

An Obstetrical Blunder: A Rare Case of Transvesical Delivery

Samashti Gupta¹, Shaveta Jain²

¹Resident, Department of Obstetric and gynaecology PGIMS Rohtak, Haryana, India
Email: [nanugupta96\[at\]gmail.com](mailto:nanugupta96[at]gmail.com)

²Professor, Department of Obstetric and gynaecology PGIMS Rohtak, Haryana, India
Corresponding Author Email: [dr_sangwan\[at\]yahoo.com](mailto:dr_sangwan[at]yahoo.com)
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Abstract: ***Background:** Bladder injury is a rare but recognized complication of cesarean section, occurring more frequently during emergency, 2nd stage and previous cesarean. Early recognition and prompt repair are essential to prevent significant morbidity. **Case Presentation:** A 37-year-old G3P2L2 woman at 40 weeks of gestation underwent emergency cesarean section for obstructed labour. Intraoperatively, an extensive bladder injury identified, and the patient was referred to our tertiary care center. On exploration, a 7–8 cm rent involving both the anterior and posterior bladder walls was identified, with the Foley catheter bulb visible in the operative field. The bladder was not separated from lower uterine segment, and the uterine incision was inadequately repaired. Following separation of the bladder from the uterus, the uterine incision was repaired. Bilateral ureterovesical junctions were identified and protected with DJ stents. The bladder was reconstructed in multiple layers, a suprapubic catheter was placed, and paravesical drainage was established. Postoperatively, antibiotic therapy, urethral and suprapubic catheters were maintained for three weeks, resulting in satisfactory recovery. **Conclusion:** In cases of second-stage cesarean section or obstructed labour, careful identification of the bladder and complete emptying of the bladder can help prevent severe bladder injury. Early diagnosis, multidisciplinary management, and meticulous surgical repair are crucial for successful outcomes in cases of extensive bladder injury complicating cesarean section.*

Keywords: Cesarean section, Obstructed labour, Bladder injury.

1. Introduction

The urinary bladder, being the closest anterior organ to the uterus, is particularly vulnerable to injury during cesarean section (CS). Bladder injury during a cesarean section is rare, but doctors should know about this possible complication so they can explain the risk to patients and treat it quickly if it happens during surgery. Bladder injury is a recognized complication of CS, occurring in approximately 0.2% of primary cesarean deliveries and 0.6% of repeat cesarean deliveries.¹ The bladder dome is the most common site of injury during cesarean section, accounting for nearly 95% of cases, while trigonal injuries are relatively uncommon. The mean injury length is approximately 4.2 cm (range: 1–10 cm). Bladder injuries most frequently occur during bladder flap dissection (43%), followed by entry into the peritoneal cavity (33%) and uterine incision or fetal extraction (24%).² Potential sequelae of bladder injury include prolonged operative time, urinary tract infection, prolonged indwelling catheter time, and formation of vesicouterine or vesicovaginal fistula.³⁻⁶

2. Case Report

A 37-year-old P3L3 woman presented to our institute following an emergency cesarean section complicated by bladder injury. She was referred from a civil hospital, where the cesarean section had been performed at 40 weeks of gestation for obstructed labour. A male infant weighing 3.5 kg was delivered. The patient had a history of two previous normal vaginal deliveries. During the surgery, a bladder injury was identified. The patient was subsequently referred to our institute with an abdominal drain and surgical sponge left in situ, and the skin incision loosely approximated.

On admission, the patient was conscious and oriented. Her pulse rate was 108 beats/minute and blood pressure was 90/50 mmHg while receiving blood transfusion. Per-abdominal examination revealed a 28-week-sized uterus, soaked abdominal dressing, and approximately 100 mL of hemorrhagic fluid in the drain. There was no urine output through the perurethral catheter. The patient was taken for emergency exploratory laparotomy in collaboration with a urologist.

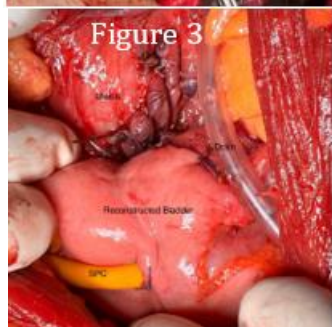
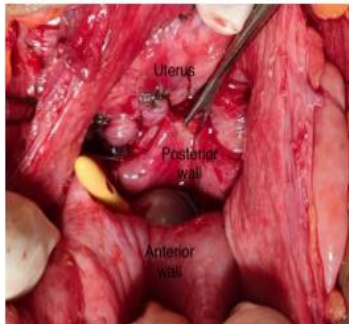
Intraoperative exploration revealed the Foley catheter bulb lying within the operative field and a 7–8 cm rent involving both the anterior and posterior walls of the urinary bladder, with marked retraction of the posterior wall (fig.1), it was appear that fetus was delivered by cutting through anterior and posterior wall of bladder. Urine was escaping from both UV junction. A strip of anterior wall of bladder tissue was adherent to the uterus (fig 2). The uterine incision had been loosely sutured with a 2–3 cm defect between the layers. After careful separation of strip of anterior wall of bladder from the uterus, the uterine incision was repaired in two layers after securing the uterine angles with Vicryl No. 1. Both ureterovesical junctions were identified and found to be in close proximity to the bladder defect. Bilateral DJ stenting was performed. Both anterior and posterior bladder walls were repaired with adhere strip of anterior wall of bladder after separation in continuous fashion by Vicryl 2-0 RB sutures. The anterior bladder wall was repaired in two layers using Vicryl 3-0 RB and Vicryl 2-0 RB sutures. A suprapubic catheter was inserted and secured with Vicryl 3-0 RB, and a drain was placed in the paravesical space (fig 3). The patient received two units of packed cell volume intraoperatively.

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Postoperatively, she was managed with antibiotics and anticholinergic medication. She developed high-grade fever on postoperative days 1 and 2. Urine culture showed numerous pus cells, and higher antibiotics were initiated. On postoperative day 6, drain fluid culture grew *Enterococcus* species, for which Linezolid therapy was started. Both the urethral and suprapubic catheters were maintained for three weeks. The patient subsequently showed clinical improvement and recovered satisfactorily.



3. Discussion

Iatrogenic bladder injury during caesarean section is a rare complication with incidence ranging from 0.0016% to 0.94%.⁷ Risk factors for intraoperative bladder injury during caesarean section include prolonged or obstructed labour with bladder distension, previous uterine surgery resulting in a scarred uterus (such as prior caesarean section or myomectomy), intra-abdominal adhesions from previous surgery or pelvic inflammatory conditions, distorted pelvic anatomy due to fibroids or congenital anomalies, placenta accreta spectrum, and caesarean hysterectomy. These conditions increase surgical difficulty and the likelihood of bladder injury. Bladder injury was more common during emergency caesarean sections (31% vs 11%)^{3,8} and in women who underwent caesarean delivery after labor had started (83% vs 61%) because, during an emergency, the priority is to deliver a distressed baby quickly, leaving less time for careful tissue dissection. The risk of incidental cystotomy increases when caesarean delivery is performed during the second stage

of labor versus the first stage (0.4% versus 0.1%, respectively, P value 0.004) similar to our case. There are multiple differences between a caesarean section performed during the second versus first stage of labor that contribute to these findings. During caesarean delivery for arrest of descent, especially in the second stage of labor, the deeply impacted fetal head and difficulty identifying bladder anatomy increase the risk of bladder injury, although the overall incidence remains low (0.4%).⁹

Bladder injury during caesarean section can be minimized by using sharp dissection when dense adhesions are anticipated, ensuring the bladder is emptied before surgery, carefully entering the peritoneal cavity in suspected adhesion cases, and using the ultrasound sliding sign to identify severe adhesions preoperatively.¹⁰ In placenta accreta spectrum, filling the bladder with about 200 mL of normal saline before surgery may help reduce the risk of injury.¹¹ Similarly in our case such extensive injury could be avoided with prior bladder catheterisation and separating uterovesical fold before incision over uterus. Most of the injuries are fortunately identified at the time of surgery- 62% of injuries are identified at the time of delivery of the infant and repair of the hysterotomy. 21% of bladder injuries are recognized during the creation of the bladder flaps, 12% during entry into the peritoneal cavity, and 5% prior to fascial closure.

Signs suggestive of bladder injury during surgery include visualization of urine in the operative field, appearance of the Foley catheter bulb within the surgical field, and haematuria. If bladder injury is suspected, it can be confirmed by instilling diluted methylene blue through the transurethral catheter and observing for dye leakage. In cases of suspected large or posterior bladder injuries, cystoscopy, ureteric catheterisation, or intravenous indigo carmine administration may be required, preferably with the assistance of a urologist or urogynaecologist.

Iatrogenic bladder injury can be classified as follows¹²

Grade 1: contusion, intramural hematoma or partial thickness laceration

Grade 2: extraperitoneal bladder wall laceration <2 cm

Grade 3: extraperitoneal >2 cm or intraperitoneal <2 cm laceration

Grade 4: intraperitoneal bladder wall laceration >2 cm

Grade 5: intra- or extraperitoneal bladder wall laceration involving the trigone or bladder neck

A bladder injury should be repaired as soon as it is detected during surgery. Early repair leads to better healing and fewer complications. After an accidental bladder injury during a caesarean section, the surgeon should first assess the size and extent of the tear and check whether the trigone or ureters are involved. Most injuries occur at the bladder dome and can be repaired with layered sutures. If a ureteric injury is suspected, Indigo Carmine dye may be injected intravenously to look for dye leakage. If there is any concern about ureteric damage, intraoperative urology consultation is recommended. Grade 1 and Grade 2 bladder injuries are usually managed conservatively with continuous bladder drainage using an indwelling Foley catheter for at least 7–14 days, and some studies recommend drainage for up to 3 weeks. These injuries generally do not require surgical repair.^{13,14} In contrast,

bladder injuries of Grade 3 or higher require surgical management.^{14,15}

A simple bladder injury is repaired in 2–3 layers using absorbable sutures. First layer consisting of a simple running closure of the mucosa with a 3–0 absorbable suture. The second layer may be closed with a running imbricating stitch using either 2–0 or 3–0 absorbable suture to include the submucosa and muscularis.¹⁶ Permanent sutures, especially silk, are avoided in bladder repair because they can lead to bladder stone formation.¹ After repair, the bladder is filled with sterile milk or methylene blue to check for leaks. A Foley catheter is kept for 7–10 days for continuous drainage. Routine cystography before catheter removal is not necessary unless the repair was extensive.

4. Conclusion

Women with a previous cesarean delivery, a second-stage cesarean section, or an emergency cesarean section are at increased risk of bladder injury and should be counseled regarding this possibility. In cases of obstructed labour, the bladder often remains high and is therefore more vulnerable to injury. Preventive measures include adequate bladder emptying before surgery, careful identification of the bladder and surrounding structures, and meticulous surgical technique. Early recognition and immediate repair of bladder injuries are associated with a favorable prognosis, whereas delayed diagnosis or treatment can lead to complications. After repair, cystography may be performed to confirm healing and exclude urinary leakage.

Declaration by Authors

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