

# Fistula-in-ano: Role of perineal and perianal ultrasound

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## Abstract

**Background:** The study aimed to assess the effectiveness of perineal ultrasound (PNUS) and perianal ultrasound (PAUS) in clinically diagnosed fistula-in-ano. **Method:** 128 patients (112 male and 16 female; age range 20-70 years) with clinically positive findings of fistula-in-ano were evaluated with PNUS and PAUS examination. The location of fistula, any associated abscess and secondary tracts were noted. Colour doppler was applied to assess the hypervascularity of fistula and anal canal hyperemia. **Result:** All examinations were successfully performed. Active fistulas and fistulous abscess were identified in 113 patients (88 %) and 15 patients (12%) respectively. Posterior location was more common than an anterior location. Anal canal hyperemia was seen in 105 fistulas (82%). **Conclusion:** PNUS and PAUS has high accuracy in the diagnosis of fistula-in-ano and fistulous abscesses. It is cost effective in rural area where patient cannot offer magnetic resonance imaging (MRI) investigation. MRI investigation can be limited to fistula-in-ano which have higher up extensions.

**Key words:** Perineal ultrasound; Perianal ultrasound; Fistula-in-ano; Fistulous abscess.

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## INTRODUCTION

Fistula in ano is defined as a tract lined by granulation tissue which may have external opening, internal opening or both external and internal openings. Fistula -in-ano or perianal fistula may be high level, which opens at or above the level of anorectal ring, or lower level, which opens below the level of the anorectal ring.<sup>1</sup> Fistula in ano are thought to arise from infection in small intersphincteric anal glands with abscess representing the acute manifestation and fistula in ano, a chronic condition.

Fistulous abscess is the descriptive term given to both entities<sup>2</sup> Aim of management of fistula-in-ano is to relieve the patient symptoms with low recurrence rates. Low type fistula-in-ano can be treated with lay open surgical procedure while high type fistula can be treated with sphincter saving procedures. Management of associated abscess depends on surgical drainage under general anesthesia.<sup>3</sup> Although MRI have been known to be the best modality for depicting fistulas, several studies have shown sonography to be comparable alternative method especially when considering its availability and cost.<sup>4</sup> The most widely used classification of fistula- in- ano is Parks' classification which includes intersphincteric, transphincteric, extrasphincteric and suprasphincteric types,<sup>5</sup> however the limitations of Parks' classification that subcutaneous or superficial fistulas were not included.<sup>3</sup>, the classification didn't evaluate the state of the extrasphincteric course of perianal fistula, the state of external opening. The assessment of fistula-in-ano prior to surgery should include the state of internal and external openings, fistula course, the side branches and if any fistulous abscess.<sup>6</sup>

## METHODS

The study included 128 patients attending the tertiary care centre in rural area of Kerala state India during one year of study duration with clinically positive findings of fistula-in-ano. The patients were examined using state of the art ultrasound equipment GE Logic Pro 400 with high frequency mechanical transvaginal probe. Patients were examined through Perineal and Perianal approach in left lateral decubitus position. Patients were evaluated for fistula and fistulous abscesses. In cases with Fistula-in-ano we assessed the course, length, the thickness, the side branches and eventually for the internal opening.

In cases with fistulous abscess, we assessed the size, the volume, the site and extension of abscess around and within the anal canal wall. The surgeon then noted the

sonographic findings and looked for lesions intraoperatively as suggested on sonography.

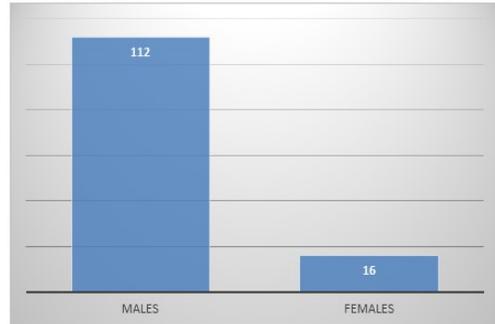


Figure 1: Showing sex distribution of fistulas-in-ano.

## RESULTS

All patients examination were successfully performed without failure. Among 128 patients clinically diagnosed with Fistula -in ano, 113 patients (88%) had active fistulas with single tract or with side branches, 15 patients (12%) had fistulous abscess. Thirty-eight (38 /128, 29.7%) had second external opening. Fistula locations were as follows: twenty-two fistulas (22/128, 17.18%) had a right anterior location, 28 fistulas (21.87%) were in the left anterior, 44 fistulas (34.37%) were in the right posterior, 34 fistulas (26.56%) were in the left posterior. In our study, posterior fistulas were more common than anterior fistulas. All fistulas demonstrated hypervascularity on colour doppler ultrasound. 32 fistulas (25%) revealed air bubbles within the fistula. Anal canal hyperemia was seen in 105 fistulas (82%). 98 fistulas (76.5%) were low lying, and 30 fistulas (23.5%) were high lying type.

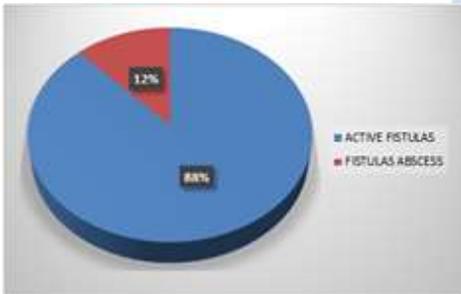


Figure 2

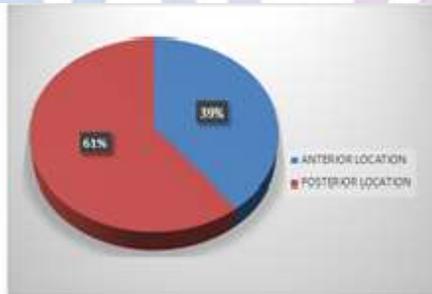


Figure 3

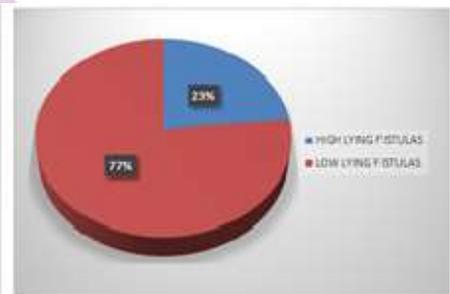


Figure 4

Figure 2: Showing percentage of active fistulas and fistulas abscess; Figure 3: Showing percentage of fistulas according to the location; Figure 4: Showing percentage of fistulas by standard classification

## DISCUSSION

Currently, the diagnosis of Fistula in ano is usually made by MRI.<sup>7</sup> MRI can provide detailed anatomical information regarding the sphincter complex and perianal inflammatory disease.<sup>8</sup> However, it is expensive and not easily available in rural area. PNUS and PAUS are a simple, cost-effective and easily available which is comparable to MRI. Endoanal sonography has already been shown useful in the evaluation of fistula in -ano.<sup>9</sup> However, placement of rigid probe in the anal canal and rectum limits assessment of the perineal region because the perineum and the buttocks are on a plane caudal to the inferior aspect of anal canal. Recent studies have reported

that PNUS and PAUS are accurate for detecting perianal fistulas and perianal abscesses.<sup>4,10</sup> Our results validate the use of PNUS and PAUS for Fistula -in- ano and fistulous abscesses. This approach has 100% sensitivity for assessing the low type of fistulas and fistulous abscesses. There are several advantages to imaging patients with Fistula -in- ano. The differentiation between fistula-in-ano and associated abscess can be clinically difficult. All collections should be surgically drained. The discovery of a primary internal opening is crucial because the most common cause of recurrence of fistula in ano is failure to eradicate the infected anal glands in the intersphincteric space. Sonography may be more sensitive for identifying

an internal opening and may also reveal additional unsuspected tracts preoperatively.<sup>4</sup> Again, failure to detect and treat lateral or upward extension also can lead to recurrence of disease. In our department, we have successfully implemented PNUS and PAUS as routine sonographic procedure for evaluation of patients with Fistula-in-ano. Procedure is well tolerated, and we believe that our findings support its value in rapid and accurate diagnosis, particularly in rural area where high end facilities are not easily available.

## REFERENCES

1. Maher A, Abbas, Christopher H, Jackson BS, Philip I, Haigh. Predictors of Outcome for Anal Fistula Surgery. *Arch Surg* 2011;146(9):1011-1016
2. Gordon PH. Anorectal abscesses and fistula-in-ano. In: Gordon PH, Nivatvongs S, eds. *Principles and practice of surgery for the colon, rectum and anus*. St. Louis: Quality medical, 1992:222-263 (Google Scholar)
3. Matthew JFX, Ricard. Anal abscess and Fistulas. *ANZ J Surg* 2005; 75:64-7.
4. Stewart LK, McGee J, Wilson SR. Transperineal and Transvaginal sonography of perianal inflammatory disease. *AJR Am J Roentgenol* 2001;177:627-632
5. Parks AG, Gordon PH, Hardcastle JD. A classification of fistula-in-ano. *Br J Surg* 1976;63:1-12
6. Goodsall DH, Miles WE. *Diseases of the Anus and Rectum*. London: Longman, 1990
7. Schwartz DA, Wiersema MJ, Dudiak KM, Fletcher JG, Clain JE, Tremaine WJ, *et al*. A Comparison of endoscopic ultrasound, magnetic resonance imaging, and exam under anesthesia for evaluation of Crohn's perianal fistulas. *Gastroenterology* 2001; 2001:1064-1072.
8. Beets-Tan RG, Beets GL, Van der Hoop AG, Kessels AG, Vliegen RF, Baeten CG, *et al*. Preoperative MR imaging of anal fistulas: does it really help the surgeon? *Radiology* 2001; 218:75-84.
9. Law PJ, Talboat RW, Bartram CJ. Anal endosonography in the evaluation of perianal sepsis and fistula-in-ano. *Br J Surg* 1989; 76:752-755.
10. Zbar AP, Oyetunji RO, Gill R. Transperineal versus hydrogen peroxide-enhanced endoanal ultrasonography in never operated and recurrent cryptogenic fistula-in-ano; a pilot study. *Tech Coloproctol* 2006; 10:297-302.

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