

Volume 31, Issue 6, June. 2025

Manuscript ID:ZUMJ-2504-3931 DOI:10.21608/zumj.2025.380092.3931 ORIGINAL ARTICLE

Effect of Bladder Dissection Timing During Cesarean Hysterectomy for Morbidly Adherent Placenta on Maternal Outcomes

Azza Abd Elmageid Abd Elhameid¹, Mohamed Abdel-moniem Ibrahem¹, Ali Abdullah Mohammed Alfiqi Alshireef², Ahmed Mohamed Abd-Alkader¹ ¹Obstetrics and Gynecology Department, Faculty of Medicine, Zagazig university, Egypt ²Obstetrics and Gynecology Department, Faculty of Medicine, El-Mergib university, Libya

*Corresponding author: AliAbdullah MohammedAlfiqi Alshireef Email Address: <u>Aliabduallahasharif@gmai</u> <u>l.com</u>

 Submit Date
 02-05-2025

 Accept Date
 12-05-2025

Abstract:

ABSTRACT

Background: Placenta accreta spectrum is the commonest cause of cesarean hysterectomy. Cesarean hysterectomy is considered the gold standard for the treatment, leaving placenta in situ, to control postpartum hemorrhage and for women want to preserve fertility, many conservative approaches are tried. This study aimed to assess the role of bladder dissection timing during cesarean hysterectomy by evaluating what is better bladder dissection before or after uterine opening. Methods: This randomized controlled clinical trial was conducted on patients with placenta accrete spectrum diagnosed by ultrasound criteria and Doppler or by MRI who attended outpatient clinics and maternity Hospital of Zagazig University Hospital. 40 Patients were assigned to either Group A (bladder dissection before uterine incision) or Group B (after uterine closure and before uterine artery clamping) who attended to outpatient clinics and maternity Hospital of Zagazig University Hospital. Results: there was Significantly lower estimated blood loss (1722.5±214.3mlvs. 2555±585.3ml), shorter operative time (123.5±13.6 vs. 153.4±14 min) and reduced Transfusion requirements in group A compared to group B. Also the urinary tract injury rate was lower in Group A than in group B (5% vs. 15%), this was not statistically significant (p > 0.05). No significant differences were observed in ICU admissions, neonatal outcomes, or maternal survival (all p>0.05). Baseline characteristics were comparable between groups. Conclusion: Surgical management of morbidly adherent placenta by cesarean hysterectomy suggested that bladder dissection before fetal delivery is much better in terms of decreasing blood loss, shorter operation time, need for blood transfusion and reduce risk of bladder injuries.

Keywords: Placenta accreta spectrum, Cesarean hysterectomy, Morbidly adherent placenta

INTRODUCTION

reast cancer ranks as the second most D common cancer worldwide. Globally, it has an incidence that The placenta accreta spectrum its abnormal adherence of the placental trophoblast into the myometrium of wall [1]. According uterine to FIGO classification of placenta accreta spectrum depend on the degree of invasion its classified to: Grade 1: (placenta accreta) - invasion of placental tissue into the decidual surface of the myometrium (middle layer). Grade 2: (placenta Abd Elhameid, A., et al

increta) - placental tissue invading the myometrium (all layer). Grade 3: (placnta percreta spectrum)-placental tissue penetrate the uterine serosa and may reach surrounding pelvic organs [2].

Etiology of placenta accreta spectrum may be due to defects in the endometrium-myometrial interface leading to abnormal decidualization of the uterine scarred area, resulting in abnormally deep infiltration of placental villi and trophoblast into myometrium. the significant risk factors are previous cesarean delivery and placenta previa. Other risk factors include multiparity, advanced maternal age, prior uterine surgeries or curettage, and Asherman syndrome[**3**].

One of the major complications of PAS is sever hemorrhage that's occurs due to failure of normal detachment of placenta at time of delivery.it can lead to shock, multisystem organ failure, disseminated intravascular coagulation, hysterectomy, and even death. also urinary bladder or ureteral injury, vesicovaginal fistula are other complications [4].

There is the rapid increase in the incidence of PAS over the past few decades from approximately 1/2500 to 1/500 **[5].** Since placenta accreta spectrum cannot be prevented and because the incidence is rising because of fewer vaginal births after cesarean delivery (VBAC) trials as well as patient desire for elective cesarean delivery, antenatal diagnosis is important to allow effective planning to minimize maternal/fetal morbidity **[6].**

Diagnosis of placenta accreta spectrum can be done by different modalities such as Histopathology, Ultrasonography, Color Doppler, Magnetic Resonance Imaging (MRI). Communally ultrasonography (US) is used to diagnose and evaluate the severity of the complications [1].

Scheduled cesarean hysterectomy with preoperative ureteric stent placement and avoiding attempted placental removal are associated with reduced maternal morbidity in women with suspected placenta accreta spectrum according to [7].

Bladder dissection is a critical surgical step during cesarean hysterectomy, particularly in cases involving morbidly adherent placenta (MAP). Due to the close anatomical relationship between the lower uterine segment and the urinary bladder, the risk of urological injury especially bladder trauma increases significantly during hysterectomy in patients with placenta accreta spectrum disorders [4].

The timing of bladder dissection, whether performed before or after uterine incision and delivery of the fetus, may play a vital role in determining the degree of blood loss, ease of surgical access, and likelihood of complications [8].

This study aimed to assess the effect of bladder dissection timing either before or after uterine incision during cesarean hysterectomy for morbidly adherent placenta on maternal outcomes.

METHODS

This a randomized controlled clinical trial study conducted on 40 patients with placenta previa who attended outpatient clinics and maternity Hospital of Zagazig University Hospital from May 2024 to November 2024. The local research ethical committee at Zagazig faculty of medicine (institutional research board "IRB") approved the study with IRB number [298/17-April-2024]. Informed written consent was obtained from each participant, confidentiality and personal privacy was respected at all levels of the study. The study follows the Helsinki Declaration (1975), which is the World Medical Association's guideline of ethics for research involving human subjects.

Sample size: assuming that the mean operative time \pm SD in group A (had bladder dissection before utrine incision at cesarean section for placenta accreta) vs group B (had bladder dissection after closing uterine incision & just before clamping uterine for cesarean hysterectomy). Was 139 \pm 27 vs 166 \pm 33, so the total sample size will be 40 patients (20 patients for each group) using open epi info, with power of test 80% & CI 95%.

Inclusion criteria: all pregnant females with placenta accrete spectrum diagnosed by ultrasound criteria and Doppler with the following inclusion criteria gestational age 36 weeks or more from the first day of LMP and confirmed by US with viable fetus and normal CTG. patient assigned for elective cesarean hysterectomy. Patient with previous 3 cesarean section or less.

Exclusion criteria: Primi gravida diagnosed with morbidly adherent placenta, morbidly adherent placenta at upper uterine segment, patient who are haemodynamically unstable before skin incision (admitted with severe bleeding, operated as an emergency,

coagulation defect, hemoglobin <9), if placenta completely separated, patient with previous history of bladder injury, evidence of placental invasion of uterine serosa (placenta percreta) at time of surgery and intraoperative findings (massive pelvic adhesion obliterating the ureterovesical pouch, presence of pelvic mass that needs intervention).

Patient diagnosed with placenta accrete spectrum by ultrasound criteria and Doppler was allocated randomly to 2 equal groups:

Group A: 20 cases we dissect bladder before uterine incision.

Group B: 20 cases we dissect bladder after closing uterine incision and just before clamping uterine artery for cesarean hysterectomy.

Randomization was conducted using a computer-generated table of random numbers with allocation concealment. Allocation concealment was done using serially numbered closed opaque envelopes. Counseling for participation was done before recruitment. Once allocation has been done, it could not be changed.

Every woman had her entire medical history which included her name, taken. age. socioeconomic position, place of residence, occupation, and any unique medically significant habits, like smoking. Evaluation of the fundal level, presentation, position, uterine tenderness, uterine tone, presence or absence of uterine contraction or painful scar, and auscultation of the fetal heart sound (FHS) are all included in the general examination. Blood group and Rh type, complete blood picture (hemoglobin level, hematocrits, platelets count), liver function test (liver transaminase level, serum albumin level), kidney function test (serum creatinine and blood urea nitrogen), and daily transabdominal ultrasound examination are examples of laboratory tests.

Sonographic findings of placenta accreta spectrum:

Diagnosis of placenta accreta spectrum depends on these finding[9]: Any portion of the echolucent region between the uterus and placenta that is obscured is referred to as

obliteration of the clear space. Placental lacunae, which are several linear, irregular vascular gaps inside the placenta, are visualized. When the posterior bladder walluterine contact is disrupted, the typical continuous echolucent line appears as a series of dashes, a condition known as abnormal serosa. The bladder is being invaded by focal exophytic tumors. Less than 1 mm of myometrial thickness and Color Doppler US finding Bridging vessels, placental lacunae feeder vessels, hypervascularity of serosabladder interferance and subplacentae hypervascularity.

Operation:

Cesarean deliveries was done under general anesthesia as it would be better for patients control of general parameters where along time is expected with more manipulation of the bowel or expected urinary tract complication. Laparotomy for cesarean section is performed via a longitudinal abdominal incision. Evaluation degree of placental invasion to uterine serosa (either placenta accreta, increta and exclusion of percreta), massive pelvic adhesion obliterating the ureterovesical pouch and presence of pelvic mass. The neonate is delivered through a longitudinal or transverse incision at the uterine fundus at a site sufficiently distant from placenta. The umbilical cord should be ligated and cutted. If placenta doesn't separate the uterine wound is sutured and closed with the placenta inside (MAP is confirmed). Cut and ligate bilateral round ligaments, ligaments of the ovaries and the fallopian tubes. Incision of the Anterior and Posterior borders of the Broad Ligament and identification of the Ureter. Cutting and Ligation of the Uterine Artery and Vein and Cutting and Ligation of the Cardinal Ligament. Cutting and Suture of the Uterosacral Ligament and vesicouterine ligament.

Maneuver of bladder dissection:

In loose areolar tissue, we begin from the lateral to the medial to the round ligament (lateral limit of the vesico-vaginal gap). Laterally, the uterine vessels were identified, the peritoneum was lifted with an artery, the

medially superior peritoneum was sharply dissected till it reached the bloodless plain (median raphe), and then a sweeping motion performed from upper downward. was Complete dissection was carried out as soon as the plain of cleavage appeared, after the evident development of the lateral gap. After doing the identical procedure on the opposite side, we finished the dissection medially. Selective ligation of bleeding neovessels was used to achieve hemostasis. Group A: In order to improve the line of cleavage, we dissect the bladder in 20 patients before making a uterine incision higher than the previous scar, starting from the lateral to the medial. Group B: After closing the uterine incision and right before clamping the uterine artery for a cesarean hysterectomy, we dissect the bladder from lateral to medial in 20 individuals.

Postoperative care involves several key components, including analgesia management, the administration of antibiotics, checking drains, nutritional support, glucose control, thromboembolism prophylaxis, early mobilization, and urinary drainage, along with discharge counseling. The primary outcomes measured include the operative time, defined as the duration from skin incision to skin closure, and the estimation of blood loss, which was calculated using the Gross formula:

Total blood loss = PBV × (Hctpre-Hctpost)/Hctave.

PBV = predicted blood volume.

Hctpre = the initial preoperative hematocrit level.

Hctpost = the lowest postoperative hematocrit level during hospitalization or the lowest postoperative hematocrit prior to blood transfusion.

Hctave = the average of the Hctpre and Hctpost.

The PBV was assessed according to the formula of Nadler [10]:

PBV (mL) = $k1 \times height$ (m) + $k2 \times weight$ (kg) + k3

k1 = 0.3669, k2 = 0.03219, and k3 = 0.6041 for men.

k1 = 0.3561, k2 = 0.03308, and k3 = 0.1833 for

women.

If a reinfusion or an allogeneic transfusion is performed, the volume transfused should be added when calculating total blood loss.

Secondary outcome; Estimation of blood and blood product transfusion. Neonatal outcomes including APGAR score, admission to the neonatal intensive care unit (NICU), and neonatal deaths were also evaluated. Admission intensive care unit (ICU). Any operative complication including morbidity and mortality.

Statistical analysis:

SPSS v28 was used to conduct statistical analysis (IBM Inc., Armonk, NY, USA). The mean and standard deviation (SD) of the quantitative variables were displayed, and the two groups were compared using the unpaired Student's t-test. The Chi-square test was used to analyze the qualitative variables, which were expressed as frequency and percentage (%). According to the type of data qualitative represent as number and percentage quantitative continues group represent by mean \pm SD, the following tests were used to test significance;. differences for Differences between quantitative independent multiple by independents sample t test (for normally distributed data) and Mann Whitney test (for not normally distributed data) were used, Oneway ANOVA test (F) was used to test differences when more than two independent groups were present and variances were equal, while Kruskal-Wallis test (KW) was used when equal variances were not present. there are two assumptions for ANOVA that keep showing up - homogeneity of variance and normality. Homogeneity of variance is the assumption that each population mean has the same variance the assumption of normality means that the populations that each group is drawn from have normal distributions. Together, these two assumptions assume that for ANOVA, every sample is drawn from a normal distribution with the same population variance, even if the population means aren't the same Logistic regression useful in the prediction of the presence or absence of an outcome based on a set of independent variables. It is similar to a linear regression model but is suited when the dependent variable is qualitative (categorical). Statistical significance was defined as P value < 0.05.

RESULTS

Table (1) showed that there was a statistically insignificant difference between group A & group B as regards (Age per year, BMI), p>0.05. there was a statistically insignificant difference between group A & group B as regards, (gestational age at delivery per week, number of previous C/S and Type of morbidly adherent), p>0.05. Table (2) showed that there was significant shorter operation time and significant less blood loss in group A than group B, p<0.001. The findings of the current study revealed a lower incidence of urinary tract injuries in Group A (5%) compared to Group B (15%), with a calculated relative risk of 0.33. This indicates that performing bladder dissection prior to the uterine incision may reduce the risk of
 Table (1): demographic data of studied groups:

bladder injury by approximately 67%. However, this difference did not reach statistical significance (p>0.05). Table (3) showed that there ere was significant less amount of whole blood transfusion ,packed RBCs transfusion and significant less amount F, F plasma in group A than group B ,p<0.001. There was no significant difference in Percent of ICU admission of both groups, p>0.05 The operation was done without complication in both groups. Table 4; showed that there was no significant difference HCT between studied groups preoperative, p=0.949. There was a significant more decline in HCT value postoperative in group B than group A. Table 5; showed that there was a statistically insignificant difference between Group A & Group B as Regard, neonatal APGAR score, their admission in NICU, neonatal survival in both groups.

Parameter	Grou n. 20	p A	Gr n.	oup B 20	t-test	p-value
Age per years Mean ±SD range	35.2± 30-39	-2.8	33 30	.7±2.3 -38	1.778	0.083
BMI (kg/m ²) Mean ±SD range	28.3±3.2 25-35		27.9±2.7 25-35		0.37	0.71
Gestational age at delivery per weeks Mean ±SD range	37.3± 36+4	-0.45 - 37+6	37 36	.5±0.4 +5 - 38	1.84	0.073
	Grou No.	рА %	Gr N o.	oup B %	χ²	p-value
number of previous C/S One Two three	2 10 8	10.0 50.0 40.0	1 10 9	5. 0 50 .0 45 .0	0.392	0.822
Type of morbidly adherent • accreta(total) • increta	16 4	80.0 20.0	15 5	75 .0 25	f	0.99

t:student't test χ 2 Chisquare test

Data are expressed as mean ± standard deviation (SD), range

P value \geq 0.05: no significan

Table (2): Comparison of operative time/min, estimation of blood loss (ml), ureteric & bladder injury in both groups:

Parameters	Group A n. 20	Group B n. 20	t-test	p- value
Operative time/min				
Mean ±SD	123.5±13.6	153.4±14		0.0001
range	100-155	128-180	6.84	**
Estimation of blood loss (ml)				
Mean ±SD	1722.5±214.3	2555±585.3		0.0001
range	1500-2300	1700-3400	5.97	**
Bladder injury				
YES	1(5%)	3(15%)		
NO	19(95%)	17(85%)	f	0.605
Ureteric injury				
	0	0		

t:student't test, : Fisher exact test, ** *P* value < 0.001: highly significant, *P* value \ge 0.05: no significant

Table (3): Comparison of Whole blood transfusion(pack), RBCs, F.F plasma transfusion and postoperative complication in both groups.

Parameters	Group A n. 20	Group B n. 20	t-test	p-value
Whole blood transfusion(pack) Median (range)	2(2-3)	3(2-4)	3.81	0.0001**
RBCs Median (range)	2(1-3)	4(1-6)	3.70	0.0001**
F.F PLASMA Median (range)	0(0-1)	1(0-2)	3.56	0.0001**
ICU admission Yes No	3(15.0) 17(85.0)	6(30.0) 14(70.0)	f	0.451
Postoperative complication No	0.0	0.0	-	-

u:Mann whitnney test, : fFisher exact test, ** P value < 0.001: highly significant, , P value ≥ 0.05 : no significant

Parameters	Group A n. 20	Group B n. 20	t-test	p-value
Hct level pre- operative				
Mean ±SD	34.8 ± 2.5	34.7±2.7		
range	29.3-41.5	29.3-38.8	.065	0.949
Hct level post- operative				
Mean ±SD	27.7±2.4	24.8±2.6		
range	24-34.5	20.4-28.4	3.673	0.001*
Percent of HCT difference Mean ±SD	20.3±4.7	28.4±5.9		0.0001*
			4.81	*
Paired t				
P(compare before	17.1	18.4		
&after)	0.0001**	0.0001**		

Table (4): Comparison of Hct level pre& post -operative in both groups :

t:student't test , : *P value < 0.05: significant, **P value < 0.001: highly significant P value \geq 0.05: no significant, % of difference= (after value – before value) / before value) * 100

Table (5): Comparison of APGAR score, admission in NICU, neonatal:

Parameters	Group A n. 20	Group B n. 20	p-value
APGAR score	3(15%)	2(10%)	0 99
≤7 ≤7	17(85%)	18(90%)	0.77
Admission in NICU YES NO	3(15%) 17(85%)	2(10%) 18(90%)	0.99
Neonatal survival Yes	20(100%)	20(100%)	-

Fisher exact test, *P* value ≥ 0.05 : no-significant

Volume 31, Issue 6, June. 2025



Figure 1: Consort flow chart



DISCUSSION

The results of the present study showed that there was a statistically insignificant difference between group A & group B as regarded, (age per year, BMI, gestational age at delivery per week, past obstetric history, parity, number of previous C/S and type of morbidly adherent).

In comparison between 2 groups regarding operative time we found that there was significant decrease in the operative time in group A compared to group B. These findings are consistent with those reported by Mitric et did planned Caesarean al. [11] who hysterectomy for PAS with surgical approach involves a midline skin incision, high midline hysterotomy, a rapid single-layer uterine closure with no placental removal attempt. constant cephalad uterine traction, and liberal choice of subtotal hysterectomy. The mean operative time was 112 ± 49 minutes.

This come in agreement with **Morsi et al., [8]**, when bladder dissection was performed before and after uterine incision in a cesarean section for a morbidly adherent placenta, the mean operative time for group A (dissected before uterine incision) was 139.67+71.79 minutes, while group B's mean operative time was 166.57+85.88 minutes, with no statistically significant difference.

According to the current findings, there was a substantial difference in the mean blood loss between groups A and B. From our point of view, this could be explained by the fact that the dissection of the urinary bladder before uterine incision allows for identification and ligation of any bleeding vessels in the lower uterine segment before the uterus is opened. This can help minimize blood loss during the procedure.

In Egypt, several previous studies have reported findings that align with those of the current study. **Morsi et al.** [8] found a statistically significant difference between Group A and Group B, with a relatively lower mean estimated blood loss of 1742.10 mL. Similarly, *Mitwaly and Abbas* [12] recruited their study for bladder dissection before uterine incision and delivery. The estimated blood loss was (1600 ± 400) ml blood.

Saha et al.[13] conducted his study on 78 women who underwent cesarean hysterectomy for placenta accreta spectrum disorder using the "bladder-first approach" they reported that this approach reduces hemorrhage and bladder injury during cesarean hysterectomy in placenta accreta spectrum disorder, with no adverse effect on neonatal outcome. Their mean blood loss was (1563±1063).

In contrast to the findings of the present study, El-Desouky et al. [14] reported differing study demonstrated results. Their that performing bladder dissection after fetal delivery was associated with a more favorable outcome in terms of reducing blood loss, with a reported mean estimated blood loss of 2654.12 \pm 1412.48 ml. This was attributed to the fact that dissection of the urinary bladder before uterine incision takes more time due to stretching of the lower uterine segment with adherent placenta.

In the present study, showed that Group A required significantly lower volumes of whole blood, packed RBCs, and FFP compared to Group B (p < 0.001). The decreased intraoperative blood loss resulted in decrease in the blood transfusion amount, bladder injuries, time of operation and post-operative delay in hospital and ICU admission. Similarly a recent study by Morsi et al., [8] reported comparable results, demonstrating that need for blood Transfusion; where Group B had higher percentage of Blood transfusion than Group A (76.7% Versus 33.3% (P<0.01)) respectively. Also Saha et al.[13] found that mean No. of RBC transfused was 2.08±2.10 (units) which is similar to our finding.

Mitwaly and Abbas[12] reported that the mean volume of intraoperative packed red blood cell (RBC) transfusion was 1800 ± 320 mL, with hysterectomy performed in only 10% of cases. Additionally, **Abd Elsalam et al.** [15] found that 87.6% of their study population required blood product transfusion, with a mean transfusion volume of 8.24 units.

There was no significant difference observed in preoperative hematocrit (HCT) levels between the two groups (p = 0.949). However, a significantly greater postoperative decline in HCT was noted in Group B compared to Group A (p = 0.0001). **Morsi et al. [8]** reported no statistically significant differences between Group A and Group B in pre- or postoperative hematocrit (HCT) or hemoglobin (Hb) levels (all p > 0.05).

The findings of the current study revealed a lower incidence of urinary tract injuries in Group A (5%) compared to Group B (15%), with a calculated relative risk of 0.33. This indicates that performing bladder dissection prior to the uterine incision may reduce the risk of bladder injury by approximately 67%. However, this difference did not reach statistical significance

Similarly, **Morsi et al.** [8] demonstrated that bladder dissection performed prior to uterine incision was associated with a significantly lower rate of urinary tract injury (6.7%) compared to 20% in the group where bladder dissection was not undertaken before the incision

Conversely, **El-Desouky et al.** [14] found that situations where bladder dissection was done after the uterine incision had a lower incidence of bladder injury (8%) than cases where it was done beforehand (20%).

In this study there was no significant difference in Percent of ICU admission of both groups, p>0.05 and the operation was done without complication in both groups.

Regarding neonatal APGAR score, their admission in NICU and neonatal survival in both groups. In our study there was a statistically insignificant difference, p>0.05 between Group A & Group B.

Lastly, there was no maternal morbidity and mortality in our cases, this related to increased medical care in university hospital tertiary center, preoperative diagnosis, and preoperative preparations, with adequate blood replacement, high experienced surgical team and availability of resources.

Limitations

This study is conducted in single-center study not multi-center study include relatively small sample (40 patients), which may limit the generalizability of the findings to larger populations or different healthcare settings. Short Duration of Follow-up: The study focused primarily on intraoperative and immediate postoperative outcomes. Long-term maternal and neonatal outcomes were not evaluated.

Conclusion

Conclusion that during surgical management of morbidly adherent placenta by cesarean hysterectomy, bladder dissection before uterine incision and fetal delivery leads to less bleeding, subsequently less blood transfusion, reduced bladder injuries and less operative time. So, it is better to do bladder dissection before fetal delivery to avoid complication as much as possible.

Funding

This research received no fund by any company, committee, or institute.

Conflict of Interest: None

REFERENCES

1- Vahdani FG, Shabani A, Haddadi M, Ghalandarpoor-Attar SM, Panahi Z, Hantoushzadeh S, et al. Novel markers of Doppler ultrasonography in the placenta accreta spectrum to predict complications. J Turk Ger Gynecol Assoc. 2023; 24(4):228.

2- Jauniaux E, Ayres-de-Campos D, Langhoff-Roos J, Fox KA, Collins S, FIGO Placenta Accreta Diagnosis and Management Expert Consensus Panel. FIGO classification for the clinical diagnosis of placenta accreta spectrum disorders. Int J Gynaecol Obstet. 2019;146(1):20-4. doi:10.1002/ijgo.12761

3- American College of Obstetricians and Gynecologists, Society for Maternal-Fetal Medicine. Obstetric care consensus no. 7: placenta accreta spectrum. Obstet Gynecol. 2018;132(6):e259-75.

4- Silver RM, Branch DW. Placenta accreta spectrum. N Engl J Med. 2018;378(16):1529-36.

5- Carrillo A, Chandraharan E. Placenta accreta spectrum: Risk factors, diagnosis and management with special reference to the Triple P procedure. Womens Health (Lond), 2019;15, 1745506519878081.

6- Ulkumen BA, Pala HG, Baytur Y. Prenatal Diagnosis of Placenta Percreta with Ultrasound. International Journal of Women's Health and Reproduction Sciences Vol. 2, No. 5, Autumn 2014, 320–322 http://www.ijwhr.net doi 10.15296/ijwhr.2014.53 ISSN 2330-4456

7- Eller Å, Porter T, Soisson P, Silver R. Optimal management strategies for placenta accreta. BJOG. 2009;116(5):648-54.

8- Morsi H, Monir HHM, Borg TF, Amr E-S, Elsenity MA. Comparison between bladder dissection at the beginning of cesarean section for morbidly adherent placenta and between delaying dissection until planning for cesarean hysterectomy. Egypt J Hosp Med. 2025;98:764-71.

9- Arakaza A, Zou L, Zhu J. Placenta Accreta Diagnosis Spectrum Challenges and Controversies in Current Obstetrics: A Review. Int J Womens Health. 2023 Apr 20;15:635-654. 10- Schwaiger M, Edmondson SJ, Merkl M, Gary T. Zemann W, Wallner J. Determination of blood loss in bimaxillary surgery: does the formula and the time point affect results? Int J Oral Maxillofac Surg. 2022 **11- Mitric C, Desilets J, Balayla J, Ziegler C.** Surgical Management of the Placenta Accreta Spectrum: An Institutional Experience. **J Obstet Gynaecol Can. 2019;** *41*(11), 1551-7.

12- Mitwaly ABA, Abbas AM. Sequential surgical steps for conservative management of morbidly adherent placenta: case series. Thai J Obstet Gynaecol. 2016;24:136-40.

13- Saha PK, Bagga R, Singla R, Arora A, Jain V, Suri V et al. Up-front dissection of the uterovesical space or "bladder-first approach" reduces hemorrhage and bladder injury during hysterectomy for placenta accreta spectrum: reconfirmed in 78 more cases in a prospective single-center study. *AJOG Glob Rep.* 2025; *5*(1), 100425.

14- El-Desouky F, El-Zayadi A, Ragab A, Thabet M. Prognostic value of the proper timing of bladder dissection in surgical management of placenta accreta spectrum. A randomized controlled trial. Egypt J Fertil Steril. 2023;27(4):65-74.

15- Abd Elsalam ES, Abouelnour AA, Ahmad AM, Abd Elhady RM. Maternal and neonatal outcomes of morbidly adherent placenta in Ain-Shams University Maternity Hospital from 2012 to 2017. Evid Based Womens Health J. 2022;12(1):22-35.

Citation

Abd Elhameid, A., Ibrahem, M., Mohammed Alfiqi Alshireef, A., Abd-Alkader, A. Effect of Bladder Dissection Timing During Cesarean Hysterectomy for Morbidly Adherent Placenta on Maternal Outcomes. *Zagazig University Medical Journal*, 2025; (2446-2456): -. doi: 10.21608/zumj.2025.380092.3931