

## The Diagnostic Dilemma of Ascites in Women

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### Abstract

**Introduction:** Ascites is the pathological accumulation of fluid within the peritoneal cavity. The most common causes of ascites are liver disease, vascular occlusion, congestive heart failure, pericarditis or nephrotic syndrome. We present to you case series of ascites as a common presentation in women, but each case with a different etio-pathogenesis related to gynecological benign disease. This case series highlights the importance, to consider gynecological problems among the potential differential diagnoses in women with ascites for early diagnosis and timely intervention.

**Methods:** We identified 5 female patients older than 18 years who presented with ascites as a common clinical presentation and we reviewed their medical records to assess demographic data, clinical presentation, imaging findings, co-morbid conditions, histo-pathologic features, pharmacologic therapies and surgical intervention.

**Results:** In all the five female patients, ascites was clinically diagnosed and confirmed with ultrasound of pelvis and abdomen. One of them noted to have pelvic tuberculosis, which was confirmed with endometrial biopsy and treated with antitubercular medication. One patient was diagnosed with adenomyosis and one other patient was diagnosed with leiomyoma, both patients were treated with total abdominal hysterectomy. One of the patients was diagnosed with endometriosis on laparotomy who was treated with gonadotrophin releasing hormone analogues. One of them was diagnosed with right sided ovarian fibroma, treated with right oophorectomy. All these patients had ascites as a common clinical presentation but with different underlying gynecological etiopathogeneses. The appropriate diagnosis and timely intervention in the above 5 cases resulted in complete resolution of symptoms.

**Conclusion:** As a healthcare worker, initial evaluation of a female patient with ascites, should rely on a detailed history and physical examination. In women with ascites, gynecologic problems should be considered among the potential differential diagnosis for appropriate management and timely intervention.

**Keywords:** Ascites, Endometriosis, Peritoneal Tuberculosis, Adenomyosis, Liomyoma, Fibroma

### Introduction

Ascites is pathological accumulation of fluid within the peritoneal cavity [1,2]. The most common causes of ascites are liver disease, congestive heart failure, pericarditis, vascular occlusion, nephrotic syndrome and malignancy [3-6]. In women, gynecological benign diseases are one of the predisposing factors for ascites presentation. As the healthcare worker often gynecological causes for ascites are less frequently considered as a differential diagnosis.

In this article we describe a case series of patients with ascites as a common presentation, but each case with a different etiopathogen-

esis related to a gynecological disease.

This case series highlights the importance, to consider benign gynecologic problems such as abdominopelvic tuberculosis, adenomyosis, endometriosis, fibroma and leiomyoma; among the potential differential diagnoses in women with ascites for early management and timely intervention [7-11].

### Methods

After getting the verbal and written consent from the patients, we identified female patients older than 18 years between January

2019 to January 2021, who presented with abdominal distention as common clinical presentation. Patients with only underlying benign gynecological conditions were included in the study.

We reviewed their medical records to assess demographic data, comorbidities, clinical presentation, imaging findings, histopathology findings and management. We then did manual chart review of identified medical records to verify which of these patients, were given the diagnosis of ascites with an underlying benign gynecological etiology. Once patients were included in the study their data was de-identified and coded using alphabets as (Patient A, B, C, D, E). Then variables like patient's age, affected organs, associated conditions, disease course and management were abstracted on to a standardised assessment sheet.

## Results

Between January 2019 and January 2021, a total of five female patients were clinically diagnosed with ascites.

Table 1 highlights the demographic data, clinical features, co-morbidities, and imaging study of the 5 female cases. The ages varied from 39 to 44 years, and all were Asian. All the five patients presented with abdominal distention as a common presenting symptom. Patient A presented with fever, abdominal pain, abdominal distention, weight loss and irregular vaginal bleeding. Patient B presented with menorrhagia and abdominal distention. Patient C presented with dysmenorrhea dyspareunia abdominal bloating and abdominal distention. Patient D presented with only abdominal distention and patient E presented with menorrhagia and abdominal distention.

**Table 1: Demographic and Clinical Features of Female Patients with Ascites (n=5)**

Pat ient ID	Age (years) at time of diagn osis	Ethni city/ Race	Clinical presentation	Obstetr ics history	Co- morbidi ties	Pelvic exami nation	Imaging
A	29	Asian	Low grade fever (101F) Weight loss Irregular Vag- inal bleeding Lower ab- dominal pain Abdominal distension	Primary infer- tility	None	Tender fornices. Cervical motion tender ness Mass in the left adnex a	Ultrasound: Abdomen & Pelvis: Loculated intraperitoneal fluid, thickened peritoneum, minute nodules on the parietal peritoneum, thickened/ nodular omentum. Left sided peritubal adhesions with left beaded fallopian tubes. Multiloculated, thick, capsulated, cystic and solid left adnexal masses.
B	39	Asian	Menorrhagia Abdominal distension	P4 L4	None	Bulky Uterus	Ultrasound: Abdomen & Pelvis: Mottled het- erogeneous appearing uterus, small myome- trial lucent areas, with indistinct endometrial strip and pelvic intraperi- toneal Fluid Figure 1.
C	22	Asian	Dysmenorr hoea Dyspere- uni a Abdomi- nal bloating & distension	P1 L1	None	Tenderness on deep pelvic exami nation	Ultrasound: Abdomen & Pelvis: Normal appear- ing uterus, with obliterated recto-uterine pouch and intraperitoneal fluid with right sided endo- metrioma.
D	44	Asian	Abdominal Distension	P2 L2	Hypertension	Right Adnex al Mass	Ultrasound: Abdomen & Pelvis: Right adnex- al hypoechoic mass with clear border and minimal doppler flow signal with intraperito- neal fluid

E	38	Asian	Menorrhagia Abdominal distension	P4 L4	Hypothyroidism	Irregular Shape of Uterus	Ultrasound: Abdomen & Pelvis: Well-defined, solid masses in the myometrium with cystic degeneration Figure: 3
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ID= Identification, P= Parity, A= abortion, L= Live

A few co-morbid conditions were identified, including hypertension (n=1) and hypothyroidism (n=1). None of the patients were diagnosed with an underlying liver disease, kidney disease, vascular occlusive disease, congestive heart failure nor pericarditis. None of the patients were diagnosed with a malignancy based on routine age-based cancer screening guidelines at the time this manuscript was written with follow-up ranging from 1 to 2 years.

The presence of ascites in all the patients was confirmed with ultrasound abdomen and pelvis, later these patients underwent explorative laparotomy. All the patients had significant amount of free fluid in the peritoneal cavity (Table 2). The ascitic fluid analysis in all the patients resulted to be exudate.

**Table 2: Different Treatment Modalities Depending On the Diagnosis in Female Patients with Ascites (n=5)**

Patient ID	Intraoperative Findings	Histopathology	Intraperitoneal fluid analysis (Ascitic fluid analysis)	Diagnosis	Management Outcome.
A	Free fluid in the peritoneal cavity with multiple yellowish- white nodules on the visceral and parietal peritoneum, with significant peritoneal and visceral adhesions and with left beaded fallopian tubes.	Endometrial biopsy: Multiple epithelioid cell granulomas scattered in the endometrium, with Langhan's giant cells suggestive of granulomatous disease like tuberculosis.	Exudate.	Pelvic tuberculosis	Medical Management: Antitubercular therapy
B	Free fluid in the peritoneal cavity with uniformly enlarged uterus.	Myometrial biopsy: Presence of endometrial stroma and glandular tissue within the smooth muscle of the myometrium suggestive of adenomyosis.	Exudate.	Adenomyosis	Surgical management: Hysterectomy
C	Complete obliteration of the pouch of Douglas and bladder was densely adherent to the lower uterus with free fluid in the peritoneal cavity right sided endometrioma	Cul de sac biopsy: Multiple cuboidal glands, columnar glands of endometrial origin, suggestive of endometriosis.	Exudate	Endometriosis	Medical management: Hysterectomy releasing hormone analogues.
D	Free fluid in the peritoneal cavity with round, oval, lobulated, well-circumscribed grayish white, right sided ovarian tumor.	Right ovary biopsy: Epithelioid round cells in vague cords and small nests separated by collagen fibers, suggestive of fibroma.	Exudate	Benign ovarian tumor (Fibroma)	Surgical management: Right sided Oophorectomy.
E	Enlarged uterus with multiple subserosal masses with free peritoneal fluid.	Uterine mass biopsy: Spindle shaped smooth muscle cells suggestive of myoma.	Exudate	Leiomyoma	Surgical management: Hysterectomy.

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Patient A had free fluid in the peritoneal cavity, multiple yellowish-white nodules on the visceral and parietal peritoneum, with significant peritoneal and visceral adhesions and left beaded fallopian tubes. The histopathology of endometrium biopsy specimen showed multiple epithelioid cell granulomas scattered in the endometrium, with Langhan's giant cells suggestive of granulomatous disease like tuberculosis. After initiating antitubercular treatment patient was noted to have complete resolution of symptoms within 3 months. The patient was treated with antitubercular regimen for a total of nine months.

Patient B had free fluid in the peritoneal cavity with uniformly enlarged uterus. The histopathology of myometrium biopsy specimen showed endometrial stroma and glandular tissue within the smooth muscle of the myometrium suggestive of adenomyosis. Patient underwent total abdominal hysterectomy. There was complete resolution of symptoms in 3 weeks.

Patient C had complete obliteration of the pouch of Douglas and bladder was densely adherent to the lower uterus right sided endometrioma with free fluid in the peritoneal cavity. The histopathology of Cul de sac biopsy showed multiple cuboidal glands and columnar glands with endometrial origin suggestive of endometriosis. The patient treated with gonadotrophin releasing hormone analogues and there was complete resolution of symptoms in 6 months.

Patient D had large amount of free fluid in the peritoneal cavity with round, oval, lobulated, well-circumscribed, grayish white, right sided ovarian solid tumor. The right ovarian biopsy showed epithelioid round cells in vague cords and small nests separated by collagen fibers suggestive of fibroma. Patient underwent right sided oophorectomy with complete resolution of symptoms in 3 weeks.

Patient E had enlarged uterus with multiple subserosal masses with free peritoneal fluid. The uterine mass biopsy showed spindle shaped smooth muscle cells suggestive of leiomyoma. Patient underwent total abdominal hysterectomy. There was complete resolution of symptoms in 3 weeks

All the patients had different gynecological etiopathogeneses but with common clinical presentation as ascites. A detailed history and appropriate physical examination helps to consider benign gynecological diseases as a potential etiology for ascites in women [12].

## Discussion

Ascites is the excessive fluid collection in the abdominopelvic cavity, as a response to an underlying pathology [1,2]. The most common etiopathogenesis for ascites is related to hepato-renal diseases, cardiac disease and malignant diseases [3-6]. There is limited literature about benign gynaecological conditions causing ascites. This case series highlights the importance of considering benign gynaecological diseases like abdominopelvic tuberculosis, adenomyosis, endometriosis, fibroma and leiomyoma, as a differential diagnosis in women presenting with ascites [7-11].

Tuberculosis is a mycobacterial infection that most commonly manifests as pulmonary disease, but may affect multiple extra pulmonary sites, including abdominopelvic region [7]. The abdominopelvic tuberculosis is usually manifested in women of reproductive age [13-15]. These patients with abdomino-pelvic tuberculosis usually present with vague pelvic pain, abdominal distension, weight loss, fever and infertility [13-16]. On diagnostic imaging, pelvic tuberculosis may appear as ascites, peritoneal nodules, omental or peritoneal thickening, or adnexal masses [15,16]. In this case series, patient A had similar signs and symptoms and radiological presentation which were confirmed on laparotomy. Patient A had a satisfactory response to anti-tuberculosis therapy and ascites resolved after anti-tuberculosis treatment [14,15].

Adenomyosis is a benign gynaecological disease characterised by the presence of ectopic endometrium within the myometrium [8]. The diffuse nature of the disease, makes it very difficult to clinically diagnose patients with adenomyosis [17-19]. It typically affects multiparous women over 30 years of age and may cause dysmenorrhea, menorrhagia, and abnormal vaginal bleeding [17,18]. In our case series, patient B was multiparous 39-year-old female with similar clinical presentation. noted to have adenomyosis, on ultrasound image. (Figure 1) She underwent total abdominal hysterectomy with complete resolution of symptoms. Till date, hysterectomy remains the standard of care [8,17-29].

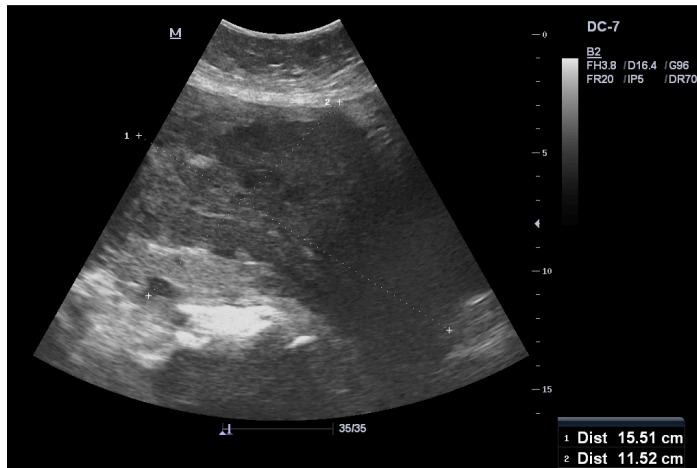
Endometriosis is a gynaecological condition characterized by the presence of endometrial glands and stroma outside the endometrial cavity [9]. Patients usually present with dysmenorrhea, dyspareunia and dyschezia [20]. The ectopic nature of the endometrial tissue makes it difficult to diagnose endometriosis [9,20]. The presence of ascitic fluid in endometriosis is usually due to irritation on the serosal surfaces caused by free blood in the peritoneal cavity during the menstruation [20-22]. Gonadotropin analogues are widely used as a way to induce hypoestrogenism, causing regression of the ectopic endometrial tissue [9,20-22]. In our case series, the patient C was diagnosed with endometriosis and right sided endometrioma. (Figure:2) She was treated with gonadotropin releasing hormone analogues, which resulted in complete resolution of symptoms in 6 months [20-22].

Ovarian fibromas are benign ovarian tumors [10]. These tumors are composed of spindle, oval, or round cells forming variable amounts of collagen [23-25]. The patients usually present with ascites pleural effusion and abdominal pain [10,23,24]. In this case series patient D presented with abdominal distension, secondary to ascites. After confirming the diagnosis, she underwent right sided oophorectomy with complete resolution of symptoms [23-25].

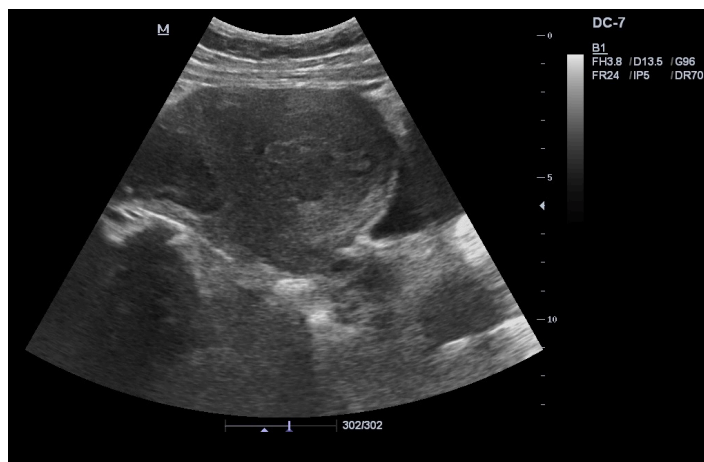
Uterine leiomyoma is the benign tumor of uterine smooth muscle [11]. Patients usually present with dysmenorrhea, menorrhagia and abdominal distension [26]. An ultrasonography is the initial diagnostic tool for the confirmation of the diagnosis [11,26]. The current management strategies involve mainly surgical interventions which include total hysterectomy versus partial myomectomy depending on the patient's age and her desire to preserve fertility [27]. In this case series patient E is a 38-year-old female who had completed her family with four children, she presented with



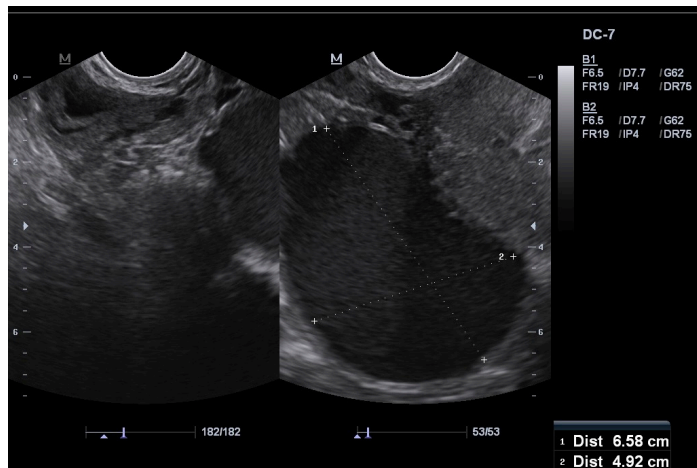
menorrhagia and abdominal distension. Uterine leiomyoma was noted on the ultrasound imaging.(Figure:3) As she did not desire any further children she opted for total abdominal hysterectomy.



**Figure 1: Adenomyosis**



**Figure 2: Anterior Wall Leiomyoma**



**Figure 3: Endometriosis with Right Sided Endometrioma**

## Conclusion

As a healthcare worker, initial evaluation of a female patient with ascites, should rely on a detailed history and physical examination [12]. In women with ascites, gynaecologic problems such as abdominopelvic tuberculosis, adenomyosis, endometriosis, fibrothecoma and leiomyoma should be considered among the potential differential for appropriate diagnosis and timely intervention.

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