Video Assisted Anal Fistula Treatment, a Paradigm Shift in the Treatment of Complex Anal Fistulas

Anshu Atreya1, Ankit Raikhy2, Srinivasa Rao Geddam3, Abhishekh Bhartia4, Vishnu Kumar Bhartia5

1, 2, 4, 5 Department of Minimal Access Surgery, Calcutta Medical Research Institute, Kolkata, West Bengal, India. 3Department of Surgery, Calcutta Medical Research Institute, Kolkata, West Bengal, India.

ABSTRACT

BACKGROUND
Fistula-in-ano or anal fistulas are documented since ancient times and their management has always been a challenge. Various modalities of treatment are available and newer ones are being added each day. The aim of this retrospective study is to analyse the outcome of the video assisted anal fistula treatment (VAAFT), one of the modalities of treatment for complex anal fistulas done at our centre.

METHODS
Records of patients who had been treated through VAAFT by single senior consultant surgeon of Minimal Access Surgery unit between April 2013 and March 2019, were collected and analysed.

RESULTS
Altogether, records of 48 (forty-eight) patients who had undergone VAAFT during the period were analysed. Data revealed that 38 male (79.17 %) and 10 female (20.83 %) patients with mean age of 49.96 ± 12.22 years were operated. Most commonly, trans sphincteric followed by intersphincteric type of fistulae were encountered. In 3 cases, internal opening couldn’t be visualised. Six patients were documented to have a recurrence within 6 months of the procedure and in the rest were cured except in a small subset of patients who did not follow up.

CONCLUSIONS
Amongst the wide range of armamentarium available today for the treatment of complex anal fistulas, video assisted anal fistula treatment (VAAFT) is a novel sphincter saving technique. The recurrence rate at our centre was at par with other studies and with zero incontinence rate, however further RCTs are required.

KEYWORDS
Complex Anal Fistula, Fistula-in-Ano, MEINERO Fistuloscope, VAAFT
Fistula-in-ano or the anal fistulas are chronic abnormal communications between perianal area and the rectum or the anal canal. It has been documented in medical literature since ancient times. Sushruta in his landmark text Sushruta Samhita way back in 6th century BC has documented the diagnosis and management of fistula-in-ano. Hippocrates in 4th Century BC described the treatment of fistula using horsehair. In the 14th century, surgeon John of Arderne, who is considered as Father of English Surgery, in his work Practica of fistula-in-ano has described management of anal fistulas and which had been ascribed as one of the deadliest surgeries of medieval era. Later, in the 19th and early 20th centuries, renowned physician / surgeons, like Goodsall and Miles, Thompson, Milligan & Morgan and Lockhart-Mummery, offered theories on pathogenesis and classification systems for fistula in ano and contributed substantially in the treatment of anal fistulas.

Fistulas are ascribed to arise because of cryptoglandular infection with subsequent perirectal abscess. The abscess represents the acute inflammatory event, whereas the fistula epitomises the chronic process. Anal fistula patients commonly have a history of drained anal abscess in the past which usually is associated with fever, anorectal pain, swelling and cellulitis. Anorectal pain, drainage from the perianal region along with irritation of the perianal skin, and occasionally bleeding, can be the presenting symptoms of a fistula in ano. The pathology itself leads to a considerable worry and morbidity to the patient. Incidence of perianal fistulas in developed world, ranges between 0.86 and 2.32 per 10,000 population / year, with a male predominance and a reported male to female ratio varying between 2:1 to 5:1.

The peak in incidence of fistula is observed between 3rd and 5th decades of life. Treatment of fistula in ano has always been an arduous task for the surgeons considering the associated technical challenges in surgery due to its close relation with the faecal continence mechanism, infected operative field and results confounded by relatively high recurrence rates.

The definite management of fistula in ano is always surgical though in the presence of acute perianal sepsis a definite surgical procedure other than incision and drainage cannot be taken up except if the track is superficial and obvious. Apart from the age old seton placement, invasive fistulotomy and fistulectomy procedures, the armamentarium for the management of fistula in ano now comprises of various least invasive surgical options like anal fistula plug, Ligation of Intern sphincteric Fistula Tract (LIFT), Video Assisted Anal Fistula Treatment (VAAFT), Fistula-tract Laser Closure (FiLaC) and the over-the-scope clip (OTSC) prostectomy procedure. Numerous new modalities like PERFAX (Proximal superficial cauterization, Emptying Regularly Fistula tracts And Curettage of Tracts), TROPIS (Transanal Opening of Intern sphincteric Space), BioLIFT, and Adipose-derived stem cell treatment are being evaluated and added each year. The present study was undertaken to analyse the outcome of Video Assisted Anal Fistula Treatment in our subset of fistula patients.
Figure 1 (A). Magnetic Resonance Image of Perineal Region (STIR Sequence). Arrows Showing the Fistula.

Figure 1 (B). Karl Storz\textsuperscript{TM} MEINERO Scope along with Its Attachments and Storz\textsuperscript{TM} Proctoscope. Insert: Endo Brush and Forceps.

Figure 1 (C). Unhealthy Granulation Tissue & Debris in Fistulous Tract.

Figure 1 (D). Internal Opening seen from within.

Figure 1 (E). Cleared Tract.
The patient database was retrospectively analysed and a total of 48 patients were found to have been operated with VAAFT, during the period between April 2013 and March 2019. The age of the patient ranged between 21 and 77 years (mean 49.96 ± 12.22 year) with maximum patients (41.66 %) operated were in their 6th decade of life. Altogether 38 male (79.17 %) and 10 female (20.83 %) patients were part of the cohort. The duration of presenting symptom ranged from 2 to 8 months with an average of 11.87 ± 4.62 months. Most common symptom was on and off discharge from external opening in 87.5 % patients, pain in 66.67 % and swelling in 41.67 % patients.

Amongst the patients who underwent VAAFT, 19 (39.6 %) were found to have associated comorbidity in the form of diabetes mellitus and 15 (31.3 %) patients in the past had undergone perianal surgery for either perianal abscess or fistula (incision and drainage 11, previous fistula surgery 4).

The mean operating time for our patients was 61 ± 11.87 minutes ranging from 40 minutes to 79 minutes.

Majority of patients (77.08 %) were discharged on 2nd operative day, however, 11 patients (22.92 %) had prolonged stay beyond 3rd postoperative day (POD) of up to 8th POD. The mean post-operative hospital stay was found to be 3.02 ± 1.34 days.

Analysis of available records reflected that 41 (85.42 %), 39 (81.25 %), 28 (58.33 %) and 25 (52.08 %) out of 48 operated patients showed up for follow up at and around 2, 6, 12 and 24 weeks respectively. Recurrence was detected in 2, 3 and 1 patient during follow up visit at around 6-, 12- and 24-weeks post-surgery respectively with total recurrence rate of 12.5 %.

4 patients (8.33 %) had complications in the early post-operative period in the form of fever, perianal sepsis and bleeding. A total of 43 (89.58 %) histopathological reports of excised external opening margins were available, 34 (70.83 %) of which were suggestive of chronic non-granulomatous inflammatory pathology, 2 (4.16 %) of Crohn's disease and 7 (14.58 %) were suggestive of granulomatous lesion (tubercular).

**DISCUSSION**

The ideal outcome of the surgical treatment of anal fistula must include eradication of sepsis, healing of the tract and at the same time preservation of the sphincters and the continence mechanism. Higher success rate of up to 100 % can be achieved for simple and superficial fistulas by the conventional fistulotomy technique involving a complete transection of tissue between the fistula tract and skin. However, high fistulas with the tract traversing more than 30 % to 50 % of external sphincter and in recurrent and
complex fistulas, the hazard of damage to the continence mechanism remains in a large proportion of patients. The risk is also confounded in patients with pre-existing incontinence, previous obstetric injury, local irradiation or existing comorbidity in the form of Crohn’s disease.21,22

Video Assisted Anal Fistula Treatment developed by MEINERO and Mori23 in 2006, technically avoids sphincter dysfunction and simultaneously destroys and cleans the fistula tract from within and facilitates the detection and closure of the internal opening. Further under direct vision, proper anatomy of the fistula tract can be delineated and all branches of the fistula along with drainage of any small collection cavity can be achieved through VAAF, which is limited in other novel procedures like FiLaC, LIFT etc. Various clinical trials and studies involving the sphincter saving procedures have been conducted and the efficacy of such procedure has been found to vary significantly. The expense aspect associated with certain procedures like anal fistula plug, FiLaC and adipose derived stem cell treatment must also be considered specially in a country like ours.

In the present retrospective study, promising and at par results of VAAF procedure were observed. Amongst the patient who underwent VAAF, a cure rate was achieved in 87.5 % of them which is at par with studies done by El-Barbary23, FY Cheung24 and P MEINERO23. The patients who developed recurrence following initial VAAF, recovered well after the second VAAF procedure done after an interval of 6 months, though at the cost of morbidity.

None of the patient had incontinence in the post-operative period though in terms of morbidity in initial period, 3 patients had fever ± cellulitis in peri anal region and purulent discharge from the tract, resulting due to infection in oedematous peri anal tissue caused due to leak of irrigation fluid. 1 patient had bleeding from the stapler site which was managed conservatively. There was no mortality in our cohort. Except for the initial cost of the MEINERO fistuloscope which could be reused for different patients after sterilization and the video system which is routinely available at any colo-rectal surgical unit or the minimal access surgery unit. There was no significant cost of any consumable used in the surgery, thus making it an affordable option for the treatment of complex anal fistulas.

CONCLUSIONS

Amongst the wide range of armamentarium available today for the treatment of complex anal fistulas, Video Assisted Anal Fistula Treatment (VAAF), is a novel sphincter saving technique. The procedure except for the initial cost and learning curve has reproducible results at par with those of stalwarts who developed it. The recurrence rate at our centre was at par with other studies and with zero incontinence rate. However, further randomised control trials (RCTs) are required.

Data sharing statement provided by the authors is available with the full text of this article at jebmh.com.

Financial or other competing interests: None.

Disclosure forms provided by the authors are available with the full text of this article at jebmh.com.

REFERENCES

[1] Corman ML. Classic articles in colon and rectal surgery. Hippocrates: on fistulae. Diseases of the Colon and Rectum 1980;23(1):56-59.
[2] Manwaring ML. Anal fistula. In: Fazio VW, Church JM, Delaney CP, et al. eds. Current therapy in colon and rectal surgery. 3rd edn. Philadelphia: Elsevier 2017: p. 24-29.
[3] Cosman BC. All's Well That Ends Well: Shakespeare's treatment of anal fistula. Dis Colon Rectum 1998;41(7):914-924.
[4] Sainio P. Fistula-in-ano in a defined population. Incidence and epidemiological aspects. Annales Chirurgiae et Gynaecologiae 1984;73(4):219-224.
[5] Zanotti C, Martinez-Puente C, Pascual I, et al. An assessment of the incidence of fistula-in-ano in four countries of the European Union. International Journal of Colorectal Disease 2007;22(12):1459-1462.
[6] Vasilevsky CA, Gordon PH. Results of treatment of fistula-in-ano. Diseases of the Colon and Rectum 1985;28(4):225-231.
[7] Shouler PJ, Grimley RP, Keighley MR, et al. Fistula-in-ano is usually simple to manage surgically. International Journal of Colorectal Disease 1986;1(2):113-115.
[8] Marks CG, Ritchie JK. Anal fistulas at St Mark's Hospital. The British Journal of Surgery 1977;64(2):84-91.
[9] Phillips J, Lees N, Arnall F. Current management of fistula-in-ano. Br J Hosp Med (Lond) 2015;76(3):142, 144-147.
[10] Johnson EK, Gaw JU, Armstrong DN. Efficacy of anal fistula plug vs. fibrin glue in closure of ano-rectal fistulas. Dis Colon Rectum 2006;49(3):371-376.
[11] Garg P, Song J, Bhatia A, et al. The efficacy of anal fistula plug in fistula-in-ano: a systematic review. Colorectal Dis 2010;12(10):965-970.
[12] Rojanasakul A. LIFT procedure: a simplified technique for fistula-in-ano. Tech Coloproctol 2009;13(3):237-240.
[13] MEINERO P, Mori L. Video-assisted anal fistula treatment (VAAF): a novel sphincter-saving procedure for treating complex anal fistulas. Tech Coloproctol 2011;15(4):417-422.
[14] Giamundo P, Geraci M, Tibaldi L, et al. Closure of fistula-in-ano with laser FiLaC™: an effective novel sphincter-saving procedure for complex disease. Colorectal Dis 2014;16(2):110-115.
[15] Proost RL, Joos AK, Ehn W, et al. Prospective pilot study of ano-rectal fistula closure with the OTSC proctology. Colorectal Dis 2015;17(1):81-86.
[16] Garg P, Garg M. PERFECT procedure: a new concept to treat highly complex anal fistula. World Journal of Gastroenterology 2015;21(13):4020-4029.
[17] Garg P. Transanal opening of inter sphincteric space (TROPIS) - a new procedure to treat high complex anal fistula. Int J Surg 2017;40:130-134.

[18] Ellis CN. Outcomes with the use of bioprosthetic grafts to reinforce the ligation of the inter sphincteric fistula tract (BioLIFT procedure) for the management of complex anal fistulas. Dis Colon Rectum 2010;53(10):1361-1364.

[19] Guadalajara H, Herreros D, De-La-Quintana P, et al. Long-term follow-up of patients undergoing adipose-derived adult stem cell administration to treat complex perianal fistulas. Int J Colorectal Dis 2012;27(5):595-600.

[20] Herreros MD, Garcia-Arranz M, Guadalajara H, et al. Autologous expanded adipose-derived stem cells for the treatment of complex cryptoglandular perianal fistulas: a phase III randomized clinical trial (FATT 1: fistula Advanced Therapy Trial 1) and long-term evaluation. Dis Colon Rectum 2012;55(7):762-772.

[21] Whiteford MH, Kilkenny J 3rd, Hyman N, et al. Practice parameters for the treatment of perianal abscess and fistula-in-ano (revised). Dis Colon Rectum 2005;48(7):1337-1342.

[22] Parks AG, Stitz RW. The treatment of high fistula-in-ano. Dis Colon Rectum 1976;19(6):487-499.

[23] El-Barbary HM. Video Assisted Anal Fistula Treatment “VAAFT Technique” for complex perianal fistulas. Open Access J Surg 2016;1(5):555571.

[24] Cheung FY, Appleton ND, Rout S, et al. Video-assisted anal fistula treatment: a high volume unit initial experience. Annals of The Royal College of Surgeons of England 2018;100(1):37-41.