

## **Drainage of Deep Pelvic and Peritoneal Abscesses Using Trans-abdominal, Transvaginal or Transrectal Ultrasound Guidance**

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**Objective:** To examine the efficacy of transabdominal, transvaginal, or transrectal sonographically guided drainage of deep pelvic abscesses.

**Design:** Retrospective study of six patients treated for peritoneal and pelvic abscesses from 1<sup>st</sup> January 2003 – 31<sup>st</sup> December 2004.

**Setting:** The Department of Obstetrics and Gynecology, Salmaniya Medical Complex.

**Results:** Six patients with pelvic and peritoneal collections were drained under sonographic guidance by transabdominal, transvaginal, transrectal catheter. No complications were recorded. One patient in which the abscess was more than 9cm, its drainage was incomplete and subsequently undergone surgical drainage. The sixth patient was a case of prenephric abscess extending to the pelvis in a young woman who had renal transplant.

**Conclusion:** Ultrasound-guided drainage of deep pelvic abscesses offer satisfactory alternative treatment to surgery in the management of pelvic and abdominal collection.

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Pelvic and abdominal abscesses are not as common in obstetrical and gynecological practice as it was in the past. When they occur, however, they are secondary to pelvi-abdominal surgery, trauma or infectious process. Their rate of occurrence has been estimated to vary from 0.6 to 1.8 %<sup>1-2</sup>.

Pelvic abscesses are associated with considerable morbidity among hospital population<sup>3</sup>. Many cases resolve with antibiotics but few are complicated leading to serious development such as rupture or dissemination of infection with occasional fatal outcome<sup>4</sup>. Apart from antibiotic therapy, which is not always successful because of resistant organisms or a large sized collection, traditional surgical drainage has been used in managing these cases. These procedures, involve anesthesia and surgical intervention and the results are not always satisfactory. Culdocentesis was also practiced, when the pelvic abscess is located in the pouch of Douglas and was accessible via the vaginal route. In recent years, several new innovative procedures have been introduced to drain pelvic and peritoneal abscesses, under ultrasound (US), computed topography (CT), or fluoroscopic guidance. These procedures are accomplished by using a variety of approaches, most commonly: transabdominal, laparoscopic, transvaginal (TVAD), transrectal (TRAD), transgluteal (TGAD), and transperineal (TPAD)<sup>5-7</sup>.

We report our experience with image-guided transabdominal, transvaginal and transrectal drainage of pelvic, abdominal abscesses or fluid collection.

## **METHODS**

Six female patients; mean age 33 years, range 18- 38 years were diagnosed to have pelvic abscesses or abdominal fluid collection between 1<sup>st</sup> January 2003 to 31<sup>st</sup> December 2004. Three cases were post Cesarean sections: one had the abscess in the utero-vesical space, the second in the pouch of Douglas, and the third the collection was high in the left side of peritoneum. The fourth case was due to rupture of appendicular abscess leading to a large deep pelvic abscess, and the last two were surgical cases, one with a large abdominal collection of pus and inflammatory fluid secondary to incomplete evacuation of ichio-rectal fossa abscess three months earlier and the last a pre renal abscess extending to the pelvis (Table 1).

The mean cavity diameter on initial imaging was 6 cm, with a range of 4-11 cm. All patients were treated with antibiotics (ceftriaxone, IM or IV injection 250 mg-1g daily; piperacillin 4g by IV or intravenous infusion 2.25-4.5 g every 6-8 hours; cefuroxime IM or IV injection 1.5 g every 6-8 hours in acute states than half the dose thereafter; gentamycin IM, IV or by infusion, 3-5 mg/kg daily; and metronidazole, IV infusion 5 mg/ml or as tablets 200 mg three times daily. It is given before and after the abscess drainage. Necessary screening such as CBC, clotting profile, septic screen and CT scan were performed on all patients (Table 2).

All six cases of abdominal drainage were performed under ultrasonographic guidance facilitated by local anesthesia. In the two cases of vaginal or rectal drainage, intracavitary probe were used. The ultrasound model used was Philips, with a sector scanner probe of

3.5-5 MHz. It is usually used in the cases of abdominal drainage. Intracavitary probes of 7.5-12.5 MHz. are used for transrectal or transvaginal access. The needle is introduced into the abscess cavity and a sample is withdrawn for microbiology analysis. The collection is completely aspirated and the remaining cavity is washed with sterile saline. Generally, following the procedure daily monitoring is performed. Once the drainage is less than 10 ml. daily or the disappearance of the abscess the catheter tip is removed.

**Table 1. Details of abscess drainage of each case**

Cases	Diameter in (cm)	Location	Route	Duration of catheter drainage
1. Post Cesarean sepsis - Sickle cell disease	5	uterovesical	abdominal	12 hours
2. Post Cesarean sepsis – Sickle cell disease and diabetic.	12	Intra-abdominal extending to pelvis	abdominal	12 hours
3. Post Cesarean sepsis	6	Pouch of Douglas	transvaginal	12 hours
4. Appendicitis	10	Retroperitoneal	transrectal	48 hours
5. Previous complicated Ischio-rectal abscess drainage	20	Pelvic peritonium	Abdominal / laparotomy x 3.	Three weeks
6. Post renal transplant operation	11	From peri-renal space down to pelvis	Abdominal	48 hours

**Table 2. Culture reports of pus drained**

Organisms
1. B hemolytic streptococci negative for AFB
2. Mixed aerobic and anaerobic growth
3. Staphylococcus aureus
4. Mixed growth of enterococci
5. Sterile culture
6. E. coli

## RESULTS

Six female patients with pelvic abscesses admitted in 2003 to 2004 in the department of Obstetrics and Gynecology. Five patients were iatrogenic. Three cases were post Cesarean, the fourth was due to ruptured appendicular abscess, the fifth followed a

previously complicated ischeo rectal abscess drainage and the last a prenephric abscess in a patient who had a renal transplant.

The abscesses drainage were successful in 5 of the 6 cases. The patient, who had a previous drainage of ischeo-rectal fossa, required three laparotomies after the catheter drainage because of rapid re-accumulation of fluid in the peritoneum and suspected perforation of the bowl. The mean period of the drainage is four days. All the patients were treated with intravenous fluid and the antibiotics were given according to the culture and sensitivity. Catheter blockage or dislodgment occurred on two occasions. No adverse effect was noted and in both occasions we did not need to reinsert the catheter. Although there was an extended morbidity no death had occurred among our patients.

## **DISCUSSION**

All the pelvic abscesses in this series were secondary to pelvic or abdominal surgery and occurred either because the hemostasis was inadequate, or due to infection which is refractory to antibiotic treatment. Other risk factors in our patients are sickle cell disease, diabetes and anemia.

Some of the problems we have encountered with treatment of pelvic abscesses are the vague symptoms, which confound the diagnosis and delay it. However, at present, modern imaging techniques help in reaching a fairly accurate diagnosis in most cases. These abscesses also are responsible for considerable morbidity and prolonged periods of hospitalization, which reflect adversely on patients.

In the past, management of these cases was either through surgical drainage or conservatively by antibiotic treatment. In the last twenty years, two major advances have occurred which made the treatment much easier: the introduction of ultrasound and the radiological imaging techniques such as ultrasound, CT, MRI and fluoroscopy<sup>8-10</sup>.

In surgery, operative gynecology, and interventional radiology, there have been parallel advances in procedures used for draining pelvic abscesses. Advances in fiber-optic technology, for instance, facilitated the use of laparoscopes for draining procedures<sup>11</sup>. In addition to using the traditional transabdominal route, several draining procedures were described such as the transvaginal and the transrectal accesses. More recently, transgluteal and transperineal were added to the list of procedures used to drain deep and extraperitoneal pelvic abscesses<sup>12-13</sup>.

The advent of the endocavitary ultrasound transducer has facilitated these procedures, for despite there relatively small field of view and limited depth, they define the pelvic collections and their relationships to distant structures with clarity<sup>14</sup>. This has helped avoiding bowels or vascular injuries. A limitation for the use of endocavitary route, however, is the limit on the size of the catheter, which can be used (8-10 f), while larger catheter can be inserted by the transgluteal route, which is more suitable for the drainage of hematoma or collection of more viscous pus<sup>15</sup>. This method is not without risks compared with the TRAD and TRAV because more vital structures are endangered, such

as, major nerves, arteries and veins that pass through the greater sciatic foramen. The simplicity of the endocavitary, compared with the transgluteal approach has added to the patients acceptance and played a major role in their popularity. Perhaps with the exception of presacral abscess because of the intervening rectum<sup>16</sup>.

Few recent reports have suggested that the use of intracavitary needle combined with lavage may reduce the procedure time, thus avoiding problems of dislodgment or blockage or the erosion of catheter into adjacent organs. However, needle aspiration is far less effective in diffuse collections with ill defined borders or in cases of viscous pus<sup>17,18</sup>.

## CONCLUSION

**Ever since the introduction of modern methods of evacuation of pelvic and abdominal collections under ultrasound guidance with or without the help of radiological imaging techniques, surgical interventions, which were used previously are now rarely needed. The majority of cases were performed by interventional radiologists. We reviewed five cases from the Gynecology and Obstetrics and one from the surgical department between 2003-2004 who undergone these procedures successfully.**

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