ORIGINAL RESEARCH PAPER
Volume - 15 | Issue - 05 | May - 2026 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

ADVANCED ABDOMINOPELVIC ACTINOMYCOSIS MIMICKING AS PELVIC MALIGNANCY IN A PATIENT WITH LONG-TERM INTRAUTERINE DEVICE USE: A CASE REPORT

General Surgery

Dr. Riya Agarwal MBBS Surgery Resident, Department of General Surgery Department of Surgery, Fortis Hospital, Mohali, Punjab, India

Dr. Piyush Sharma* MBBS Surgery Resident, Department of General Surgery Department of Surgery, Fortis Hospital, Mohali, Punjab, India*Corresponding Author

Dr. Iqbal Singh Senior Consultant, Department of General Surgery Department of Surgery, Fortis Hospital, Mohali, Punjab, India

Dr. Swapna Misra MS Director-Department of Obstetrics and Gynecology Department of Surgery, Fortis Hospital, Mohali, Punjab, India

Dr. Arvind Kumawat MBBS Surgery Resident, Department of General Surgery Department of Surgery, Fortis Hospital, Mohali, Punjab, India

ABSTRACT

Background: Pelvic actinomycosis is an uncommon chronic granulomatous infection whose clinical and radiological presentation frequently mimics advanced pelvic malignancy, posing a significant diagnostic challenge. The condition is strongly associated with long-term intrauterine device (IUD) use. Preoperative diagnosis is achieved in fewer than 10% of cases. **Case Summary:** We report a 42-year-old woman with a history of long-term IUD use and prior caesarean section who presented with a three-month history of anorexia, significant unintentional weight loss, constipation, and a recent urinary tract infection. Clinical examination revealed a tender, relatively fixed 10–15 cm left iliac fossa mass extending into the left hypochondrium. Multimodality imaging—including ultrasonography, contrast-enhanced computed tomography (CT), magnetic resonance imaging (MRI), and fluorodeoxyglucose positron emission tomography-CT (FDG PET-CT)—demonstrated an infiltrative abdominopelvic process involving the uterus, bilateral adnexa, distal ureters, adjacent bowel loops, and retroperitoneal lymph nodes, with features strongly suggestive of advanced gynaecological malignancy. Serum tumour markers (CA-125, CEA, CA 19-9) were within normal limits.Exploratory laparotomy revealed a complete frozen pelvis with approximately 750 mL of thick purulent fluid, a large multiloculated abscess cavity, and dense adhesions involving the uterus, bilateral adnexa, sigmoid colon, terminal ileum, and omentum with extension to the sacral promontory. Intraoperative frozen section showed no malignancy. Surgical management included abscess drainage, adhesiolysis, debridement, bilateral ureterolysis, peritoneal lavage, and drain placement. Final histopathological examination confirmed pelvic actinomycosis, demonstrating characteristic sulfur granules. **Outcome:** The patient was initiated on intravenous beta-lactam antibiotic therapy followed by prolonged oral therapy, with subsequent clinical improvement. **Conclusion:** This case underscores the diagnostic complexity of pelvic actinomycosis as a great mimicker of advanced pelvic malignancy. A high index of clinical suspicion, particularly in women with prolonged IUD use, is essential to avoid unnecessary radical surgery. Histopathological confirmation remains the gold standard for diagnosis, and long-term antibiotic therapy is the cornerstone of treatment.

KEYWORDS

Pelvic Actinomycosis; Intrauterine Device; Pelvic Mass; Mimicking Malignancy; Frozen Pelvis; Actinomyces Israelii

INTRODUCTION

Actinomycosis is a chronic, subacute, suppurative granulomatous infection caused by Actinomyces israelii and related species—anaerobic or microaerophilic, Gram-positive filamentous bacilli that are commensal inhabitants of the oral cavity, gastrointestinal tract, and female genital mucosa [1]. The disease manifests in three principal anatomical forms: cervicofacial (50–65%), thoracic (15–20%), and abdominopelvic (approximately 20%), with pelvic actinomycosis constituting only 3% of all reported cases [2,3].

The strong epidemiological association between pelvic actinomycosis and intrauterine device (IUD) use has been well established since first described in 1928 [4]. The IUD exerts a chronic traumatising effect on the endometrium, eroding the mucosal barrier and facilitating invasion by Actinomyces spp., which are ordinarily saprophytic under normal conditions [5]. This risk escalates significantly with prolonged IUD retention, and it is estimated that IUD-associated infection is documented in up to 75% of reported pelvic actinomycosis cases [6].

The clinical insidiousness of pelvic actinomycosis—characterised by its indolent course, non-specific symptoms, and striking radiological resemblance to advanced pelvic or ovarian malignancy—results in preoperative diagnostic accuracy of fewer than 10% of cases [7]. The disease's capacity for contiguous spread across tissue planes, formation of multiloculated abscesses and pseudo-tumoral masses, retroperitoneal lymphadenopathy, ureteral involvement, and intense FDG uptake on PET-CT collectively simulate advanced gynaecological cancer [8,9].

CASE REPORT

Patient Presentation

A 42-year-old woman presented with a three-month history of progressive anorexia and significant unintentional weight loss, accompanied by constipation of four to six weeks' duration. She also reported a recent episode of urinary tract infection. Her obstetric and surgical history was notable for a lower-segment Caesarean section and long-term IUD use. She had no prior personal or family history of gynaecological malignancy.

Physical examination revealed a haemodynamically stable patient. Abdominal palpation identified a tender, relatively immobile mass of approximately 10–15 cm in the left iliac fossa, extending into the left hypochondrium. No ascites or peripheral lymphadenopathy was noted. Pelvic examination confirmed the mass to be of pelvic origin.

Investigations

Haematological and biochemical workup revealed low haemoglobin levels with no leucocytosis or elevated inflammatory markers. Serum tumour markers — CA-125, carcinoembryonic antigen (CEA), and CA 19-9 — were all within normal limits, an important negative finding given the clinical suspicion of malignancy. The persistence of normal tumour markers despite extensive disease raised the possibility of a non-malignant etiology.

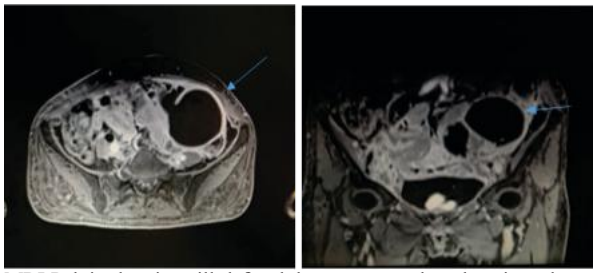
Pelvic ultrasonography demonstrated a heterogeneous abdominopelvic mass with both solid and cystic components containing internal echoes, consistent with a complex pathology. The lesion displayed an indistinct interface with the adjacent bowel loop, raising concern for dense adhesions or direct infiltration.

Contrast-enhanced CT of the abdomen and pelvis revealed a thick-walled, multiloculated pelvic collection with peripheral enhancement and internal air foci, centred in the left iliac fossa. Separate lesional

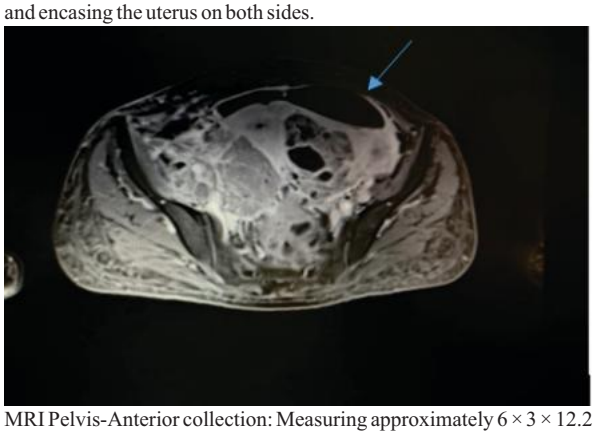
components were identified in the bilateral adnexal regions. Retroperitoneal lymphadenopathy and right-sided hydronephrosis were also demonstrated, a pattern raising concern for an advanced inflammatory or malignant abdominopelvic process. Abdominal wall involvement was noted, which, in retrospect, suggested actinomycosis.

MRI of the pelvis demonstrated an ill-defined, infiltrative process involving the uterus, bilateral adnexa, distal ureters, and adjacent bowel loops, with areas of diffuse restricted diffusion. These features heightened suspicion for advanced pelvic malignancy, particularly ovarian cancer with peritoneal spread.

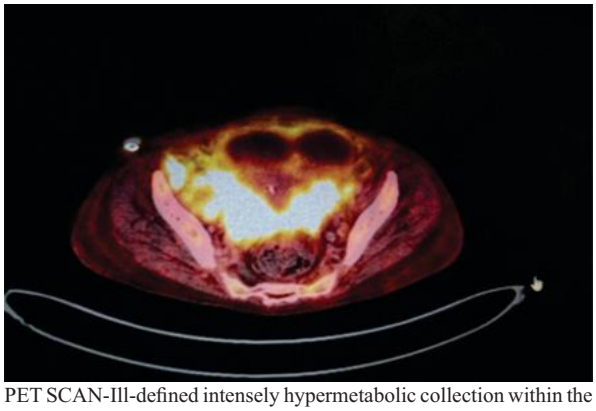
FDG PET-CT demonstrated avid metabolic uptake within the lesion and adjacent structures. While this finding further supported a malignant aetiology, it is noteworthy that Actinomyces infections are well recognised to generate significant FDG uptake due to intense granulomatous inflammation, and this metabolic avidity should not be interpreted as unequivocal evidence of malignancy in the appropriate clinical context [10].



MRI Pelvis showing ill-defined, heterogeneously enhancing, sheet-like soft tissue lesion in the pelvis involving bilateral adnexal regions and encasing the uterus on both sides.



MRI Pelvis-Anterior collection: Measuring approximately 6 × 3 × 12.2 cm (CC × AP × TR) Located anterior to the lesion just beneath the anterior abdominal wall. Shows thin internal septations.



PET SCAN-Ill-defined intensely hypermetabolic collection within the pelvic cavity, predominantly on the left side - suggestive of primary pathology (likely infective/inflammatory) with associated intestinal obstruction

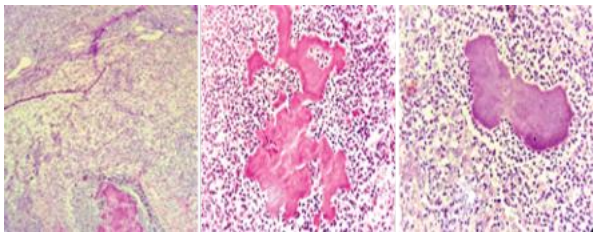
Intraoperative Findings

Given the strong suspicion of advanced pelvic malignancy, the patient underwent exploratory laparotomy. Upon entering the peritoneal cavity, approximately 750 mL of thick purulent fluid was encountered. A large multiloculated abscess cavity was identified, with dense adhesions involving the uterus, bilateral adnexa, sigmoid colon, terminal ileum, and omentum, resulting in a complete frozen pelvis.

The inflammatory process extended to the sacral promontory, with associated ureteral involvement and proximal bowel dilatation. Surgical management included abscess drainage, extensive adhesiolysis, debridement of necrotic tissue, bilateral ureterolysis, peritoneal lavage, and placement of surgical drains. The intrauterine device was retrieved. Intraoperative frozen section analysis showed no evidence of malignancy.

Histopathological Findings

Final histopathological examination of the surgical specimens confirmed the diagnosis of pelvic actinomycosis. The ovarian tissue was replaced by a dense inflammatory infiltrate comprising foamy macrophages, lymphocytes, and plasma cells. Multiple basophilic Actinomyces colonies were identified, surrounded by degenerating neutrophils forming the characteristic rosette configuration — the pathognomonic sulfur granules — confirming the diagnosis beyond doubt.



Photomicrograph showing Photomicrograph showing actinomyces colony surrounded by Neutrophilic microabscess 40x actinomyces colony in ovarian
parenchyma 10x

Postoperative Course and Management

The patient was initiated on intravenous penicillin-based antibiotic therapy in the immediate postoperative period, followed by planned long-term oral amoxicillin therapy for 6–12 months. She demonstrated progressive clinical improvement with resolution of symptoms and was discharged in stable condition. Follow-up evaluation showed continued recovery without evidence of recurrence

DISCUSSION

Pelvic actinomycosis remains a diagnostically challenging entity due to its close resemblance to advanced pelvic malignancy [2,11]. The association with long-term IUD use is well established, with colonisation reported in a significant proportion of users [12].

The disease spreads contiguously across tissue planes, producing granulomatous inflammation, fibrosis, and abscess formation, resulting in mass-like lesions that mimic malignancy [3,14]. Radiological findings—including multiloculated masses, lymphadenopathy, ureteral involvement, and FDG uptake—are often indistinguishable from malignant processes [8–10,15].

An important diagnostic clue in this case was the presence of normal tumour markers despite extensive disease, which should prompt consideration of alternative non-malignant etiologies [7].

Preoperative diagnosis is difficult. Image-guided biopsy may be inconclusive, and intraoperative frozen section plays a critical role in avoiding unnecessary radical surgery.

Treatment is primarily medical, with prolonged beta-lactam antibiotic therapy forming the cornerstone of management. Surgical intervention is reserved for complications or diagnostic uncertainty [1,2,18].

Clinical Learning Points

Pelvic actinomycosis can closely mimic advanced pelvic malignancy Long-term IUD use is a critical risk factor Normal tumour markers despite extensive disease are an important clue FDG PET-CT findings may be misleading Frozen section can prevent unnecessary radical surgery Long-term antibiotic therapy leads to excellent outcomes

CONCLUSION

Pelvic actinomycosis is an important differential diagnosis in women

presenting with a pelvic mass, particularly in the context of long-term IUD use. Early recognition and appropriate management can prevent unnecessary radical surgery and result in excellent outcomes.

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