

## Research Article

# RECURRENT RETROPERITONEAL COLLECTIONS: DIAGNOSTIC CHALLENGES, MANAGEMENT STRATEGIES AND PROPOSED TREATMENT ALGORITHM - A FIVE-PATIENT CASE SERIES

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**Abstract:** **Introduction:** Retroperitoneal abscess can be a rare but serious disease with vague and non-specific clinical appearance, insidious onset, and late diagnosis. The retroperitoneal space is a complex space and infections can be occult until they are large or persistent. Inadequate source control, occlusion or continuation of fistulous tracts, gastrointestinal or genitourinary illness, or unusual infections, like tuberculosis, are all challenging causes of persistent or recurrent RP collections. A structured multidisciplinary management strategy is therefore crucial and early diagnosis is essential to minimize morbidity and mortality. **Aim:** The aim of this case series was to: •Outline the features of patients with recurrence of collections in the retroperitoneum. •Discuss pitfalls in the diagnosis that may allow delayed diagnosis or recurrence. •Discuss the success rates of different approaches such as antimicrobial therapy, drainage via imaging, surgical approaches, and vacuum-assisted closure (VAC) therapy. •Describe an algorithm for the management of recurrent retroperitoneal collections (far more than a theoretical one) as learnt from our institution experience and literature available. **Materials and Methods:** The descriptive case series was carried out between January and April 2026, in the Department of General Surgery at the Sri Aurobindo Institute of Medical Sciences, Indore with the permission from the institutional ethics committee (IEC Approval No. SAIMS/IEC/2026/GS/021). Consecutive patients in adulthood (aged >16 years) who presented with other deep-seated or retroperitoneal abscess were accepted as eligible. Five consecutive patients who met the inclusion criteria were enrolled (after written informed consent) after obtaining written informed consent. A thorough clinical evaluation occurred in all participants, with baseline lab investigations and a medical history taken. All patients underwent computed tomography (CT) of the abdomen to confirm the location, size and possible cause of the abdomen abscess. Selective ultrasonography and magnetic resonance imaging (MRI) were acquired when further anatomical information was needed. Abscess specimens obtained from diagnostic/exploratory or therapeutic procedures were sent to the laboratory for Gram staining and bacterial culture including antimicrobial susceptibility testing. Further laboratory work-up when clinically suspected of TB involved AFB staining and GeneXpert MTB/RIF assay for rapid molecular detection of Mycobacterium tuberculosis. Patients received a standardized management including empirical broad-spectrum antibiotics, percutaneous drainage and image-guided drainage of collections, as well as surgery drainage and/or debridement in patients with refractory collections; empirical anti-tubercular therapy was initiated in clinically indicated patients; and VAC therapy was reserved for selected patients. The patients received continuous clinical evaluation and imaging at 3-month intervals for 3 months. **Results:** Recurrent discharges of pus was the most common presenting symptoms and the most common constitutional symptoms in the 5 patients. All patients had successful localization of retroperitoneal collections with the help of CECT and directed further intervention. A complete clinical and radiological recovery was achieved in 3 patients after antibiotic therapy and the drainage was performed. Although one patient had persistent recurrence, necessitating further drainage and prolonged anti-microbial treatment, he eventually recovered. In one patient septic shock with multiorgan dysfunction occurred, and despite intensive and surgical treatment, he died. The primary reasons for diagnostic delays were due to lack of specificity in clinical presentation, hidden disease foci and failure to determine the underlying cause of the problem. Patients from an endemic area were selected for the diagnosis of tuberculosis depending on clinico-radiological suspicion. **Conclusion:** Relapsing retroperitoneal collections continue to be a complex diagnosis and therapeutic dilemma. Baseline imaging, prompt detection of these in the future, appropriate source control (image or surgical drainage), thorough microbiological work up and tailored anti-microbial therapy are essential to optimum treatment. A multidisciplinary management protocol with regular clinical and radiological

monitoring might decrease the recurrence rate, increase the chance of a good prognosis, and early recognition of underlying pathology

**Keywords:** Retroperitoneal abscess, recurrent retroperitoneal collection, contrast enhanced computed tomography, image guided drainage, vacuum assisted closure, tuberculosis.

## INTRODUCTION

However, retroperitoneal collections especially abscesses are rare but life-threatening diseases with non-specific clinical signs, which are frequently overlooked. Retroperitoneum is a deep extraperitoneum located behind the parietal peritoneum and in front of the posterior peritoneal wall. It runs from the diaphragm to the pelvic inlet and contains several important organs and neurovascular structures such as adrenals, duodenum, ascending and descending colon, ureters, inferior vena cava and abdominal aorta. Due to its hidden anatomic position and relationship and the numerous connecting fascial planes, retroperitoneal pathologies often go unrecognized until they are quite large, making diagnosis and treatment a difficult challenge.<sup>1</sup>

Along with deep-seated infections, retroperitoneal abscess is a rare, but life-threatening type of infection. Most such collections are classified as either primary or secondary ones based on the defining pathology. Primary abscesses occur when microorganisms are disseminated by the blood or lymphatic system, but there is no nearby source of infection and are seen more commonly in patients who have compromised immune function. Primary abscesses involve direct or contiguous spread from nearby organs or tissues while secondary abscesses are caused by the spread of primary abscesses. Representative underlying causes are: complicated appendicitis, pyelonephritis, inflammatory bowel disease, osteomyelitis of the spine or post-traumatic and postoperative signs and symptoms of infection, gastrointestinal perforation, and pancreatitis.<sup>2,3</sup>

Symptoms of retroperitoneal collections tend to be vague and non-specific. Fever, back pain, abdominal discomfort or swelling in the surrounding areas of the body, e.g., thigh or groin. Physical examination is often limited or misleading, as the retroperitoneum is a deep space, thus contributing to the diagnostic delay in diagnosis in many cases, the disease may become quite severe before diagnosis is rendered; which results in progress into adjacent compartments and/or sepsis.<sup>4,5</sup> Imaging is very important in the diagnosis of retroperitoneal abscesses. Among all the modalities present, CECT is considered as the gold standards technique because of its high ability to delineate the extent of infection and guide the therapeutic interventions.<sup>6</sup> Ultrasonography may be a good initial modality to assess the extent of infection and source as well as guide therapeutic interventions but is poor at assessing deeper collections. In certain cases, magnetic resonance imaging (MRI) can add soft tissues detail.<sup>7</sup>

Microbiologically retroperitoneal abscesses are often polymicrobial with common pathogens including *E. coli*, *Proteus* sp. and *S. aureus*.<sup>8</sup> In some countries, including India, tuberculosis is a significant possibility for recurrent or chronic presentation and in those cases, alongside the persistent or chronic presentation of other cause, microscopic examination is generally essential for the diagnosis.<sup>9</sup> Atypical Mycobacterial Infection can also cause an atypical presentation of an abscess, particularly in immunocompromized patients though very uncommon.<sup>10</sup>

The management of retroperitoneal collections requires a multidisciplinary approach, which consists of early use of antibiotic therapy, adequate drainage of the abscess and identifying and treating the underlying cause. In some cases, minimally invasive image-guided percutaneous drainage has resulted in high success rates and this method is used as the first choice of treatment,<sup>11</sup> but surgical exploration may be required in cases with complex collections, failure with percutaneous drainage, or unclear etiology.<sup>12-14</sup>

Recurrent collections behind the kidneys are even harder to manage because they can be caused by a failure to resolve the primary source of infection and/or poor drainage of the kidneys, or an atypical infection. Each of these cases presents some specific imaging problem to be addressed, some may contain a fistula and/or a hidden source, and each needs a specific therapy. Empirical anti-tubercular therapy, as well as the use of vacuum assisted closure (VAC) in selected cases, have also been investigated.

There is a lack of good literature for precisely defining treatment for this unique and often variable condition. The aim of the present case series is to outline the clinical characteristics, diagnostic difficulties and management experience of the patients having a history of recurrent retroperitoneal collections, and suggest a pragmatic approach for managing them.

### Aim:

- Outline the clinical features and management of patients with recurrent collections in the retroperitoneum.
- Recognise the potential pitfalls in the diagnosis process that may lead to delayed diagnosis or reoccurrence.
- Determine the efficacy of different techniques of management such as the use of antimicrobial agents, image guided drainage, surgical procedures and vacuum-assisted closure (VAC) therapy.

- Outline an algorithm for management of recurrent collections in the retroperitoneum based on evidence.

## MATERIALS AND METHODS

### Study Design and Setting

A descriptive case series study was conducted in Department of General Surgery, Sri Aurobindo Institute of Medical Sciences & Post graduate Institute, Indore, Madhya Pradesh, India in the Department of General Surgery. As an academic and tertiary care center, the institute deploys the advanced discipline-based services such as imaging, clinical microbiology, interventional radiology and critical care in addition to other specialties to offer comprehensive diagnostic and therapeutic services. A study was conducted for four months, from January-April 2026, and included patients that presented with recurrent deep-seated (retroperitoneum or other) abdominal collections. The main aim was to describe the clinical profile, explore diagnostic difficulties, outline the management strategies used and short-term clinical outcome. On the basis of the clinical experience, relevant published evidence and practical considerations, a possible management strategy for such cases has also been proposed.

### Ethical Approval

Study protocol was approved prior to start with the Institutional Ethics Committee of Sri Aurobindo Institute of Medical Sciences and Post Graduate Institute, Indore (Approval No. SAIMS/IEC/2026/GS/021). Patients were enrolled by voluntary consent, and under the supervision and with written informed consent of the user, a legal representative or a patient. All clinical data were anonymized for analysis, which was carried out in the ethical framework of the Declaration of Helsinki.

### Study Population

A total of five consecutive adult patients presenting with recurrent retroperitoneal or deep-seated abscesses with occult or persistent sources of infection were included in the study.

### Inclusion Criteria

**Patients fulfilling all of the following criteria were enrolled:**

- Age >18 years.
- Radiologically confirmed deep-seated or retroperitoneal abscess.
- Persistent or recurrent occult pus discharge from the operative wound or sinus.
- Patients willing to provide informed consent and comply with follow-up.

### Exclusion Criteria

**Patients were excluded if they had:**

- Superficial soft tissue abscesses without retroperitoneal extension.

- Known malignant disease involving the retroperitoneum.
- Age less than 18 years.
- Refusal to participate in the study.

### Clinical Evaluation

**All patients underwent detailed clinical assessment at presentation, including:**

- Demographic profile (age and sex)
- Detailed medical and surgical history
- Previous interventions including drainage procedures or surgeries
- Associated comorbidities such as diabetes mellitus, chronic kidney disease, immunosuppression, and tuberculosis
- Presenting symptoms including fever, abdominal pain, flank pain, swelling, pus discharge, weight loss, anorexia, and constitutional symptoms
- Duration of illness and recurrence history
- Complete general and systemic examination with emphasis on abdominal and wound findings

### Laboratory Investigations

**The following investigations were performed in all patients:**

- Complete blood count (CBC)
- Erythrocyte sedimentation rate (ESR)
- C-reactive protein (CRP)
- Serum procalcitonin (where indicated)
- Blood glucose levels
- Renal function tests
- Liver function tests
- Serum electrolytes
- Blood cultures in patients with systemic sepsis
- Urinalysis

### Radiological Assessment

Radiological evaluation was performed in a standardized manner.

Contrast-enhanced computed tomography (CECT) of the abdomen and pelvis was performed in all patients to determine:

- Location of the retroperitoneal collection
  - Size and extent of abscess
  - Presence of multiloculations
  - Communication with adjacent viscera
  - Fistulous tracts
  - Residual collections following drainage
  - Associated bowel or genitourinary pathology
- Initial assessment and drainage if necessary was performed using ultrasonography. Selectively patients with inconclusive computed tomography (CT) scan results or possible involvement of the musculoskeletal and spinal system underwent magnetic resonance imaging (MRI).

### Microbiological Evaluation

Pus obtained during image-guided or operative drainage was cultured as follows:

- Gram staining
- Aerobic bacterial culture
- Antibiotic sensitivity testing
- Acid-fast bacilli (AFB) staining
- GeneXpert MTB/RIF assay
- Make fungal cultures as needed clinically

Patients with negative bacterial culture but ongoing clinical suspicion of TB were subjected to further investigations, and "suspicion guided" anti-tubercular therapy was taken up by consensus of multidisciplinary panel.

### Management Protocol

Clinical signs, imaging and microbiological data were used to make individual management decisions. In the standardised treatment protocol, the following measures were conducted:

- Hemodynamic stabilization and supportive care, initially.
- Empirical broad-spectrum IV antibiotics at admission.
- Changing the antimicrobials or attending to reports on culture and sensitivity tests.
- Image-guided percutaneous catheter drainage for accessible collections.
- Open surgical drainage and debridement in patients with recurrent, multiloculated, or inaccessible collections, or following failure of percutaneous drainage.
- Vacuum-assisted closure (VAC) for a limited number of patients with larger wounds who will need to be dressed frequently and have very good healing.
- Empirical anti-tubercular therapy in patients with high clinoradiological suspicion despite negative microbiological tests after exclusion of alternative diagnoses.

- Optimization and management of associated comorbidities related to nutrition.

### Follow-up

Coherence of the patients was preserved for 3 months after definitive treatment. Recheck was carried out at 2 weeks, after 1 month and at 3 months. Repeat ultrasonography or CECT was ordered on an as-needed basis to evaluate for resolution or recurrence.

### Outcome Measures

#### Primary Outcome

**Resolution of the retroperitoneal collection, both clinically and radiologically.**

#### Secondary Outcomes

- Requirement for repeat drainage or surgical intervention.
- Recurrence of collection during follow-up.
- Length of stay in the hospital.
- Need for VAC therapy.
- Complications such as sepsis, fistula or multiorgan dysfunction.
- Mortality.

### SUMMARY -

|                       |             |
|-----------------------|-------------|
| NUMBER OF PATIENTS    | 5           |
| MEAN AGE              | 40-70 YEARS |
| MALE                  | 4           |
| FEMALE                | 1           |
| DIABETIC              | 1           |
| PREVIOUS SURGERY      | 4           |
| RECURRENT DRAINAGE    | 3           |
| VAC THERAPY           | 3           |
| PERCUTANEOUS DRAINAGE | 2           |
| SURGICAL DRAINAGE     | 3           |
| MORTALITY             | 1           |

## Case Descriptions

### Case 1

A 73-year-old lady with prior history of type 2 diabetes mellitus (T2DM) presented to the emergency department with a history of insidious onset swelling with erythema of the right lower limb and fever that had been ongoing for 7 days. She had developed several episodes of symptomatic hypoglycemia that needed medical help during this time period. She did not report that she had any prior trauma or insect bite or there had been any surgeries in her recent months or prior any history of similar complaints.

On admission the patient was pyrexial and was systemically unwell. Features of the affected limb included diffuse soft tissue swelling with overlying pinkness, heat and severe tenderness, all of which were in keeping with an acute infective process involving subcutaneous tissues and the skin. There was no wound, sinus tract or purulent discharge found and there was peripheral perfusion present and normal distally. Based on the clinical assessment an prognosis of right lower limb cellulitis was established. Intensive monitoring and management of blood glucose levels was performed in combination with empirical IV broad-spectrum antimicrobial therapy.

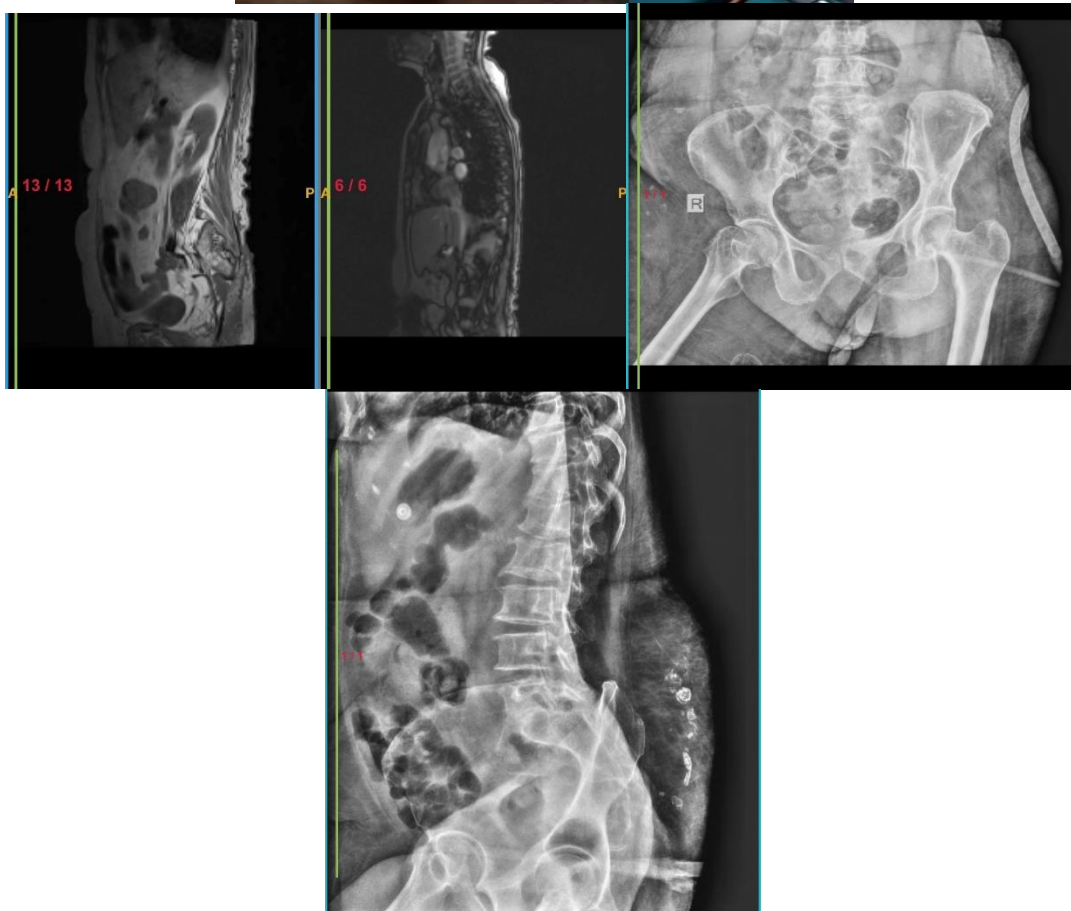
But her condition did not improve, and instead deteriorated, leading to more assessment. A large volume (about 400 cc) was seen in the right thigh by ultrasonography (USG) over the medial part of the thigh. MRI of spine and pelvis revealed



a large subfascial and intramuscular collection in the gluteal region extending into the upper thigh with no evidence of involvement of the vertebral column but with evidence of degenerative changes of the vertebral column.

Extensive collections and failure to respond to conservative surgical measures made it necessary to take this patient up for surgical incision and drainage. Intraoperatively, five incisions were made for releasing the thigh and gluteal region on the right side and about 500–600 cc of purulent material was drained. Pus cultures and CBNAAT were sent for. Bacterial testing showed the presence of *Escherichia coli* and a bacterial profile was used to guide antibiotic choice. The CBNAAT test was found to be negative, however, on the grounds of the chronicity and the deep-seated nature, empirical anti-tubercular therapy (ATT) was started. The postoperative period included daily dressing changes and vacuum assisted closure (VAC) therapy, when the average purulent output during a 30-day period was recorded as 150–200 cc/day. The patient gradually improved clinically. She was discharged on postoperative day 12 on a VAC device which was removed in satisfaction after 7 days and no sign of infection or obstruction.

Patients were followed up at 2 weekly, 1 month after and 3 months after discharge. The VAC device was discarded one week after discharge and healthy granulation tissue was observed with progressive healing of the wound. During follow up examinations, the local inflammation was completely resolved, and no signs of local pus discharge were noted, nor was there evidence of local pus collection with ultrasonography at subsequent visits. Glycemic control was optimized and patient was continued with anti-tubercular therapy under the supervision of a physician. The patient had not complained of a recurrence at the 3-month follow-up, which showed complete wound healing with no clinical or radiological recurrence.



## **Case 2**

The patient is a 35 year old man with a history of fevers but no associated bowel symptoms for three days, complaining of a pain in the right iliac fossa. The pain in the abdomen was sudden, increasing and accompanied by intermittent, low grade pyrexia. He wasn't a true athlete, didn't have a history of chronic medical conditions, nor had an abdominal surgery or similar experience.

Abdominal ultrasonography was performed initially and revealed some inflammatory changes in the right lower abdomen, leading to a suspicion of either acute appendicitis or colitis. Therefore, the sonographic results were inconclusive and an abdomen contrast-enhanced computed tomography (CECT) was ordered. The scan showed a pocket suppurating adjacent to the cecum, matching up with a contained perforation with restricted peritonitis. Taking into consideration the clinical and radiological characteristics, the patient was planned for an exploratory laparotomy to confirm the diagnosis, and to ensure definitive surgical management.

Intraoperatively, an inflamed and long appendix was found with an absence of the evident changes of an abscess or a collection around the appendix. An appendectomy was done and abdomen was well irrigated! Immediate postoperative period was uneventful.

Postoperatively however, on postoperative day 2, the patient's symptoms consisted of continued fever and cellulosic changes involving the right flank area. A repeat ultrasound of the local region demonstrated a group of about 200 cc right into the right iliac fossa. Following discussion with interventional radiology, the pigtail catheter was placed and a total of about 300 cc of purulent fluid had been withdrawn after 5 days. The tests for AIDS antibody were negative.

Patient recovered clinically and discharged after pigtail removal. He later came back however with persistent fever. A follow-up CECT abdomen revealed a resurfacing 140 cc collection in right iliac fossa with air bubbles in the lumbar area. Second pigtail insertion was performed which yielded about 350cc and lasted a week in the hospital. The culture of pus was positive for *Klebsiella pneumoniae* and appropriate anti-microbial was given.

After stabilization in the clinic the patient was discharged with the pigtail still in place. After follow up their output gradually decreased to 10–20 cc during the 15 days, signifying gradual resolution of the collection.

Patients were followed up at 2, 1 and 3 weeks after discharge. The pigtail catheter was removed when the drainage output was less than 10 mL/day, and follow up ultrasonography showed the collection was almost completely resolved. Thus the patient was afebrile and there was full resolution of abdominal pain, and inflammatory markers became normal. At 3 months, the patient was reimaged and the retroperitoneal collection was completely cleared without recurrence, and the patient had resumed normal daily life.

## **Case 3**

### **Case Description**

The surgical outpatient clinic was visited by a man aged 30 where he had noticed a purulent discharge for 2 days from the scar of a previous surgical procedure in the right lower quadrant. He was treated for a presumed psoas abscess six months prior with incision and drainage of a painful swelling in the same location. He had complained about non-distinctive, mild, intermittent, lower abdominal discomfort since that intervention, but with no perceptible development. He did not have fever, unintentional weight loss, bowel symptoms, urinary symptoms or other constitutional symptoms.

Presenting clinical vital signs were normal and the patient was clinically stable. On the right side, examination of the fossa showed a small sinus opening over the previous operation site, and with minimal purulent discharge and mild induration around the site. No signs of fluctuance, large soft tissue inflammation or overlying cellulitis. Abdominal examination was unremarkable, including no tenderness, guarding and no palpable organomegaly or masses. Digital examination of the rectum (DRE) was normal, and no palpated induration or well defined internal opening was seen suggestive of a fistulous communication.

The whole abdominal contrast-enhanced computed tomography (CE-CT) showed an extra-peritoneal pre-sacral abscess of about 20 cc. A fistulous track of about 9 cm was found, which ran anteriorly through the urinary bladder with associated inflammatory wall thickening of about 10 mm was noted. No evidence of bowel lumen involvement (assessments were done at the junction where there is usually communication with the bowel lumen). The microbiological examination consisted of a negative CBNAAT tuberculosis and a culture sensitivity of the discharge.

However, since the lesion was chronic and the imaging showed a deeper abscess with a tract the patient was to undergo vacuum-assisted closure (VAC) after good drainage was performed. The empirical anti-tubercular therapy (ATT) was started in endemic settings, even in the absence of the microbiological evidence.

The 200th day of hospitalization, some purulent matter (about 150 cc) fluid has been drained, and a purulent discharge of about 20 cc/day was initially observed, then gradually decreased. The discharge and local inflammation in the patient was

reduced, showing good clinical improvement. VAC dressing was continued until granulation tissue formed, at which point, healing was considered satisfactory. They were discharged after 10 days on a stable condition with recommendations for follow-up and continuation of ATT.

Follow-up was done every 2 weeks, 1 month, and 3 months. Satisfactory granulation tissue formation and complete closure of the sinus tract made it possible to discontinue VAC dressings. Drugs of the empirical anti-tubercular therapy were tolerated well without any adverse effect noted. During follow-up, there was no recurrence of pus discharge or development of new symptoms. The presacral collection was completely resolved with no evidence of a residual fistulous tract on imaging at 3 months and patient had achieved clinical stability.



#### Case 4

##### Case Description

A man, aged 70, had complained of progressive abdominal pain, distention, fever and painful swelling over suprapubic (hypogastric) region for 7 days and presented to the emergency department. As the process of illness went on the swelling was associated with an offensive discharge, containing feculent material, raising the possibility that it was communicating with the bowel with secondary soft tissue infection. The patient also mentioned that she had purulent discharge from the perianal area for 10 years indicating a chronic fistula-in-ano. He developed absolute constipation within 2 days before admission with failure of passage of stool and flatus suggesting an underlying intestinal obstruction.

Clinical examination revealed temperature of 38.8 degree and the patient was looking toxic. Examination of the abdomen showed fullness in the hypogastric area and abdomen was non-tender. A circumscribed increase in volume with characteristics that are indicative of "subcutaneous emphysema" and a foul, stinking smell was seen in the anterior abdominal wall. Per rectum examination showed a fistulous opening at the 11 o'clock position with no internal opening, with grade II haemorrhoids.

A computed tomography of the abdomen with a contrast agent had found a large collection that included several air foci. The affected area was in the lower abdomen and pelvis and extended into the anterior abdominal wall and subcutaneous planes. Limited bowels are found and no definite extravasation of bowels contrast was identified. Patient was taken up due to emergency incision and drainage. Intraoperatively, a total of about 1400 cc purulent material was removed after opening up the anterior abdominal wall and making bilateral incisions of the inguinis. This involved extensive and localized debridement, and after a thorough irrigation, drains were set. There was no mention of any communication with rectum during intra-operative methylene blue dye test.

Postoperatively patient continued to have purulent discharge (~100 cc/day) requiring a repeat debridement and VAC therapy. The second batch of VAC cycles produced good yields (200 cc/day; 1000 cc in 5 days). Klebsiella species were grown from CBNAAT-negative samples with culture sensitivity. No matter how many times the wound was debrised and treated with VAC, the patient continued to have diarrhea. Persistent diarrhea continued despite repeated debridement and application of VAC. When they performed a colonoscopy, they found proctitis and superficial ulcerations in the rectum and a biopsy was removed.

The patient's hypoxia and hypotension was sudden on 7th March 2026. He died at 11:50 PM in spite of vigorous resuscitation efforts, including cardiopulmonary resuscitation (CPR). Severe metabolic acidosis with dyselectrolytemia and septic shock were likely the result of an unknown source of infection from the abscess of the anterior abdominal wall. Patients condition had steadily worsened despite multiple surgical debridement, broad spectrum antibiotics, and intensive supportive care, VAC therapy. He developed chronic septic shock, with worsening metabolic acidosis and dyselectrolytemia and died during the same admission to the hospital. As such, no post-discharge follow-up was possible.

The case demonstrates the frantic presentation of anterior abdominal wall infection and extensive retroperitoneal infection and presents the need for rapid diagnosis, early surgical source control and finally a proactive multidisciplinary management approach.



## Case 5

### Description

The patient was a 52-year-old man who presented with recurrent symptoms of a fistula in ano (FIA). Medical history was noteworthy for an atrial septal defect (ASD) surgical closure done in 2022. An external fistulous opening was observed at 11 o'clock during a perianal examination. Digital rectal examination revealed an induration in the 9 o'clock position with a normal anal sphincter tone.

Hospitalization was achieved when the patient was clinically stable. The vital signs were blood pressure of 120/80 mmHg, heart rate of 86 beats per minute, a respiratory rate of 20 breaths per minute and a documented lack of fever, with oxygen saturation of 97% recorded when the patient was breathing ambient air. Routine laboratory values revealed a high white blood cell count and hypoalbuminemia, while all renal and liver function tests were normal.

Chest x-ray revealed cardiomegaly, with previous sternotomy sutures. Abdominal ultrasonography revealed some splenomegaly and the presence of minimal ascites.

On MRI, multifocal involvement was seen in the presacral region and right mesorectal space in the form of multiloculated presacral and right mesorectal abscesses with an air-fluid level was seen, and surrounding inflammatory fat stranding was seen. The collection pushed the mid rectum to the left and was accompanied by reactive thickening of the rectum wall. Premature infective changes in the internal anal sphincter area (between the 9th and 11th clock hour) were also found. Radiological findings were suggestive of presacral/mesorectal abscess that was thought to be secondary to chronic infection or inflammatory bowel disease, and colonoscopy was recommended to assess for underlying malignancy or inflammatory bowel disease.

In the hospital, the patient suffered an episode of atrial fibrillation and was transferred to the Surgical ICU (SIUC). Cardiology consultation was secured and treatment with amiodarone intravenously, followed by oral amiodarone and low molecular-weight heparin was initiated. He was given to the surgical ward after bipolarizing and if there was no further episode of arrhythmia.

The patient received intravenous amoxicillin-clavulanate, low molecular weight heparin, proton pump inhibitor (PPI) therapy, nebulisation and supportive care. Under local anaesthesia, interventional radiology guided transrectal ultrasound (TRUS) guided aspiration of the presacral abscess was performed. This was successfully aspirated (approximately 30 mL) without immediate complications and samples were sent for microbiological analysis.

Postoperatively, there was no problem. Patient's condition remained stable with clinical improvement and he was discharged home with oral cefuroxime, pantoprazole, amiodarone, vitamin C, and B-complex with advice of regular follow up care in the General Surgery outpatient department.

The patient had follow-up visits at 2 weeks, 1 month and 3 months after discharge. He remained clinically stable and failed to have any more episodes of acute atrial fibrillation and septic complications. Satisfactory healing of aspiration site, and complete resolution of painful symptoms and inflammatory symptoms of pelvis. The presacral abscess was nearly



completely resolved on follow-up MRI performed at 3 months, and no residual collection was seen. Optimally, the patient continued with regular follow-up in cardiology and surgical outpatient clinics and was completely asymptomatic with no recurrent evidence of a fistula or an abscess.

## DISCUSSION

Retroperitoneal collections are a rare, but very clinically important entity because of their atypical presentation and interpretation of the radiological findings. The present case trial is a representative sample of the wide spectrum of clinical presentations, etiologies and therapeutic difficulties of recurrent retroperitoneal abscesses.

Retroperitoneum as a potential space supporting wide spread of the infection without generation of clinical signs until the infection is late. This accounts for many of the late presentations commonly seen.<sup>1</sup> Many symptoms were non-specific (such as pain in the back, swelling, fever) which explains why the diagnosis is often delayed.<sup>2</sup>

All patients in this series had reoccurring collections, which meant either that they had not received all initial therapy or that a primary source had not been determined. Some poor drainage, fistuli or unusual infections like tuberculosis tend to be associated with recurrence.<sup>3</sup>

Imaging is an important aspect of diagnosis. In this series, when used to define the extent of disease, allow for the tracking and identification of collections from their retroperitoneal origin, CT imaging was instrumental.<sup>4</sup>

The results of this study were similar to the literatures since the predominance of *E. coli* and *Klebsiella* in microbiological findings, but negative culture in some cases indicates the presence of atypical infections or previous use of antibiotics.<sup>5</sup>

In endemic areas, tuberculosis is to be considered an important differential diagnosis. Empirical ATT was started based on clinical suspicion even though there was no microbiological confirmation, a conclusion that has

been supported by previous studies.<sup>6</sup>

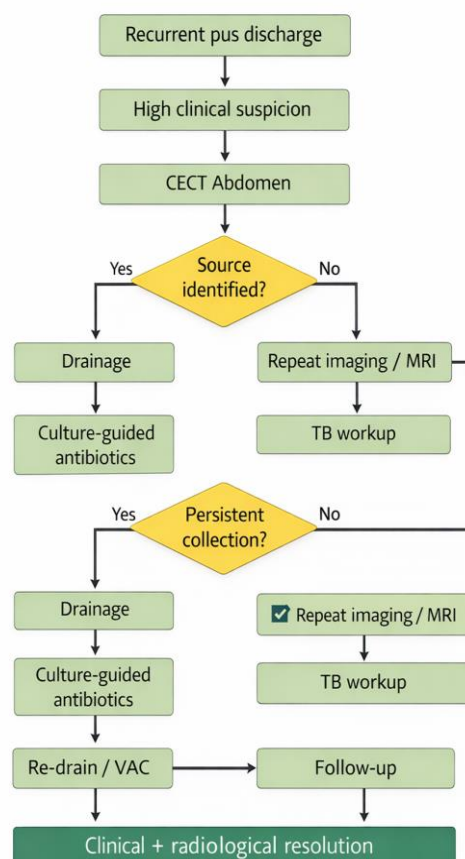
Treatment of any retroperitoneal collections consists of antibiotics and drainage. Surgical intervention is always necessary if the drainage is unsuccessful or has recurred, but given percutaneous drainage's high success rate and minimally invasive nature is often used as the initial treatment.<sup>7,8</sup>

Two patients had a recurrence and went into surgery to be drained in this series. This is an emphasis of proper initial management and comprehensive cause investigation. In addition, VAC therapy was reported to be used as an adjunct in the management of complex infection, which was not a common use in this series.<sup>9</sup>

The case of one patient with mortality accentuates the possible severity of such infections, especially in the elderly and AIDS patients. Early recognition and aggressive management is crucial to minimise complications like septic peritonitis and multi organ failure.<sup>10,13</sup>

**According to the results, a protocol for management is suggested:**

### Proposed Management Protocol



## CONCLUSION

Recurrent retroperitoneal collections are a mixed bag of surgical problems and should be carefully assessed to help determine what the source is. The central tenets of management are early CECT, timely source control, culture directed antimicrobial treatment, and selective use of image guided drainage, surgery and use of VAC therapy. In many ways a structured multidisciplinary algorithm can help minimise recurrence and reduce septic complications and improve patient outcome.

## Limitations

The following limitations restrict the interpretation of the findings of this case series: The number of patients (only five) limits the generalizability of observed results and leads to the impossibility of drawing general conclusions. Due to the single-center study design, findings may not be generalized to other centers having distinct patient populations, referral practices or clinical management. In addition, the relatively short follow-up period of three months did not allow for the evaluation of long-term results, such as late recurrences and procedure-related complications. Third, the cases were a staging of underlying pathologies that caused retroperitoneal collections, thus demonstrating a large clinical spectrum of disease. This variability made it impossible to make meaningful comparative comparisons and to come to any conclusions on the relative effectiveness of the various management strategies.

Additionally, some patients did not have microbiologic confirmation for the diagnosis, and empirical anti-tubercular therapy was instituted in a few, likely influencing treatment outcome.

To implement the proposed management algorithm and to make evidence-based recommendations regarding recurrent retroperitoneal collections, larger, multicenter, longer followup studies with optimal management guidelines are needed.

## Learning Points

- Recurrent retroperitoneal abscess should always raise suspicion of an occult underlying pathology or inadequate source control.
- Contrast-enhanced CT remains the imaging modality of choice for diagnosis and treatment planning.
- Image-guided drainage combined with culture-directed antibiotics is the preferred first-line management.
- Persistent or recurrent collections require prompt surgical evaluation and consideration of VAC therapy.
- Tuberculosis should be actively considered in endemic regions when routine cultures are negative.
- Multidisciplinary management involving surgeons, radiologists, microbiologists, infectious disease specialists, and intensivists significantly improves clinical outcomes.
- Regular clinical and radiological follow-up is essential for early detection of recurrence and confirmation of complete resolution.

## REFERENCES

1. He W, Yuan Y, Huang J. A case report of iliopsoas abscess and literature review. *Medicine (Baltimore)*. 2024 Aug 16;103(33):e39356. Doi: 10.1097/MD.00000000000039356.
2. Ricci, M.A., Rose, F.B. and Meyer, K.K. (1986), Pyogenic psoas abscess: Worldwide variations in etiology. *World J. Surg.*, 10: 834-842. <https://doi.org/10.1007/BF01655254>
3. Garner JP, Meiring PD, Ravi K, Gupta R. Psoas abscess - not as rare as we think? *Colorectal Dis*. 2007 Mar;9(3):269-74. doi: 10.1111/j.1463-1318.2006.01135.x. PMID: 17298628.
4. van den Berge M, de Marie S, Kuipers T, Jansz AR, Bravenboer B. Psoas abscess: report of a series and review of the literature. *The Netherlands Journal of Medicine*. 2005 Nov;63(10):413-416. PMID: 16301764.
5. Youssef J. Hamade, Elizabeth Ogando-Rivas, Zachary L. Tataryn, Matias L. Costa et al. Iliopsoas Abscesses: Whose Problem is it? Insights Gained by an Institutional 100-Patient Consecutive Case Series. *World Neurosurgery*. 2025;198: 123978. <https://doi.org/10.1016/j.wneu.2025.123978>
6. Sharma SK, Mohan A, Kohli M. Extrapulmonary tuberculosis. *Expert Rev Respir Med*. 2021 Jul;15(7):931-948. doi: 10.1080/17476348.2021.1927718. Epub 2021 Jul 14. PMID: 33966561.
7. Xu XX, Liu C, Wang L, Li Y, Yang HF, Du Y, Zhang C, Li B. Computed tomography-guided catheter drainage with ozone in management of pyogenic liver abscess. *Pol J Radiol*. 2018 Jun 12;83:e275-e279. doi: 10.5114/pjr.2018.76784. PMID: 30627247
8. Yacoub WN, Sohn HJ, Chan S, Petrosyan M, Vermaire HM, Kelso RL, Towfigh S, Mason RJ. Psoas abscess rarely requires surgical intervention. *Am J Surg*. 2008 Aug;196(2):223-7. doi: 10.1016/j.amjsurg.2007.07.032. Epub 2008 May 7. PMID: 18466865.
9. Mouës, C.M., Vos, M.C., Van Den Bemd, G.-J.C.M., Stijnen, T. and Hovius, S.E.R. (2004), Bacterial load in relation to vacuum-assisted closure wound therapy: A prospective randomized trial. *Wound Repair and Regeneration*, 12: 11-17. <https://doi.org/10.1111/j.1067-1927.2004.12105.x>
10. Thakral A, Prasad D, Katyal S, Kumar A. Characteristics and Outcomes of Psoas Abscess: Experience From a Tertiary Care Center in North India. *Cureus*. 2022 Jan 18;14(1):e21358. doi: 10.7759/cureus.21358. PMID: 35198272
11. Winburn B, Sharman T. Atypical Mycobacterial Disease. 2023 Jan 9. In: *StatPearls [Internet]*. Treasure Island (FL): StatPearls Publishing; 2026 Jan-. PMID: 32310577
12. Neal MT, Curley KL, Richards AE, Kalani MA, Lyons MK, Davila VJ. An unusual case of a persistent, infected retroperitoneal fluid collection 5 years after anterior lumbar fusion surgery: illustrative case. *J Neurosurg Case Lessons*. 2021 Jan 25;1(4):CASE20107. doi: 10.3171/CASE20107. PMID: 36033916

13. Li, Zhonghu; Jin, Weidong. Retroperitoneal infections: Diagnosis, treatment, and the emphasis on peritoneum. *World Journal of Surgical Infection* 3(2):p 58-63, Jul-Dec 2024. | DOI: 10.4103/wjsi.wjsi\_12\_24
14. Gambiez LP, Denimal FA, Porte HL, Saudemont A, Chambon JM, Quandalle PA. Retroperitoneal Approach and Endoscopic Management of Peripancreatic Necrosis Collections. *Arch Surg*. 1998;133(1):66–72. doi:10.1001/archsurg.133.1.66