Neglected pelvic viscera prolapse complicated by irreducible cystocele containing a large vesicle calculus

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Accepted 24 February 2022

DESCRIPTION

A woman in her 60s presented to the emergency department with severe pain in the lower abdomen rectum and was unable to pass urine since morning. The patient had difficulty passing urine and felt mass bulging through the vaginal opening for 6 months. She reported three to four episodes of incontinence per day and two to three episodes of enuresis per night with a poor flow for the last 2 months. Clinical examination of the pelvis revealed inferior descent of urinary bladder with hard consistency and posteroinferior descent of the rectum. There was complete prolapse of the uterus and vagina with external os exposed. An unenhanced MRI of the pelvis was advised to look for the pelvic viscera's status and assess the protruding hard consistency mass.

Unenhanced MRI of the pelvis revealed complete prolapse of the uterus, vagina (procidentia) and rectum below the pubococcygeal line (middle and posterior compartment prolapse) (figure 1A,B). There was inferior descent of the urinary bladder forming an hourglass appearance with a large well-defined, oval-shaped structure in the prolapsed part of the bladder lumen suggestive of cystocele with a large calculus (anterior compartment prolapse) (figure 2A,B). The calculus appeared hypointense on all MRI sequences. Cystocele was irreducible due to the presence of the large calculus. The primary goal was to remove obstructive urinary symptoms, considering weak pelvic muscle, significantly large hiatus and large calculus in the bladder lumen. The abdominal approach was selected due to vaginal wall oedema, and correction of rectal prolapse by rectosigmoidectomy, reanastomosis and posterior colporrhaphy was done. Cystolithotomy was performed, calculus was removed and hiatus was repaired using an abdominal approach by the urologist. The bladder wall was significantly inflamed, and the vaginal route was not selected to avoid fistula formation as bladder mucosa was significantly inflamed. Considering the age of the patient, an abdominal supracervical hysterectomy was done. The vaginal wall and pelvic floor muscles were provided mainly by posterior colporrhaphy and sacrocolpopexy using native tissue. For rectal prolapse, posterior colporrhaphy was done after rectosigmoidectomy and reanastomosis. Burch urethropexy and perineoplasty were done to support the pelvis.

A cystocele is a pelvic organ prolapse where the bladder descends inferiorly and posteriorly into the

vagina and perineum. Cystocele is quite a common condition accompanied by other pelvic viscera prolapses.^{1,2} The incidence of cystocele is around 9 per 100 women-years, and the affected age group is mainly the geriatric group. Muscles and tissue supporting the bladder become weak, allowing it to herniate out of its place. During vaginal childbirth, chronic constipation, violent coughing or heavy lifting can happen.

The occurrence of irreducible cystocele with procidentia caused by the simultaneous event of large urolithiasis is relatively rare. Developing obstructive urinary symptoms and changes (hydronephrosis and hydronephrosis) in the urinary tract makes this entity urgent for intervention.

The most common presentation in cystocele is increased urination frequency, stress incontinence, frequent urinary tract infection, discomfort and pain in the vagina and tissue protruding in the perineum that may be tender or bleeding. A pelvic examination can assess how far the uterus has slipped into the vagina. The investigation to diagnose cystocele is through cystourethrogram and MRI. Cystourethrogram helps in identifying the configuration of the bladder and any blockages. MRI is more valuable in cystocele to determine the full extent of bladder prolapse and helps in grading. MRI also provides information on other viscera and the status of muscles forming the pelvic floor.

Various surgical approaches have been proposed for procidentia and multiple compartmental prolapses with large bladder calculi. The predictive value of apical prolapse will increase as the cystocele stage increases. In the case of anterior compartment prolapse, proper suspension of the vaginal apex plays an essential role in treatment success.³ A study of over 2700 women comparing isolated anterior repair versus combined anterior and apical repair found lower rate of 10-year reoperation in the combined anterior and apical repair group (11.6% vs 20.2%).⁴

Correction of anatomical defect is the basic principle of surgery for cystocele. Laparotomy, laparoscopic and robotic system approaches can be preferred with vaginal or abdominal routes. The risk of fistula formation is higher if the calculus is removed by the vaginal route during anterior colporrhaphy. However, transvaginal cystolithotomy is the preferred surgery as it is minimally invasive. With the suprapubic cystotomy approach, no risk of fistula formation seems to occur and it cures the patient completely.

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To cite: Chaudhary R, Tiwari T, Sharma R, et al. *BMJ Case Rep* 2022;**15**:e246939. doi:10.1136/bcr-2021-246939

Figure 1 (A,B) MRI. Sagittal plane and coronal plane demonstrate urinary bladder (UB) and uterus below the pubococcygeus line suggestive of pelvic viscera prolapse. A large round to oval, hypointense structure (asterisk) is seen in the prolapsed part of the UB with thickened wall suggestive of calculus, causing an irreducible cystocele. The figure also demonstrates complete prolapse of the uterus and cervix (procidentia) marked as a black arrow along with peritoneocele (white arrow).

Apical prolapse surgeries are classified into two categories: the first one is the obliterative approach, and the second one is the restorative approach.

Abdominal sacrocolpopexy can be performed with various approaches, such as laparotomy, robot assisted-laparoscopic sacrocolpopexy or conventional laparoscopic sacrocolpopexy, and remains the gold standard for patients desiring restorative outcomes.

An obliterative procedure can be done in patients who cannot tolerate extensive surgery due to old age and no longer desire preservation of coital function.

There are three ways in case of prolapsed uterus in patients with apical prolapse. First is the supracervical hysterectomy with sacrocervicocolpopexy, in which the uterus is not preserved. The second option can be sacrohysteropexy. The uterus and vagina are fixed with a mesh to the sacral promontory, preserving the uterus. The third option is sacrocolpopexy, in which closure of the vaginal cuff is done after total hysterectomy. Based on these options, it is difficult to determine whether sacrohysteropexy and total hysterectomy and sacrocolpopexy result in superior outcomes given our current knowledge.⁵⁻⁸

Figure 2 (A,B) MRI. Short tau inversion recovery and T2 weighted image (T2WI) sagittal plane demonstrate anterior, middle and posterior compartment of the pelvis. A large calculus (asterisk) is seen in the prolapsed part of the urinary bladder (UB) with inflamed wall. The figure also demonstrates procidentia marked as a black arrow along with peritoneocele (white arrow). There is prolapse of the rectum inferiorly and posteriorly below the pubococcygeal line that suggests posterior compartment prolapse (white star).

The supracervical hysterectomy is way better as it reduces the risk of mesh erosion and cautery-induced thermal injury to the vagina.⁹ Warner *et al*⁵ observed that the mesh exposure rate was 4.9% in the total hysterectomy group. The supracervical hysterectomy group ($p=0.03$) showed no mesh exposure.

In 2006, a randomised study was conducted by Paraiso *et al*¹⁰ for comparing outcomes of three different rectocele repair techniques: posterior colporrhaphy, site-specific repair and site-specific repair augmentation with a porcine small intestinal submucosal graft. After 1 year, subjects who received site-specific repair alone (6 of 27; 22%) or posterior colporrhaphy (4 of 28; 14%) ($p=0.02$) had better results than those who received graft augmentation as there was a significantly greater anatomical failure rate (12 of 26; 46%).

The abdominal surgical route is preferred for patients with anterior and posterior prolapse and a high risk of recurrence.

This case is an unusual presentation of the large vesical calculus in the prolapsed part of the cystocele, which is further complicated by the neglected middle and posterior compartment, making it necessary because the surgical approach needs to be modified based on complications and age of the patients.¹¹

Patient's perspective

I was in pain for the past few months, and my symptoms have increased in severity, affecting my daily routine activity. I came to the hospital with great hopes. Doctors assured me about my condition and advised me to undergo surgery. After many discussions, I agreed to surgery, and I am happy that doctors had saved my life. Doctors also asked me to come for a general check-up every month.

Learning points

- Multispecialty approaches are needed in case of multicompartamental prolapse with irreducible cystocele containing calculus due to long-standing situation complicating the anatomy of the pelvis resulting in various urinary complications such as hydronephrosis and cystolithiasis.
- Imaging has to cover the entire urogenital system to diagnose preoperatively. MRI was superior to CT because of its inherent soft tissue resolution and non-invasive nature.
- Urgent surgical correction of the obstructive symptoms is essential. Inclination towards vaginal approach towards cystolithotomy is more in literature than the abdominal route. However, the patient's age and clinical/local examination findings are essential to decide the surgical approach to avoid postoperative fistula formation and ureteral injuries.

Contributors RC and TT contributed to the planning, conduct, reporting, conception and design, acquisition of data, or analysis and interpretation of data. RS and SG contributed to the acquisition of data and interpretation of data.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent for publication Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

Case reports provide a valuable learning resource for the scientific community and can indicate areas of interest for future research. They should not be used in isolation to guide treatment choices or public health policy.

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