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Use of Cystoinflation To Prevent Urinary Tract Injuries In Patients With Placenta Previa

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Abstract: Introduction: There is insufficient evidence to support the use of cystoinflation to prevent bladder injury in women with placenta previa. The purpose of this study is to find the effectiveness and safety of cystoinflation to prevent bladder injury in women with placenta previa. **Methods**: The study was conducted at Gynecology & Obstetrics Department, lady Willing-don hospital, Lahore for six months duration . The research was conducted by forming two groups. Women in Group-A (inflated urinary bladder) had significantly lower bladder injury as compared to women in Group-B (deflated urinary bladder). i.e. 1.9% vs. 11.32%, p-value=0.050. **Results**: Homeostatic sutures requirement was significantly higher in Group-B as that of Group-A. i.e. 15.1% vs. 18.9%, p-value=0.604 Duration of hospital stay showed no significant difference between groups. i.e. 96.2% patients in Group-A and 88.7% patients in Group-B discharged from hospital within 3-4 days. **Conclusion**: Based on the results of this study, women presenting with placenta previa had significantly lower incidences of bladder injury as a result of cystoinflation during cesarean section.

Keywords: Effectiveness, Safety, Cystoinflation, Bladder injury, Placenta previa.

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Introduction

The term placenta previa refers to a placenta that is completely or partially covering the internal cervical os [1,2]. It is crucial to consider the location of the placental attachment when determining pregnancy outcomes for patients with placenta previa. A placenta located on the anterior wall of the uterus can lead to adverse pregnancy outcomes and massive postpartum hemorrhage. Doctors should be extremely vigilant regarding placenta accreta spectrum disorders when the placenta attaches to an incision site in the uterus [3]. There are limitations to this method and false positive results may occur; however, transabdominal ultrasound is typically used to rule out abnormal placentation. Color Doppler ultrasonographic examinations may enhance sensitivity in detecting abnormal placentas compared to other diagnostic methods. [1].
Globally, placenta previa affects approximately five out of 1000 women per 1000 pregnancies, and this is the reason that maximum use of cesarean is becoming very common due to which maternity is effecting on large scale.[4]. Maternal morbidity and mortality are associated with placenta previa. Since 1970, placenta previa has increased 10-fold because of the increase in cesarean deliveries[5].

When a woman has had a previous cesarean delivery, she is significantly more likely to develop placental adhesion anomalies. Literature highlighted the significantly higher rates of placental adhesion anomalies in previous cesarean birth subgroups than in previous vaginal birth subgroups: 12.4% against 32.7%, 10.2% against 52.2%, and 9.5% against 63.6%, respectively[6]. Previous cesarean births were associated with 9.1% more urogenital complications than vaginal births[6]. Anterior placenta previa cases undergoing cesarean section are associated with a 63% placenta accreta rate[7]. Placenta accreta was treated with cesarean hysterectomy in 24 cases (60 %). Ten cases (25% of the cases) were affected by bladder injury. There was one case of bowel injury (2.5%)[8].

There was a bladder injury in 25.93% of patients with placenta previa and 0% of patients without placenta previa [9]. When performing placenta accreta surgery, filling the bladder with 200ml of saline solution before the surgery can reduce the possibility of bladder injury [10]. In retro-fill (cystoinflation), the bladder takes a rounded contour as it rises into the abdomen. Compared to the control group, cystoinflation group's bladder injury rate is significantly lower (2.8% compared to 20.6%)[11]. Prior to cesarean section, bladder and ureteric injuries are significantly reduced when the bladder is inflated. A substantial decrease was observed in both the duration of time spent in the operation room and the hospital, with no subsequent pstoperative complications impacting the urinary tract. [12]. This study highlight the significance and support the use of cystoinflamation to prevent bladder injury. This study will provide the direction and safety of cystoinflation specially in women with placenta previa.

Literature Review

An abnormally placed placenta covers part or all of the internal opening of the cervix in a condition known as placenta previa. There is a high risk of maternal and perinatal morbidity and mortality associated with it when it occurs during pregnancy. A pregnant woman can experience potentially life-threatening conditions as a result of this condition, including bleeding and after delivery, invasive placentation, hysterectomy, blood transfusions, septicemia, and thrombophlebitis after delivery. Preterm birth and perinatal death are also common adverse outcomes in fetuses and newborns.[13]. A placenta previa occurs when it implants in a lower uterine segment, fully or partially. A "double setup" examination was traditionally conducted in the case of vaginal bleeding to diagnose placenta previa. The role of sonography in assessing the placenta-cervix relationship has almost completely replaced clinical examination over time; therefore, the definition of placenta previa has changed in line with ultrasound findings. As there are different types of placenta previa, there is still inconsistency in the terminology for placenta previa.[14]

According to RCOG guidelines[15], ultrasound imaging should be used to classify placenta previa based on clinical criteria: major previa occurs when the placenta is over the internal cervical os; minor or partial previa occurs when the placenta's leading edge is in the lower uterine segment without covering the cervical os. If the internal os distance between the cervix and the uterus is less than 1.5 cm, it is considered placenta previa. It is called complete placenta previa when the placenta completely covers the internal cervical os.[16,17] Placental edge terminology becomes confusing if it just reaches the margin of the cervix, not crossing it, but not a measurable distance away.[14]

A different placenta previa condition can be described by each of these terms, such as incomplete, partial, or marginal. In the clinical definition, partial previa refers to a stretchy cervix partially covered by the placenta. [16,18], The term has been dropped from placental terminology due to its rarity and lack of widespread acceptance.[18] An external os or a placenta located within 20–25 mm of the external os is called marginal previa, or a placenta that extends beyond the margin of the internal os.[16-18]

Some authors have made a distinction, calling a "low-lying" placenta one that is located within 20 millimeters of the internal os[19]. In placesntas that cover any part of the internal organ system, there are different recommended management methods than in those that are close to the organ system. A placenta that implants in the lower uterine segment but does not reach the cervix is called a "low-lying placenta. Placental edge close to cervical os may allow vaginal delivery[14].

Figure-I: Ultrasound of transabdominal placenta previa.

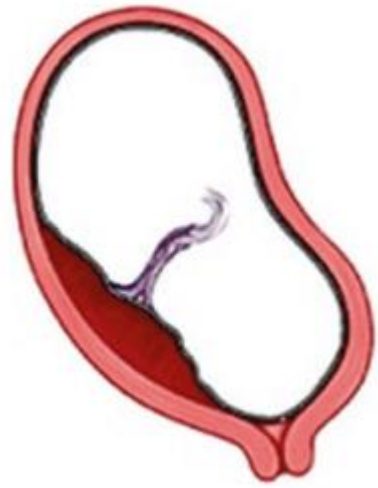

Figure-II: A partial or minor placenta previa

Placenta previa has become more common in recent decades. Placenta previa was reported to occur 4.0 times per 1000 births in a systematic review of studies published between 1966 and 2000.[20,21] The prevalence of placenta previa has increased over the last 30 years, with 5.2 cases per 1000 pregnancies and 4.3 cases per 1000 pregnancies of major placenta previa in a recent meta-analysis [22].

According to regional differences, Asian populations are most likely to have placenta previa (12.2% per 1000), while Europeans are less likely to have it (3.6%), North Americans are more likely to have it (2.9%), and Africans are more likely to have it (2.7%), according to a study from the British Medical Journal. Caesarean delivery rates have increased over the past three decades, possibly contributing to placenta previas prevalence[23,24].

In 2020, the caesarean delivery rate is projected to reach 56.2% if the rate of primary and secondary cesarean deliveries continues to rise. The number of placenta previas, accretas, and maternal deaths will increase by 6236, 4504, and 130, respectively.[25]

Numerous epidemiological studies have reported predisposing factors for placenta previa, but its etiology remains unknown [26]. In addition to previous caesarean sections, prior uterine surgeries (such as curettage, myomectomy, Asherman's syndrome) contribute to the development of placenta previa, since uterine scarring predisposes to the formation of low placental implantation. There appears to be a correlation between placenta previa and caesarean section rates. Compared to ten caesarean deliveries per 1000, 28 caesarean deliveries per 1000 were associated with placenta previa.[26] The endometrium and myometrium are damaged and scarred during caesarean delivery and spontaneous and induced abortion, resulting in low placenta implantation.[27,28]

Among the risk factors associated with placenta previa are maternal age (over 35), low economic status, grandmotherhood, smoking, illicit drug use, repeated miscarriages, induced abortions, myomas under the mucous membranes, short caesarean- or curettage-to-conception intervals, male fetuse gender, and multiple pregnancy.[29,30]

In addition, women who have had a previous pregnancy with placenta previa are more likely to have a second pregnancy with it [21]. Insufficient blood flow to the placenta is a common cause of placenta previa in women over 35 years old due to atherosclerosis in their uterine arteries. As a result of proper blood circulation, the placenta can encroach on the lower uterine segment.[31]

As a result of endometrial scarring at previous placental attachment sites, multiparous women are more likely to develop placenta previa. Additionally, when pregnant with repeat pregnancies, blood vessels may narrow at prior placental attachment sites, leading to a larger placenta impinging on the placenta os. As a result of nicotine's vasoactive properties and carbon monoxide's chronic hypoxia, cigarette smoking during pregnancy may be associated with placenta previa risk: chronic hypoxia in comparison to non-smokers, smokers have a larger placenta and a greater chance of placental attachment to the cervical os.[32]

As a result of maternal cocaine use, sympathetic blood vessels in the uterus are under perfused, consequently, a larger placenta is formed that encroaches on the cervical os, leading to premature delivery[20].

There is a higher risk of placenta previa in women who have chronic or underlying high blood pressure. Placenta implantation is lower in women with chronic hypertension for unknown reasons. As a result of better oxygen and blood supply in the posterior segment of the uterus, placentas that are better supplied with oxygen may reduce the risk of pregnancy-induced hypertension and preeclampsia in placenta previa, since anti-inflammatory substances are inhibited from entering the circulatory system during pregnancy.[33]

Moreover, assisted reproductive technology (ART) may also contribute to placenta previa according to recent studies [34,35]. In a study of 318 consecutive ART patients, with endometrial disease (odd ratio 15.1) and tubal disease (odd ratio 4.4) were associated with an increased risk of postpartum depression. The pathogenesis of placenta previa may also be influenced by factors that cause infertility, since there are usually some underlying infertility factors present in most women who undergo ART.[36]

Another ART study found that placenta previa is positively correlated with endometrial thickness, even without taking into account potentially dangerous risk factors like tobacco use and endometriosis. Preparation of the endometrium and stimulation of the endocrine system.[37]. It is not completely understood how placenta previa develops [38]. Within the first few weeks of pregnancy, placental edge and internal cervical os changes when a woman conceives. Third trimester is the time when low implanted placentas typically move away from the internal os if they are implanted early in the second trimester. A greater amount of vascularization in the fundus than in the rest of the uterus may explain Placental tissue would not migrate away from the

internal orifice due to a decrease in vascularization, the orifice is deteriorating not due to the trophoblast, but rather due to a deterioration of the trophoblast.[39] Due to a previous uterine scar, this "migration" of the lower uterus would be prevented by distortion of the normal anatomy"[40]. As an alternative, deficient decidual vascularization and endometrial hypoxia can lead to an increased placenta size, resulting in a lower implantation close to the cervix.[20]. According to one case series, over 58% of bladder tumours were perforated during transurethral resections. There are many bladder injuries caused by urologists. Based on the European Association of Urology Guidelines on Iatrogenic Trauma, the reported incidence of bladder perforation during various procedures (table-1)

According to the WHO, 130,000 cases of obstetric genitourinary fistula are diagnosed each year worldwide and 2 million women suffer from untreated fistulas in sub-Saharan Africa and Asia. Hysterectomy for benign disease is the most common cause of fistulas in well-resourced countries. Among all types of hysterectomy performed in the UK, 0.12% of women developed VVF. Among industrialized countries, 2055 urogenital fistulae were reported in a large systematic review.

Among the fistulas they studied, 46.2% were associated with abdominal hysterectomy, 62.7 percent with any type of hysterectomy, and 75.4% with surgery-related fistulas.[41]

Procedure	%
Caesarean delivery	0.0016–0.94
Laparoscopic sterilization	0.02
Diagnostic laparoscopy	0.01
Laparoscopic hysterectomy (benign)	0.5–2.0
Vaginal hysterectomy (benign)	0.44–6.3
Abdominal hysterectomy (benign)	0.73–2.5
Laparoscopic sacrocolpopexy	1.9
Burch colposuspension	1.0–1.2
Synthetic midurethral slings (all)	6.0–6.6
• Transobturator route	0–2.4
• Retropubic route	3.2–8.5
Pubovaginal sling	2.8
Transvaginal mesh surgery	1.5–3.5
Anterior colporrhaphy	0.5

Table-1: A review of various procedures that lead to bladder perforations [41]

As a direct result of direct injury during surgery, bladder injuries usually occur in gynecological surgery, and they are often detected immediately following surgery. It is possible to develop a pelvic urinoma during hysterectomy if the cystostomy near the vaginal cuff is not recognized and drains out through the vaginal cuff. A fistula may also develop if this cystostomy is not recognized during the operation. The bladder may also be injured in subtler ways, for example due to thermal injury, clamping, crushing, or suturing. During the closure of the vaginal cuff, a suture may pass through both the bladder and the vaginal wall. Eventually, necrosis and tissue breakdown may result from the compromised blood supply to the affected tissue. In the long run, blood supply to the affected tissue can be compromised, resulting in necrosis and tissue breakdown. [41]. It is possible to sustain a bladder injury due to an iatrogenic cause in any situation that reduces exposure to the pelvic region, such as large pelvic masses, obesity, haemorrhage, or malignant diseases. Patients undergoing open or laparoscopic hysterectomy are at risk for bladder injury

due to previous laparotomies and Caesarean sections, endometriosis, malignancy, and concomitant anti-incontinence or pelvic organ prolapse surgery.[41]

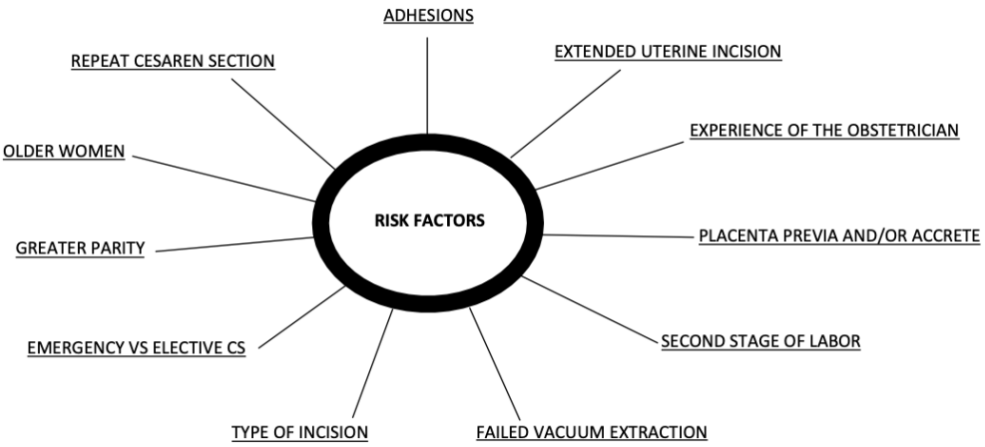

Figure III: Potential risk factors for bladder injuries

A CS is most commonly associated with bladder damage, which occurs 0.08 to 0.94% of the time. The bladder is damaged in between 28.6% and 46.6% of cases when the peritoneum is opened, and in one large study, 41.4% occurred after the first CS and 58.6% after the second.[42] Pfannenstiel's techniques (Joel-Cohen and Misgav-Ladach) seem to be safer for opening the peritoneum than "blunt" methods (Joel-Cohen and Misgav-Ladach) especially during repeated cesarean section. A first CS tends to damage the dome of the bladder (76.2%), whereas a repeated cesarean section tends to damage the body of the bladder and the trigone.[43]

In order to minimize the risk of bladder injury, a bladder flap should be created at least 1–2 cm above the bladder top edge.[44]

Patients with gross hematuria in the Foley bag, urine visible outside the bladder, and a Foley catheter visible in the surgical field can have their injuries identified and treated intraoperatively. When damage is identified and repaired immediately, complications and further procedures are reduced. An indocarmine or methylene blue injection through a urethral catheter is used when a bladder lesion is suspected.

By identifying the injury and its location from the urine extravasation, the surgeon can determine the severity of the injury. A urologist is usually needed if the trigone of the bladder or ureters have been damaged and the extent of the damage cannot be evaluated by an obstetrician.[45]

The wound should be sutured with one layer of sutures (usually 3–0 absorbable sutures) when the damage is less than 2 cm. It is recommended to apply two layers of continuous sutures (3-0 absorbable sutures) to lesions greater than 2 cm in diameter. It is contraindicated to use non absorbable sutures since they are more likely to cause complications such as urolithiasis, granulation scarring, and recurrent UTIs.[46]

Adding methylene blue dye to the bladder may be helpful in confirming bladder integrity. Damage to the trigone in the urinary bladder can coexist with urethral and ureteral lesions; as a result, urologists are needed for the repair of such damage. A Foley catheter should be used to continuously drain the bladder for at least seven to ten days following surgery. Prophylactic antibiotics during the maintenance of Foley catheters are controversial [47]. Foley's catheters are commonly used to empty bladders during cesarean sections, but their safety is speculative rather than proven. By using Foley's catheter, the bladder is expected to be deflated, preventing bladder injury while entering the bladder, and allowing it to retract after it is separated from the lower uterus. In many studies, however, it has been demonstrated that CS without bladder deflation are safe [48-50]. During the surgery, the bladder will fill spontaneously without an indwelling Foley's catheter. It may be perceived as safe to fill the bladder intentionally rather than spontaneously based on extrapolation. Clinical trials are being conducted to test this extrapolation. In cases of tough adhesions between the bladder and lower uterine segment, urinary bladder injuries can result. In such circumstances, separating the bladder may cause injury to the bladder. Defining the bladder's contour and determining the best dissection plane can be accomplished by filling the bladder.[51]

There are various methods currently being investigated to prevent adhesion, including hydrophobicity, hydrophilic membranes, and derivative gels, etc. By modifying their surgical techniques, surgeons are also

reducing the complications associated with adhesions. Additionally, bladder flaps have been omitted in this context, but additional evidence is necessary to prove their effectiveness. [52-54]

Preoperatively, a urinary catheter is placed to deflate the bladder during C-sections [54,55]. There is, however, evidence that C-sections without catheters are safe in recent studies.[12,48,50] To prevent bladder injury, cysto inflation is not supported by sufficient evidence in the literature.

It has been proven that bladder retrofill can prevent bladder injuries. According to a recent study, having a full bladder has also been associated with a reduction in bladder injuries among women who have had multiple CC, including cases of PP [12].

Using CO2 for cystoinsufflation during laparoscopic gynecological surgery virtually eliminated bladder injury [56].

Caesarean hysterectomy with placenta accreta has not been observed to have this beneficial effect of cystoinflation [57]. Placenta previa cases often have increased vascularity and excessive bleeding, which lead to poor visualization of the operative field, making cystoinflation less effective at creating bladder flaps. The flap covering the bladder can still fail to prevent bladder injuries when the bladder adherents are firmly attached to the inside wall of the uterus [58]. Surgical examination of the pelvis after the bladder is full may not reveal any bladder wall under the adhesion. During retrofill, a surgeon can see that a bladder part is beneath the adhesion as it changes shape as the bladder fills. Even firmly adherent bladders can be treated with the correct demarcation of bladder margins.

Alayan Zcan studied the effects of bladder filling on peripartum genitourinary injuries but also the characteristics of patients with placenta percreta. According to his research, mobilizing the bladder from the lower uterus and flooding it with saline solution does not significantly reduce genital complications. Surgery times, postoperative hospital stays, and bladder injuries were shorter for patients with bladder fillings, although the benefits were not significant.[51]

A bladder inflation prior to a cesarean section (CS) reduces urinary tract incidentals, according to Abd El-Naser Abd El-Gaber Ali. According to Abd El-Naser Abd El-Gaber Ali, bladder inflation before CS reduces incidental urinary tract injuries. The study found that ureteric injuries, urinary bladder injuries, and operative time were significantly reduced. The bladder should be inflated before cesarean section for patients with a risk factor for dense bladder adhesions.[12]

The bladder outline was determined by cystoinflation (inflating bladder with saline retro-fill) conducted by Shazia Saaqib in her study. As per her findings the bladder injury rate was significantly lower in cystoinflation group compared to control (2.8% vs 20.6%, P<.0001) with lesser blood loss in cystoinflation group (585.33 cc vs 797.10 cc, P<.0001).

A similar amount of time was spent on operative tasks in both groups. In comparison to the control group, cystoinflation was associated with more UTI and micturition problems (16.8% vs 1.9%, P=.001), with one subject presenting with a fistula.[11]

Objective

This study highlight the significance and support the use of cystoinflamation to prevent bladder injury. This study will provide the direction and safety of cystoinflation specially in women with placenta previa.

Materials and Methods ERC/IRB LW8965

The study was conducted at Gynecology & Obstetrics Department, lady Willingdon hospital, Lahore for period of six monthsWtih Randomized Controlled Trial Single Blind technique. Non-Probability Convenient Sampling technique was used for this purpose. The sample size of 106 patients (53 in each group) was estimated with 5% level of significance and 90% power of the test with bladder injury rates of 2.8% in Cystoinflation group vs. 20.6% in control group[11].

$$n = \frac{\left\{Z_{1-\alpha}\sqrt{2\bar{p}(1-\bar{p})} + Z_{1-\beta}\sqrt{p_1(1-p_1)+p_2(1-p_2)}\right\}^2}{(p_1-p_2)^2}$$

$Z_{1-\alpha=}$ Confidence level 95%=1.96

$Z_{1-\beta=}$ Power of test 90%

$p_{1=}$Population proportion I=2.8%

$p_{2=}$Population proportion II=20.6%

Pregnant women with age group of 18-40 years were included in this research study. Placenta previa in pregnant women identified by ultrasound. Study participants will be 106 patients from Lady Willingdon Hospital in Lahore who fulfill inclusion criteria. A complete history was taken, a general and obstetric examination was conducted, and routine laboratory tests were performed. As part of the ultrasound examination, each case was evaluated for biometrics, viability, placental position, development, the volume of amniotic fluid, cloudiness, and multiple pregnancy exclusion. Scar thickness was also assessed in the lower uterine segment. A total of two groups of patients were randomly selected (using closed envelopes) and divided into two groups (group A contained 53 cases of inflated urinary bladders before CS and group B included 53 cases of deflated urinary bladders before CS). Before the operation, all women underwent spinal anesthesia were catheterized. Training was provided to theatre staff nurses so they could perform catheterizations aseptically. From front to back, the nurse used sterile gauze pieces soaked in sterile water held with sponge holders to cleanse the woman's urethral meatus and perineum. A nurse inserted and held the catheter well beyond the bulb while the surgeon inflated the bulb with 10cc distilled water. She was draped with sterilized sheets while her tubing was elevated and her legs were straightened. A drape was attached to the thigh in front of the urinary port end of the catheter for drainage, and the catheter was attached to the urine bag once that was completed [11]. Aseptic procedures were followed during cystoinflation. House officer assigned to cystoinflation As the principal surgeon examined the pelvis for gradually distending bladder between adhesions, group A reterofilled 300 cc of normal saline-five fills of a 60 cc bladder wash syringes [11].

Statistical Analysis.

Data was analyzed by SPSS v26 was used to enter and analyze the collected data. A mean and st. deviation was used to express qualitative data such as age, time taken to dissect the bladder, and duration of hospitalization, while a frequency and percentage was used to express qualitative data such as intraoperative bladder injuries, injury sites, and prior surgeries. Cysto-inflation Group A and Control Group B were compared using Chi square. A statistical significance level of 0.05 was used to determine p-values.

Results

Mean age of patients in Group-A and Group-B was 27.88±4.18 and 28.56±4.74 years. **Table-1.** Table-2 describes the gravida status of patients in both study groups. **Table-2.** Table-3 describes parity status of patients in both study groups. **Table-3.** In Group-A and B duration of pregnancy was 37.01±1.04 and 36.69±1.20 weeks. **Table-4.** In Group-A 11(20.8%) patients underwent emergency and 42(79.2%) underwent elective surgery. In Group-B 6(11.3%) underwent emergency surgery and 47(88.7%) underwent elective surgery. **Table-5.** In Group-A 13(24.5%) patients and in Group-B 8(15.15%) patients had no history of previous surgery. **Table-6.** In both study groups placenta Previa was confirmed on ultrasound. Accreta was present in all patients in both study groups. **Table-7 & Table-8.** In Group-A and Group-B all patients underwent catheterization. **Table-9.** In Group-A all 53(100%) patients cystoinflation was done with 300 ml of normal saline. **Table-10.** In Group-A 1(1.9%) patient and 8(15.1%) patients in Group-B bladder were dissected in 5-10 minutes. **Table-11.** In Group-A 1(1.9%) patient and in Group-B 5(9.4%) patients had intra-op bladder injury. Group-B patients experienced significantly more intra-op bladder injuries. **Table-12.** In Group-A site of injury was done and in Group-B all 6 patients had injury at dome. **Table-13.** The hemostatic sutures were required by 8 (15.1%) patients in Group-A and 10 (18.9%) patients in Group-B. i.e. p-value=0.604 **Table-14.** In Group-A patient with bladder injury underwent life saving hysterectomy. While none of the patients in Group-B underwent lifesaving hysterectomy. **Table-**

15. Group-B patients stayed in the hospital longer than Group-A patients, but the difference was not statistically significant. i.e. p-value=0.141 **Table-16.** In Group-A only 1(1.9%) patient and in Group-B 5(9.4%) patients had catheter retained for 21 days. **Table-17**

Table-1: Age of women in study group

	Group-A	Group-B
n	53	53
Mean	27.88	28.56
so	4. 18	4.74
Minimum	17	19
Maximum	36	39

Table -2 Gravida status of women in study group

	Group-A	Group-B	Total
1	9(17%0	5(9.4%)	14
2	17(32.1%)	12(22.6%)	29
3	10(18.9%)	13(24.5%)	23
4	10(18.9%)	14(26.4%)	24
>5	7(13.2%)	9(16.9%)	16
Total	53	53	106

Table-3: Parity or women In study Groups

Parity	Group-A	Group-B
0	12(22.6%)	7(13.2%)
1	15(28.3%)	13(24.5%)
2	13(24.5%)	13(24.5%)
3	8(15.1%)	14(26.4%)
4	4(7.5%)	5(9.4%)

5	1(1.9%)	1(1.9%)
Total	53	53

Table-4: Duration of Pregnancy in Study Groups

	Group-A	Group-B
n	53	53
Mean (weeks)	37.01	36.69
SD	1.04	1.2
Minimum	34	33
Maximum	39	39

Table-5: Type of surgery in Study Groups

	Group-A	Group-B	Total
Emergency	11(20.8%)	6(11.3%)	17
Elective	42(79.2%)	47(88.7%)	89
Total	53	53	106

Table-6: Previous surgery among women in Study Groups

	Group-A	Group-B	Total
0	13 (24.5%)	8(15.1%)	21
1	14(26.4%)	15(28.3%)	29
2	13(24 .5%)	15(28.3%)	28
3	9(17%)	11(20.8%)	20
4	4(7.5%)	4(7.5%)	8
Total	53	53	106

Table-7: Diagnosis of placenta Previa confirmed on ultrasound

	Group-A	Group-B	Total
Yes	53(100%)	53(100%)	106
No	0(0%)	0(0%)	0(0%)
Total	53	53	106

Table-8: Presence of Accreta in study groups

	Group-A	Group-B	Total
Yes	53(100%)	53(100%)	106
No	0(0%)	0(0%)	0(0%)
Total	53	53	106

Table-9: Patient catheterized in Operation Theatre

	Group-A	Group-B	Total
Yes	53(100%)	53(100%)	106
No	0(0%)	0(0%)	0
Total	53	53	106

Table-10: Cystoinflation done with amount of normal saline

	Group-A	Group-B	Total
100 ml	0(0%)	-	-
200 ml	0(0%)	-	-
300 ml	53(100%)	-	53
400 ml	0(0%)	-	-
Total	53	-	53

Table-11: Time taken to dissect bladder in study groups

	Group-A	Group-B	Total
2-5 Min	52(98.1%)	45(84.9%)	97
5 10 Min	1(1.9%)	8(15.1%)	9
Total	53	53	106

Table-12: Intra-op bladder injury in study groups

	Group-A	Group-B	Total
Yes	1(1.9%)	6(11.32%)	7
No	52(98.1%)	47(88.68%)	100
Total	53	53	106
p-value	0.05		

Table-13 Bladder injury site in study group

	Group-A	Group-B	Total
Yes	1(1.9%)	6(11.32%)	7
No	52(98.1%)	47(88.68%)	100
Total	53	53	106
p-value	0.05		

Table-14 Homeostatic structures required on bladder surface in study

	Group-A	Group-B	Total
Yes	8(15.1%)	10(18.9%)	18
No	45(84 .9%)	43(81.1%)	88
Total	53	53	106
p-value	0.604		

Table-15: Life saving history to done in study groups

	Group-A	Group-8	Total
Yes	1(1.9%)	0(0%)	1
No	52(98.1%)	53(100%)	105
Total	53	53	106

Table-16: Duration of hospital stay in study groups

	Group-A	Group-B	Total
3-4 Days	51(96.2%)	47(88.7%)	98
>5 Days	2(3.8%)	6(11.3%)	8
Total	53	53	106
p-value	0.141		

Table-17: Duration of retention of catheter in study groups

	Group-A	Group-B	Total
12 Hours	26(49.1%)	18(34%)	44
24 Hours	24(45.3%)	25(47.2%)	49
72 Hours	2(3.8%)	5(9.4%)	7
1Week	0(0%)	0(0%)	0
21 Days	1(1.9%)	5(9.4%)	6
Total	53	53	106

Discussion

During pelvic surgeries, the urinary bladder dome is the most common site of injury, and during cesarean sections, this happens most often at the time of creating the urinary bladder flap.[59] Because of adhesions, the risk of repeat cesarean sections is even higher during intrapartum emergency cesareans. A new technique for preventing bladder injury in obstetrics is cystoinflation or bladder retro-fill. Literature suggests that cystoinflation is not effective in preventing bladder injury. Only a limited number of studies have examined the role of retrograde bladder filling in identifying bladder injury and confirming the integrity of the bladder following repair. The purpose of this study was to evaluate the safety and effectiveness of cystoinflation in women with placenta previa in order to prevent bladder injury. A significant difference was found between women in Group-A (inflated urinary bladder) and women in Group-B (deflated urinary bladder) in terms of bladder injury. Using saline solution to fill the bladder before commencing placenta accreta surgery is an easy and useful technique described in Samettin Celik's study. A surgical injury of the bladder with physiological saline filled intraoperatively was 4.5%, compared to a

surgical injury of the bladder without physiological saline filled intraoperatively was 31.5%. In spite of this, no statistically significant differences were found between the two groups in terms of bladder injury rates.[10]

Deflated urinary bladders caused more bladder injuries than inflated urinary bladders, according to an Egyptian study. The difference between 5.2% and 13.1% is 0.001, i.e.[12]

Shazia Saaqib tested whether cystoinflation can improve bladder margin identification without causing urological complications by reducing bladder injury rates and blood loss.[11]

Based on the results of this study, there are fewer bladder injuries associated with cystoinflation than in the above mentioned study.

Ozcan et al.[51] According to Ozcan et al., bladder filling does not prevent urinary tract injuries (Filled bladder: 21.9% vs. Not filled bladder: 32.4%, p-value=0.339). According to the study, urinary bladder injury was more common in patients with placenta percreta than those with placenta accreta, with 15% - 43% injury rates. [60,61], The prevalence of urinary tract injuries is higher after cesarean hysterectomy, which Ozcan et al. studied in women who had hysterectomy.[61]

By inserting a urinary catheter preoperatively, bladder deflation during C-section is routinely performed to prevent bladder injury. C-sections without catheters have been shown to be safe in recent studies.[12,48,50]

Cesarean sections reduce urological complications by stretching and contouring the bladder wall during delivery, facilitating the ligation of vessels and reducing urination problems. Using this surgical technique, the bladder walls can be stretched and contoured clearly.

In addition to deflating the bladder, after dissection, the bladder can be retracted using Foley's catheter following separation from the lower uterine segment. In many studies, however, it has been demonstrated that C-sections without bladder deflation are safe [11,50,62]. A bladder filling that is intentionally performed may be perceived as more safe than a bladder filling that is spontaneous. Clinical trials are being conducted to test this extrapolation. When there are challenging adhesions between the urinary bladder and the lower uterus segment, it is possible to sustain injuries to the bladder. In such circumstances, separating the bladder may cause injury to the bladder. By filling the bladder, you will be able to define its contour and determine the appropriate plane of dissection.[51] According to the surgeon's experience, the bladder may need to be filled before surgery in placenta percreta with unclear anatomical landmarks.

Conclusion

Based on the results of this study, women presenting with placenta previa had significantly lower incidences of bladder injury as a result of cystoinflation during cesarean section.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Not applicable.

HUMAN AND ANIMAL RIGHTS

No animals were used in this study. The study on humans was conducted in accordance with the ethical rules of the Helsinki Declaration and Good Clinical Practice.

CONSENT FOR PUBLICATION

Not applicable.

AVAILABILITY OF DATA AND MATERIALS

None.

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CONFLICT OF INTEREST
The authors declare no conflict of interest, financial or otherwise.

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