

Clinical Examination for Complex Fistula in Ano: Relevance in Present Times -A Clinical Study

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ABSTRACT

Background: Fistula in Ano has been known as a chronic painful disease since centuries past with no proven well defined course of management even till the present times. This has given rise to various forms of treatment ranging from seton to flaps. **Materials and Methods:** Total 83 adult patients with age ranging from 16 to 70 years were studied over a span of 8 years starting from Jan'10 to Dec'17. Clinical findings were compared with MR Imaging and correlated with Intraoperative Methylene blue injection. The findings were tabulated and compared regarding effectiveness of each method in determining the exact anatomy of the fistula and statistical significance was determined by Chi square test. **Results:** Our studies showed that the chances of detecting the internal opening by clinical examination is significantly better than MRI, however neither clinical examination nor MRI is a full proof mechanism for detecting the type of fistula. **Conclusion:** Even though Imaging is better at detecting the fistula anatomy there is still a role for a proper clinical examination in outpatient department. Clinical Examination compares favorably with MR Imaging in detecting Internal Opening of a Fistula. Even in complicated Fistulas, a proper clinical examination is better than Imaging in detection of anatomy of a fistula, even though there is no statistically significant difference between the two methods.

Keywords: Intraoperative Methylene Blue; Fistula InAno; MRI; Fistulectomy; Seton.

Introduction

Fistula-In-Ano is one of the oldest diseases probably as old as human civilization and various methods of treatments have been advocated and used since the time of documentation ranging from ksharasutra by susruta (1000 B.C.), fistulectomy by Joan of Arden, fistula plugs, mucomuscular flaps, and LIFT procedures more recently[1]. However, irrespective of the method of treatment used, what is imperative in the management is identifying the type of fistula.

Most popularly used form of classification is Parks [2] who has classified it into 4 types- A) Intersphincteric, B) Trans-Sphincteric, C) Suprasphincteric, D) Extrasphincteric. But the drawback of this system is that it doesn't cover complex fistulae like horseshoe or branching fistula with more than one external or internal opening. American society of Gastroenterologists came out with the easy to use classification where fistulas are divided into two types: simple and complex. Simple where there is minimum involvement of sphincter complex muscle and Complex which may involve significant portions of the sphincter musculature, may have multiple tracts, involve other organs like vagina and even includes recurrent fistulas [1]. Making out the anatomy of the fistula- including length and course of the tract, amount of sphincteric musculature traversed by the fistula and the number and level of internal openings is imperative

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before treating a fistula as leaving out any part of tract or internal opening will invariably lead to recurrence [3]. This is underscored by the fact that previously patient's with fistula in ano used to undergo multiple surgeries and most of them at the hands of quacks which is continuing even in the present times- obviously with false assurances of complete cure.

Traditional methods of investigation in fistula in ano were limited to fistulogram and examination under general Anesthesia with obvious limitations; Examination under Anesthesia requires an anesthesiologist, equipment, pre anesthetic evaluation and an experienced surgeon. A fistulogram wouldn't show the level of internal opening and often times if the internal opening is blocked or in presence of branching there is no run off of contrast giving false negative result; while probing is no good in case of tortuous, branching or horseshoe fistula. All this changed with the advent of new imaging techniques namely Endo Anal ultrasound and MRI (Magnetic Resonance Imaging) with the latter being accepted as a more accurate method in determining the type of high fistula and it's branches while endosonography proved

more accurate in assessing the internal opening[4], the drawbacks of each being high operator dependence in Endo Anal USG and expensive equipment with some degree of training required to properly interpret an MR Fistulogram especially in cases of intersphincteric fistulas[5]. Even with proper preoperative assessment and a myriad of surgical options available till now, there is no gold standard procedure in treatment of complete fistula in ano with methods that were in practice since centuries like fistulotomy, fistulectomy with seton and ksharasutra still showing good results[6-8].

Methods and materials

A prospective study was conducted over a period of 8 years starting from Jan 2010 to December 2017 involving all adult patients fitting into the below mentioned inclusion criteria. Detailed informed consent was taken regarding nature of study, need for investigations and regular follow up upto a minimum period of 6 months following the surgery.

Inclusion Criteria	Exclusion Criteria
<ul style="list-style-type: none"> All Adult Patients above 16 years with clinically diagnosed fistula in Ano by the presence of sinus visible in the perianal region or induration extending to the Anal Canal. Patients with recurrent perianal abscess Patients with recurrent Fistula treated either in this hospital or elsewhere Already presenting with a MR Fistulogram or willing to get the same done at our Institute. 	<ul style="list-style-type: none"> Patients with superficial subcutaneous Fistula Patients not willing to undergo MRI either for financial or any other reason Patients with co-morbidities not making them fit to undergo surgical procedure due to high risk involved

Patients were advised surgery and after proper pre-operative workup and explained about the procedure i.e; fistulectomy or fistulotomy and need for additional seton placement if necessary intraoperatively in case the track extended above the puborectalis.

Patients were placed in Lithotomy position after giving Regional Anesthesia. After disinfection and draping of the area, Methylene Blue was injected into the external opening and it's progress noted from Anal canal after retracting the Anal opening *(and where the tract is not well formed it is identified by staining of the tract wall with methylene Blue) No probing was done. The tract is dissected out from surrounding subcutaneous fat and sphincter muscle using electrocautery where the tract is well formed by fibrosis and excised upto the internal opening in case of low trans-sphincteric fistula. In

instances of track extending upto puborectalis or branching into intersphincteric or ischioanal space, fistulectomy was done upto the external sphincter or puborectalis and two setons of thick black silk/ linen passed through remaining portion of tract and tied around the external and internal sphincter in case of intersphincteric extension and around the puborectalis in case of high trans-sphincteric or extrasphincteric fistulas.

Patients were started on Sitz Bath 6hrs after surgery and discharged by second POD usually after passing stools with advice to continue sitz bath till the wound is fully approximated. They were reviewed at fortnightly intervals to check on the progress of healing. Seton removal with the remaining sphincterotomy if any is

done at 6-8 weeks interval following the first fistulectomy Surgery.

In the meantime, histopathology of the excised fistulectomy specimen is obtained and appropriate specific treatment started if reported as Koch's or Crohn's. After complete wound healing clinical Findings were correlated with radiological and preoperative findings and compared to check for sensitivity and specificity of radiological investigations with regard to course of tract branching and location of internal opening.

Statistical Analysis was done by calculating the Chi Square Values for the tabulated data using the Easy Chi Square Calculator (www.socscistatistics.com).

P value <0.05 is taken to be statistically significant.

Results

A Total of 86 patients (68 male, 18 female) met the inclusion criteria and were included in the study. A study of the age distribution showed bimodal peaks in the range of 25-35 years and 45-55 years. The most

common range being 32-35 years and 48-51 years, the youngest patient being 16 years old and the oldest 70 years. Of the 86 patients, internal opening was visualized by egress of methylene blue in 73 patients. By the staining of Fistula track wall with methylene blue we could identify 27 Intersphincteric, 29 Trans-sphincteric, 22 Extrasphincteric and 8 fistulas that were either horseshoe or a combination of the three. Of the 73 patients in whom Internal opening could be visualized, 42 were found within Anal canal, 26 above Anal canal- either at Ano-rectal junction or higher and in 5 patients more than one internal opening was detected.

Type of Fistula: Taking Intraoperative Methylene Blue as standard, just clinical examination was able to detect 74% of Intersphincteric, 62% of Trans-sphincteric, 72% of Extrasphincteric and 50% other fistulas while Imaging detected 81% of Intersphincteric, 57% of Trans-sphincteric, 31% of Extrasphincteric and 37% other fistulas[Table 1][fig1-4]

Table 1: Showing Detection of Type of Fistula by Clinical Examination and MRI, taking Intraoperative methylene Blue as standard

Type of fistula	Detected by methylene blue	Correlation by clinical examination		Correlation by MRI			
		Present	%	Absent	Present	%	Absent
Intersphincteric	27	20	74%	7	22	81%	5
Transsphincteric	29	18	62%	11	15	51%	14
Extrasphincteric	22	16	72%	6	7	31%	15
Others	8	4	50%	4	3	37%	5
Total	86	58	67%	28	47	54%	39

There is a statistically significant difference in detecting Extrasphincteric fistula by clinical examination as compared to MRI (p value:0.0065)

while on the whole there is no statistical significant difference between these two methods.

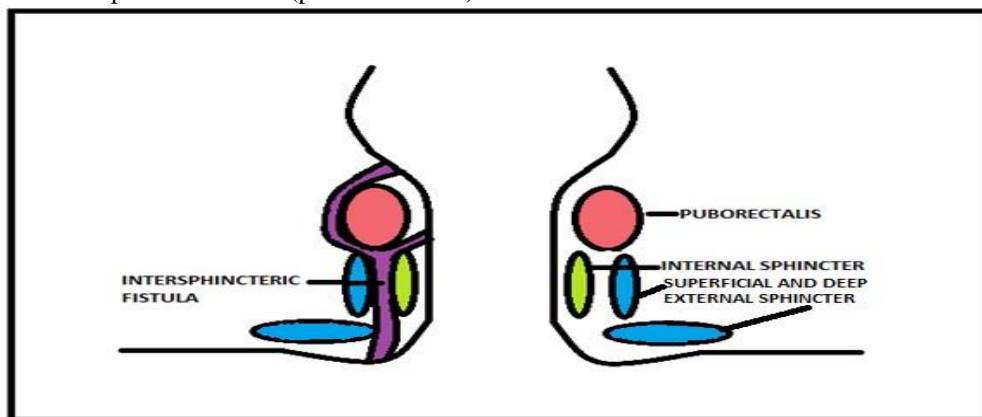


Fig 1: Depicting normal Sphincter Anatomy on right side and Intersphincteric fistula tract straddling puborectalis with internal opening either above or below the puborectalis on the left side

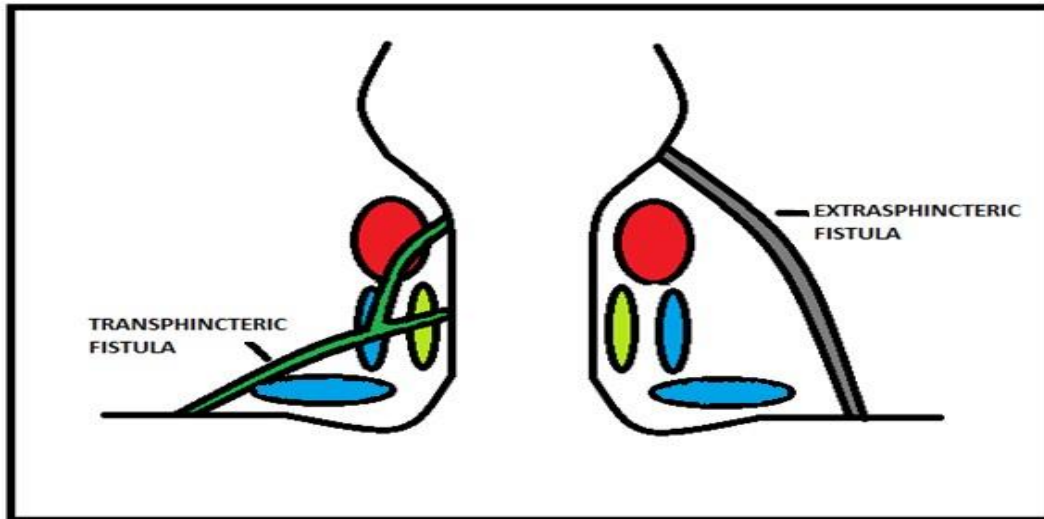


Fig 2: Showing Extrasphincteric fistula tract on right side and trans-sphincteric fistula tract on left side traversing the sphincter complex

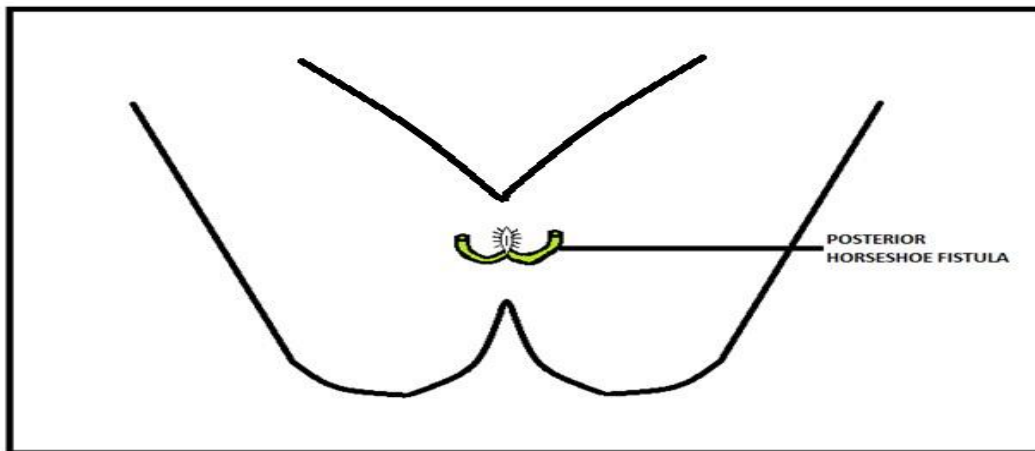


Fig 3: Schematic depiction of Horseshoe fistula with single posterior internal opening and track extending on either side of anal canal with two external openings at 3 and 9 o'clock positions

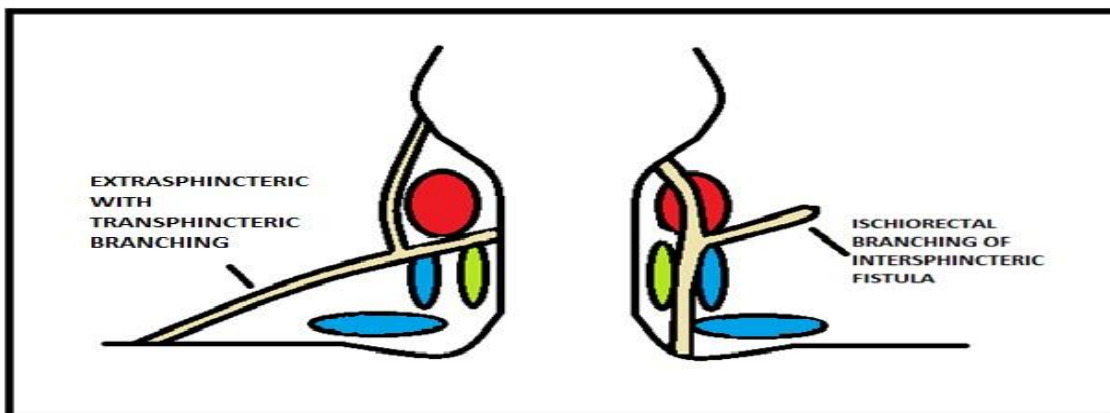


Fig 4: Intersphincteric fistula with ischio-rectal blind extension on right side; Extrasphincteric fistula with trans-sphincteric branching and opening in Anal canal on left side



Fig 5: Pre-operative photograph showing trans-sphincteric fistula with external opening at 11’oclock position
 Internal Opening:Clinical Examination was able to detect 88% of Internal Openings in the Anal Canal, 50% above the Anal Canal, >1 opening in 60% of patients while MRI detected Internal opening in the Anal Canal in 54%, above the Anal Canal in 38% and did not detect >1 opening in any patient [Table 2].

Table 2: Showing Detection of Internal Opening by Clinical Examination and MRI, taking Intraoperative methylene Blue as standard

Detection of internal opening	Detected by methylene blue	Correlation by clinical examination			Correlation by MRI		
		present	%	Absent	present	%	Absent
In anal canal	42	37	88%	5	23	54%	19
Above anal canal	26	14	53%	12	10	38%	16
>1 opening	5	3	60%	2	0	0	5
Total	73	54	73%	19	33	45%	40

There is a statistically significant difference in detecting Internal opening in the Anal Canal by Clinical examination as compared to MRI (0.00072).The data available for comparison of >1 Internal opening in the anal canal is not sufficient for statistical comparison.On the whole also, there is statistical significance in detection of Internal opening when clinical examination is compared to MRI (p value: 0.00039)

Type of Surgical Intervention:In 78 patients, fistulectomy was done whereas fistulotomy was done in 5 patients. In one patient, fistulectomy with abscess drainage was done and in one fistulotomy with abscess drainage. In one patient, exclusive drainage of Ischiorectal abscess was done.

Healing time:In most patients, the wound healed by 5 weeks. Average healing time was 5.5 weeks, healing time ranging from 3 weeks to 17 weeks.

In 6 patients, the fistula recurred- 5 of them had persistent discharge even after 4 months while one 22 year old male came with recurrence 3 years after surgery. He had recurrent discharge from the external

opening which was in the same track of the healed fistula. Internal opening could not be made out on Clinical Examination, MRI reported as transphincteric fistula without mentioning internal opening. Intra-operative Methylene blue revealed an intersphincteric fistula with Internal Opening above puborectalis.

Discussion

In all probability the person who first used the phrase ‘pain in the arse’ must have been suffering from fistula in ano, which will be endorsed by all the patients who have tried all the methods available- both indigenous and scientifically proven but have failed in making their fistulas heal.Fistula surgeries were conducted by both Barbers or quacks and surgeons down the ages and recurrence was the norm as can be discerned from the statement of J. P. Lokhart Mummery – probably more reputations have been damaged by the unsuccessful treatment of cases of fistula than by excision of rectum orgastroenterostomy [3].A reason attributed to this could also be that they didn’t have

access to imaging investigations as we have now. But even in the present times, in a country like ours, most of the fistula surgeries are done by unqualified quacks or Ayurveda practitioners, with apparently good results. Hence, the dilemma arises whether to spend precious money of the economically disadvantaged individuals on expensive investigations like MRI or not. Our study has shown that when intraoperative methylene blue injection is taken as standard and clinical examination is compared with MRI, on the whole internal opening is detected better by clinical examination statistically and MRI is better at delineating the anatomy of the fistula. We can safely say that based on combination of meticulous clinical examination and intraoperative methylene blue, most of the fistulas can be managed effectively unless we want to document the type of fistula and its branches for medico legal purposes. Our finding is in contrast to the article [9], where they have discarded Clinical Examination to be of no use when compared to Imaging. This can be attributed to the fact that medical services including imaging investigations are publicly funded in the country of origin of said article while in our case, the cost is borne by the patients and hence, every additional investigation has to be weighed for its value in providing us with additional information other than which is obtained by clinical examination or intra-

operative methylene blue. Methylene blue is a formal derivative of phenothiazine. It is a dark green powder that yields a blue solution in water. It can be used both as dye and medicine. As a medication, it is used for the treatment of methemoglobinemia, as an analgesic for UTI and as an antidote for cyanide poisoning. It is used as a dye in endoscopic polypectomy and chromoendoscopy. In surgeries, such as sentinel lymph node biopsy, methylene blue can be used to trace the lymphatic drainage of tested tissues. It is also added to bone cement in orthopedic operations to provide easy discrimination between native bone and cement[9]. The use of Methylene Blue is in disfavor with many operators of fistula in Ano because it stains and colours the area of operative field. But in our case, this staining did not affect the clarity of our field but helped us in identifying tracts which couldn't be made out on clinical examination and detect internal openings and branches from main the tract which couldn't be identified on MRI [fig 2,3]. Coincidentally we have found that MRI is poor in detecting laterally situated internal openings as compared to those situated in the midline (6 and 12'oclock position)- lateral internal openings being more common in trans-sphincteric and midline openings in intersphincteric and Horseshoe fistulas.



P2

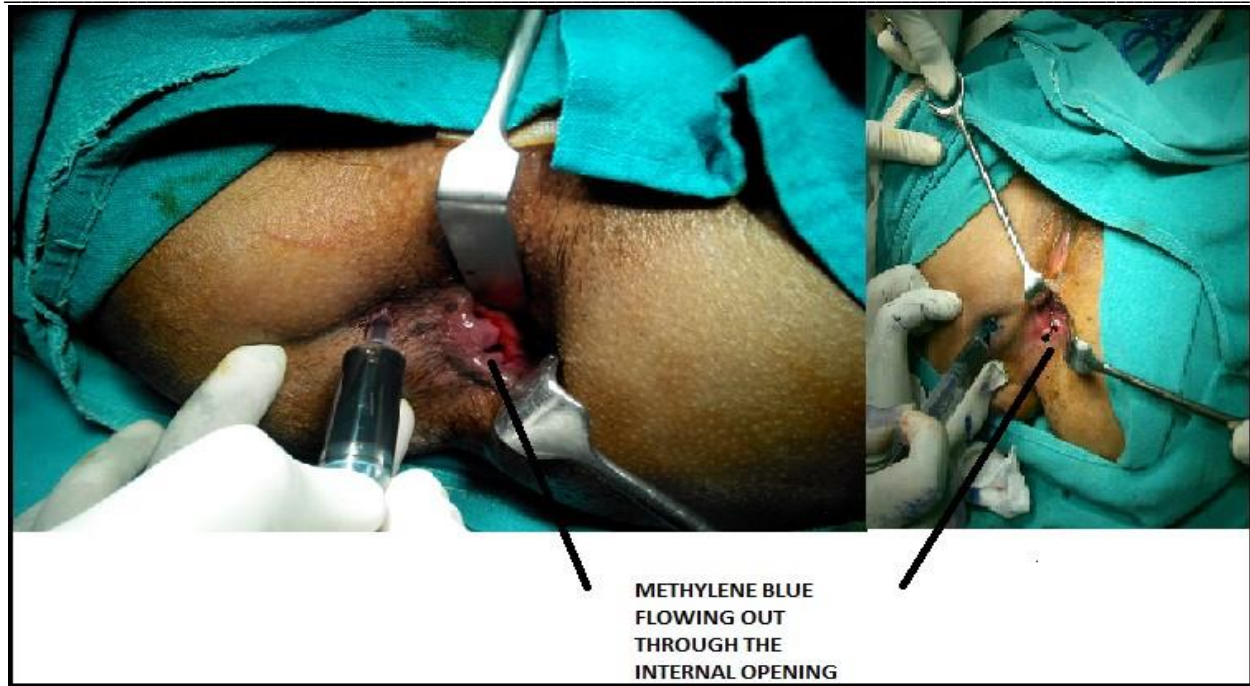


Fig 2 and 3: Methylene Blue being injected from external opening which is seen extruding through Internal opening into the Anal canal

On critical review of literature we found that none of the studies, conducted by either surgeons [3,6,7], radiologists [4,5,11,13-15], or both [10,12], mentioned the method of identification of fistula and internal opening per-operatively and on what basis had they classified the fistula. Our study showed that neither clinical examination nor MRI is a full proof mechanism for detecting the type of fistula. In the same vein in our study, chances of detecting the internal opening by clinical examination is significantly better than MRI which might be due to imaging being reported by multiple radiologists with varying experience and skill in reading the findings while pre-operative and per-operative procedures were conducted by the same set of surgeons. We do realize during the years of conducting this study that clinical examination and intraoperative methylene blue were both dependent on the skill and knowledge of the operating surgeon and hence, operator dependent. There is no doubt that Imaging is a superior method of confirmatory diagnosis and this has been proved in previous studies time and again [4,5,10-15], but here we try to give Clinical

Examination and per-operative methylene blue the importance they deserve. Discussing the line of treatment, all the patients in our study were treated either by fistulectomy (78 patients) or fistulotomy (5 patients) or a combination of the two along with seton. The healing rates were comparable with large studies employing other recent methods of treatment like LIFT procedures [1], cutting seton [6] which is almost similar to ksharasutra employed by Ayurveda practitioners in our country [8] since centuries back. Traditionally fistulectomy is a reviled procedure because of apparently increased chances of post-operative anal incontinence. In our case we offset this by employing seton placement whenever we felt significant amount of sphincter muscle has to be divided to do a complete fistulectomy with good results- only one patient, a 23 year old woman had faecal incontinence to liquids for whom two separate trans-sphincteric fistulas were excised in the same sitting. Even that was resolved conservatively by perineal exercises [fig 4].

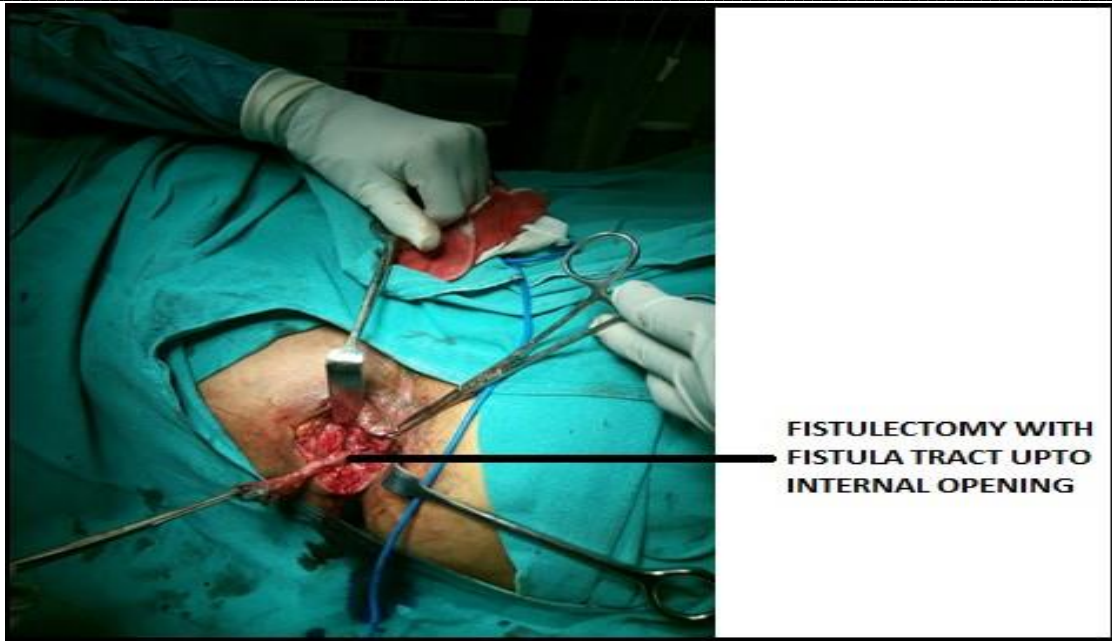
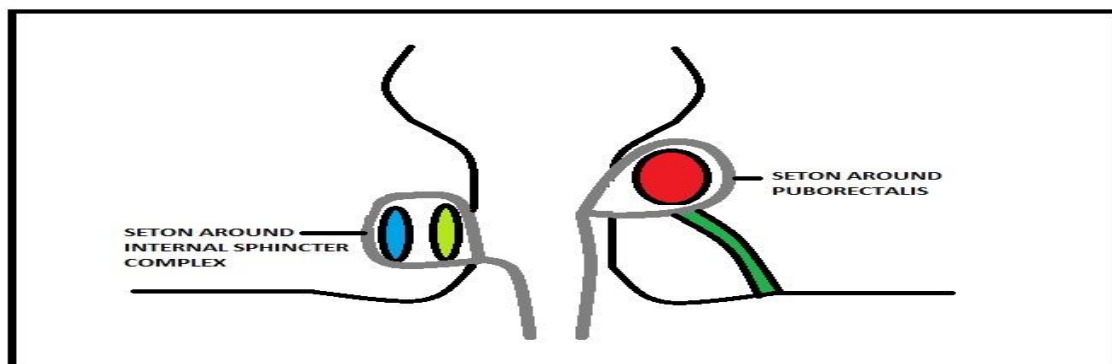


Fig 4: Fistulectomy with tract excised upto internal opening

The average time taken for the fistula to heal in our series was 5.5 weeks. Even the complex branching and horseshoe fistulas healed within 4 months, the longest one taking 17 weeks. This obviates the belief that more complex procedures like mucosal or rectal advancement flaps are needed for the treatment of complex fistulas.

Almost all the recurrences in our series were in patients in whom the internal opening could not be identified even on methylene blue injection or a track which was seen on MRI but could not be identified intraoperatively.

This further strengthened our view that delineating the fistula anatomy is of paramount importance in removing all sources of sepsis and achieving a permanent cure. In patients where we thought that the fistula track was extending above the puborectalis, we used a combination of loose and cutting seton [PD5][P5]. Cutting seton slowly cuts through the sphincter complex whereas the loose seton acts as a wick drainage for the exudates and prevents the skin from closing prematurely over the wound. In our experience, we have found that this combination works better than either cutting or loose seton alone.



PD5: Seton around the puborectalis (red colour) for Trans-sphincteric fistula (green coloured track) on right; Seton around the external sphincteric complex for low trans-sphincteric fistula on the left

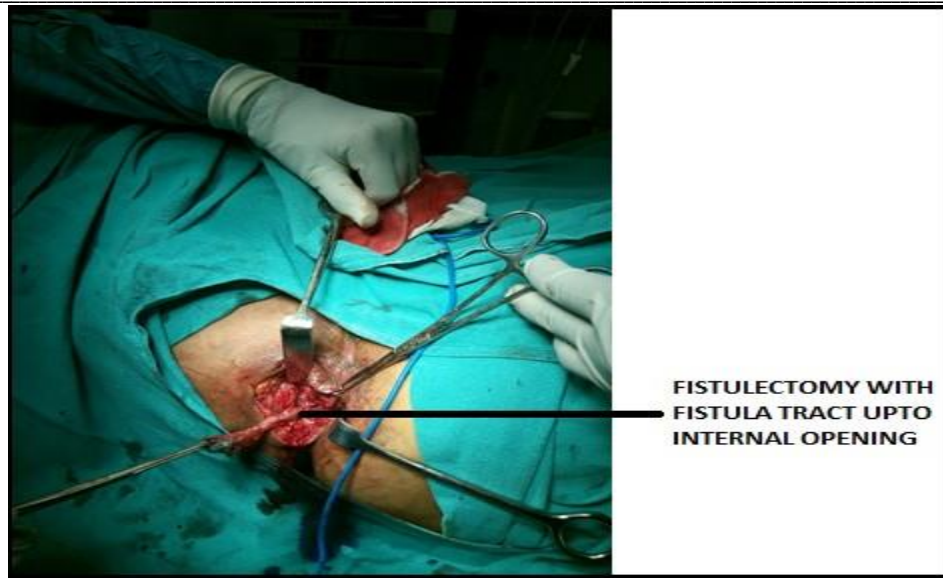


Fig 5: Seton in situ in a healed wound following fistulectomy for a patient with recurrent/ incompletely treated fistula (done elsewhere).

The disadvantage with applying a seton is that we have to contend with patients who are not ready to come for regular follow ups and those who do not agree to undergo a second procedure for seton removal as happened to two patients of our series in whom the recurrence was suspected to be due to a seton incorporated in the wound which triggered a foreign body reaction. Advantages of combining a seton with fistulectomy or fistulotomy is that we minimise the amount of tissue which has to be cut through by the seton to only the sphincter complex, thus improving the time for healing [P6].Fistulectomy also provides us with the specimen which can be sent for Histopathological Examination thus helping us in identifying specific causes like Tuberculosis, Crohn's disease and malignancy which was diagnosed in two patients of our series and healed completely on Antituberculous treatment.

Conclusion

At the beginning of our study, we aimed to re-emphasize the importance of good clinical examination in delineating the anatomy of the internal opening and fistula track, which to a large extent we satisfactorily did. However, during the years of conducting this study we not only discovered that combining a fistulectomy or fistulotomy with a seton placement was a superior method of surgical intervention which contributed to decreasing morbidity and recurrence, we can actually say with fair amount of conviction that injection of methylene blue revealed branches, hidden pockets of

pus and extension of tracts on the operating table which were missed or failed to be reported by radiologists in the MRI's and thus could be relied upon as a reasonable method of investigation in the absence of Imaging or where financial constraints are present. Correct delineation of fistula anatomy and internal opening by intra-operative methylene blue supported by careful clinical examination and imaging goes a long way in alleviating the suffering caused by persistent pain and discharge in the perianal region even in long standing disease. The important thing to be noted is to avoid a dogmatic and rigid approach to the disease as after all human beings are complex animals and fistula in Ano is a complex disease.

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