Unraveling the complexities: stress urinary incontinence, pubic diastasis with bladder herniation and pelvic organ prolapse following obstructed labor of macrosomic stillborn

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Abstract

Pelvic floor dysfunctions such as stress urinary incontinence (SUI), pelvic organ prolapse (POP), and pubic diastasis are known complications of obstructed labor, particularly in cases involving macrosomic infants. Macrosomia, defined as birthweight >4000 g, significantly increases maternal pelvic floor stress, which can result in long-term morbidity. While individual conditions such as SUI and POP are well documented, the coexistence of multiple pelvic floor injuries, including bladder herniation through pubic diastasis, is exceedingly rare. We report a unique case of a female in her early 40s with a history of obstructed vaginal delivery of a 6.5 kg stillborn infant 13 years ago. Despite a previously uneventful antenatal course, the prolonged labor led to significant trauma. Over the years, she developed worsening SUI, a right-sided groin swelling, and recurrent POP, despite undergoing vaginal hysterectomy and cystocele repair. Imaging revealed a 4 cm pubic diastasis, a right sacroiliac joint fracture, and bladder herniation into the labia majora. A multidisciplinary surgical approach was undertaken, including abdominal sacrocolpopexy, Burch colposuspension, and fixation of pubic diastasis and the sacroiliac joint. Postoperative recovery was successful, with significant improvement in symptoms and quality of life. This case illustrates the devastating pelvic floor consequences of obstructed labor, particularly in the context of macrosomia. It emphasizes the importance of early recognition of bony and soft tissue injuries, appropriate imaging, and a tailored, multidisciplinary surgical approach. It also highlights the need for proactive antenatal care and high clinical suspicion in post-labor patients presenting with persistent urinary/pelvic symptoms.

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Introduction

The incidence of stress urinary incontinence (SUI) and pelvic organ prolapse (POP) significantly increases after obstructed labor. Studies indicate that approximately 25% of women develop SUI eventually, following traumatic childbirth; the prevalence of POP can range from 10% to 30% in similar cohorts.[1]

Macrosomic infants, defined as those weighing >4000 g, can exert excessive pressure on the maternal pelvis during childbirth, increasing the likelihood of complications such as diastasis of the pubic symphysis (defined as separation of pubic bones for >1 cm).[2] It has been reported that approximately 6.2% of women experiencing obstructed labor with macrosomic infants develop pubic diastasis, highlighting the potential for substantial pelvic floor trauma during delivery. Overall, the occurrence of pubic diastasis emphasizes the need for awareness and appropriate management strategies in the context of obstructed labor, particularly for women delivering macrosomic infants.[2]

We present the case of a female in her early 40s with a rare and complex combination of urological and gynecological conditions: Stamey grade III SUI, bladder herniation into the right labia majora, pubic diastasis, and recurrent apical vault prolapse. This constellation of symptoms followed an obstructed labor resulting in the stillbirth of a macrosomic infant weighing 6.5 kg. To our

knowledge, this is the first documented case of such a coexistent presentation arising from obstructed labor.

Case Report

A female patient in her early 40s with a known history of type 2 diabetes mellitus presented symptoms suggestive of SUI and swelling in the right groin region for the last 12 years. She had an obstructed vaginal delivery of a macrosomic stillborn infant 13 years ago. Before the delivery, she had an uneventful antenatal course with no prior history of pelvic girdle pain or instability. However, she was diagnosed with gestational diabetes mellitus in the third trimester, which was managed with dietary modifications alone. Despite this, fetal growth scans at 34 and 38 weeks suggested increasing macrosomia, with an estimated fetal weight exceeding 5.5 kg. The patient was recommended early intervention, but she presented in spontaneous labor at term. Labor was prolonged, with failure to progress despite adequate contractions. Multiple unsuccessful attempts at assisted vaginal delivery were made before an emergency cesarean section was considered. However, by this time, the fetal head had deeply engaged, necessitating a difficult vaginal extraction. Following delivery, the patient experienced immediate difficulty in ambulation and persistent suprapubic pain, which was attributed to soft tissue trauma rather than underlying bony injury. No imaging was performed at that time, and she was discharged with conservative management.

Over the years, she gradually developed worsening SUI as well as fecal incontinence and a right-sided groin swelling, which remained undiagnosed until her first surgical intervention. She was managed conservatively initially, following which her fecal continence resolved, but the urinary symptoms persisted. Then, 4 years back, she underwent vaginal hysterectomy with cystocele repair and sacrospinous fixation to address POP. Despite the surgical intervention, the patient experienced a recurrence of symptoms, specifically severe SUI and groin swelling, which led to her most recent evaluation. On examination, the patient had a swelling in the right inguinal region extending to the labia majora, and a stress test confirmed Stamey's grade III SUI (Figure 1). A per-speculum examination revealed grade 2 anterior and posterior compartment prolapse, along with apical prolapse. Pelvic floor muscle function was assessed as weak using the modified Oxford scale (grade III), with poor strength of contraction but complete voluntary relaxation.

Neurological and rectal examinations were normal. Uroflowmetry demonstrated a maximum flow rate of 7 mL/second with a voided volume of 108 mL and no post-void residual volume. A micturating cystourethrogram (MCU) wherein the scout film revealed pubic diastasis ~4 cm along with a fracture of the right sacroiliac joint. The filling phase showed an outpouching arising from the anterior wall of the bladder, which was coursing through the pubic diastasis defect during the filling phase (Figure 2). A uro-

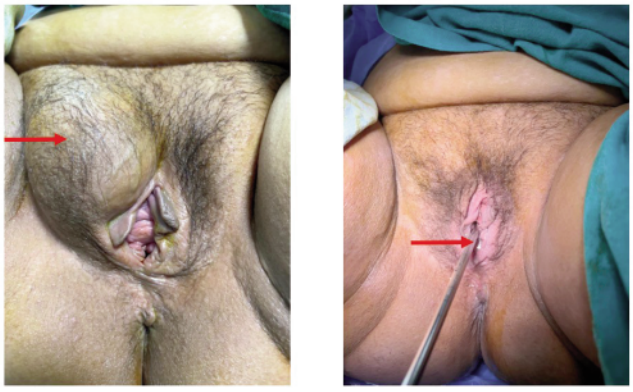

Figure 1. Right inguinal swelling extending to the labia majora (on the right, red arrow); urine leak per vaginum (on the left, red arrow).

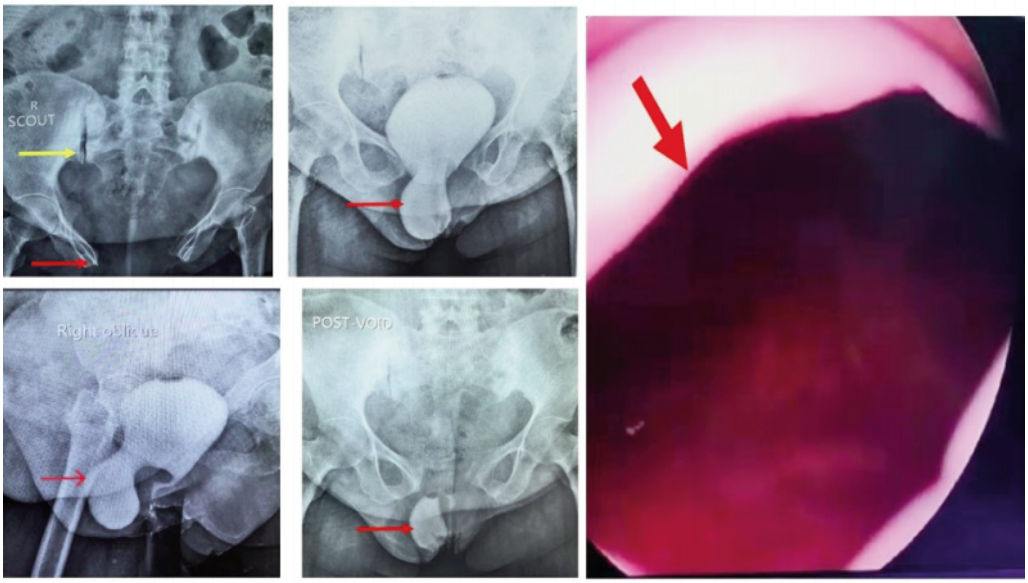

Figure 2. On the right: different phases of micturating cystourethrogram. The upper-right image shows scout film (the yellow arrow indicates a fracture of the right sacroiliac joint, and the red arrow indicates pubic diastasis), and the upper-left image shows the bladder outpouching from the anterior wall (red arrow). The lower right image shows outpouching in the right oblique film (red arrow), and the lower left image shows some residual urine in outpouching (red arrow). On the left: wide-open bladder neck seen on cystopanendoscopy (red arrow).

dynamic study was done following this, and it revealed normal bladder compliance and capacity. Next, the patient underwent a cystopanendoscopy that revealed a wide bladder neck with grade III trabeculations in the bladder (Figure 2).

After all these essential studies, she was finally planned for abdominal sacro-colpopexy with Bursch colposuspension along with pubic diastasis and sacroiliac joint fixation. The aim was to restore pelvic stability and alleviate symptoms associated with prolapse and bladder herniation. Currently, the patient is doing well and has a better quality of life.

Discussion

This case presents an exceptionally rare combination of SUI, bladder herniation through a pubic diastasis, and recurrent apical vault prolapse following obstructed labor with a macrosomic stillbirth. Such a constellation of findings is infrequently documented, particularly the herniation of the bladder into the labia majora *via* pubic diastasis, which is typically associated with significant pelvic disruption rather than complications arising from labor.

Despite a chronic pubic diastasis of 4 cm and an unrecognized sacroiliac joint fracture, the patient remained ambulatory over the years, albeit with significant biomechanical adaptations. She developed a widened stance and an altered gait pattern, relying on pelvic and core muscle compensation to maintain stability. Over time, she experienced progressive discomfort, intermittent pelvic instability, and mechanical lower back pain, which she attributed to ageing rather than an underlying structural defect. Her ability to ambulate, despite the severity of her condition, may be attributed to the absence of complete pelvic ring disruption and a gradual musculoskeletal adaptation process. However, the cumulative strain on her pelvic support structures likely contributed to the worsening of her POP and SUI.

A critical aspect of this case is the undiagnosed pubic diastasis at the time of the patient's previous vaginal hysterectomy and sacrospinous fixation. Given the patient's persistent urinary symptoms and pelvic instability, it is likely that the diastasis had been present but remained unrecognized during the initial surgical evaluation. The absence of routine pelvic imaging and the focus on prolapse correction may have contributed to the oversight. Additionally, the patient's compensatory biomechanical adaptations masked overt instability, leading to an underestimation of the structural defect.

Obstructed labor, particularly with macrosomic infants, poses a substantial risk for pelvic floor trauma, often resulting in conditions that go unreported. Prolonged engagement of the fetal head can lead to separation of the pubic symphysis (pubic diastasis), a significant concern for pelvic stability. Evidence suggests that approximately 6.2% of women experiencing obstructed labor with macrosomic infants develop this condition. The risk of bladder herniation correlates with the severity of pelvic floor trauma sustained during delivery.[2-4]

Despite the use of surgical techniques like sacrospinous fixation, this case highlights the potential for high failure rates, especially in patients with prior pelvic trauma. The endoscopic bladder neck suspension procedures, including the Stamey-Pereyra technique, show variable long-term success rates, complicating treatment outcomes in patients with multifaceted pelvic floor dysfunction.[5,6] This case underscores the necessity for a multidisciplinary approach to achieve optimal treatment outcomes. A thorough diagnostic workup comprising MCU, urodynamic studies, and cystopanendoscopy provides essential insights into the extent of anatomical disruption, guiding the surgical plan. In this case, abdominal sacrocolpopexy, alongside pubic diastasis fixation, is planned to restore pelvic stability and alleviate associated symptoms.

Moreover, patient education plays a critical role in preventing such complications. Enhanced antenatal care, particularly for women with risk factors such as gestational diabetes and previous macrosomic deliveries, can mitigate the risk of prolonged labor and subsequent complications. Early detection and proactive management of risk factors may prevent the progression of pelvic floor dysfunction, potentially averting the need for extensive surgical correction. Emphasizing the importance of comprehensive antenatal care and proper glycemic control is crucial for managing and preventing rare complications like those observed in this patient.[7]

Conclusions

This rare case highlights the severe and long-term sequelae of obstructed labor, particularly in the context of macrosomic deliveries. Key takeaways include the importance of early recognition and management of pubic diastasis, as missed diagnoses can lead to chronic pelvic instability and bladder herniation. Comprehensive antenatal care, timely obstetric intervention, and multidisciplinary evaluation are crucial to prevent and manage complex pelvic floor disorders. Thorough imaging and tailored surgical planning are essential for effective treatment. This case reinforces the need for high clinical suspicion in post-obstructed labor patients presenting with persistent pelvic or urinary symptoms.

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