

Urinary Tract Injuries During Cesarean Section In Patients With Morbid Placental Adherence

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ABSTRACT

Objective To find out the frequency of urinary tract injuries during cesarean section in patients with morbid placental adherence.

Study design Cross sectional study.

Place & Duration of study Department of Obstetrics and Gynecology, Liaquat University of Medical & Health Sciences (LUMHS) Jamshoro, from March 2017 to February 2020.

Methodology Patients with suspected morbidly adherent placenta according to ultrasound and color Doppler and MRI were included in this study. Confirmation of placental adherence was done on MRI and intraoperatively. Ureter and bladder injuries were identified by methylene blue infusion through a Foley catheter. Age, parity, demographic data, BMI, radiological findings and type of surgery performed were noted. Descriptive statistics were used to present data. Statistical analysis was done by SPSS version 21.

Results A total of 166 women visiting hospital for cesarean section with morbidly adherent placenta were managed. The mean gestational age of women was 34.5±4.5 weeks. In 68 (41%) women there was a previous history of cesarean section. In 129 (77.7%) patients cesarean section was done and 37 (22.8%) had hysterectomy. During surgery 16.8% patients had bladder injury, 9.6% had injuries to the ureter whereas 5.4% had injuries to bladder and ureter.

Conclusions Urinary tract injuries are likely to occur in morbid adherent placenta. Urinary bladder injuries were frequent in comparison with ureteral trauma.

Key words Urinary tract injuries, Cesarean section, Morbid placental adherence.

INTRODUCTION:

Morbidly adherent placenta is a major cause of morbidity and mortality among pregnant women and the spectrum ranges from placenta accreta, increta to percreta, depending on the degree of adherence

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of placenta to the uterine wall.¹ It can lead to massive hemorrhage ending up in hysterectomy in severe cases adding to the mortality. Superficial invasion of placenta into the uterine wall is labeled as placenta accreta, whereas in placenta increta it invades the myometrium. Placenta percreta can be defined as invasion of placental villi throughout the uterine serosa.² Prior risk factor analysis, and accurate investigations can lead to decreased morbidity and mortality in such cases.³

The incidence of placenta accreta has increased from 0.12% to 0.31% in the last 15 years due to increase in cesarean section rate.⁴ Maternal morbidity associated with cesarean section increases proportionately with subsequent cesarean sections.⁵ Women having prior history of placenta previa had

60% chances of having placenta accreta in their next pregnancy.⁶ Ultrasound and Doppler are the first line investigations for morbidly adherent placenta carrying highest sensitivity. Patients having history of placenta previa must undergo transvaginal ultrasound along with color Doppler. The presence of placental lacunae making Swiss cheese appearance is suggestive of placenta accreta whereas loss of hyperechoic interface within the bladder and uterus suggests placental invasion into the uterine serosa.⁷

Pregnant women with placenta accreta need preoperative planning and discussion of management options with the patient. Surgery for morbidly adherent placenta should be performed under multidisciplinary team and preferably as an elective procedure. Intraoperative complications like severe blood loss and injury to ureter are likely to occur.⁸ MRI scan or ultrasound is needed to rule out bladder involvement in placenta percreta.⁹ Bladder involvement can lead to complications like fistula formation, and hematuria.^{10,11} The aim of this study was to determine the frequency of urinary tract injuries during cesarean section in patients with morbid placental adherence.

METHODOLOGY:

This was a cross sectional study conducted at the Department of Obstetrics and Gynecology, Liaquat University of Medical & Health Sciences Jamshoro, from March 2017 to February 2020. The study participants included patients with suspected morbidly adherent placenta on ultrasound and color Doppler. Confirmation of placental adherence was

done intraoperatively. Surgery was done through Pfannenstiel incision. Surgery was performed depending on the type of placental invasion. Ureter and bladder injuries were identified by methylene blue infusion through a Foley catheter.

The sample calculation was done using the WHO software for "Sample size calculation" by using the proportion of "pregnant women having morbidly adherent placenta" with 95 % confidence interval and 5% of margin of error, the sample size was 166. Non-probability consecutive sampling technique was used. Variables assessed included age, parity, demographic data, BMI, radiological findings and type of surgery performed.

Patients were divided into four groups according to the urinary tract injuries. In group 1 no urinary tract injury occurred, in group 2 bladder was injured, group 3 patients with ureter injuries and group 4 when injuries occurred to both the bladder and ureter. Statistical analysis was done by SPSS version 21. Descriptive statistics were used for presenting data.

RESULTS:

A total of 166 women were managed. The mean gestational age of women was 34.5 + 0.5 weeks. The characteristics of study group are given in table I. Sixty-eight (41%) had previous cesarean section. In our study 129 (77.7%) patients were managed by cesarean section and 37 (22.8%) had hysterectomy. Forty-seven (27.8%) patients had bladder invasion as seen on radiological

Table I: Characteristics of Study Group

Variable	Total Population (n)	Mean Value	Standard Deviation
AGE (years)	166	34	5.92
Parity (n)	166	4.2	1.9
Gestational Age (Weeks)	166	34.5	3.5
BMI (kg/m ²)	166	32.3	6.5

Table II: Frequency and Type of Urinary Tract Injuries

Type of Injury	Surgery Performed		Total
	Cesarean Section (n=129)	Hysterectomy (n=37)	
Group 1: No urinary tract injuries	93 (56.02%)	20 (12.04%)	113(68%)
Group 2: Injuries of the bladder	19 (11.44%)	9 (5.42%)	28 (16.8%)
Group 3: Injuries of the ureter	11 (6.62%)	5 (3.01%)	16 (9.6%)
Group 4: Injuries to the bladder and ureter	6 (3.61%)	3 (1.80%)	9 (5.4%)

investigations. The frequency of urinary tract injuries are given in table II.

DISCUSSION:

This study revealed number of urinary tract injuries in patients who underwent cesarean section or hysterectomy for morbidly adherent placenta. It also highlighted that previous cesarean section was a risk factor for development of placenta accreta as noted in other studies as well.¹¹ A study conducted on 342 women in Egypt with placental adherence showed that 21.7 % females had urinary tract injuries during cesarean section.¹² In our study 31.8% women had injuries to the urinary tract.

The most commonly injured parts of urinary tract as reported in various studies are urinary bladder and distal ureter.¹³ The urinary bladder is a retroperitoneal structure and its trigone and base lies over the anterior vaginal fornix and cervix respectively, hence more likely to be injured during obstetrical procedures. A study was conducted on patients who underwent cesarean section and two groups were made. In one there was normal placental anatomy and other had placenta accreta. The frequency of urinary tract injuries was 61% in placenta accrete group while in normal placental anatomy group only 1.5% urinary tract injuries occurred.¹⁴

Another study showed the ratio of bladder and ureter injuries as 5.13% and 1.71% for hysterectomy due to placenta accreta and 0.58% and 0.36% for abdominal hysterectomy without placenta accreta.¹⁵ In another study of 292 women with placenta accreta in whom hysterectomy was performed, urinary tract injuries occurred in 29% of cases. Of these 10.8% women required urinary bladder repair, whereas ureterovesical repair and ureteric catheterization was needed in 5% of women.¹⁶

Other approach for dealing with bladder injuries in placenta accreta was removal of placental invasion area within the bladder and uterus along with distal ureter. However, this is a long procedure carrying the risk of sepsis and vesicovaginal fistula.¹⁷ Another study suggested placement of ureteric catheter at surgery to prevent ureteric injury and showed that frequency of urologic injury was reduced.¹⁶ Antenatal diagnosis of morbidly adherent placenta and discussion of treatment options preoperatively is important. American Congress of Obstetricians and Gynecologists suggests that placenta accreta must be managed by preterm cesarean hysterectomy with placenta left in place. Removal of placenta carries risk of severe hemorrhage and urologic

injury, therefore it could be the safest approach.¹⁸

CONCLUSIONS:

Injury to urinary bladder occurred more frequently than ureter. All injuries were more frequent in women who underwent cesarean section.

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Farhana Shaikh: Data collection, critical revision.

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Conflict of Interest:

The authors declare that they have no conflict of interest.

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