

A Hospital Based Comparative Assessment of MRI Findings versus Intraoperative Findings in Patients of Fistula in ANO: An Analytical Study

Santosh Kumar¹, Anil Kumar²

¹Senior Resident, Department of General Surgery, Darbhanga Medical College and Hospital, Darbhanga, Bihar, India

²Associate Professor and HOD, Department of General Surgery, Darbhanga Medical College and Hospital, Darbhanga, Bihar, India

Received: 09-4-2023 Revised: 14-05-2023 / Accepted: 05-06-2023

Corresponding author: Dr. Santosh Kumar

Conflict of interest: Nil

Abstract

Aim: The aim of the present study was to compare MRI findings to intraoperative findings in patients of Fistula in ANO.

Methods: The study was conducted over a period of 12 months in Darbhanga Medical College and Hospital, Darbhanga, Bihar, India. All cases of Fistula in Ano confirmed by clinical and radiological parameters were admitted in Department of Surgery. 50 patients were included in the study.

Results: Out of 50 patients admitted, position of external opening of fistula tract was anterior to transverse line in 32 (64%) patients. In 18 (36%) patients position of external opening was posterior to transverse line. Out of 50 patients admitted, position of external opening of fistula tract within 3cm distance from anal verge was seen in 40 (80%) patients. In 10 (20%) patients position of external opening was >3cm distance from anal verge. Out of 50 patients admitted, 46 (92%) patients had single external opening of fistula tract and 4 (8%) patients had multiple external openings of fistula tract. Out of 50 patients, in 38 patients correlation was seen between MRI finding and Intraoperative finding in Fistula in Ano. No correlation was seen between the MRI finding and Intraoperative finding in 12 patient.

Conclusion: MRI is a valuable and accurate preoperative investigation for evaluation of perianal fistula activity and abscess localization, so it can aid surgical decision making. Moreover, MRI allowed accurate fistula detection, internal opening identification, and evaluation of its relation to sphincters, so it can help surgical procedure planning. To summarise, evaluation of a Fistula in Ano by MRI, provides most of the details necessary for accurate evaluation.

Keywords: Fistula in Ano, MRI, fistulogram, fistulectomy, seton

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Introduction

Perianal fistula (PAF) is an abnormal tract communicating an external cutaneous opening in the perianal region to an internal opening, most often in the anal canal. [1] PAF is one of the common

anorectal disorders in surgical practice [2] with high prevalence, which predominantly affects young adult males. [3] Anal glands are situated in the intramuscular plane at the level of the

dentate line in the anal canal. [4] The burden of anorectal sepsis is high [5], and persistent infection may spread in circumferential or in axial direction, resulting in different types of fistulas [4] within the first year of presentation with an abscess. [5] Clinically, the Parks Classification and Perianal Disease Activity Index (PDAI) can be considered as the milestone for classifying patients with PAF and as the gold standard for evaluating its complexity and severity. [6]

The characteristics of anal fistulas that should be noted during physical examination include the external opening(s), internal opening, main tract, lateral burrowings from the main tract, and presence of other diseases complicating the fistula. [7] As the major cause of fistula-in-ano is crypto glandular infection, abscess formation is not unusual. Proper manipulations, such as curettage and drainage of blind sinuses, abscess cavities, and accessory tracts, are the key for successful treatment. Physical examination alone may not be sufficient in detecting these features of the fistula, and imaging modalities play a very important complementary role. [8] Fistulography, computed tomography (CT), endoanal ultrasonography (EUS), and magnetic resonance imaging (MRI) may be used to delineate anal fistulas. [9] Fistulography has not gained popularity because of its very poor diagnostic accuracy. [10] Low soft tissue contrast and need for cannulating the fistula to increase the contrast are the main causes that decrease the utility of CT in the assessment of anal fistulas. [11]

Traditionally been imaged by conventional fistulograms; the procedure involves cannulation of the external opening and injection of a water-soluble contrast into the fistula. This method has two main disadvantages: First, the primary tract and its extensions do not fill with contrast if they are plugged with pus or debris and, second, the sphincter muscle anatomy is

not imaged and hence the relation between the tract, the internal/external sphincter, and the levator any muscle is not revealed. [9] A successful outcome after fistula surgery requires an accurate assessment of the fistula and patient expectations (especially in terms of risk to incontinence). [12]

The aim of the present study was to compare MRI findings to intraoperative findings in patients of Fistula in ANO.

Materials and Methods

The study was conducted over a period of 12 months in Darbhanga Medical College and Hospital, Darbhanga, Bihar, India. All cases of Fistula in Ano confirmed by clinical and radiological parameters were admitted in Department of Surgery. 50 patients were included in the study.

Inclusion Criteria:

The patients diagnosed as Fistula- in- Ano who will undergo surgical intervention during the study period.

Exclusion Criteria:

- All congenital fistulas
- Malignancy
- Inflammatory bowel disease patients
- Incontinent patients
- Patients with rectovaginal fistula
- Cases unfit or refused for surgery.

Study Planning:

All the patients admitted were evaluated for fistula by history, clinical examination and investigation. Patients of Fistula in Ano were classified as anterior and posterior as per imaginary transverse line passing from the centre of anus, in lithotomy position. The position of external opening of fistula tract is described in o'clock position, where anterior midline position is taken as 12 o'clock and posterior midline is taken as 6 o'clock position.

Results

Table 1: Position of external opening of fistula tract (as per transverse line)

Position Of External Opening of Fistula Tract	No. of Patients	Percentage
Anterior To Transverse Line	32	64
Posterior To Transverse Line	18	36
Total	50	100

Out of 50 patients admitted, position of external opening of fistula tract was anterior to transverse line in 32 (64%) patients. In 18 (36%) patients position of external opening was posterior to transverse line.

Table 2: Position of external opening of fistula tract (distance from anal verge)

Position of External Opening of Fistula Tract	No. of Patients	Percentage
<= TO 3CM	40	80
>3CM	10	20
Total	50	100

Out of 50 patients admitted, position of external opening of fistula tract within 3cm distance from anal verge was seen in 40 (80%) patients. In 10 (20%) patients position of external opening was >3cm distance from anal verge.

Table 3: Number of external opening of fistula tract

Number of External Opening of Fistula Tract	No. of Patients	Percentage
Single	46	92
Multiple	4	8
Total	50	100

Out of 50 patients admitted, 46 (92%) patients had single external opening of fistula tract and 4 (8%) patients had multiple external openings of fistula tract.

Table 4: MRI finding correlating with intraoperative finding

	No. of Patients	Percentage
Both Correlate	38	76
Do Not Correlate	12	24
Total	50	100

Out of 50 patients, in 38 patients correlation was seen between MRI finding and Intraoperative finding in Fistula in Ano. No correlation was seen between the MRI finding and Intraoperative finding in 12 patient.

Discussion

The improved surgical techniques have rendered steep fall in recurrence rate. With better training in colorectal surgery over recent decades and more experience in surgery of the anal sphincters, surgeons

now have the confidence to try new methods for the treatment of an anal fistula to preserve the external sphincter.¹² The external anal sphincter (a striated muscle) is clearly visualized on MRI. It is hypointense on T1W, T2W, and fat-suppressed T2W images, and is bordered laterally by the fat in the ischioanal fossa. The coronal images depict the levator any muscle (levator plane), the identification of which is important to distinguish supralelevator from infralevator infection. [13]

In that initial report, MRI showed 87.5% concordance with the surgery. MRI has the ability to differentiate soft tissues, identify tracts outside the anal canal, and demonstrate the images compatible with the surgically relevant plane. [14,15] The Association of Coloproctology of Great Britain and Ireland [16] defined MRI as an imaging technique with high sensitivity and specificity for the diagnosis of the primary fistula tract and recommended this technique for imaging assessment of the complex or recurrent fistulas. Owing to high soft tissue resolution of MRI, localization of the site of internal opening of anal fistula, definition of the primary and secondary tracts and their relationships with the sphincter muscles, and presence of horseshoe fistulas and abscesses can be more accurately depicted preoperatively compared with physical examination. [17]

Out of 50 patients admitted, position of external opening of fistula tract was anterior to transverse line in 32 (64%) patients. In 18 (36%) patients position of external opening was posterior to transverse line. Out of 50 patients admitted, position of external opening of fistula tract within 3cm distance from anal verge was seen in 40 (80%) patients. In 10 (20%) patients position of external opening was >3cm distance from anal verge. Out of 50 patients admitted, 46 (92%) patients had single external opening of fistula tract and 4 (8%) patients had multiple external openings of fistula tract. Out of 50 patients, in 38 patients correlation was seen between MRI finding and Intraoperative finding in Fistula in Ano. No correlation was seen between the MRI finding and Intraoperative finding in 12 patient. In a study done by Alexander et. al, in 92.5% patients of Fistula in Ano, the position of external opening of fistula tract was < 3cm in distance from anal verge and in 11% patients, the position of external opening of fistula tract was >3cm in distance from the anal verge. [18]

Frequently, the internal orifice is narrowed, small or periodically closed. If the internal orifice with an infected intersphincteric gland is not removed, and if all additional canals of the fistula are not found and properly drained or also removed, then the probability of recurrence is high. Many failures of surgical treatment are related to insufficient identification of the fistula course, or failure in finding all of the branches or internal orifices. Additionally, difficult anatomical conditions limit aggressive diagnostics and treatment before and during surgery, due to the concern of sphincter injury and subsequent fecal incontinence. The least frequently used method – fistulography – is helpful only in visualization of the main canal of the fistula; the sensitivity of that method, according to different authors, ranges from 24% to 50%. Additional branches, frequently filled with granulation tissue, are not accessible for a contrast agent administered during that test. [19-21] In support of the efficacy of MRI for perianal fistula evaluation, Lee et al. [22] used MRI as a comparative gold standard and found transperitoneal US corresponded with MRI findings with sensitivity and PPV of 76.3% and 84.2% for fistula detection and 56.3% and 90.0% for diagnosis of abscess cavity, while colonoscopy corresponded with MRI findings with sensitivity and PPV of 67.8% and 89.9%, respectively, for fistula detection and 43.8% and 48.8% for abscess detection.

Conclusion

MRI is a valuable and accurate preoperative investigation for evaluation of perianal fistula activity and abscess localization, so it can aid surgical decision making. Moreover, MRI allowed accurate fistula detection, internal opening identification, and evaluation of its relation to sphincters, so it can help surgical procedure planning. To summarise, evaluation of a Fistula in Ano by MRI,

provides most of the details necessary for accurate evaluation.

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