



PELVIC ACTINOMYCOSIS FOR THE ABDOMINAL RADIOLOGIST

Dr J Addis, ST5 Radiology

Dr A Madhavan, ST3 Radiology

Prof S A Sukumar, Consultant GI Radiologist

Manchester University NHS Foundation Trust

LEARNING OBJECTIVES



Pelvic actinomycosis is a chronic pelvic infection with diverse clinical presentations and a great mimicker of pelvic malignancy.

The aims of our educational poster are to:

- ✦ Describe pelvic actinomycosis, its clinical features and associated risk factors
- ✦ Illustrate the characteristic imaging manifestations of pelvic actinomycosis using our cohort of cases

BACKGROUND

- ✦ Actinomycosis is an uncommon chronic suppurative infection caused by gram positive bacterium *Actinomyces israelii* ¹⁻³
- ✦ *Actinomyces* forms part of the endogenous flora in the female genital tract.
- ✦ Spreads via disruption of the mucosal barrier due to trauma, surgery, or foreign bodies
- ✦ Increased prevalence in women with IUD
- ✦ The progressive and infiltrative nature of the disease can be frequently mistaken for malignancy or other granulomatous infection such as TB¹

BACKGROUND

Indolent course : Average symptom duration of 2 months at diagnosis³

Clinical symptoms can mimic malignancy and include²⁻⁶:

- lower abdominal pain (85%)⁵
- weight loss (44%)⁵
- palpable mass
- vaginal discharge (24%)⁵
- fever
- change in bowel habits (constipation/diarrhoea)
- nausea
- weight loss

Bloods: leukocytosis, raised inflammatory markers and anaemia.⁵

CASE 1

31year old female

- presented to general surgery department
- 1 month history of constipation
- not responding to laxatives.
- low abdominal pain

Bloods: leukocytosis, raised CRP.

CASE 1

CT:

- large bowel obstruction
- pelvic mass
- malpositioned IUD

Initially thought to be
invasive cervical tumour



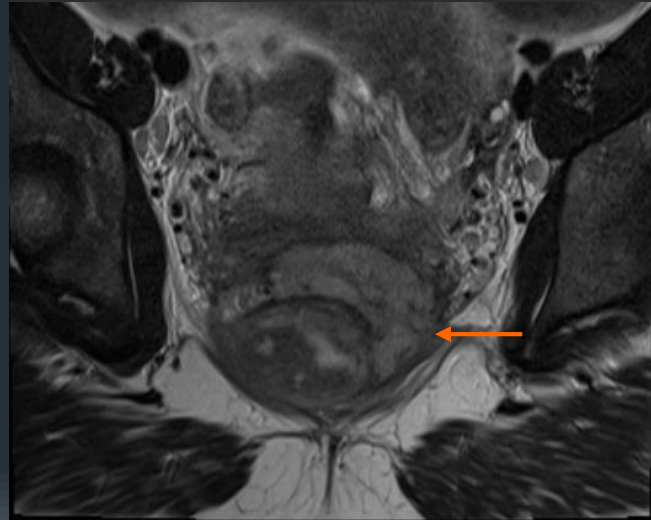
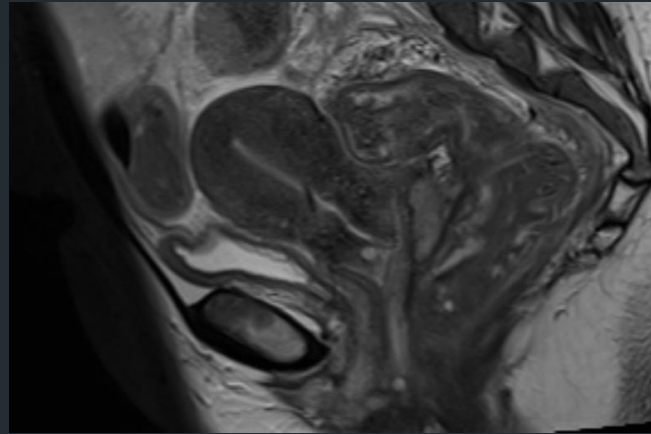
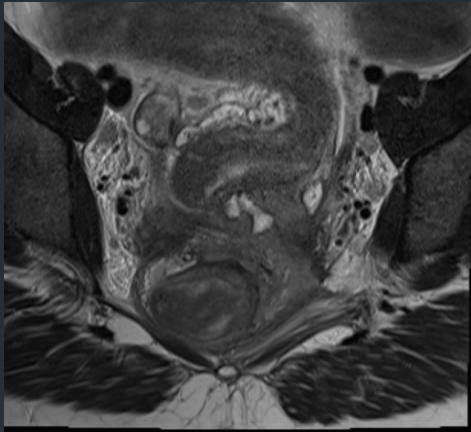
EUA: firm mass behind posterior vaginal wall, pus in
the posterior fornix sent for culture.

Microbiology - *Actinomyces israelii* isolated

CASE 1

MR: T2W axial and sagittal

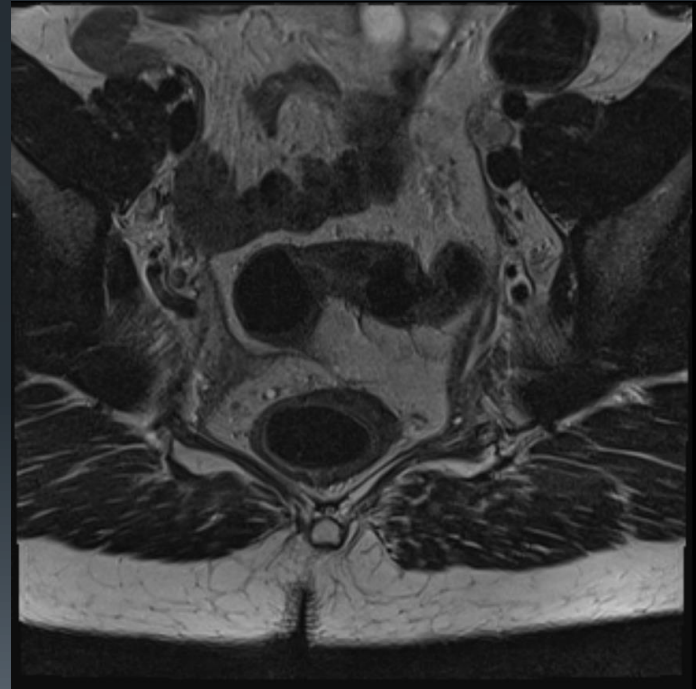
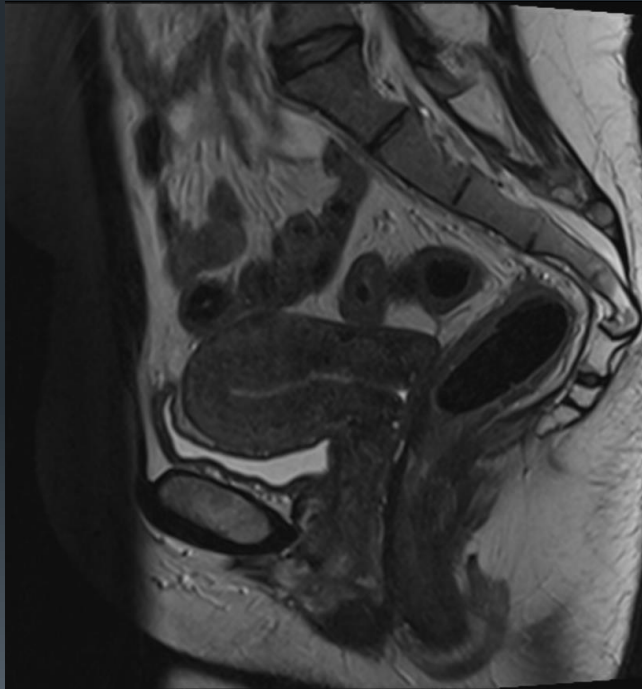
Indurated pelvic fat with mass-like abscess encasing and filling the pelvic cul de sac and extending to involve the rectum



CASE 1

Post treatment scan: 3 months later

T2W Sagittal and axial: resolution of abscesses, cul-de-sac changes and rectal thickening.



CASE 2



50 year old female

- referred to urology
- 5 day history of suprapubic pain

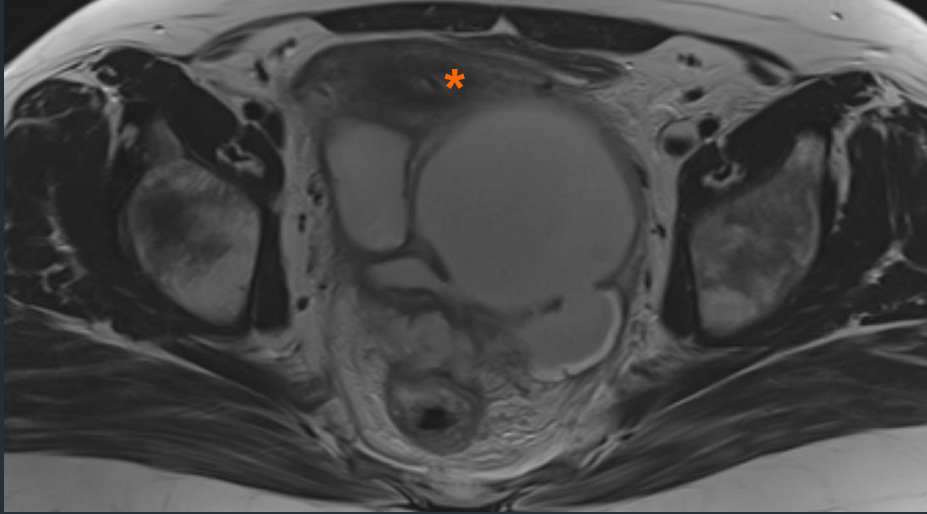
Bloods: raised white cell count (16.0) and CRP (319).

Treated as ?UTI ? Renal calculi

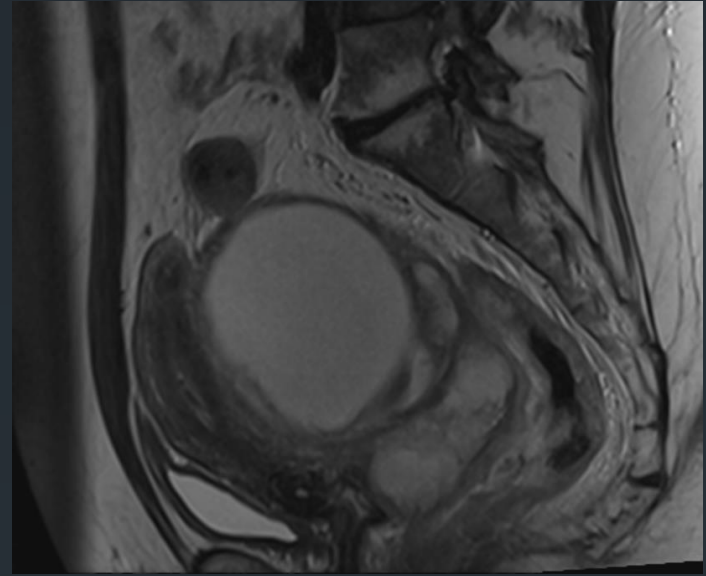
CT KUB:

- bilateral adnexal masses
- IUD (*) noted within the uterus.

CASE 2

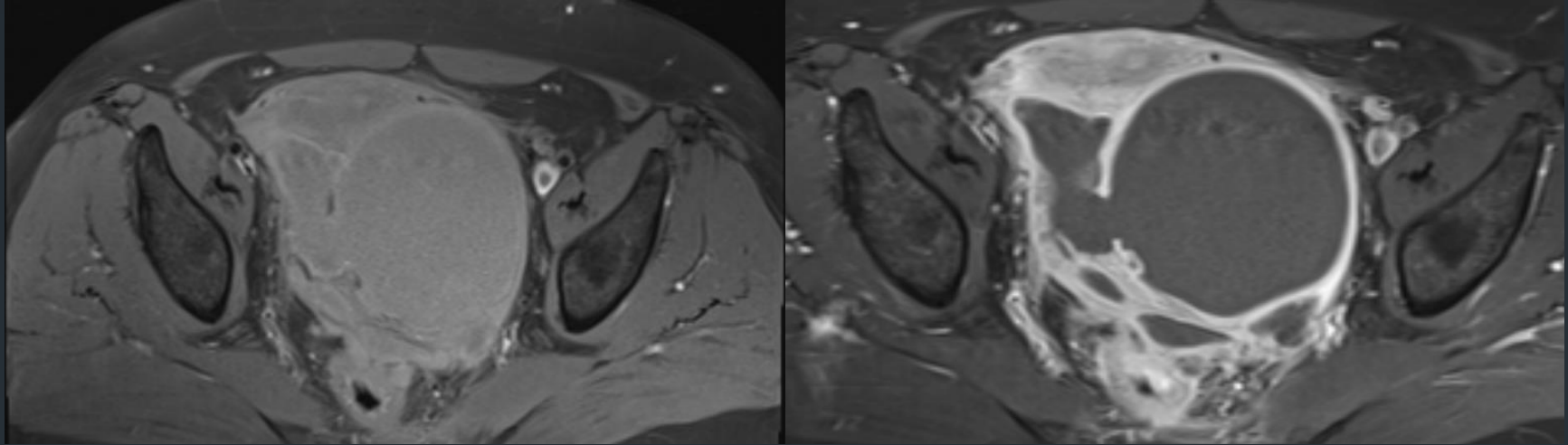


LEFT: T2W: thick walled multi-loculated, communicating pelvic abscesses with pelvic cul-de-sac infiltration (*) IUD



RIGHT: Abscess with high/intermediate signal within the pouch of Douglas with rectal involvement

CASE 2

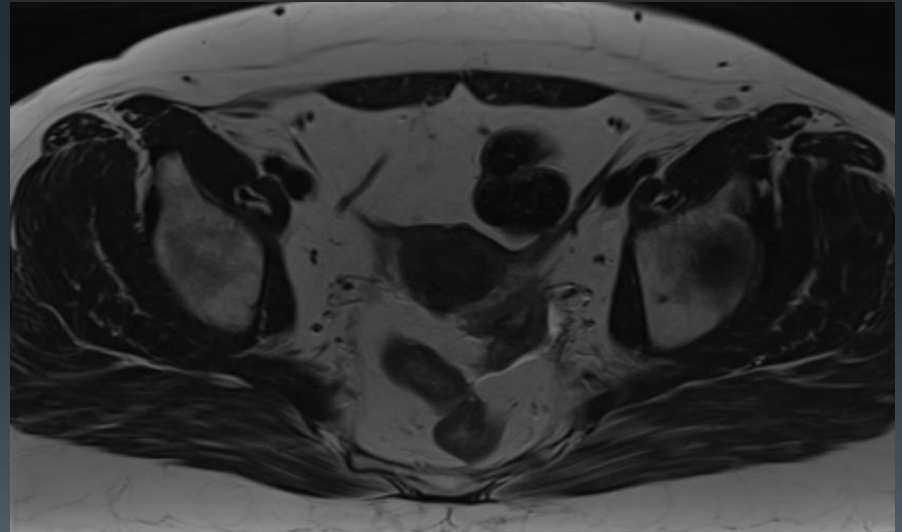
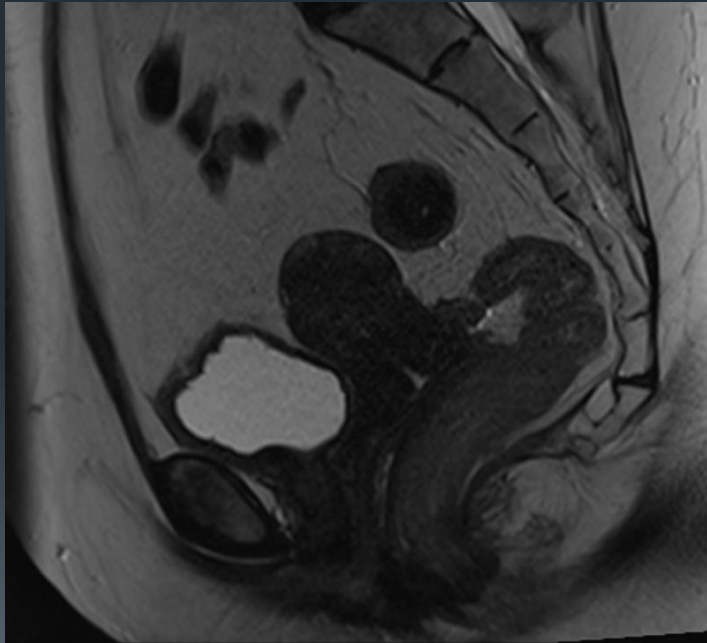


LEFT: T1W FS: pre-contrast

RIGHT: T1W FS with contrast : Intense enhancement of abscess walls and induration

CASE 2

Post treatment scan: 8 months later, resolution of abscesses and rectal thickening.



CASE 3

59 year old female

- lower abdominal pain

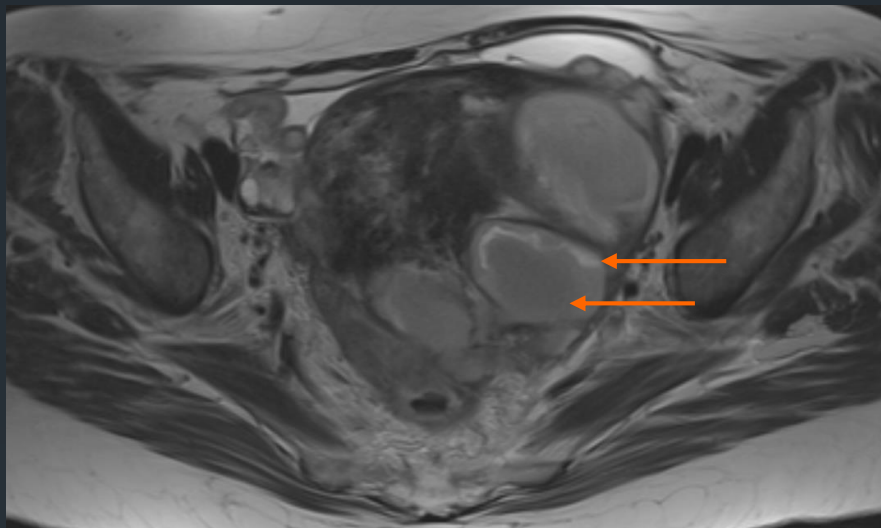
US performed by gynaecology:

- pelvic mass
- removed IUD at time of examination, not sent for microbiology

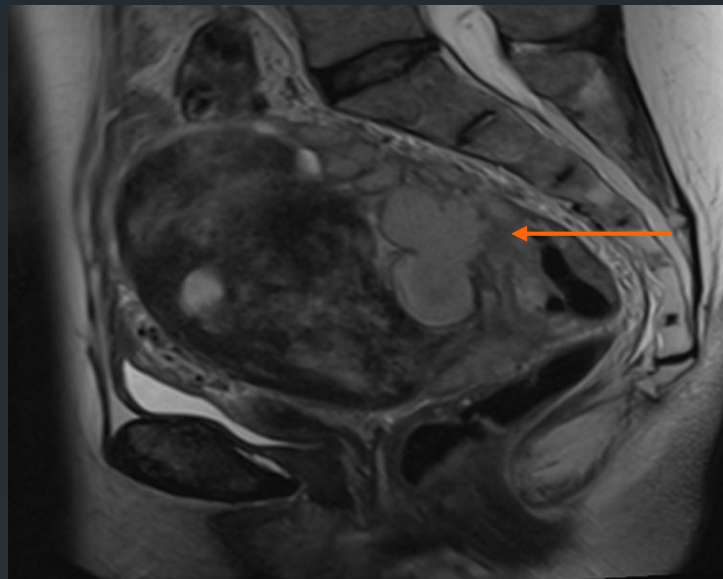
Referred for MRI

- ?malignancy

CASE 3

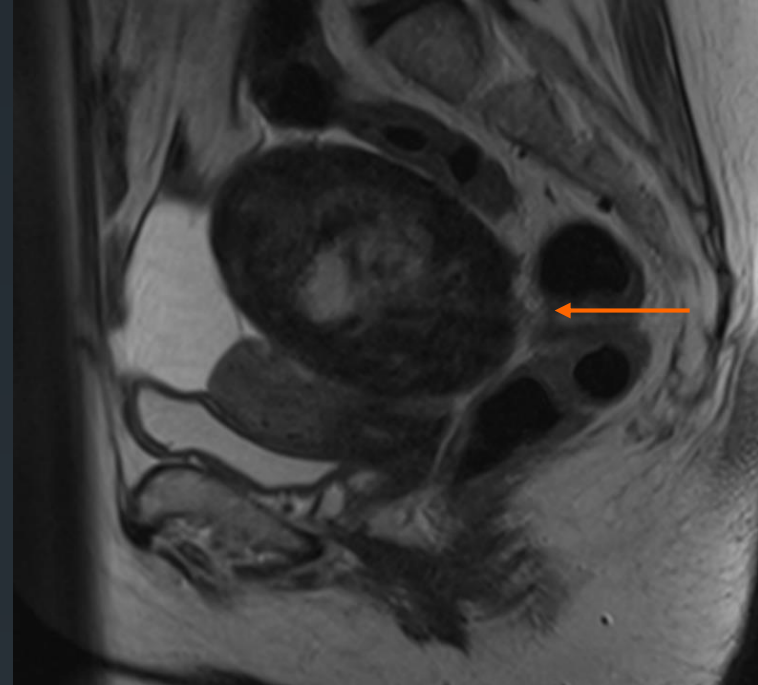
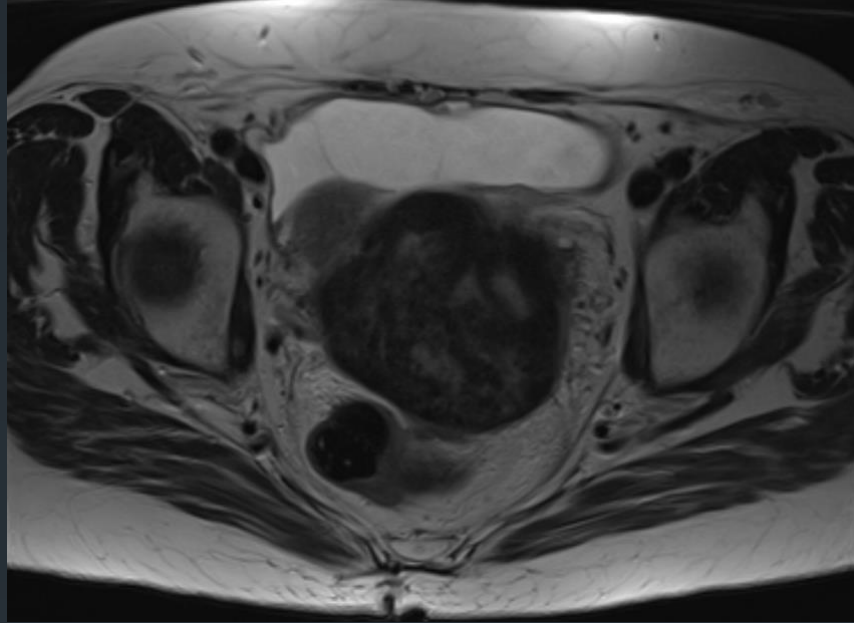


Left: Axial T2W: multi-loculated pelvic abscesses with thick walls and “gelatinous” content. Collections show peripheral high signal intensity with central intermediate-to low intensity. Pelvic free fluid and indurated fat within the pelvic cul-de-sac.



Right: Sagittal T2W: Incidental large intramural fibroid showing reactive change

CASE 3



Post treatment scan: following 6 weeks of antibiotic therapy
Axial and sagittal T2W MR: reduction in volume of pelvic disease and
resolution of changes within the pelvic cul-de-sac.

IMAGING FEATURES



Spectrum of imaging manifestations include ^{1,2,4,6}:

- pelvic/tubo-ovarian abscess formation (appear more solid than usual TOA)
- solid portions demonstrate avid contrast enhancement
- dense fibrosis with extensive spread across fascial planes
- infiltrative, soft tissue stranding involving the pelvic-cul-de sac
- presence of IUD
- hydronephrosis due to ureteric compression from pelvic abscess

In addition, it may involve the uterus, urinary bladder, rectum, urachus, abdominal wall, and peritoneum.

IMAGING FEATURES



MRI findings of pelvic actinomycosis ⁵:

mass-like pelvic actinomycosis:

- Intermediate signal intensity on T1-weighted images
- Intermediate to low signal intensity on T2-weighted sequences
- Avid contrast enhancement

Abscess/ collections:

- T2 hyperintense cystic components, “gelatinous content”
- T2 intermediate to hyperintense abscess wall

MANAGEMENT

- Timely diagnosis and treatment is associated with excellent prognosis and low morbidity ¹.
- Mainly conservative management with antibiotic treatment.
- High dose penicillin is administered for prolonged period usually around 6-12months ³ due to poor penetration of the antibiotics into the fibrotic tissues¹
- Surgical intervention only required in advanced cases⁷; e.g. if the pelvic collection is large (>8cm in diameter)⁵
- Long term follow up is often required to due to high rate of relapse¹

CONCLUSIONS

- ✦ The diverse clinical presentations of pelvic actinomycosis can be diagnostically challenging with heavy reliance on imaging, which has been illustrated in our case review
- ✦ Tubo-ovarian/pelvic abscesses, pelvic-cul-de sac infiltration with the presence of IUD should raise the suspicion of pelvic actinomycosis
- ✦ Awareness of hallmark imaging features is key to early diagnosis and initiation of appropriate treatment

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- (1) Heo et al. Imaging of Actinomyces in Various Organs: A Comprehensive Review. *RadioGraphics* 2014 34:1, 19-33.
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- (5) Nozawa H, Yamada Y, Muto Y, Arita S, Aisaka K. Pelvic actinomyces presenting with a large abscess and bowel stenosis with marked response to conservative treatment: a case report. *Journal of Medical Case Reports* 2007;1:141.
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- (7) J. F. Yeguez, S. Martinez, L. R. Sands, and M. D. Hellinger, “Pelvic actinomyces presenting as malignant large bowel obstruction: a case report and a review of the literature,” *The American Journal of Surgery*, vol. 66, no. 1, pp. 85–90, 2000.