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From Secretion to Solution: The Transformative Role of Pus Culture and Sensitivity in Managing Fistula in Ano: A Case Report

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Abstract

Anal fistulas are often difficult to manage due to its chronic nature and resistance to antibiotic therapy. This study highlights the importance of pus culture and sensitivity testing in guiding effective treatment. A 21-year-old male patient presenting with Fistula in Ano since last eight months admitted for treatment in the Institute. He had previously taken treatment from various private hospitals but the symptoms got worsened instead of curing. Initial MRI fistula findings were s/o-, left transphincteric fistula in Ano with local abscess, and he underwent planned surgery as Partial fistulectomy with KS ligation. Despite postoperative antibiotics, the patient developed persistent pus discharge and systemic symptoms. Repeat imaging confirmed a non-healing fistulous tract. Pus culture revealed multidrug-resistant organisms, sensitive only to higher antibiotics. Targeted therapy was initiated based on sensitivity along with Standard Apamarga Ksharsutra ligation, the patient showed significant clinical improvement and the fistula healed completely within a month.

This case demonstrates the limitations of antibiotic regimens in treating complex fistulas, especially when resistant pathogens are involved. Though the MRI fistulogram is the most standard investigation in treating patients, Pus culture and sensitivity test also plays a significant role in treating Fistula, providing clear diagnostic and therapeutic direction. Together, it enables personalized treatment planning, accurate delineation of fistulous tracts, and improved clinical outcomes. The results focus on integration of Pus culture and sensitivity test and Standard Apamarga ksharsutra therapy into routine fistula management to control infection, reduce recurrence and enhance surgical outcome.

In conclusion, culture-guided antibiotic therapy, MRI fistulogram findings and Ksharsutra therapy —plays a vital role in managing fistulas, ensuring timely and effective treatment, and improving overall patient care.

Keywords: Fistula management, pus culture, antibiotic sensitivity, transphincteric fistula, targeted therapy, multidrug resistance, MRI fistulogram.

Introduction

Bhagandara is a *Marmaashrit vyadhi* which affects *bhaga, guda* and *basti,* characterised by track formation, tearing a multiple opening in the *bhag pradesha* [1] that is perianal region. It is enrolled under *Ashtamahagada*[2] and is *Krucchyasadhya vyadhi* [3] i.e. very difficult to cure. *Bhagandara* disease in ayurveda can be co related with fistula in Ano in modern sciences on the basis of signs and symptoms [4]. Fistula in Ano is a persistent inflammatory condition in which an abnormal tract develops between the anal canal and perianal skin, commonly leading to pain, swelling, and chronic discharge. Because of its recurrent nature and tendency to form complex tracts, accurate assessment is critical for successful treatment. MRI Fistulogram has become an essential diagnostic tool due to its ability to define the primary tract, identify secondary extensions, and detect occult abscesses with high precision [5-6]. Its detailed anatomical mapping significantly influences operative planning and helps reduce recurrence.

Despite the importance of MRI, Pus culture sensitivity test remains yet vital component of fistula management. Chronic or non-healing fistulas frequently harbour resistant organisms that may not respond to commonly prescribed empirical antibiotics [7-8] Identifying the specific pathogens present in the discharge and understanding their susceptibility profile allows clinicians to select appropriate, targeted antimicrobial therapy. This improves control of residual infection, reduces bacterial burden, and creates a more favourable environment for wound healing [9]. While multiple studies have underscored the diagnostic value of MRI, very few have addressed the combined utility of culture-guided antimicrobial therapy and Ksharsutra therapy. This represents a significant gap in the literature, particularly in settings where patients show inadequate response to standard antibiotics or develop recurrent symptoms after surgery. An integrated diagnostic approach may play a crucial role in such challenging cases, especially in the current era of growing antimicrobial resistance.

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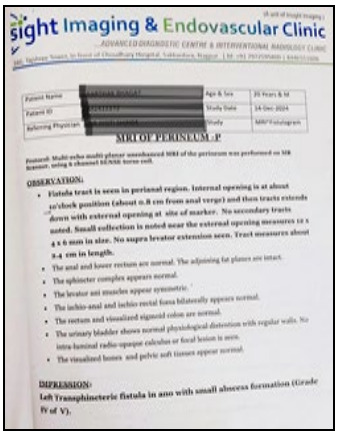
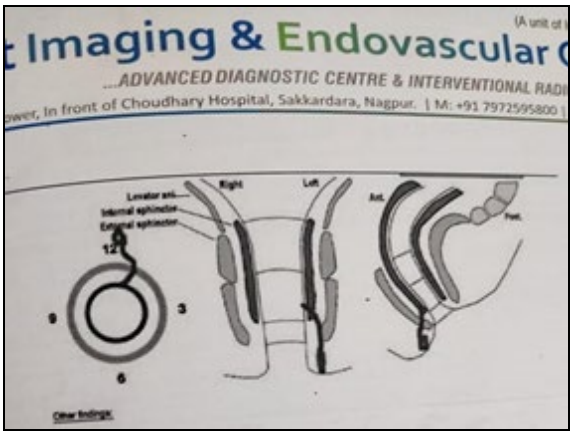
The objective of this case report is to highlight the complementary roles of pus culture with sensitivity test and Ksharsutra therapy in the evaluation and management of a transphincteric fistula in Ano. The case demonstrates how microbiological results can alter therapeutic decisions and improve outcomes when empirical regimens fail. Although the study is limited to a single patient and cannot be generalized, it emphasizes the clinical relevance of microbiological surveillance in preventing treatment delays, avoiding inappropriate antibiotic use, and enhancing postoperative recovery.

Chief Complaints

A single case report was conducted in the Department of Shalyatantra at Pakwasa Hospital Nagpur between December 2024 to Feb 2025. All procedures were performed under institutional guidelines after obtaining informed consent. The study included a 21 years old male patient complaining- Intermittent pus discharge from anal region with pain in perianal region pain since last 8 months. Despite multiple courses of various antibiotics prescribed by local medical practitioners, the symptoms persisted. Then he visited OPD of the Institute and got admitted for treatment.



Previous MRI report-14.12.24



Diagramatic presentation

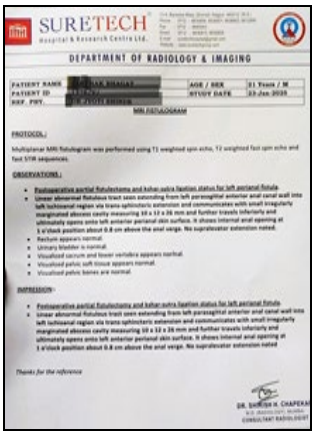
On first visit in OPD

On examination there was huge perianal swelling extending from 12 to 2 o'clock position on left side with all signs of inflammation. No external opening was observed. A detailed history was taken and necessary investigations including CBC, HIV, HBsAg, RBS, Mantoux test were carried out to assess the patient prior to surgery. MRI fistula done on 14 December 2024, revealed a left transphincteric fistula-in-Ano Grade IV with a small abscess.

After pre-operative assessment, the patient underwent partial fistulectomy with *Kshar-Sutra* (KS) ligation on 17 December 2024. Postoperatively, the patient received intravenous broad-spectrum antibiotics for five days, followed by oral antibiotics. Wound care included daily sitz bath thrice a day proper cleaning and dressing, weekly change of *Ksharsutra* with adjuvant medicinal therapy. On postoperative days 8–9, the patient developed a thick green purulent discharge from the operative site despite ongoing antibiotic therapy, and this intermittent discharge persisted for one month with no observable improvement in wound healing. Owing to systemic symptoms, including subjective fever and weight loss, a CBNAAT test using wound pus was performed to rule out tuberculosis, which returned negative. A repeat MRI fistula study on 23 January 2025 demonstrated a persistent left transphincteric fistulous tract with abscess. At last, we performed Pus culture and sensitivity test done on 24 Jan 2025 which revealed that the causative organism exhibited resistance to most used antibiotics and was sensitive only to higher agents.

Just after surgery -17.12.24

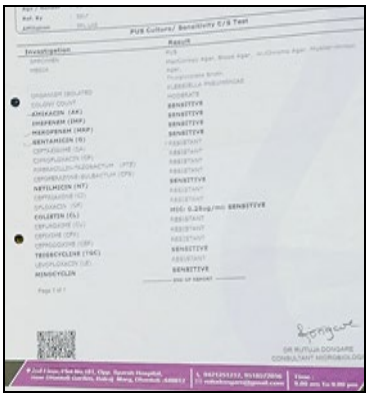
15 days after surgery with pus discharge



Repeated MRI a month after surgery

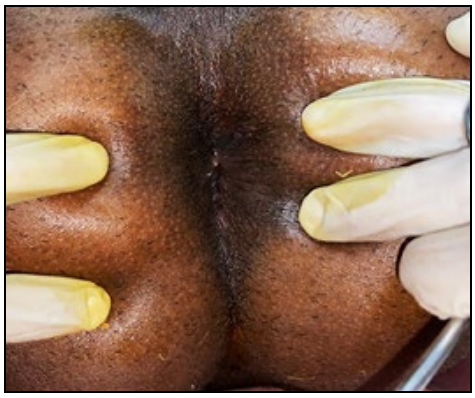
Review of the treatment history indicated prior exposure to inappropriate and resistant antibiotics, likely contributing to infection persistence and delayed fistula healing [10, 11, 12]. According to pus culture and sensitivity test antibiotic therapy was modified in accordance with the organism's susceptibility profile. Patient was resistant to all the antibiotics except Meropenem. The patient was subsequently administered with the appropriate sensitive antibiotic regimen i.e. Tab Faropenem 300mg BD, for 14 days alongside other adjuvant medicine and Ksharsutra ligation therapy. Adjuvant therapy

included Triphala guggulu 250 mg 2-tab TDS, Arogyavardhini vati 250 mg 2tab TDS, Abhayaarishtha 30 ml BD, Sitz bath with Triphalakashaya followed by dressing. Patient was advised to take high protein and high fibre diet, daily exercise and maintain local hygiene. Meanwhile slough gradually subsided within 4-5 days and healthy granulation tissue formation was observed. There was no further purulent discharge observed and the patient was improved drastically within next 15-20 days.



Pus culture & sensitivity report a month after surgery

Improvement after targeted antibiotic therapy



Completely healed fistula

Result and Discussion

In this case, the integration of culture sensitivity guided antibiotic therapy and *ksharsutra* therapy along with adjuvant therapy proved instrumental in successfully managing a complex transphincteric fistula-in-Ano. The MRI provided an accurate anatomical map of the fistulous tract, including a small residual abscess, facilitating precise surgical planning and early recognition of persistent disease. Despite receiving broad-spectrum antibiotics following surgery, the patient developed purulent discharge and signs of systemic infection. This prompted us to perform a culture sensitivity evaluation, which revealed a pathogen resistant to commonly used antibiotics—highlighting a critical and often-neglected factor in fistula management. Some Antibiotic regimens, may be insufficient in cases where resistant organisms are driving persistent infection. Culture and sensitivity testing allowed us to tailor the antibiotic therapy to the pathogen's specific profile [13].

After initiating targeted antibiotic therapy (intravenous for three days followed by an oral course), the patient experienced rapid symptomatic relief: the discharge stopped, wound healing accelerated, and within one month the cavity had fully healed, culminating in successful *ksharsutra* cut-through. This clinical turnaround strongly suggests that directed antibiotic therapy, informed by sensitivity data, can significantly shorten healing time, reduce bacterial load, and improve overall outcomes in challenging fistula cases. However, this is a single-patient report, and there are some limitations. The favourable outcome may also have been influenced by factors other than antibiotics — such as surgical technique, host immune response, nutritional status, and diligent wound care. Moreover, because microbiological cultures are resource-intensive, the feasibility of routinely applying this approach in all settings remains uncertain.

Nonetheless, the case underlines an important message: Culture and Sensitivity test should be considered as a routine adjunct to radiological assessment, especially in recurrent or non-healing fistulas.

For future research, well-designed prospective studies are needed to compare outcomes between patients managed empirically versus those receiving culture-guided therapy. Such treatment reduces not only healing time and recurrence rates but also improves patient quality-of-life.

Conclusion

This case report highlights the synergistic value of culture-guided antibiotic therapy and standard *Apamarga ksharsutra* therapy in treating a complex transphincteric fistula-in-Ano. Targeted antimicrobial treatment, tailored to the causative organism's sensitivity profile, facilitated rapid wound healing and successful *ksharasutra* cut-through, underscoring the role of microbiological diagnostics in improving clinical outcomes.

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