

Pyoperitoneum: An unusual presentation of advanced carcinoma cervix

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SUMMARY

Pyometra is the accumulation of pus inside the uterus due to blockage of drainage of uterus. It is a known that pyometra can lead to pyoperitoneum. A 65-years-old postmenopausal woman, para three (three children) presented with symptom of carcinoma cervix. However, spontaneous rupture of pyometra leading to pyoperitoneum is a rare phenomenon. Spontaneous perforation of pyometra resulting in generalised peritonitis can pose diagnostic dilemma to the clinician and these patients may need emergency surgery due to acute presentation compromising the outcome due to inadequate workup and suboptimal treatment. High index of suspicion and multi-disciplinary approach is needed to manage such patients to reduce the related morbidity and mortality. We present one case of undiagnosed cervical cancer presenting as acute abdomen due to spontaneous perforation with acute abdomen and signs of generalised peritonitis. After a clinical evaluation, a provisional diagnosis of cervical cancer stage IIA with pyoperitoneum was made. Ultrasound and contrast enhanced computerised tomography confirmed the diagnosis of pyometra with uterine perforation and moderate ascites. Emergency laparotomy was planned. Around 1000 ml of pus was drained. A circular defect of 0.5 × 0.5 cm with pus oozing out was found at the anterior wall of the uterus, around 1.5 cm below the fundus. Total abdominal hysterectomy with bilateral salpingo-oophorectomy was done. Lymph node sampling could not be attempted due to friable tissue. Histopathological examination confirmed diagnosis of squamous cell carcinoma of cervix.

INTRODUCTION

Cervical cancer is the fourth most common gynaecological cancer affecting women globally. The association of cervical carcinoma with human papilloma virus (HPV) is well established, and the presence of HPV vaccination makes primary prevention of the disease possible. Long latency period from HPV infection to development of the cancer and availability of various screening facilities makes it possible to diagnose and treat the precancerous lesions of cervix and prevent progression to cervical cancer. Yet, cancer cervix is one of the leading cause of deaths among women. WHO reported 604,000 new cases of cervical carcinoma with 342,000 deaths worldwide in 2020. Around 90% of deaths occurred in lower middle-income countries.¹ Such high rate of

mortality can be attributed to poor infrastructure, improper implementation of screening programs or unavailability of vaccination and screening services in these countries. One case of undiagnosed cervical carcinoma presented as acute abdomen as a result of spontaneous perforation of pyometra is being reported here.

CASE PRESENTATION

A 65-years-old woman, para three, menopausal since past 12 years, presented to surgical emergency with the complaints of dull pain abdomen, vomiting and constipation for past 3 days. Pain suddenly increased in intensity for last 3 hours of her presentation to the hospital. She also gave history of low-grade fever on and off since past 1 week. Patient was extremely uncomfortable and was tossing in bed due to pain. Her last childbirth was 42 years ago, all three children delivered vaginally. She did not practice any form of family planning. There was no history of any gynaecological examination or cervical cancer screening done in the past. No significant past medical and surgical history was present. On examination she was anxious with pulse rate of 106 bpm, blood pressure 100/60 mmHg, respiratory rate 22 bpm and oxygen saturation 90 to 94% at room air. Mild pallor was present. Her abdomen was distended, tense and tender. On palpation guarding, fluid thrill and shifting dullness were present. Bowel sounds were present but sluggish. Her haemoglobin was 8.9 gm/dl, total leukocyte count was 10.51 thousand/ μ l. Liver function test, kidney function tests and electrolytes were normal. X-ray abdomen erect and supine was suggestive of dilated bowel loops. Patient was being prepared for emergency exploratory laparotomy for acute abdomen with features of peritonitis and an ultrasound was ordered to confirm the probable aetiology. From ultrasound there was heterogenous bulky uterus with echogenic contents and septations. Moderate ascites with echogenic content was seen in the abdominal cavity. In view of these ultrasound findings, gynaecological opinion was sought to workup for gynaecological cause. On per-speculum examination an ulcerated growth was seen on the anterior lip of the cervix with minimal purulent foul-smelling discharge coming through the cervix. Bimanual examination of pelvis revealed hard cervix that bled on touch. Uterus was retroverted, bulky and relatively soft in feel. Vagina and bilateral parametrium was free. On per rectal examination rectal mucosa appears to be free. With above clinical findings a provisional diagnosis of cervical cancer stage IB1 clinically was made. Differential

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Table 1: Summary of cervical cancer patients presenting with acute abdomen due to spontaneous perforation of pyometra leading to pyoperitoneum.

Study	No. of cases	Age (years)	Parity	Presenting symptom	Duration of symptoms	Provisional diagnosis	Site of perforation	Management	Final diagnosis
Imachi M et al. (1993)	One	67	*P3L3	1. Pain abdomen, abdominal distention, genital bleeding and fever	2 weeks	Cervical cancer stage IV B	Anterior wall of uterine fundus near right horn	Subtotal hysterectomy with bilateral salpingo-oophorectomy with peritoneal lavage	Squamous cell carcinoma keratinising type
Chan LY et al. (2000)	Two	34 and 72	Not mentioned	1. Pain abdominal and fever 2. Pain abdomen and fever	Not mentioned	Generalised peritonitis	1. Left cornual region 2. Uterine fundus	Exploratory laparotomy with drainage of the pus	Cervical cancer
Shahid N et al. (2006)	One	80	--	Pain abdomen	Not mentioned	Gastrointestinal perforation	Uterine fundus	Exploratory laparotomy with drainage of pus with repair of the perforation with TAH with BSO	Not mentioned
Lee SL et al. (2007)	One	60	P4	Acute pain abdomen, fever and cold sweats	Not mentioned	Gastrointestinal perforation	Uterine fundus	Exploratory laparotomy with drainage of pus with TAH with BSO Followed by radiotherapy	Poorly differentiated cervical cancer stage Ib
Vyas S et al. (2009)	One	60	P5L5	Lower abdominal pain and vomiting	Initial symptoms 4 months Presentation of acute abdomen	Histo-pathologically confirmed case of moderately differentiated adenocarcinoma cervix stage IIIB	Uterine fundus	Pigtail drainage of large pelvic and sub-hepatic pus collection under antibiotic cover	Moderately differentiated adenocarcinoma cervix stage IIIB
Ou YC et al. (2010)	Two	80 & 73	Not mentioned	1. Pain abdomen Pain abdominal and fever	Not mentioned	Gastrointestinal perforation with pneumoperitoneum	Site not mentioned	Drainage + total abdominal hysterectomy + bilateral salpingo-oophorectomy + lymphadenectomy	Not mentioned
Agarwal R et al. (2011)	One	60	P2	Acute central abdominal pain, abdominal distension and fever Presenting symptom	12 hours fever x 3 days	Enteric perforation with peritonitis	Uterine fundus	Exploratory laparotomy with abdominal lavage by surgeons and prevaginal pyometra drainage followed by radiotherapy	Advanced stage of cervical carcinoma

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Study	No. of cases	Age (years)	Parity	Presenting symptom	Duration of symptoms	Provisional diagnosis	Site of perforation	Management	Final diagnosis
Jeon HS et al. (2012)	One	78	P6	Fever, vomiting and diffuse abdominal pain	4 hours	Perforated pyometra/GI perforation	Uterine fundus	Exploratory laparotomy + peritoneal lavage +TAH + BSO Followed by radiotherapy	Squamous cell carcinoma of the cervix with large cell keratinising cervical cancer stage Ib
Ikeda M et al. (2013)	One	80	Not mentioned	Pain abdomen and fever	Not mentioned	Perforated pyometra	Anterior uterine wall	Exploratory laparotomy with TAH + BSO	Not mentioned
Alakananda et al. (2015)	One	60	P11	Severe abdominal pain, abdominal distension, vaginal bleeding for 25 days followed by vaginal discharge for 1 month and foul smelling discharge for 1 week	2 days	Pyoperitoneum due to perforated pyometra	Site not mentioned	Exploratory laparotomy with pan-hysterectomy	Keratinizing squamous cell carcinoma
Konishi Y et al. (2015) ³	One	64	P3	Sudden pain abdomen and vomiting	Not Mentioned	Squamous cell carcinoma cervix Stage IIB	Uterine Fundus	Exploratory laparotomy with drainage of pus with intrauterine indwelling silicone catheter left in situ	Squamous cell carcinoma cervix Stage IIB
Rao SVM et al. (2015)	One	60	P4L4	Pain abdomen, fever, constipation and decreased urinary output	1 day	Generalised peritonitis	Site not mentioned	Emergency laparotomy with biopsy from perforation site closure of perforation followed by chemoradiotherapy	Well differentiated squamous cell carcinoma
Kroon HM et al. (2016)	One	65	Not mentioned	Sudden onset pain abdomen	Not mentioned	GI perforation squamous cell carcinoma stage IIA1	Uterine fundus	Exploratory laparotomy with drainage of pus with radical hysterectomy	Not mentioned
Oumayma L (2023) ⁵	One	60	P2	Severe pain abdomen, persistent vomiting, obstructive syndrome with no bowel movements and fever	2 days	Squamous cell carcinoma Stage IIIB	Multiple perforations	Exploratory laparotomy with TAH +BSO with peritoneal lavage	Invasive cervical cancer
Our study	One	65	P3L3	Severe pain abdomen, vomiting, constipation and fever	3 days	Generalised peritonitis	Uterine fundus	Exploratory laparotomy with drainage of pus with TAH with BSO followed by external beam radiotherapy + cisplatin-based chemotherapy	Squamous cell carcinoma stage III A1

*P-Para, L-Live

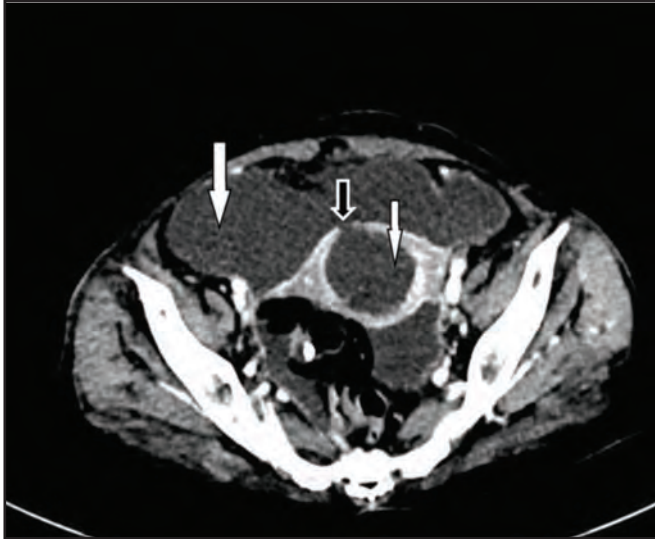


Fig. 1: Axial view (pelvic level) contrast enhanced CT scan demonstrating distended fluid filled endometrial cavity (white solid arrows) consistent with pyometra. Loculated collection (hollow white arrow) consistent with pyoperitoneum is seen in lower abdomen. Also seen is a small defect along anterior wall of uterine corpus marked by black arrow

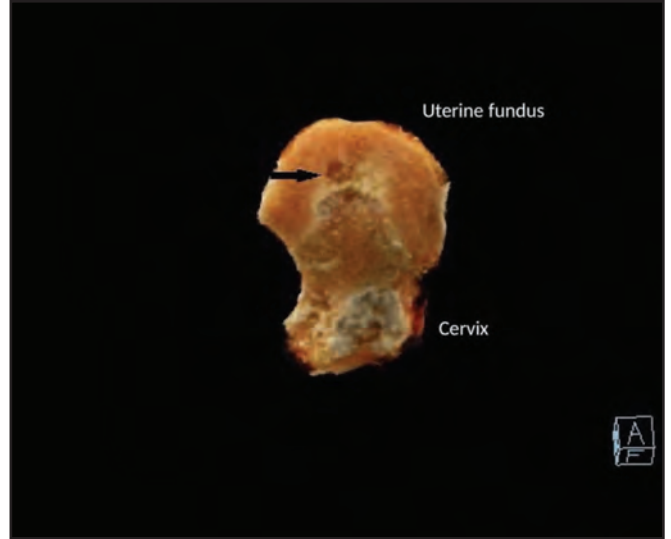


Fig. 2: Coronal post contrast and volume rendered image demonstrating en-face view the perforation (black arrow)

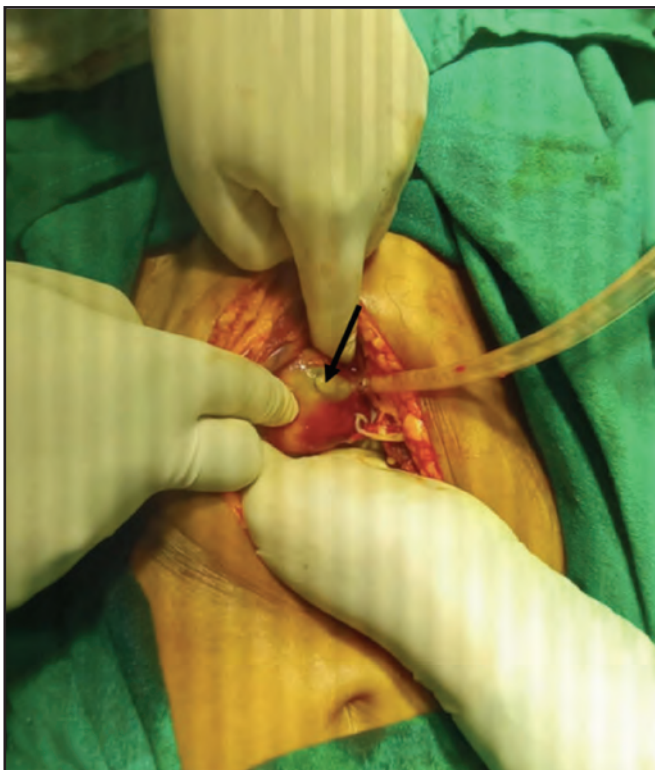


Fig. 3: Intraoperative image showing perforation at the fundus of the uterus with pus oozing out

diagnosis was tuberculosis of cervix, due to ultrasonographical features and history of low-grade fever. An urgent contrast enhanced computerised tomography (CECT) abdomen was ordered which was suggestive of

distended abdominal cavity (hydro/pyometra) with evidence of focal area of gross wall thinning along recto-uterine pouch/pelvis/para-colic gutter (Figure 1). A defect (0.3 × 0.5 cm) along anterior aspect of uterus corpus is seen (Figure 2). Loculated collection along pelvis and lower abdomen (15 × 5 × 5.5 cm) with few small air foci present suggesting infected collection. Bulky cervix (3.0 × 3.1 × 3.6 cm) with relatively irregular serosal margins with heterogenous post-contrast enhancement and irregular peritoneum. Omental fat stranding and regional small bowel wall thickening was present. No enlarged lymph nodes were seen.

After initial stabilisation, decision for emergency laparotomy with pyo-peritoneum drainage was taken. Inter-operatively 1000 ml of foul-smelling pustular discharge was drained (Figure 3). Omentum and bowel were matted with pus. Pus was sent for culture, acid fast bacilli (AFB), adenosine deaminase (ADA), cytology and biochemical evaluation. Around 0.5 × 0.5 cm circular defect was present in the anterior wall of the uterus around 1.5 cm below the fundus. Pus was oozing out from the defect. Uterus was distended and thinned out. Bilateral fallopian tubes and ovaries were adherent to the bowel. A decision for total abdominal hysterectomy with bilateral salpingo-oophorectomy (type 1) was taken. Intraoperatively tumour was extended towards the left side but was not extending till lateral pelvic wall. The tissue was extremely friable hence lymph node sampling could not be done. Patient was given two units of blood intraoperatively. Pus for culture sensitivity was sterile, AFB negative ADA raised (110.4), cytology was negative for malignant cells.

Histopathology confirmed the diagnosis of squamous cell carcinoma NOS, grade 2, moderately differentiated, with middle third stromal invasion with involvement of

ectocervix. Final clinic-surgical stage assigned was stage III A1. Her postoperative period was uneventful. Patient was referred to medical oncologist for further management and was planned for external beam radiotherapy and chemotherapy.

DISCUSSION

Pyometra is collection of pus in the uterine cavity due to obstruction to the natural drainage to the uterine secretions/content. Pyometra is more common in postmenopausal women due to increased chances of cervical canal stenosis at this age. The risk further increases by 1.5 to 4% in presence of cervical or uterine malignancy. Patients with pyometra can remain asymptomatic for long time. Postmenopausal bleeding, foul-smelling vaginal discharge and lower abdominal pain are the usual manifestations of symptomatic pyometra.

Very rarely, pyometra causes spontaneous perforation due to degeneration of the uterine walls. Formation of pyoperitoneum results in clinical features of acute abdomen. Reported incidence of generalised peritonitis because of spontaneous perforation of pyometra in both benign and malignant condition is nearly 0.01 to 0.05%.² Abdominal pain (96.3%), fever (44.44%), vomiting (30.8%), purulent vaginal discharge (7.4%) and genital bleeding (3.7%) were among the common symptoms reported in such cases.⁵ In a case report and literature review by Konishi Y et al.,³ authors reported 11 cases of spontaneous perforation of pyometra in patient with cervical carcinoma. All the cases presented with features of generalised peritonitis (abdominal pain in 100% and fever in 63%).

The most common site for perforation was uterine fundus in 72.72% (08/11 cases). Cornual region in 0.09% (01/11 cases), anterior uterine wall 0.09% (01/11 cases) were the other sites mentioned. In 18.18% (02/11 cases) the site of perforation was not documented.⁴ Most of these cases like our case remain undiagnosed and present for the first time in emergency and require urgent surgical management owing to their acute symptoms compromising final outcome because of suboptimal workup and management. Emergency laparotomy followed by drainage of pus with total abdominal hysterectomy with bilateral salpingectomy is most common surgical management done in such cases. In cases where total abdominal hysterectomy cannot be done drainage of pus followed by peritoneal lavage with or without repair of the perforation is also acceptable.⁵

The final management depends upon the histopathological confirmation of the diagnosis and final stage of the disease. Many patients require second surgery and others are candidates for radiotherapy or chemoradiation. Our patient presented to the surgical emergency with acute abdomen

requiring surgical management and finally was confirmed as squamous cell carcinoma cervix stage III A1 and hence required external beam radiation therapy with cisplatin-based chemotherapy. A summary of previously published cases of spontaneous perforation of pyometra resulting in pyoperitoneum in women with cervical cancer is provided in Table I.

CONCLUSION

Pyoperitoneum due to spontaneous perforation of pyometra is a rare complication of cervical cancer. Most of the times these patients require emergency surgical management due to acute presentation of the symptoms that can compromise patients haemodynamically. High index of suspicion is required, and a multidisciplinary approach is mandatory to optimise management and improve the outcome. In short, reinforcement of the vaccination and cervical screening programs are utmost crucial to reduce overall incidence of cervical carcinoma.

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CONFLICT OF INTEREST

There is no conflict of interest among the authors.

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