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Two Cases of Acute Urinary Retention in Early Pregnancy: A Rare Obstetric Emergency

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A B S T R A C T

Acute urinary retention (AUR) is a rare but potentially serious complication in early pregnancy, characterized by the sudden inability to void, resulting in bladder distension and lower abdominal pain. The incidence of AUR in pregnancy is estimated to be around 1 in 3000 to 1 in 8000 pregnancies. While AUR can occur at any gestational age, it is most frequently encountered in the first and second trimesters. A retroverted uterus, where the uterus tilts backward instead of forward, is present in approximately 11-15% of women and is a major contributing factor to AUR. This case series presents two cases of AUR managed at our institution. The first case involved a 28-year-old woman, gravida 2, para 1, who presented at 14 weeks and 3 days gestation with continuous suprapubic pain and a sensation of incomplete bladder emptying. The second case involved a 38-year-old woman, gravida 6, para 3, who presented at 9 weeks and 2 days gestation with an inability to void since the previous night, along with suprapubic pain and a sensation of incomplete bladder emptying. Both women had a retroverted uterus on ultrasound. Successful management involved bladder decompression with a Foley catheter for 48 hours, followed by bladder training. In conclusion, AUR in early pregnancy necessitates prompt diagnosis and management to prevent maternal and fetal complications. A retroverted uterus is a significant risk factor. Catheterization and bladder training are effective in most cases.

1. Introduction

Acute urinary retention (AUR) is an uncommon yet potentially serious complication during pregnancy, characterized by the abrupt inability to void, leading to bladder distension and lower abdominal pain. This condition, while rare, can cause considerable discomfort and distress to the patient. The incidence of AUR in pregnancy is estimated to be around 1 in 3000 to 1 in 8000 pregnancies. Although AUR can occur at any gestational age, it is most frequently encountered in the first and second trimesters of pregnancy. Specifically, it is most commonly seen between 9 and 16 weeks of gestation. Several factors can contribute to the development of AUR during pregnancy. These include hormonal changes, mechanical compression from the enlarging uterus, and anatomical abnormalities such as a retroverted uterus. A retroverted uterus, where the uterus tilts backward instead of forward, is present in approximately 11-15% of women. In these cases, the enlarging uterus can compress the urethra and bladder neck against the pubic bone, leading to obstruction of urine flow. This mechanical obstruction can result in incomplete bladder emptying and, ultimately, AUR. Other potential causes of AUR in pregnancy include hormonal changes, such as increased progesterone levels, which can relax the bladder muscles and decrease bladder tone. Additionally, conditions such as urinary tract infections, pelvic masses, and neurological disorders can also contribute to AUR.[1-4]

The clinical presentation of AUR typically involves the sudden onset of lower abdominal pain, an inability to void, and a palpable distended bladder. If left untreated, AUR can lead to serious complications such as urinary tract infections, hydronephrosis, and even bladder rupture. Furthermore, AUR can have adverse effects on the fetus, including premature rupture of membranes, preterm labor, and fetal distress. Prompt diagnosis and management of AUR are crucial to alleviating symptoms, preventing complications, and ensuring the well-being of both mother and fetus. The diagnosis of AUR is primarily clinical, based on the patient's symptoms and physical examination findings. A palpable, distended bladder is a hallmark of AUR. Imaging studies, such as ultrasound, can be helpful to confirm the diagnosis and identify any underlying anatomical abnormalities, such as a retroverted uterus.[5-7]

The management of AUR in pregnancy focuses on relieving the obstruction and restoring normal bladder function. Bladder catheterization is the mainstay of treatment, allowing for immediate decompression and drainage of urine. In most cases, a Foley catheter is sufficient, although suprapubic catheterization may be considered in certain situations. Following catheterization, it is important to monitor the patient closely for signs of recurrent retention. Bladder training, which involves gradually increasing the time between voiding attempts, can help to restore normal bladder function. In some cases, manual repositioning of the uterus may be attempted, but this is generally not recommended after 20 weeks gestation due to the risk of preterm labor. In the majority of cases, AUR in pregnancy resolves with conservative management. However, in rare instances, surgical intervention may be necessary, particularly if there is an underlying anatomical abnormality or if conservative measures fail.[8-10] This case series describes two cases of AUR in early pregnancy managed at our institution, highlighting the importance of early recognition and intervention.

2. Case Presentation

Case 1

The first case involved a 28-year-old woman, gravida 2, para 1 (G2P1001), who presented to our institution at 14 weeks and 3 days of gestation. Her past obstetric history was notable for one uncomplicated vaginal delivery. She had no significant past medical history, denied any previous surgical interventions, and reported no known allergies. The patient's primary presenting complaint was continuous suprapubic pain experienced for one day. She also reported a sensation of incomplete bladder emptying. However, she denied experiencing fever, urinary frequency, urinary urgency, dysuria, hematuria, or any previous episodes of similar symptoms. There was no history of recent trauma or pelvic surgery. The patient also denied any known uterine fibroids or other medical conditions. The patient reported that the suprapubic pain had begun gradually, increasing in intensity over the 24 hours leading up to her presentation. The pain was described as a dull, aching sensation, localized to the lower abdomen above the pubic bone. The sensation of incomplete bladder emptying was a significant concern for the patient, as she felt a persistent urge to void despite having recently attempted to urinate. This sensation was accompanied by the feeling that her bladder was not fully evacuated. The patient's denial of fever was important in ruling out infectious etiologies such as pyelonephritis or complicated urinary tract infections, which can sometimes present with urinary retention. The absence of urinary frequency, urgency, dysuria, and hematuria further supported the likelihood of a mechanical rather than an infectious cause of her symptoms. Specifically, these negative symptoms made a diagnosis of cystitis less likely. The patient's lack of previous similar episodes was noteworthy, as recurrent AUR might suggest an underlying chronic condition or anatomical predisposition. The absence of recent trauma or pelvic surgery helped to exclude iatrogenic or injury-related causes of bladder dysfunction. The patient's past medical history was unremarkable. Her previous

pregnancy resulted in an uncomplicated vaginal delivery, suggesting a normally functioning genitourinary system prior to the current presentation. She had no history of gynecological surgeries, urinary tract infections, or other medical conditions. She was not on any medications and reported no known allergies. The patient's family history was negative for urinary tract disorders or other relevant medical conditions. Her social history was also unremarkable, with no reported smoking, alcohol consumption, or drug use. These factors were important to consider as they can sometimes contribute to or exacerbate urinary symptoms. Upon physical examination, the patient's vital signs were within normal limits. Abdominal examination revealed a uterine size consistent with her gestational age of 14 weeks and 3 days. The fetal heart rate was 132 beats per minute (bpm), indicating fetal viability and well-being. There was no suprapubic tenderness or costovertebral angle tenderness elicited during palpation. A pelvic examination, including vaginal, speculum, and bimanual examinations, was not performed in this case. The decision not to perform a pelvic examination was likely based on the clinical suspicion of AUR and the desire to avoid potentially exacerbating the patient's discomfort or introducing infection. Furthermore, the information gained from a pelvic exam would likely have been of limited additional diagnostic value at this stage, with ultrasound being the preferred imaging modality. Laboratory investigations included a complete blood count (CBC) and urinalysis. The CBC results were within normal limits, indicating no evidence of infection or other hematologic abnormalities. The urinalysis revealed a clear yellow color, with leukocytes present at 1-3 per low power field and squamous epithelial cells at 2-4 per low power field. No bacteria were observed in the urine sample. The normal CBC results were reassuring, as they helped to rule out systemic infection or significant inflammation. The urinalysis findings were relatively benign, with a small number of leukocytes and epithelial cells, which can be normal in pregnancy. The absence of bacteria in the urine further supported the clinical impression of a non-infectious etiology for the patient's symptoms. Kidney function tests were also performed, with urea measured at 21.2 mg/dL and creatinine at 0.7 mg/dL. These values were within the normal range for pregnancy, indicating adequate renal function. A transvaginal ultrasound was performed, which confirmed the presence of an intrauterine pregnancy with a gestational age of 14 weeks and 3 days, consistent with the patient's reported dates. Notably, the ultrasound revealed a retroverted uterus. There were no adnexal masses or free fluid identified in the pelvic cavity. The ultrasound findings were crucial in establishing the diagnosis. The confirmation of the intrauterine pregnancy and the accurate assessment of gestational age were important for both maternal and fetal care. The identification of the retroverted uterus was a key finding, as it is a major contributing factor to AUR in early pregnancy. The absence of adnexal masses and free fluid helped to exclude other potential causes of pelvic pain and urinary symptoms, such as ovarian cysts, ectopic pregnancy, or pelvic inflammatory disease. Based on the clinical presentation, physical examination findings, laboratory investigations, and imaging results, the patient was diagnosed with acute urinary retention (AUR) and a retroverted uterus. The combination of suprapubic pain, sensation of incomplete bladder emptying, the absence of infectious signs, and the ultrasound confirmation of a retroverted uterus supported this diagnosis.

The second case involved a 38-year-old woman, gravida 6, para 3 (G6P3023), who presented at 9 weeks and 2 days of gestation. Her past obstetric history was significant for three vaginal deliveries and two miscarriages. She had no significant past medical history, denied any previous surgical interventions, and reported no known allergies. The patient's primary presenting complaint was an inability to void since the previous night, accompanied by suprapubic pain. She also reported a sensation of incomplete bladder emptying. She denied fever, dysuria, hematuria, previous episodes of similar symptoms, recent trauma,

recent pelvic surgery, known uterine fibroids, or other medical conditions. However, she reported experiencing urinary frequency and urinary urgency. The patient reported a sudden onset of inability to urinate the night before her presentation. This was a complete inability to pass urine, despite feeling the urge to do so. The suprapubic pain was described as a progressively worsening discomfort in the lower abdomen. The sensation of incomplete bladder emptying was also present, similar to Case 1. The patient's denial of fever, dysuria, and hematuria was important in differentiating her condition from infectious causes of urinary symptoms. However, her report of urinary frequency and urgency, in contrast to Case 1, suggested a potentially different underlying mechanism or a more complex presentation. Urinary frequency and urgency can sometimes be associated with early pregnancy changes, but in the context of complete urinary retention, they raised the possibility of bladder irritation or inflammation secondary to the retention itself. The patient's negative history for previous similar episodes, recent trauma, pelvic surgery, and known uterine fibroids was consistent with Case 1 and helped to narrow the differential diagnosis. The patient's past obstetric history was notable for three vaginal deliveries and two miscarriages. This history suggested that she had experienced successful pregnancies and deliveries in the past, but also highlighted a history of pregnancy loss. Similar to Case 1, she had no history of gynecological surgeries, urinary tract infections, or other medical conditions. She was not on any medications and reported no known allergies. The patient's family history was negative for urinary tract disorders or other relevant medical conditions. Her social history was also unremarkable, with no reported smoking, alcohol consumption, or drug use. Upon physical examination, the patient's vital signs were within normal limits. An abdominal examination revealed a uterine size consistent with her gestational age of 9 weeks and 2 days. The fetal heart rate was 132 bpm. There was no suprapubic tenderness or costovertebral angle tenderness. Similar to Case 1, a pelvic examination, including vaginal, speculum, and bimanual examinations, was not performed. The rationale for this decision was likely the same as in Case 1, focusing on clinical suspicion and minimizing potential discomfort or complications. Laboratory investigations included a complete blood count (CBC) and urinalysis. The CBC results were within normal limits. The urinalysis revealed a slightly cloudy yellow color, with leukocytes present at 1-2 per low power field and squamous epithelial cells at 5-7 per low power field. Bacteria were present in the urine sample. The CBC results were again reassuring, indicating no systemic signs of infection or hematologic abnormalities. The urinalysis findings, however, differed from Case 1 in the presence of bacteria. While the number of leukocytes was similar, the presence of bacteria suggested a possible urinary tract infection or bacterial colonization. This finding was important to consider in the management of the patient. Kidney function tests showed urea at 10.2 mg/dL and creatinine at 0.4 mg/dL, both within the normal range for pregnancy. A transvaginal ultrasound confirmed the presence of an intrauterine pregnancy with a gestational age of 9 weeks and 2 days. The ultrasound also revealed a retroverted uterus. There were no adnexal masses or free fluid identified. The ultrasound findings were consistent with Case 1, confirming the intrauterine pregnancy, establishing the gestational age, and identifying the retroverted uterus as a significant anatomical factor. The absence of adnexal masses and free fluid helped to exclude other potential causes of the patient's symptoms. Based on the clinical presentation, physical examination findings, laboratory investigations, and imaging results, the patient was diagnosed with acute urinary retention (AUR) and a retroverted uterus. The presence of bacteria in the urine suggested a possible concurrent urinary tract infection or bacterial colonization, which was considered in the patient's management.

Table 1. Comprehensive overview of the clinical presentation, investigations, and diagnosis for both cases.

Feature	Case 1	Case 2
Age	28 years old	38 years old
Gravidity/Parity	G2P1001	G6P3023
Gestational age	14 weeks 3 days	9 weeks 2 days
Presenting complaint	Continuous suprapubic pain	Inability to urinate, suprapubic pain
History of present illness		
- Duration of symptoms	1 day	1 night
- Incomplete emptying	Yes	Yes
- Fever	No	No
- Urinary frequency	-	Yes
- Urinary urgency	-	Yes
- Dysuria	-	No
- Hematuria	-	No
- Previous episodes	-	No
- Recent trauma	-	No
- Recent pelvic surgery	-	No
- Known uterine fibroids	-	No
- Other medical conditions	-	No
Past medical history		
- Previous pregnancies	1 uncomplicated vaginal delivery	3 vaginal deliveries, 2 miscarriages
- Gynecological surgeries	None	None
- Urinary tract infections	None	None
- Other medical conditions	None	None
Medications	None	None
Allergies	None	None
Family history		
- Urinary tract disorders	None	None
- Other relevant conditions	None	None
Social history		
- Smoking	No	No
- Alcohol consumption	No	No
- Drug use	No	No
Physical examination		
- Vital signs	Within normal limits	Within normal limits
- Abdominal exam		
- - Uterine size	Consistent with gestational age	Consistent with gestational age
- - Fetal heart rate	132 bpm	132 bpm
- - Suprapubic tenderness	No	No
- - Costovertebral angle tenderness	No	No
- Pelvic exam		
- - Vaginal examination	Not performed	Not performed
- - Speculum examination	-	-
- - Bimanual examination	-	-
Laboratory investigations		
- Complete blood count	Within normal limits	Within normal limits
- Urinalysis		
- - Color	Clear yellow	Slightly cloudy yellow
- - Leukocytes	1-3 per low power field	1-2 per low power field
- - Squamous epithelium	2-4 per low power field	5-7 per low power field
- - Bacteria	-	Positive
- Kidney function tests		
- - Urea	21.2 mg/dL	10.2 mg/dL
- - Creatinine	0.7 mg/dL	0.4 mg/dL
Imaging		
- Transvaginal ultrasound		
- - Intrauterine pregnancy	Yes	Yes
- - Gestational age	14 weeks 3 days	9 weeks 2 days
- - Retroverted uterus	Yes	Yes
- - Adnexal masses	No	No
- - Free fluid	No	No
Diagnosis		
- Acute urinary retention	Yes	Yes
- Retroverted uterus	Yes	Yes

Case 2

A 28-year-old woman, gravida 2, para 1, presented to our institution at 14 weeks and 3 days of gestation. The patient's obstetric history was significant for one previous uncomplicated vaginal delivery. Her medical history was unremarkable, and she reported no surgical interventions or known allergies. The patient's primary complaint upon presentation was continuous suprapubic pain. She described the pain as a persistent, dull ache located in the lower abdomen, above the pubic bone. The pain had been present for approximately one day and had been gradually increasing in intensity. In addition to the suprapubic pain, the patient also reported a sensation of incomplete bladder emptying. She expressed concern about a persistent urge to urinate, even after recent attempts to void. This sensation was accompanied by the feeling that her bladder was not fully evacuating. The patient specifically denied experiencing any fever, urinary frequency, urinary urgency, dysuria, or hematuria. She also stated that she had not experienced any similar episodes in the past. There was no reported history of recent trauma or pelvic surgery. The patient denied any knowledge of uterine fibroids or any other medical conditions. In exploring the history of the present illness in greater detail, the patient indicated that the suprapubic pain had begun insidiously, with a gradual onset that had intensified over the 24 hours preceding her presentation. The pain was described as a constant discomfort, not associated with any specific activity or movement. The sensation of incomplete bladder emptying was a prominent concern for the patient, causing her significant distress. She reported feeling a persistent pressure in her lower abdomen and the need to urinate, despite her inability to achieve complete relief. The patient's denial of fever was clinically important, as it helped to reduce suspicion for infectious processes that might manifest with urinary retention, such as pyelonephritis or complicated urinary tract infections. The absence of urinary frequency, urgency, dysuria, and hematuria further suggested a non-infectious etiology for her symptoms, making conditions like cystitis less likely. The fact that the patient had not experienced similar episodes in the past was also noteworthy, as recurrent urinary retention might suggest an underlying chronic condition or a predisposing anatomical factor. The lack of recent trauma or pelvic surgery helped to rule out iatrogenic or injury-related causes of her bladder dysfunction. The patient's past medical history was unremarkable. Her previous pregnancy had resulted in an uncomplicated vaginal delivery, suggesting that her genitourinary system had functioned normally prior to her current presentation. She had no history of gynecological surgeries, urinary tract infections, or any other medical conditions. The patient was not taking any medications and stated that she had no known allergies. The patient's family history was negative for any urinary tract disorders or other relevant medical conditions. Her social history was also unremarkable, with no reported smoking, alcohol consumption, or illicit drug use. These factors were considered, as they can sometimes contribute to or exacerbate urinary symptoms. Upon physical examination, the patient's vital signs were all within normal limits. The abdominal examination revealed that the uterine size was consistent with her gestational age of 14 weeks and 3 days. The fetal heart rate was 132 beats per minute, which was reassuring and indicated fetal viability and well-being. There was no suprapubic tenderness or costovertebral angle tenderness elicited during palpation of the abdomen. A pelvic examination, including vaginal, speculum, and bimanual examinations, was not performed in this particular case. The decision not to proceed with a pelvic examination was likely based on the clinical suspicion of acute urinary retention and the desire to avoid potentially worsening the patient's discomfort or introducing any risk of infection. Furthermore, it was likely determined that the information obtained from a pelvic examination would have limited additional diagnostic value at that stage, with ultrasound being the preferred imaging modality to further investigate the patient's condition. Laboratory investigations were conducted, including a complete blood count (CBC)

and a urinalysis. The results of the CBC were within normal limits, providing no evidence of infection or any other hematologic abnormalities. The urinalysis revealed a clear yellow color. Leukocytes were present, with 1-3 leukocytes per low power field, and squamous epithelial cells were also observed, with 2-4 squamous epithelial cells per low power field. No bacteria were identified in the urine sample. The normal CBC results were clinically reassuring, as they helped to exclude any systemic infection or significant inflammation. The urinalysis findings were considered relatively benign, as the presence of a small number of leukocytes and epithelial cells can be within the normal range during pregnancy. The absence of bacteria in the urine further supported the clinical impression that the patient's symptoms were likely not due to an infectious process. Kidney function tests were also performed. The urea level was measured at 21.2 mg/dL, and the creatinine level was measured at 0.7 mg/dL. Both of these values were within the normal range expected for pregnancy, indicating that the patient's renal function was adequate. A transvaginal ultrasound was performed. The ultrasound confirmed the presence of an intrauterine pregnancy, and the gestational age was determined to be 14 weeks and 3 days, which was consistent with the patient's reported dates. A significant finding on the ultrasound was that the uterus was retroverted. There were no adnexal masses or free fluid identified within the pelvic cavity. The ultrasound findings were crucial in establishing the diagnosis. The confirmation of the intrauterine pregnancy and the accurate assessment of the gestational age were important for the overall management of both the mother and the fetus. The identification of the retroverted uterus was a key finding, as it is a major contributing factor in cases of acute urinary retention in early pregnancy. The absence of adnexal masses and free fluid helped to exclude other potential causes of the patient's pelvic pain and urinary symptoms, such as ovarian cysts, ectopic pregnancy, or pelvic inflammatory disease. Based on the patient's clinical presentation, the findings of the physical examination, the results of the laboratory investigations, and the imaging results from the ultrasound, the patient was diagnosed with acute urinary retention and a retroverted uterus. The combination of the patient's suprapubic pain, the sensation of incomplete bladder emptying, the absence of infectious signs, and the ultrasound confirmation of a retroverted uterus supported this diagnosis.

A 38-year-old woman, gravida 6, para 3, presented to the institution at 9 weeks and 2 days of gestation. The patient's obstetric history was significant for three previous vaginal deliveries and two miscarriages. Her past medical history was unremarkable, and she denied any previous surgical interventions or known allergies. The patient's primary complaint upon presentation was an inability to void, which had begun the previous night. This inability to urinate was accompanied by suprapubic pain. The patient also reported a sensation of incomplete bladder emptying. She denied experiencing any fever, dysuria, or hematuria. She stated that she had not experienced any previous episodes of similar symptoms. There was no reported history of recent trauma, recent pelvic surgery, or known uterine fibroids. The patient also denied any other medical conditions. However, in contrast to the first case, this patient reported experiencing urinary frequency and urinary urgency. In exploring the history of the present illness in greater detail, the patient reported a sudden onset of the inability to urinate the night before her presentation. This was described as a complete inability to pass urine, despite feeling the urge to do so. The suprapubic pain was characterized as a discomfort in the lower abdomen that had been progressively worsening. The sensation of incomplete bladder emptying was also present, similar to the first case. The patient's denial of fever, dysuria, and hematuria was important in helping to differentiate her condition from infectious causes of urinary symptoms. However, her report of urinary frequency and urgency, which was in contrast to the first case, suggested a potentially different underlying mechanism or a more complex presentation. Urinary frequency and urgency can sometimes be associated with the physiological

changes of early pregnancy, but in the context of complete urinary retention, they raised the possibility of bladder irritation or inflammation that could be secondary to the retention itself. The patient's negative history for previous similar episodes, recent trauma, pelvic surgery, and known uterine fibroids was consistent with the first case and helped to narrow the differential diagnosis. The patient's past obstetric history was notable for three vaginal deliveries and two miscarriages. This history indicated that she had experienced successful pregnancies and deliveries in the past, but it also highlighted a history of pregnancy loss. Similar to the first case, she had no history of gynecological surgeries, urinary tract infections, or other medical conditions. The patient was not taking any medications and reported no known allergies. The patient's family history was negative for any urinary tract disorders or other relevant medical conditions. Her social history was also unremarkable, with no reported smoking, alcohol consumption, or illicit drug use. Upon physical examination, the patient's vital signs were all within normal limits. The abdominal examination revealed a uterine size that was consistent with her gestational age of 9 weeks and 2 days. The fetal heart rate was 132 beats per minute. There was no suprapubic tenderness or costovertebral angle tenderness. Similar to the first case, a pelvic examination, including vaginal, speculum, and bimanual examinations, was not performed. The rationale for this decision was likely the same as in the first case, focusing on clinical suspicion and minimizing potential discomfort or complications for the patient. Laboratory investigations were conducted, including a complete blood count (CBC) and a urinalysis. The results of the CBC were within normal limits. The urinalysis revealed a slightly cloudy yellow color. Leukocytes were present, with 1-2 leukocytes per low power field, and squamous epithelial cells were also observed, with 5-7 squamous epithelial cells per low power field. Bacteria were present in the urine sample. The CBC results were again reassuring, indicating no systemic signs of infection or hematologic abnormalities. The urinalysis findings, however, differed from the first case in the presence of bacteria. While the number of leukocytes was similar, the presence of bacteria suggested a possible urinary tract infection or bacterial colonization. This finding was important to consider in the subsequent management of the patient. Kidney function tests were performed, and the results showed urea at 10.2 mg/dL and creatinine at 0.4 mg/dL. Both of these values were within the normal range expected for pregnancy. A transvaginal ultrasound was performed. The ultrasound confirmed the presence of an intrauterine pregnancy, and the gestational age was determined to be 9 weeks and 2 days. The ultrasound also revealed a retroverted uterus. There were no adnexal masses or free fluid identified. The ultrasound findings were consistent with the first case, confirming the intrauterine pregnancy, establishing the gestational age, and identifying the retroverted uterus as a significant anatomical factor. The absence of adnexal masses and free fluid helped to exclude other potential causes of the patient's symptoms. Based on the patient's clinical presentation, the findings of the physical examination, the results of the laboratory investigations, and the imaging results, the patient was diagnosed with acute urinary retention and a retroverted uterus. The presence of bacteria in the urine suggested a possible concurrent urinary tract infection or bacterial colonization, which was taken into consideration in the patient's management plan.

3. Discussion

Acute urinary retention in pregnancy, while not a frequent occurrence, represents a potentially serious condition that necessitates prompt recognition and appropriate intervention. The reported incidence of AUR during pregnancy varies in the literature, with estimates ranging from approximately 1 in 3,000 to 1 in 8,000 pregnancies. This variability in incidence may be attributed to differences in diagnostic criteria, study populations, and reporting practices across different studies. AUR can manifest at any stage of gestation however, it is more commonly encountered during the first and second trimesters.

Table 2. Treatment and follow up.

Feature	Case 1	Case 2
Initial management		
- Bladder catheterization		
- - Type of catheter	Foley catheter	Foley catheter
- - Size of catheter	16 Fr	16 Fr
- - Insertion technique	Transurethral	Transurethral
- - Difficulty of insertion	No	No
- - Amount of urine drained	800 ml	600 ml
- - Catheterization duration	48 hours	48 hours
- Other interventions		
- - Manual repositioning of the uterus	Not attempted	Not attempted
- - Medications	None	None
Bladder training		
- Duration	24 hours	24 hours
- Technique		
- - Clamping and releasing catheter	Every 2 hours	Every 2 hours
- - Voiding trials	Every 2 hours	Every 2 hours
- - Post-void residual volume measurement	After each voiding trial	After each voiding trial
- - Success of voiding trials	Successful	Successful
Follow-up		
- Duration of hospitalization	3 days	3 days
- Post-discharge instructions		
- - Fluid intake	Maintain adequate hydration	Maintain adequate hydration
- - Voiding habits	Void every 2-3 hours	Void every 2-3 hours
- - Signs of recurrent retention	Report any difficulty with urination	Report any difficulty with urination
- - Follow-up appointment	Scheduled after 1 week	Scheduled after 1 week
Outcome		
- Resolution of symptoms	Yes	Yes
- Complications	None	None
- Recurrent retention	No	No
- Maternal satisfaction	High	High

The cases presented in this series align with this general trend, with one case occurring at 14 weeks and 3 days gestation and the other at 9 weeks and 2 days gestation. This predilection for the earlier stages of pregnancy is thought to be related to the dynamic anatomical and physiological changes that occur during this period. The etiology of AUR in pregnancy is multifactorial, involving a complex interplay of hormonal, mechanical, and anatomical factors. Hormonal changes, particularly the increase in progesterone levels, contribute to the relaxation of smooth muscle throughout the body, including the bladder and urethra. This smooth muscle relaxation can lead to decreased bladder tone and reduced detrusor muscle contractility, potentially impairing the bladder's ability to empty effectively. Mechanical factors also play a significant role. The enlarging uterus, as it grows within the confined space of the pelvis, can exert pressure on the bladder, urethra, and surrounding structures. This mechanical compression can lead to obstruction of urine flow, particularly in cases where there is an underlying anatomical predisposition. Anatomical factors, such as a retroverted uterus, are important contributors to AUR

in pregnancy, as exemplified by the two cases presented in this series.[11-13]

A retroverted uterus, characterized by its backward tilt towards the spine instead of the typical anteverted position, is a common anatomical variation present in approximately 11-15% of women. While often asymptomatic, a retroverted uterus can predispose to various gynecological and obstetric complications, including AUR, particularly in early pregnancy. In the context of pregnancy, a retroverted uterus can become a significant risk factor for AUR due to the altered spatial relationship between the uterus, bladder, and urethra. As the uterus enlarges during the first trimester, it can become entrapped within the bony pelvis. In a retroverted position, the enlarging uterus can compress the bladder neck and urethra against the pubic symphysis, leading to a functional obstruction of the bladder outlet. This compression impedes the normal flow of urine, resulting in incomplete bladder emptying and, in severe cases, AUR. Both cases presented in this series demonstrated a retroverted uterus on ultrasound imaging. In Case 1, the patient presented at 14 weeks and 3 days gestation, and in Case 2, the patient presented at 9 weeks and 2 days gestation. The presence of a retroverted uterus in both cases strongly suggests that it played a crucial role in the development of AUR. The enlarging uterus in the retroverted position likely caused significant mechanical compression on the bladder and urethra, leading to the observed urinary retention. It is important to note that while a retroverted uterus is a significant risk factor, not all women with a retroverted uterus will develop AUR during pregnancy. Other factors, such as the degree of uterine retroversion, the rate of uterine enlargement, and individual anatomical variations, may also contribute to the likelihood of developing this complication.[14-16]

The clinical presentation of AUR in pregnancy can vary, but it typically involves a combination of urinary symptoms and lower abdominal discomfort. Common symptoms include a sudden inability to void, a sensation of incomplete bladder emptying, suprapubic pain or pressure, urinary frequency, and urinary urgency. In Case 1, the patient presented with continuous suprapubic pain and a sensation of incomplete bladder emptying. She denied experiencing fever, urinary frequency, urinary urgency, dysuria, or hematuria. In contrast, Case 2 presented with a complete inability to void, suprapubic pain, and a sensation of incomplete bladder emptying. She also reported urinary frequency and urinary urgency. The differences in the clinical presentation between the two cases highlight the variability of symptoms associated with AUR in pregnancy. While both patients experienced suprapubic pain and a sensation of incomplete bladder emptying, Case 2 also presented with a complete inability to void, urinary frequency, and urgency. These variations in symptoms may reflect differences in the severity of the obstruction, individual pain thresholds, and other contributing factors. The diagnosis of AUR in pregnancy is primarily clinical, based on a thorough history and physical examination. A detailed assessment of the patient's symptoms, including the onset, duration, and severity of urinary complaints, is crucial. Physical examination should include abdominal palpation to assess for bladder distension and suprapubic tenderness. In cases of AUR, a distended bladder is often palpable in the suprapubic region. In both cases presented in this series, the diagnosis of AUR was suspected based on the patients' reported symptoms and the clinical findings. The patients' complaints of suprapubic pain and a sensation of incomplete bladder emptying, coupled with the reported inability to void in Case 2, raised a high index of suspicion for AUR. While the diagnosis of AUR is primarily clinical, imaging studies play an important role in confirming the diagnosis, identifying underlying anatomical abnormalities, and excluding other potential causes of the patient's symptoms. A transvaginal ultrasound is a valuable tool in the evaluation of AUR in pregnancy. It allows for visualization of the uterus, bladder, and surrounding structures, aiding in the identification of a retroverted uterus, assessment of bladder distension, and exclusion of other pelvic pathology,

such as adnexal masses or free fluid. In both cases, transvaginal ultrasound confirmed the presence of an intrauterine pregnancy, established the gestational age, and revealed a retroverted uterus. The ultrasound findings were crucial in confirming the diagnosis of AUR and identifying the underlying anatomical factor contributing to the condition. The absence of adnexal masses and free fluid on ultrasound helped to rule out other potential causes of the patients' symptoms. Laboratory investigations, including complete blood count (CBC) and urinalysis, are also important in the evaluation of AUR in pregnancy. CBC helps to assess for signs of infection or other hematologic abnormalities. Urinalysis helps to evaluate for evidence of urinary tract infection, hematuria, or other urinary abnormalities. In both cases, the CBC results were within normal limits, indicating no evidence of infection or other hematologic abnormalities. The urinalysis findings differed between the two cases. In Case 1, the urinalysis revealed a clear yellow color, with leukocytes present at 1-3 per low power field and squamous epithelial cells at 2-4 per low power field. No bacteria were observed in the urine sample. In contrast, in Case 2, the urinalysis revealed a slightly cloudy yellow color, with leukocytes present at 1-2 per low power field, squamous epithelial cells at 5-7 per low power field, and bacteria present in the urine sample. The presence of bacteria in the urine sample in Case 2 suggested a possible concurrent urinary tract infection or bacterial colonization. While the number of leukocytes was similar in both cases, the presence of bacteria in Case 2 warranted consideration and appropriate management. It is important to differentiate between asymptomatic bacteriuria, which is common in pregnancy, and a true urinary tract infection, which requires antibiotic treatment. Kidney function tests, including urea and creatinine levels, are also typically performed to assess renal function. In both cases, the kidney function tests were within the normal range for pregnancy, indicating adequate renal function.[17-20]

4. Conclusion

In conclusion, this case series highlights the importance of considering AUR in the differential diagnosis of women presenting with lower abdominal pain and urinary symptoms in early pregnancy. The incidence of AUR in pregnancy, although rare, necessitates a high index of suspicion to ensure timely diagnosis and intervention. A retroverted uterus is a significant anatomical risk factor for AUR in early pregnancy. The enlarging uterus in a retroverted position can lead to compression of the bladder and urethra, resulting in urinary retention. Prompt diagnosis, primarily based on clinical presentation and confirmed by ultrasound, is crucial. Management should focus on relieving the obstruction and restoring bladder function. Bladder catheterization, followed by bladder training, is an effective approach in most cases. This case series adds to the existing body of literature on AUR in early pregnancy, emphasizing the need for clinicians to be vigilant in recognizing this condition to prevent potential complications and ensure favorable maternal and fetal outcomes.

5. References

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