# PERCUTANEOUS DRAINAGE AS AN ALTERNATIVE OF SURGICAL MANAGEMENT IN PARARENAL ABSCESS: A CASE REPORT

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***ABSTRACT***

***Objective:*** *This case report will discuss the experience of using percutaneous drainage as an alternative of open surgery in pararenal abscess therapy.* ***Case(s) Presentation:*** *61 years old woman complained of left flank pain 6 months before with septic condition. Physical examination revealed tenderness and mass in the left flank region with leukocytosis. Abdominal Computed Tomography (CT) Scan results showed a left lower pole pararenal abscess, severe hydropyonephrosis and ureteropelvic junction stones. Percutaneous abscess drainage and percutaneous nephrostomy was performed with an 18Fr troicart using ultrasound guidance.* ***Discussion:*** *The pus culture showed Escherichia coli bacteria. After three days of operation and intravenous antibiotics, the patient experienced clinical improvement. Outpatient follow-up showed decreased drain production from percutaneous abscess drainage and clear yellow liquid production from percutaneous. Percutaneous nephrolithotomy was performed for the management of stone evacuation. After going through the whole procedure, there is clinical improvement of patient.* ***Conclusion:*** *Percutaneous drainage is an alternative option in the management of perirenal abscesses. Compared to open surgical drainage, the percutaneous technique provides a minimally invasive process, shorter length of stay and more effective costs. This procedure has also shown good clinical improvement in patients.*

***Keywords:*** *Minimal invasive, pararenal abscess, percutaneous drainage.*

***ABSTRAK***

***Tujuan:*** *Laporan kasus ini membahas pengalaman penggunaan drainase perkutan sebagai alternatif pembedahan terbuka dalam terapi abses pararenal.* ***Presentasi Kasus:*** *Wanita 61 tahun mengeluh nyeri pinggang kiri sejak 6 bulan disertai kondisi sepsis. Pemeriksaan fisik ditemukan nyeri tekan dan massa pada regio flank kiri dengan peningkatan leukosit. Hasil CT abdomen kontras menunjukkan abses pada pararenal pole bawah, hidropionefrosis berat dan batu ureteropelvic junction. Dilakukan tindakan drainase abses perkutan dan nefrostomi perkutan menggunakan trokar ukuran 18Fr dengan menggunakan panduan USG.* ***Diskusi:*** *Kultur pus menunjukan bakteri Escherichia coli. Setelah tiga hari perawatan dan pemberian antibiotik intravena, pasien mengalami perbaikan klinis. Pemantauan selama rawat jalan menunjukkan penurunan produksi drain dan perbaikan klinis. Pasien kemudian di lakukan nefrolitotomi perkutan untuk tatalaksana evakuasi batu.* ***Simpulan:*** *Drainase perkutan menjadi pilihan alternatif pada manajemen abses perirenal. Dibandingkan dengan drainase melalui pembedahan terbuka, teknik perkutan memberikan proses yang minimal invasif, masa rawat lebih singkat dan biaya terjangkau. Prosedur ini juga menunjukkan perbaikan klinis yang baik pada pasien.*

***Kata kunci:*** *Abses pararenal, drainase perkutan, minimal invasive.*

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## INTRODUCTION

The pararenal abscess is an accumulation of pus in the pararenal space with an incidence rate of 1 to 10 per 10,000 cases. The data show that more than 80% of pararenal abscess occur as secondary infection due to urinary tract stones. Other causes are rupture of the kidney disorder and hematogenous spread. Gram-negative microorganisms are often found in pus culture results.[1-2]

Predisposing factors for pararenal abscess that have been identified are obstructive uropathy, urinary tract infections, diabetes mellitus, trauma, post abdominal or urological surgery, and immunosuppressive drugs used for the treatment of malignancies or AIDS.[3] Any delay in diagnosis of pararenal abscess can lead to high morbidity rates. Computed Tomography (CT) and Magnetic

Resonance Imaging (MRI) can reduce morbidity rates up to 12%.[4]

Management of pararenal abscess includes medical and surgery. Surgical methods are used when the treatment with antibiotics is unsuccessful.[5-6] In the past, open surgical abscess drainage was the main option of pararenal abscess treatment. An improvement in imaging modalities such as ultrasonography (USG) and CT scan making percutaneous abscess drainage with radiological guidance has become an alternative for pararenal abscesses.[7-8]

Percutaneous abscess drainage is the most common technique due to minimally invasive, more affordable, shorter length of post-procedure recovery time, and the clinical results are not much different from surgical drainage and with the right combination of antibiotics can drastically reduce morbidity and mortality of pararenal abscess.[9-10] This case report will discuss the experience of using percutaneous drainage as an alternative of open surgery in pararenal abscess therapy. Ethical approval for this case report was obtained from The Ethics Committee of Saiful Anwar General Hospital, Malang.

## CASE(S) PRESENTATION

A 61-year-old woman complaint left flank pain since 6 months ago which is worsen since 1 month. Before admission pain typically occurs in left flank to the front of the stomach. The patient has history of fever and a lump on the left flank. There is no previous history of hypertension and diabetes mellitus. She had a history of ureterorenoscopy 1 year before and extracorporeal soundwave lithotripsy due to ureteropelvic junction stone 10 months before. After the procedure, the stone was not completely removed.

Physical examination, we found fever and in the left flank region demonstrated a tenderness and cystic mass measuring 5x6 cm. In laboratory examination, we found leukocytosis. CT examination found a left ureteropelvic junction stone by 1.7 cm 435 HU in diameter and there was severe hydropyonephrosis with an accumulation of fluid in the lower pararenal pole.

The patient was diagnosed with a left pararenal abscess and ureteropelvic junction stone. The patient was performed percutaneous drainage abscess and percutaneous nephrostomy. Percutaneous drainage and nephrostomy was performed using an 18Fr troicart and ultrasound guidance. Then, a foley 18Fr latex catheter was installed. Patients also received an intravenous of cefoperazone. Postoperative pus culture results found Escherichia coli and sensitive to antibiotics such as cephalosporin and meropenem. The evaluation was carried out for 3 days and showed the

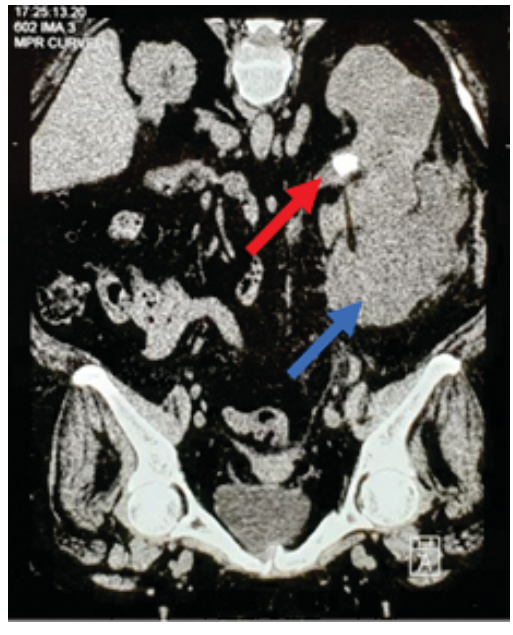

**Figure 1.** CT Scan perform when patient came to polyclinic. There is a pararenal abscess with hydropyonephrosis (indicated by blue arrows). Also visible is a stone at the left ureteropelvic junction (indicated by a red arrow).

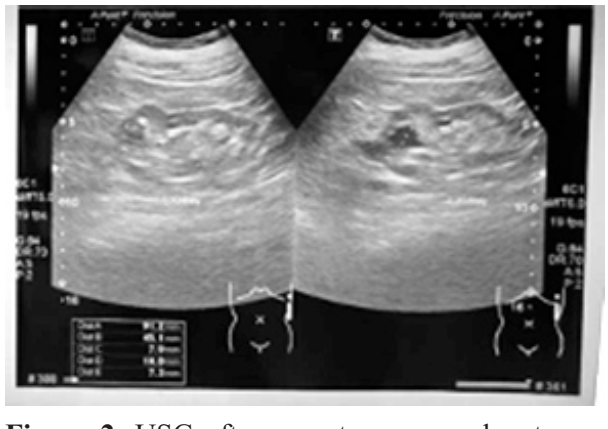

**Figure 2.** USG after percutaneous nephrostomy. Hydronephrosis of the left kidney appears to have improved. There is also no picture of the fluid accumulation around the left kidney.

clinical improvement and drainage flowed smoothly. Then, the patient was admitted to an outpatient.

The outpatient evaluation after 7 days of surgical procedure, showed that the production of pus in percutaneous drainage abscess was minimal and the production of percutaneous nephrostomy was clear yellow liquid. Furthermore, percutaneous nephrolithotomy and DJ stent insertion were performed 10 days after previous surgery to evacuate stones and treat obstruction.

The final condition, patient has clinical improved. There are no complaints of flank pain. Based on the results of ultrasound and abdominal CT with contrast evaluation, it was found that there were no hydronephrosis, fluid accumulation and remaining stones in the left kidney.

**Figure 3.** CT scan of the abdominal without contrast after the entire procedure in the patient showed anatomical improvement of the kidney. There were no stones and fluid accumulation in the left kidney.

## DISCUSSION

The pararenal abscess has a high morbidity and mortality rate reaching up to 56%.[5] It can be related to delayed diagnosis due to non-specific and confusing symptoms. The development of radio diagnostic modalities of imaging such as CT-scan and ultrasound has made advances in the earlier diagnosis of pararenal abscess.

Generally, the common clinical manifestation of para renal abscess are fever and chills. Other clinical manifestations are abdominal pain, anorexia, low back pain, lethargy and dysuria.[11] On physical examination, there was a mass in the left flank region on palpation and deafening on percussion. In this case report, the manifestations that can be found are fever, low back pain and a mass on the patient's left waist.

Predisposing factors such as diabetes mellitus, urinary tract stones, urinary tract obstruction and patients with immune disorders usually occur in patients with pararenal abscess.[1] The patient in this case report predisposing factors such as presence of stones in the left ureteropelvic junction which obstructed urine. The patient had a history of previous surgery such as ureterorenoscopy and extracorporeal soundwave lithotripsy about 1 year ago. After the procedure, the patient still felt the complaint. These findings suggest that treatment to evacuate stones causing urinary tract obstruction in the patient is inadequate. This can be a predisposing factor for pararenal abscess.

Complete blood laboratory examination can be performed. In most cases, there will be leukocytosis.[11] In this case report, patient was in septic condition. It requires prompt recognition, appropriate antibiotics, careful hemodynamic support, and control of the source of infection. For definitive treatment, patient underwent percutaneous abscess drainage. The procedure was preferred for patient because it was more minimal invasive. There is a development of treatment for pararenal abscess. Open surgical drainage of the abscess is the classic treatment of pararenal abscess. Finally, percutaneous drainage is an alternative option in the management of pararenal abscess. The development of the radiology department as a guide in performing percutaneous drainage has provided satisfactory clinical results with minimal complications and minimizing the need for open surgery.[12]

Percutaneous drainage was first performed in 1842 to treat liver abscesses. Percutaneous drainage was introduced by inserting a trocar into the abdominal area and leaving it until adhesions occur between the abdominal wall and the liver. Although surgical drainage of the abdominal abscess is still the main choice, the use of percutaneous drainage has been developing since then.[10] Percutaneous drainage was performed because there were no differences for clinical results from surgical drainage, even it tends

to be minimally invasive and more affordable. Percutaneous drainage can mostly be performed in emergency patients without having to go through general anesthetic procedures so that treatment can be done quickly.[5] Surgical drainage must be through general anesthesia so it is less preferred in an emergency setting. However, in pediatric cases, general anesthesia is still used to perform this procedure.[10]

After the drainage procedure, it is necessary to follow up regarding the administration of antibiotic therapy according to the patient culture. In some cases, the bacteria found were gram-negative bacteria (Escherichia coli, Klebsiella pneumonia, and Alcaligenes faecalis) with Escherichia coli being the most common bacteria. Sensitive antibiotics depend on the results of the sensitivity of the antibiotics. Antibiotics that are often used are the third generation cephalosporins.9 In this patient, postoperative pus culture results found Escherichia coli and was sensitive to the antibiotics such as cephalosporin third generation (cefixime, cefoxitin, cefotaxime, ceftazidine, ceftriaxone) and meropenem.

The recovery time after the procedure is also relatively fast, it's about 1 to 2 days, so it can reduce length of stay in the hospital. However, the decision between percutaneous drainage and surgical drainage should be considered based on the clinical of the patient to avoid complications. The absence of a safe percutaneous path is the factor that prohibits percutaneous abscess drainage. The presence of bowel or gastrointestinal organ near the abscess may contraindicate percutaneous abscess drainage.[13] Infection after percutaneous drainage is divided into two, namely the time of insertion of the first drainage catheter and the time of repeated drainage catheter placement. When placing a drainage catheter, bleeding may also occur due to rupture of a blood vessel close to the puncture site. These complications are rare, but vigilance when carrying out this action must be upheld.[11-12]

## CONCLUSION

Percutaneous drainage is an alternative option in the management of perirenal abscesses. Compared to open surgical drainage, the percutaneous technique has a minimally invasive technique, shorter length of stay and more affordable costs. This procedure has also shown good clinical improvement in patients.

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