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A Case Report of Nursing Intervention for a Patient with Uterine Incarceration at 14th Weeks of Gestation Complicated by Acute Urinary Retention

Chong Yang[1], Yadan Wang[1], Yuhong Liu[1], Longhai Song[2]*
[1]Affiliated Hospital of Hebei University, Baoding 071000, Hebei, China
[2]Department of Urology, Affiliated Hospital of Hebei University, Baoding 071000, Hebei, China

**Author to whom correspondence should be addressed.*

Abstract: This paper summarizes the management and nursing experience of a rare case involving uterine impaction with acute urinary retention in mid-pregnancy (14th week). Following the failure of conservative treatment, a multidisciplinary team (comprising obstetricians, sonographers, and specialist nurses) collaborated to perform manual reduction under real-time ultrasound guidance, achieving successful resolution. Nursing priorities spanned three phases of manual reduction: pre-, intra-, and post-procedure stages. Comprehensive measures encompassed clinical observation, positioning interventions, bladder management, psychological support, and infection control, yielding favourable maternal and neonatal outcomes. This case underscores that early recognition of entrapment signs and tailored, precision nursing management according to the patient's condition are pivotal for favourable outcomes.

Keywords: Pregnancy; Uterine incarceration; Manual reduction; Nursing

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1. Introduction

The term "uterine incarceration" was first coined by Hunter in 1771 [1], describing a pregnancy where the uterus is confined within the pelvic cavity between the symphysis pubis and the sacral promontory [2]. Its incidence ranges from 1/3000 to 1/10000 [3]. Studies indicate that approximately 77.08% of women have a uterus in an anteverted position, while 22.92% have a retroverted uterus [4]. From the 14th week of gestation, the pregnant uterus progressively ascends into the abdominal cavity. Persistence of the uterus within the pelvic cavity beyond 14 weeks of pregnancy warrants consideration of uterine incarceration [5], a pathological condition incapable of spontaneous reduction. It is particularly prevalent in pregnant women with a retroverted and retroflexed uterus [6]. As gestational age increases, the impacted uterus enlarges and presents with a series

of non-specific symptoms, such as urinary frequency, urgency, urinary retention, abdominal pain, and vaginal bleeding [7]. Failure to promptly reduce the impacted uterus may lead to severe complications, including acute renal failure [8], bladder rupture [9], pulmonary oedema [10], miscarriage [11], massive haemorrhage during caesarean section [12], pulmonary embolism [13], and maternal death [9]. In December 2024, our department admitted one patient with this condition. Through case study analysis of this patient, the hospital systematically examined the implementation and outcomes of key nursing interventions, including clinical observation, positioning care, bladder management, infection prevention, and psychological support, across three critical phases: pre-manual reduction, during reduction, and post-reduction. This study explores challenges and countermeasures in multidimensional nursing decision-making for patients with uterine impaction. The findings are reported below.

2. Case presentation

Patient, female, aged 33, G3P1. Last menstrual period: 27 August 2024. Presented with a 3+ month pregnancy, urinary difficulty for half a month, and a sensation of incomplete bladder emptying for one day. Admitted to our hospital on 18 December 2024. The patient had undergone one caesarean section in 2013 and a left breast nodule excision in 2017 (details unspecified). Admission diagnoses: (1) Intrauterine pregnancy, 14th week, second gestation; (2) Pregnancy complicated by uterine incarceration; (3) Pregnancy complicated by urinary retention; (4) Scarred uterus; (5) Pregnancy complicated by uterine fibroids. Admission examination: (1) Abdomen flat, soft; (2) Fetal heart rate 142 bpm. Vaginal examination: (1) Married vulva; (2) Unobstructed vagina; (3) Cervix located in the anterior fornix; (4) Cervical canal length 2.5 cm, posteriorly displaced, firm in consistency; (5) Cervical is closed, no tenderness on elevation or movement; (6) Uterus retroverted; (7) No tenderness in parametrial regions. Admission ultrasound findings: (1) Enlarged uterus with visible foetus and foetal movements within the cavity; (2) Myometrial echoes were heterogeneous, with a hypoechoic mass visible subserosal on the anterior wall; (3) The fundus and posterior wall were located deep within the iliac fossae, the cervix positioned above the uterine body, and the posterior fundal wall at the same level as the external cervical; (4) Placenta was located on the posterior wall; (5) Residual urine was present in the bladder.

Conservative management was initiated upon admission. On 20 December 2024, the pelvic ultrasound revealed no improvement in the uterine impaction. Manual reduction was performed that same day under ultrasound guidance, achieving successful repositioning. Post-repositioning, the patient reported no lower abdominal pain, vaginal bleeding, or vaginal discharge. Active pregnancy preservation therapy with allylestrenol tablets was initiated, with close monitoring of foetal heart rate and micturition, alongside prophylactic anti-infective treatment. On the second day post-manual reduction, the patient reported frequent urination, urgency, dysuria, and intermittent blood-streaked urine. Urinalysis indicated a urinary tract infection. A supplementary diagnosis of urinary tract infection during pregnancy was made, and intravenous infusion of cefuroxime sodium 1.5 g Q8h was initiated for antimicrobial therapy. After an 8-day hospital stay, the patient experienced no lower abdominal pain, bleeding, or vaginal discharge. No uterine contractions were palpable, and fetal heart rate and movements remained normal. Symptoms of urinary tract infection resolved, and the patient was discharged in good condition.

3. Nursing

Patients with uterine impaction represent a rare clinical entity. The latest edition of obstetrics and gynaecology

nursing textbooks contains no relevant content, and international guidelines lack specific diagnostic, therapeutic, or nursing protocols for this condition. Clinical descriptions primarily appear in case reports or reviews, with nursing care for this disorder being scarcely documented, and reference experience is limited. There exists no established reference for nursing care during conservative treatment, manual reduction procedures, or post-reduction management. This poses greater challenges for obstetric nursing staff, particularly junior nurses. Consequently, the nursing experience gained from this patient is reported below for professional exchange and reference.

3.1. Pre-reduction care

3.1.1. Psychological care

The expectant mother spoke at a moderate pace with normal volume, expressing herself clearly and fluently. Her expression revealed slight concern, and she reported feeling "nervous and afraid" (anxiety) of moderate intensity. Observation noted a slight furrow of the brow and occasional sighs. Her thinking was coherent; she acknowledged her anxiety and expressed a desire for support. She indicated she would "try to think positively and cooperate with treatment" (positive inclination). Her husband was present and expressed full support. Summary: The patient exhibits moderate situational anxiety with intact insight and strong social support. Healthcare personnel, adopting a warm yet composed demeanour, employed plain language supplemented by visual aids to explain the causes of uterine impaction, conservative management options, and the necessity and safety of manual reduction following treatment failure. This facilitated accurate disease understanding, alleviated tension and fear, bolstered confidence, and secured active treatment cooperation.

3.1.2. Clinical observation

Due to excessive retroversion and retroflexion of the uterus, which becomes impacted within the sacral fossa of the pelvis, cervical displacement elongates the urethra, eliminates the urethrovaginal angle, and compresses the bladder neck. This leads to urinary retention, causing dysuria, and may subsequently result in urinary tract infection, miscarriage, or even uterine rupture. Therefore, vital signs must be closely monitored, including temperature, pulse, respiration, and blood pressure. Particular attention should be paid to observing for abdominal pain, vaginal bleeding, or fluid discharge, promptly identifying any abnormalities, and reporting them to the doctor.

3.1.3. Positioning care

The patient's uterus is impacted within the sacral fossa of the pelvis. Conservative management is being administered to observe whether spontaneous uterine reduction may occur. Recent studies indicate that conservative treatment may be attempted as the initial management approach for correcting uterine impaction, irrespective of gestational age [14]. Ensure the bed remains stationary with both bed rails raised. Assist the patient into the chest-knee position for 10 minutes per session, three times daily for one week [15], utilising uterine gravity to facilitate reduction of the impacted uterus [16]. During the chest-knee position, instruct the patient on key points: (1) Maintain core engagement by keeping abdominal and gluteal muscles slightly contracted to protect the lumbar spine, avoiding sagging or excessive arching; (2) Breathe steadily without holding breath; (3) Maintain natural respiration, particularly avoiding rapid breathing when the head is elevated to prevent cerebral congestion; (4) Keep the neck relaxed with the head hanging naturally. During this process, visceral displacement may mildly compress the diaphragm, affecting respiratory depth; Increased blood return to the upper body elevates

central venous pressure (CVP), potentially exacerbating cardiac burden in patients with heart failure. When the head is below cardiac level, intracranial pressure (ICP) and intraocular pressure (IOP) may rise, increasing cerebral congestion. Therefore, we must enhance ward rounds, attend to patients, and prioritize complaints of dizziness or dyspnoea. Closely monitor blood oxygen saturation to prevent hypoxaemia. Simultaneously, educate accompanying family members to immediately notify medical staff should any of these issues arise.

3.1.4. Bladder care

Patients may experience urinary retention, potentially leading to bladder overdistension, bladder wall necrosis, or paradoxical urinary incontinence. Following medical orders, insert an indwelling urinary catheter to drain urine and maintain bladder emptiness, which is crucial for uterine involution. During catheterisation, record urine output, colour (haematuria, pyuria), clarity, and odour, reporting any abnormalities promptly. Should blood clots, flocculent material, or sudden absence of urine be observed, investigate for obstruction, bleeding, or catheter displacement. Inquire about symptoms such as urinary urgency, dysuria, or lower abdominal heaviness, remaining vigilant for urinary tract infection or bladder spasm. Monitor temperature; fever (particularly with chills) warrants consideration of catheter-associated urinary tract infection.

3.1.5. Fetal heart monitoring

Uterine impaction may compromise uterine circulation, posing risks of miscarriage or even uterine rupture. Therefore, closely monitor fetal heart rate, recording every three hours, and observe for maternal complaints such as abdominal pain. Address any abnormalities promptly to ensure fetal safety.

3.1.6. Preoperative preparation

The patient has an indwelling urinary catheter to maintain bladder emptiness. Perform perineal cleansing preparations and assist the patient in completing all other preoperative investigations, such as complete blood count, coagulation function tests, and ultrasound, to comprehensively assess the condition of both mother and fetus.

3.2. Manual reduction

On the third day of hospitalization, the patient's vital signs were normal, laboratory results showed no abnormalities, fetal heart rate was regular, her mood was calm, and she reported no other discomfort. Having been in a breech presentation for two days, the patient and her family requested a repeat ultrasound to assess uterine position relative to the pelvis. The ultrasound indicated the fundus had not descended beyond the pelvic rim. The patient and family then requested manual reduction. Manual reduction is the preferred treatment method [17]. A typical manual version involves the practitioner placing the index and middle fingers in the posterior vaginal fornix, or positioning the middle finger in the posterior vaginal fornix while inserting the index finger into the anus. Pressure is then applied in the direction of the patient's head and abdomen to dislodge the fundus of the impacted uterus from the posterior vaginal fornix and out of the pelvis [18]. Obstetricians, sonographers, and obstetric nurses are all present. The patient lies supine on the operating table in the lithotomy position. The sonographer positions the probe above the symphysis pubis. The transverse view displays the bladder (already emptied), the uterine body and cervix posteriorly, confirming the direction of uterine prolapse. Under ultrasound guidance, the internal, anterior and posterior uterine walls, and the placental attachment site are identified. The operator donned a sterile gown and

gloves. Following routine vulvovaginal disinfection, sterile drapes were applied. Manual reduction commenced: one hand gently pressed the fundus through the abdominal wall while ultrasound monitored the uterine body's trajectory into the pelvis, confirming clearance of the impaction point. The other hand elevated the cervix via the vaginal posterior fornix, with ultrasound tracking changes in the internal position to ensure gradual restoration of the uterine axis. The obstetric nurse continuously monitored the fetal heart rate throughout the procedure, with no abnormalities observed during reduction. Upon resolution of the impaction, ultrasound revealed the lower uterine segment gradually unfolding from its "folded" state, with the cervical canal and uterine body forming a continuous physiological curve. Colour Doppler Imaging demonstrated enhanced blood flow signals in the uterine arteries and placenta, indicating successful reduction. The patient reported no discomfort and was discharged to her ward for rest.

3.3. Post-manual reduction care

3.3.1. Rest and activity

Recent reports have documented recurrent uterine entrapment [13], necessitating vigilance in clinical practice. Following successful reduction, bed rest was prescribed to prevent re-entrapment of the uterus. Activity should be minimized for the first 24 hours post-procedure. Thereafter, activity levels may be gradually increased according to the patient's condition, though strenuous exercise and heavy physical labour must be avoided. Maintaining a chest-knee position is recommended wherever possible. Commonly employed clinical positions include the chest-knee position, supine position with legs elevated and straight, and inverted position [16,19]. As this position compresses the thoracic cavity, patients experiencing dizziness or dyspnoea should change position slowly and immediately rest in the lateral decubitus position.

3.3.2. Vital signs monitoring

Following reduction, continue to closely monitor the pregnant woman's vital signs, measuring every 30 minutes to 1 hour. Once stable, gradually extend the monitoring intervals to ensure sustained vital sign stability.

3.3.3. Observation of vaginal condition

Carefully observe for vaginal bleeding or discharge, documenting volume, colour, and consistency. Significant vaginal haemorrhage or worsening abdominal pain may indicate severe complications such as uterine rupture and requires immediate medical notification.

3.3.4. Infection prevention and treatment

Patient presents with complaints of urinary frequency, urgency, and dysuria. Urinalysis and urine sediment analysis results: Leukocyte count: 415.1/μL; Leukocytes (high-power field): 74.66/HP; Leukocyte esterase: 3+; Occult blood: 3+; Temperature: 36.5 ℃. Consideration given to catheter-related issues. Instruct the patient to drink fluids and urinate frequently. Urinary tract infection cannot be ruled out; order comprehensive urine culture. Given the urine test results, urinary tract infection remains a possibility. Administered Cefuroxime sodium 1.5 g intravenously every 8 hours for prophylactic treatment. Simultaneously requested consultation with the Nephrology Department for further management. Maintain perineal hygiene by washing the external genitalia with warm water twice daily. Change undergarments and sanitary pads frequently.

3.3.5. Urine culture and antibiotic sensitivity

Urine culture showed no sterile growth after two days. Blood cell analysis + C-reactive protein analysis: CRP 24.9 mg/L, haemoglobin 7.24 × 10^{-9}/L, blood cell count 257 × 10^{9}/L, neutrophils 70.8%. Urinalysis revealed no abnormalities. The patient reported no symptoms of urinary frequency, dysuria, or urgency. Antibiotic treatment was discontinued.

3.3.6. Pregnancy preservation therapy

Fetal heart rate monitored via Doppler three times daily (morning, afternoon, evening). Any abnormal heart rate detected was promptly reported to the physician for symptomatic management. Concurrently, allylestrenol tablets were administered for pregnancy preservation. The medication course typically lasted 2–4 weeks. No adverse reactions were observed in the patient during treatment.

3.3.7. Mid-pregnancy routine ultrasound

Post-repositioning ultrasound review indicated: uterus anteverted, located in the lower abdomen; fetal heart rate 150 beats per minute; placenta posterior wall. Findings: single viable intrauterine fetus, equivalent to 15+ weeks of gestation, with no abnormalities noted.

3.3.8. Emphasis on post-reduction follow-up

Upon discharge, the patient followed the department's WeChat official account and joined a WeChat group with obstetricians for ongoing communication. The responsible nurse conducted a telephone follow-up one week post-discharge with no abnormal findings reported. At the one-month post-discharge antenatal clinic appointment, the patient's fetal heart rate was normal, with no lower abdominal pain, vaginal bleeding, or fluid leakage. A repeat ultrasound scan was normal, and there were no symptoms of urinary tract infection. The patient was advised to attend regular antenatal appointments and seek immediate medical attention if experiencing any discomfort.

4. Summary

The prognosis for retained placenta in pregnancy is largely dependent on the timing of diagnosis, which should be made as early as possible during gestation. Manual reduction is recommended before 20 weeks of gestation, with higher success rates observed particularly before 15 weeks [20]. Manual reduction remains the treatment of choice, with the vast majority of cases achieving favourable pregnancy outcomes following successful reduction. In patient care, psychological support is prioritized, with enhanced nursing before, during, and after reduction. Dynamic ultrasound monitoring is employed to confirm uterine and fetal status, preventing undetected recurrence. Given the clinical rarity of this condition, this paper reports a single case from our institution. Drawing on published literature, it details relevant nursing interventions. While these measures are described, they inevitably contain shortcomings and require ongoing refinement by nursing colleagues in clinical practice.

Disclosure statement

The author declares no conflict of interest.

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