Introduction

The overall prevalence of anal fistula is 8-10 cases per 100,000 individuals with male female ratio of 2:1. Anal fistula may have a primary etiology, resulting from an anorectal abscess or can develop secondary to trauma, tuberculosis, Crohn’s disease, anorectal carcinoma & exposure to radiation. Among the treatment options available for anal fistula, there are both traditional & novel techniques. Traditional methods include fistulotomy; fistulectomy & Seton placement are usually associated with incontinence. The newer treatment options include use of fibrin glue, bio-prosthetic plugs, mucosal advancement flaps & ligation of intersphincteric fistula tract (LIFT). These newer methods also have risk of incontinence as well as costly & need expertise. To overcome these difficulties Professor P. Meinero introduced a novel technique.
Methods

Karl Storz Video equipment including Meinero Fistuloscope was used. Key steps are visualization of the fistula tract, correct localization of the internal fistula opening under direct vision and endoscopic treatment of the fistula. The procedure has two phases:

A. Diagnostic phase

B. Operative phase

The purpose of the diagnostic phase is the correct identification of the fistula tract form the external to the inner opening and accessory tracts. The fistuloscope was then inserted through the external opening. Under continuous infusion of glycine solution, the fistuloscope was advanced through the fistula tract with direct visualization of the lumen [6-10]. The identification of incomplete secondary fistula tracts (meaning not associated with an external opening) is one of the major advantages of fistuloscopy when compared to conventional surgical exploration using a probe or methylene blue infusion. The purposes of the operative phase are destruction and cleaning of the fistula tract followed by management of the internal opening. For fistula tract destruction, the monopolar electrode was activated all the way under direct vision resulting in cautery of the tract centimeter-by-centimeter form the level of the external orifice to the level of the internal opening. Jet irrigation and brush abrasion were used to remove necrotic material. The closure of the internal opening is another critical step to the cure of anal fistula. Its performance should be carefully conducted during surgery employing VAAFT. Here we used simple suture with vicryl 1/0 for closure of internal opening. We adopted certain modifications like no use of stapler and synthetic cyanoacrylate because of no availability and increasing cost of the procedure. Patients were anesthetized with spinal anaesthesia with lithotomy position. Preoperative single dose of 2nd generation cephalosporin was used and 1 dose of the same antibiotic was given post operatively. Postoperatively pain killer used were injectable opioids followed by oral pain killers for 3-5 days.

Results

This study was a prospective type of observational one, done with 14 cases of Fistula-in-Ano treated by a new method i.e. VAAFT (Video Assisted Anal Fistula Treatment). The study was conducted over a period of one year (i.e. March, 2015 to June, 2016) in the Department of Surgery of SSMC & Mitford Hospital & some private hospitals in Dhaka. General objective in the present study was to observe the short term outcome of VAAFT. Outcome of this procedure was assessed in different terms. In our study, among 14 patients, 11 (79%) male and rest female patients were operated with a male to female ratio 11:3. The mean age 37.3 years was almost similar of other studies mentioned above [11]. Most patients are from poor socioeconomic group (n=08, 57%). It does not indicate the predominance of fistula in Ano in this group but because most of the patients were from GOVT hospital.

All the patients presented with intermittent discharge (100%, n=14). The second most complaint was swelling (08 patients, 57%). Different studies support this findings [12]. During EAU; distance of external opening from the anal verge was measured. Majority of the cases i.e. in 9 cases (64%) external opening of the fistula tract was found within 4 cm from the anal verge. During the procedure, 11 (79%) patients had trans-sphincteric fistula.10 (71%) patients were operated within 60-90 min. Degree of postoperative pain is a major determinant of patient satisfaction. We encouraged warm Sitz bath from first post-operative day to all patients but it could not spare the need for an analgesic.

Sitz bath was allowed to reduce postoperative pain due to its soothing effect as well as to keep perianal area less contaminated. Spinal Headache was the most common complication (n=2, 14%). 92% (11 cases) patients had excellent wound healing. In this study no anal incontinence was observed among the patients undergone VAAFT procedure. Incidence of anal incontinence was excluded by asking the patient for any leak of flatus, liquid or formed stool. All patients denied worsening of faecal continence postoperatively. In the study 12 (100%) patients were discharged in the 1st POD. Only 1 (8%) patients had recurrence. One patient was diagnosed as a case of malignancy & one patient didn’t come for follow up. This occurs in between 1-4 weeks.

Discussion

Current surgical techniques for treating anal fistulas are based on three main principles: identification of the tract and the internal opening, excision of the fistula tract and preservation of anal sphincter function. Fistulotomy/fistulectomy is the gold standard in the treatment of anal fistulas with only minor involvement of the sphincters. Complex fistulas are very challenging for the surgeon because of the high incidence of anal incontinence after these traditional surgical approaches. The rationale of the VAAFT technique is based on the concept of both detection and perfect closure of the internal fistula opening, in addition to the destruction of the fistula tract and cleaning which will allow complete and definitive healing. There is great variation in both technical difficulty and efficacy among other sphincter-preserving options for complex cysto-glandular fistulas. Mucosal advancement flaps are technically challenging and are associated with recurrence rates that vary from 2 to 54% [10-14] as well as associated with postoperative incontinence, and the incidence of this complication has been reported to approach 35% in some series [14]. Fibrin glue injection is a technically easy, low-risk technique but results have been disappointing, showing success rates as low as 16% long term [15-20]. Similarly, the use of the anal fistula plug is a simple, sphincter sparing technique, but very expensive [21] and
with reported success rates ranging between 29% and 87% [22-26]. The latest conservative technique reported in literature is the ligation of intersphincteric fistula tract (LIFT) procedure. This approach consists of ligation of the tract in the intersphincteric space, uretage of the tract and closure of the external anal sphincter defect with sutures. This technique, like VAAFT, is based on the principle of a secure closure of the tract near the internal opening and makes possible healing rates ranging from 57 to 94.4% [5,27-29]. But this technique is not technically sound as well as having high risk of failure [30]. In any event, the procedure leaves more or less extensive perianal skin wounds, which is not the case with VAAFT. Recently, another novel technique for treating complex fistulas, fistula laser closure (FiLaC), has been proposed [31-33]. This approach, like VAAFT, is aimed at destroying the tract and preserving the sphincters, but it is a procedure performed blindly, without advantages in identifying the internal opening, secondary tracts and abscess cavities. The rationale of the VAAFT technique is based on the same principles as other procedures for closing the internal opening and obliterating the tract, where the real innovation is the precise identification of the fistula anatomy and of the internal opening by fistuloscopy and fulguration of the tract walls under direct vision [34]. This approach allows the identification and treatment of all the secondary tracts, and the abscess cavities connected to the main pathway. In the group with six months follow-up, 92% of the patients healed. VAAFT involves an initial expenditure for purchasing the required equipment. However, the fistuloscope & ancillary equipment are reusable and the initial costs are likely to be recovered soon. The technique provides significant advantages to patients in terms of reduced pain, minimal morbidity & earlier resumption of normal activities. The global socioeconomic costs of this procedure are therefore likely to be low.

**Conclusion**

The VAAFT technique is a minimally invasive and safe technique. This method does not affect sphincter function, no intra- and postoperative complications were observed. As compared to other minimally invasive procedures a comparable recovery rate is observed without the risk of incontinence. It is the only method enabling the intra-operative identification of the internal opening and fistula tract under visual control, VAAFT appears cost effective, enabling the intra-operative identification of the internal opening and makes possible healing rates ranging from 57 to 94.4% [5,27-29]. But this technique is not technically sound as well as having high risk of failure [30]. In any event, the procedure leaves more or less extensive perianal skin wounds, which is not the case with VAAFT. Recently, another novel technique for treating complex fistulas, fistula laser closure (FiLaC), has been proposed [31-33]. This approach, like VAAFT, is aimed at destroying the tract and preserving the sphincters, but it is a procedure performed blindly, without advantages in identifying the internal opening, secondary tracts and abscess cavities. The rationale of the VAAFT technique is based on the same principles as other procedures for closing the internal opening and obliterating the tract, where the real innovation is the precise identification of the fistula anatomy and of the internal opening by fistuloscopy and fulguration of the tract walls under direct vision [34]. This approach allows the identification and treatment of all the secondary tracts, and the abscess cavities connected to the main pathway. In the group with six months follow-up, 92% of the patients healed. VAAFT involves an initial expenditure for purchasing the required equipment. However, the fistuloscope & ancillary equipment are reusable and the initial costs are likely to be recovered soon. The technique provides significant advantages to patients in terms of reduced pain, minimal morbidity & earlier resumption of normal activities. The global socioeconomic costs of this procedure are therefore likely to be low.

**References**

1. Garcia AJ, Belmonte C, Wong WD, Goldberg SM, Madoff RD (1996) Anal fistula surgery. Factors associated with recurrence and incontinence. Dis Colon Rectum 39(7): 723-729.
2. Sangwan YP, Rosen L, Riether RD, Staski JJ, Sheets JA, et al. (1994) Is simple fistula-in-ano simple? Dis Colon Rectum 37(9): 885-889.
3. Ritchie RD, Sackier JM, Hodde JP (2009) Incontinence rates after cutting seton treatment for anal fistula. Colorectal Dis 11(6): 564-571.
4. Atkin GK, Martins J, Tozer P, Ranchod P, Phillips RKS (2011) For many high anal fistulas, lay open is still a good option. Tech Coloproctol 15(2): 143-150.
5. Rojanasakul A (2009) LIFT procedure: a simplified technique for fistula-in-ano. Tech Coloproctol 13(3): 237-240.
6. Lupinacci RM, Vallet C, Parc Y, Chafai N, Tinet E (2010) Treatment of fistula-in-ano with the Surgisis() AFP(TM) anal fistula plug. Gastroenterol Clin Biol 34(10): 549-553.
7. Cinicchi R, Santoro A, Trastulli S (2010) Meta-analysis of fibrin glue versus surgery for treatment of fistula-in-ano. Ann Ital Chir 81(5): 349-356.
8. Parks AG, Stitz RW (1976) The treatment of high fistula-in-ano. Dis Colon Rectum 19(6): 487-499.
9. Parks AG, Gordon PH, Hardcastle JD (1976) A classification of fistula-in-ano. Br J Surg 63(1): 1-12.
10. Aguilar PS, Plasencia G, Hardy TG, Hartmann RF, Stewart WR (1985) Mucosal advancement in the treatment of anal fistula. Dis Colon Rectum 28(7): 496-498.
11. Ozuner G, Hull'TL, Cartmill J, Fazio VW (1996) Long-term analysis of the use of transanal rectal advancement flaps for complicated anorectal/vaginal fistulas. Dis Colon Rectum 39(1): 10-14.
12. Schouten WR, Zimmermann DD, Briel JW (1999) Transanal advancement flap repair of transphincteric fistulas. Dis Colon Rectum 42(11): 1419-1423.
13. Mizrahi N, Wexner SD, Zmora O (2002) Endorectal advancement flap: are there predictors of failure? Dis Colon Rectum 45(12): 1616-1621.
14. Sonoda T, Hall T, Piedmonte MR, Fazio VW (2002) Outcomes of primary repair of anorectal and rectovaginal fistulas using the endorectal advancement flap. Dis Colon Rectum 45(12): 1622-1628.
15. Sentovich SM (2001) Fibrin glue for all anal fistulas. J GastrointestSurg 5(2): 158-161.
16. Buchanan GN, Bartram CI, Phillips RKS (2003) Efficacy of fibrin sealant in the management of complex anal fistula: a prospective trial. Dis Colon Rectum 46(9): 1167-1174.
17. Sentovich SM (2003) Fibrin glue for anal fistulas: long-term results. Dis Colon Rectum 46(4): 498-502.
18. Gisbertz SS, Sosef MN, Festen S (2005) Treatment of fistulas in ano with fibrin glue. Dig Surg 22(1-2): 91-94.
19. Ellis CN, Clark S (2006) Fibrin glue as an adjunct to flap repair of anal fistulas: a randomized, controlled study. Dis Colon Rectum 49(11): 1736-1740.
20. Williams JG, Farrands PA, Williams AB (2007) The treatment of anal fistula: ACPGBI position statement. Colorectal Dis 9(Supple 4): 18-50.
21. Adamina M, Hoch JS, Burnstein MJ (2010) To plug or not to plug: a cost-effectiveness analysis for complex anal fistula. Surgery 147(1): 72-78.
22. Johnson EK, Gaw JU, Armstrong DN (2006) Efficacy of anal fistula plug vs. fibrin glue in closure of anorectal fistulas. Dis Colon Rectum 49(5): 371-376.
23. Christoforidis D, Etzioni DA, Goldberg SM (2008) Treatment of complex anal fistulas with the collagen fistula plug. Dis Colon Rectum 51(10): 1482-1487.
24. Lawes DA, Efron JE, Abbas M (2008) Early experience with the bioabsorbable anal fistula plug. World J Surg 32(6): 1157-1159.
25. Malik AI, Nelson RL (2008) Surgical management of anal fistulae: a systematic review. Colorectal Dis 10(5): 420-430.
26. Wang JY, Garcia-Aguilar J, Sternberg JA, Abel ME, Varma MG (2009) Treatment of transsphincteric anal fistulas: are fistula plugs an acceptable alternative? Dis Colon Rectum 52(4): 692-697.

27. Rojanasakul A, Pattanaarun J, Sahakitrungruang C, Tantiphlachiva K (2007) Total anal sphincter saving technique for fistulain-ano: the ligation of intersphincteric fistula tract. J Med Assoc Thai 90(3): 581-586.

28. Shanwani A, Nor AM, Amri N (2010) Ligation of the intersphincteric fistula tract (LIFT): a sphincter-saving technique for fistula-in-ano. Dis Colon Rectum 53(1): 39-42.

29. Bleier JJ, Moloo H, Goldberg SM (2010) Ligation of the intersphincteric fistula tract: an effective new technique for complex fistulas. Dis Colon Rectum 53(1): 43-46.

30. Lunniss PJ (2009) LIFT Procedure: a simplified technique for fistula-in-ano. Tech Coloproctol 13(3): 241-242.

31. Athanasiadis S, Helmes C, Yazigi R, Kohler A (2004) The direct closure of the internal fistula opening without advancement flap for transsphincteric fistulas-in-ano. Dis Colon Rectum 47(7): 1174-1180.

32. Thomson WH, Fowler AL (2004) Direct appositional (no flap) closure of deep anal fistula. Colorectal Dis 6(1): 32-36.

33. Wilhelm A (2011) New technique for anal fistula repair using a novel radial emitting laser probe (FILACTM). Tech Coloproctol 15(4): 445-449.

34. Ortiz H, Marzo M, De Miguel M (2008) Length of follow-up after fistulotomy and fistulectomy associated with endorectal advancement flap repair for fistula in ano. Br J Surg 95(4): 484-487.