

## Bladder Actinomycosis: Mimicking Tumour

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### Abstract

Actinomycosis is a chronic, granulomatous disease caused by the *actinomyces* species, most commonly, *Actinomyces israelii*. Primary actinomycosis of the bladder is rare and is usually associated with abdomino-pelvic infection and prolonged use of Intrauterine Device (IUD). On imaging, it can often be mistaken for a malignancy. We report a case of a 55-year-old female with weight loss, anaemia and chronic pelvic discharge with a history of a retained IUD. An initial Computerized Tomography (CT) revealed an adnexal mass that was pelvically resected. A rigid cystoscopy was then performed and an incidental posterior bladder wall mass revealed actinomycosis.

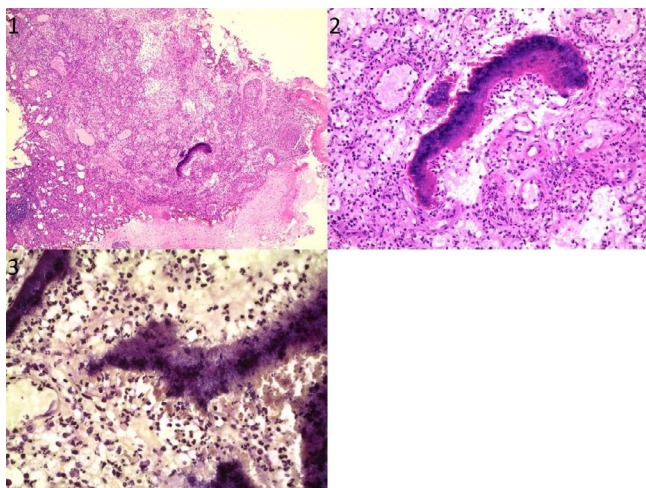
**Keywords:** Actinomycosis; Bladder; Intrauterine device; Bladder tumour; Infection

### Introduction

Actinomycosis is a chronic, suppurative and granulomatous infection caused by the *actinomyces* species (e.g. *A. israelii*, *A. propionicus* and *A. naeslundii*) which is an anaerobic Gram-positive bacteria. This type of infection commonly occurs in middle-aged group with male predominance. It is also present as commensal flora of the oral cavity as well as gastrointestinal tracts. Its pathological form involves the cervico-facial, abdomino-pelvic and thoracic regions and rarely the genitourinary system. Actinomycosis of the urinary bladder has previously been associated with prolonged use of Intrauterine Devices (IUD).

### Case Report

We present a case of a 55-year-old woman with a history of fatigue, weight loss, a chronic pelvic discharge and a non healing ulcer on her right buttock. She was generally fit and well although previously noted to have iron deficiency anaemia. She never complained of haematuria or lower urinary tract symptoms. Her chronic pelvic abscess discharge was on a background of a retained Intrauterine Contraceptive Device (ICD) that was inserted six years prior to presentation.



**Figure 1:** Gram positive bacterial colonies consistent with Actinomycosis.

Laboratory investigations were essentially normal, without evidence of anaemia or raised inflammatory markers. Urine MCS showed slightly raised leucocytes and erythrocytes of 90 & 33 x10<sup>6</sup>/L but no isolated bacterial growth. A Computerized Tomography (CT) of the abdomen and pelvis showed extensive bilateral retroperitoneal mass, extending from L4 to the pelvic cavity involving bilateral gluteal maximus muscles and extending into the right buttock and skin. There was evidence of left hydronephrosis and hydroureter whilst the right kidney was normal in appearance. In addition, there was an irregular sclerotic and lytic appearance of the L5 vertebra sacrum indicative of a pelvic malignancy. All other organs in the imaging were otherwise normal.

Initially, a core biopsy to the subcutaneous lesion of the buttock was undertaken which showed inflammatory granulation tissue. A colonoscopy did not reveal any abnormalities.

Pelvic laparoscopic procedure showed a frozen pelvis and led on to an open conversion hysterectomy and bilateral salphingo-oophorectomy and left ureterolysis. Due to the hydronephrosis, a rigid cystoscopy was also performed and incidentally, a single lesion was found at the posterior aspect of the bladder wall and biopsied for histological review.

Histopathology showed left tubo-ovarian abscess with actinomyces with suppurative inflammation as well as oedematous granulation tissue but no malignancy was identified. In the bladder, 0.2 grams of tan tissue was excised and the microscopic sections displayed florid oedema with sheets of neutrophils and macrophages that suggested inflammation on the polypoid portions of the bladder mucosa. There was focal cystitis cystica with inflammation through one region. One of the fragments revealed filamentous Gram positive bacterial colonies consistent with

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Actinomyces (Figure 1). Post-operatively, she was commenced on intravenous antibiotics.

## Discussion

Actinomycosis is a chronic granulomatous infection caused by gram-positive anaerobic bacteria of the Actinomycetes species. It is characterized by mixed suppurative and granulomatous inflammatory reactions, connective-tissue proliferation, and the presence of sulfur granules which often occurs in clusters of filaments [1-6].

The sulfur granules are nearly pathognomonic for actinomycosis, although similar findings have been reported with other infective strains such as *Nocardia brasiliensis*, *Streptomyces madurae* and *Staphylococcus aureus* presenting as *botryomycosis*. These sulfur granules are approximately 0.1-1 mm in diameter and may be seen as yellowish particles with the naked eye [2].

Microscopically, the granules manifest a cauliflower like shape at low magnification and at higher magnification (X100) appear as clusters of polymorphonuclear neutrophils surrounding the clump of filamentous actinomycete microcolonies. Gram stain renders these microcolonies visible as gram-positive, intertwined branching filaments, with radially arranged, peripheral hyphae [2].

Actinomycosis infection occurs most commonly in middle aged groups between 20 and 50 years of age with the ratio of male to female of 3:1. While the organism can be found as a normal flora inhabiting the oral and gastrointestinal tract in normal people, clinical actinomycosis occurs most commonly in the cervicofacial (~60%), abdomino-pelvic (22%) and thoracic (15%) regions [1,3,4-6,7]. Actinomycosis rarely involves the genito-urinary system and it is usually secondary to abdomino-pelvic infection [6-8].

Other known predisposing risk factors include abdominal surgery, tubo-ovarian abscess, ruptured appendicitis and intrauterine contraceptive devices [1,2]. In addition, previous surgery and poor hygiene have also been recognised as associated risk factors [3,6]. We present another case where the confirmation of the diagnosis of abdomino-pelvic actinomycosis was only noted postoperatively following exploratory laparotomy and pelvic resection for a suspected malignancy [2]. The other main differential diagnosis that was considered was pelvic inflammatory disease.

Multiple cases of actinomycosis have been reported relating to female pelvic actinomycosis and the use of an IUD [1,5,7-9]. One study has identified ninety-two cases of actinomycotic abscesses associated with retained IUD or intravaginal foreign bodies with an average of 8 years in situ while less than 16% of the cases had IUD for less than 3 years [5].

Generally, the most common complaints associated with this infection were abdominal pain 85%, fever and weight loss 44% while 24% of patients complaint of vaginal discharge. In terms of laboratory investigations, about 70% of the patients were anaemic and had leukocytosis on blood profile [5-8,10].

In our case report, the patient had lost ~15 kg over the preceding two years and had a chronic pelvic discharge for more than 6 months. Her

IUD was retained for six years which is consistent with the literature. Surprisingly, our patient did not have a leucocytosis or positive urine culture to suggest an infection.

Postoperatively – she was treated with intravenous ampicillin for three days and then changed to phenoxymethylpenicillin and her clinical course improved.

## Conclusion

In conclusion, we present another rare case of primary bladder acintomycosis. Whilst this can certainly mimic malignancy on imaging, it is imperative for clinicians to consider actinomycosis as a differential diagnosis for abdominal pelvic mass, particularly with women with a retained IUD and pelvic discharge.

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