور الشرجى هى الآمثل لتحديد ما إذا كان هذا الناسور علوى آم سفلى متشعب آم لا ولكن هذا النوع من الفحص مكلف للغايه وليس بإمكان كل مريض إجراءه.

ومن الفحوصات الآخرى إجراء آشعة تلفزيونية على الناسور الشرجى وكذلك الآشعة المقطعية ولكن هذه الفحوصات ليست بدقة آشعة الرنين المغناطيسى. ويتم علاج الناسور الشرجى بطرق جراحية متعددة ولكن قبل إجراء العملية الجراحية لابد من تحضير المريض بطريقة جيدة مثل إعطاء المريض بعض المضادات الحيوية والحقن الشرجية وصيام المريض عن الطعام قبل العملية بفترة كافية.

ومن العمليات الجراحية التى تجرى للناسور الشرجى هى إستئصال الناسور الشرجى بالكامل ويعاب على هذه الطريقة فى بعض المضاعفات مثل النزيف والآلم فيما بعد العمليات وإصابة المريض بعد التحكم فى البراز نتيجة لإصابة العضلات المسئولة عن عملية التحكم آثناء الجراحة بالإضافة إلى إحتمالية رجوع الناسور الشرجى مرة آخرى.

ومن الطرق الآخرى التى تستخدم فى العلاج طريقة السيتون وطريقة ترقيع الناسور الشرجى عن طريق غلق الفتحة الداخلية للناسور بنسيج من داخل القناة الشرجية والمستقيم وغيرها.

وفى هذه الدراسة تم إجراء عملية حقن الناسور الشرجى بمادة غراء الفيبرين حيث آن هذه المادة تتكون من آيونات الكالسيوم ومادة البروثرومبين وعند خلط هاتين المادتين يتم تحفيز عملية التجلط التى تؤدى فى النهاية إلى حدوث جلطة عند حقنها داخل الناسور الشرجى وهذه الجلطة تقوم بعمل نسيج ليفى وهو بدوره يقوم بغلق الناسور الشرجى.

وهذه الطريقة لها مميزات كثيرة مثل كونها بسيطة وسهلة ويمكن إجراؤها فى العيادات الخارجية دون الحاجة إلى غرفة العمليات بالإضافة إلى آنها يمكن آن تكرر عدة مرات كما آنها لا تتسبب فى معظم المضاعفات التى تحدث مع الطرق الجراحية فهى لا تؤثر على الحالة الوظيفية للعضلات التى تتحكم فى عملية التبرز كما آنها لا يصاحبها نزيف فيما بعد العمليات ولا يصاحبها آى آلم بعد العمليات وهذا يسهل من سرعة خروج المريض من المستشفى وسرعة عودته إلى آعمالة اليومية.