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Research Article

Hysteroscopic evaluation of the cervix and uterine cavity after Cervical Advancement in cases of placenta accreta spectrum (intrventional study)

Mohamed Salah Abd El Hameed[1], Reham Refaat Taha[1], Mohamed Hassan Abd El Zaher[1] and Ayman Nady Abdel Megeed[1]

[1] Department of Obstetrics and Gynecology, Faculty of Medicine, Minia University, Minia, Egypt

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Abstract

Background: Placenta accreta spectrum (PAS) diseases are primarily linked to a prior cesarean section (CS). The objective of this study was to assess the cervix, uterine cavity for the existence of postoperative sequelae in cases of PAS following cervical advancement using a hysteroscope. **Methods:** This interventional study was carried out on 43 patients aged from 19 to 39 years old, female, with history of Cervical Advancement of placenta accreta (either symptomatic or not) and females seeks fertility. Ultrasonography and hysteroscopy are assessed to all patients. **Results:** There was a significant negative correlation between the development of cervical stenosis and scar thickness, whereas There was a negative correlation relationship between cervical stenosis and the thickness of the endometrium. A strong positive correlation was seen between the development of irregularities in the uterine cavity and the thickness of the endometrium, whereas a negative correlation was found with scar thickness. There was a strong negative correlation seen between the occurrence of scar niche and cervical length, although no significant association was found with other factors. **Conclusions:** The three most discovered abnormalities cervical stenosis, uterine cavity irregularity, and intrauterine adhesions are linked to cervical advancement. Some factors are correlated with ultrasound (US) findings including scar thickness, endometrial thickness, cervical length with uterine adhesions, uterine cavity irregularities and scar niche.

Keywords: Hysteroscopic Evaluation, Cervix, Uterine Cavity, Placenta Accreta Spectrum

Introduction

Placenta accreta is characterized by the aberrant invasion of trophoblast cells into the myometrium of the uterine wall [1]. Placenta accreta spectrum (PAS) is primarily linked to a prior cesarean section (CS) [2].

Ultrasonography is the main method used for diagnosing conditions during pregnancy. In the second trimester (20 weeks) and third trimesters (28-32 weeks), the most significant ultrasonographic finding associated with placenta accreta syndrome (PAS) is the presence of placenta previa. This condition is observed in over 80% of cases in most extensive studies [3]. Magnetic resonance imaging (MRI) is a prominent diagnostic technique [4].

Antepartum and postpartum hemorrhage are the most prevalent maternal complications linked to the PAS. These factors can be linked to intraoperative hypoperfusion, transfusion, post-resuscitation fluid overload, and disseminated intravascular coagulopathy (DIC). In one research, 80 percent of patients need transfusion, whereas 28 percent of individuals experienced DIC.

An further significant issue arises from injury to adjacent structures. Partial cystectomy may arise during the operation. Typically, the

placenta is positioned at the front and may thus infiltrate the bladder. In this scenario, cystectomy may be required to isolate the placental tissue. Ureteral damage can also arise as a result of the technical challenges associated with a caesarean hysterectomy [6].

After the diagnosis is confirmed, it is advisable to refer the patient to a specialized medical facility with skilled surgeons and a multidisciplinary team who have expertise in handling such intricate cases. This facility should have immediate access to blood products, interventional radiology services, an intensive care unit, and a neonatal intensive care unit in order to maximize the chances of a successful outcome [7].

It is advisable to choose for elective delivery between 35 and 37 weeks in order to strike the optimal balance between the potential dangers of premature birth and the possibility of an unplanned emergency delivery [8]. If the patient's condition is stable and there is no ongoing bleeding, she can be treated as an outpatient with a well-defined plan for delivery in case of an emergency [7].
The advantage of this method is its overall reduction of bleeding; however, the bleeding may persist following hysterectomy [9].

Hysteroscopy is considered the most reliable and widely accepted method for assessing the uterine cavity and cervix. The operation can be conducted either in an office setting or as a day care procedure under general anesthesia. Hysteroscopy is employed to assess the endocervical canal, endometrial cavity, and tubal ostia [10].

The objective of this study was to assess the cervix, uterine cavity for existence of postoperative complications in cases with placenta accrete spectrum following cervical advancement using a hysteroscope.

Patients and Methods

This interventional study was carried out on 43 patients aged from 19 to 39 years old, female, with history of Cervical Advancement of placenta accreta (either symptomatic or not) and females seeks fertility. The study was done from September 2022 to September 2023 after approval from the Ethical Committee Medical Researchers at Minia University Maternity Hospital, Minia, Egypt. An informed written consent was obtained from the patients.
Exclusion criteria were any contraindication for hysteroscopy and incomplete data in the medical records.

All patients were subjected to: history taking and clinical examination including [general and PV and speculum examination with stress on: Size of uterus by bimanual examination, mobility of the uterus vaginal fornices, laboratory investigations [complete blood count (CBC), prothrombin time (PT), activated Partial thromboplastin clotting time (APTT) and blood grouping (ABO)] and ultra-sonography done preoperative for observing; size of the uterus, cavity of the uterus and adenexia.

Hysteroscopy was done within 6 months postpartum;
The procedure was performed after the completion of the menstrual cycle in the case of a woman who was menstruating, and after ruling out pregnancy in the case of a woman experiencing absence of menstruation. Hysteroscopy was conducted using established methods.

Following the elucidation of the protocol, the patient was instructed to void. The patient was positioned in lithotomy. Normal saline was utilized as a distention medium for uterine distension, coupled to the inflow channel on the sheath. A vaginal disinfection with a 10% povidine iodine solution was performed without the use of a speculum. The hysteroscope's tip was placed at the vaginal introitus, with the labia gently parted using fingers. The vaginal cavity was expanded using a solution of saline. The scope was inserted into the posterior fornix to easily observe the portio and then moved slowly forward to locate the external cervical os.

Upon becoming apparent, the scope was cautiously advanced first to the internal os and subsequently to the uterine cavity, minimizing any potential harm. The uterine cavity was thoroughly examined using a panoramic view obtained by rotating the fore-oblique scope. The purpose was to detect any abnormalities in the uterine walls, as well as the right and left

tubal ostia. The following data was recorded: the status of the cervix (whether it was stenosed or not), the regularity of the uterine cavity (presence or absence of elevation and depression), the presence of intrauterine adhesions, scar niche, and endometrial scarring.

Statistical analysis

The statistical analysis was conducted using SPSS v26 software (IBM Inc., Chicago, IL, USA). The normality of the data distribution was assessed using the Shapiro-Wilks test and histograms. The presentation of quantitative parametric data included the mean and standard deviation (SD). The presentation of the quantitative non-parametric data included the use of the median and interquartile range (IQR). The qualitative variables were shown in terms of frequency and percentage (%).

Results

The mean age was 31.19±4.8. 40(93%) was housewife, 3(7%) was employee. 6(13.95%) was underweight, 20(46.51%) with ideal BMI, 10(23.25%) were overweight and 7(16.27%) were obese. The mean parity was 4.16±1.17, the mean number of previous cs was 3.02±1.2 and 9(20.9%) were urban. **Table 1**

Table 1: Demographic characters of studied sample and operative details

		N=43
Age		31.19±4.8
Occupation	**housewife**	40(93%)
	Employee	3(7%)
Parity		4.16±1.17
BMI	**Underweight**	6(13.95%)
	Ideal	20(46.51%)
	Overweight	10(23.25%)
	Obesity	7(16.3%)
Number of previous CS		3.02±1.2
Residency	**Rural**	34(79.1%)
	Urban	9(20.9%)

Data are presented as mean ± SD or frequency (%). BMI: Body mass index, CS: Cesarean Section.

The mean cervical length by U/S was 2.658±0.33, the mean endometrial thickness was 5.1349±0.60114. The mean scar thickness was 3.0977±0.31281. The hysteroscopic findings of examined patient; 11.6% showed intrauterine adhesions, 4.7%with endometrial scaring, 16.27% with Uterine cavity irregularity. 20.9% with scar niche and cervical stenosis in 69.8%. **Table 2**

Table 2:US findings and hystroscopic examination of studied sample

US findings		
Cervical length (mm)		2.658±0.33
Scar thickness (mm)		3.0977±0.31281
Endom. Thickness (mm)		5.1349±0.60114
Hysteroscopic examination		
Uterine cavity		
Intrauterine adhesions	**Mild**	3(7%)
	Moderate	1(2.3%)
	Sever	1(2.3%)
Endometrial scaring		2(4.7%)
Uterine cavity irregularity		7(16.27%)
Scar Niche		9(20.9%)
Length of niche(mm)		15±2.1
Shape	**Triangular niche**	6(14%)
	Semicircular niche	3(7%)
Apparently normal		20(49.66%)
Cervix Stenosed		30(69.8%)

Data are presented as mean ± SD or frequency (%), US: ultrasound.

There was insignificant positive correlation between development of cervical stenosis and duration of CS, while there was statistically significant negative correlation between development of cervical stenosis and scar thickness. there was insignificant negative correlation between duration of CS and scar thickness , endometrial thickness by US. While there was positive correlation between development of intra uterine adhesions and duration of CS. There was insignificant positive correlation between development of intrauterine adhesions and duration of CS. There was insignificant positive correlation between development of scar niche and duration of CS. **Table 3**

Table 3: correlation between cervical stenosis and duration of CS and U/S finding, between duration of CS and US findings and between hysteroscopic findings and duration of CS

	r	**P value**
Cervical stenosis and duration of CS , scar thickness		
Duration of CS (min)	**0.135***	0.323
Scar thickness (mm)	**-0.289***	**≥0.001****
US findings and Duration of CS		
cervical length	**-0.125-**	0.424
scar thickness.	**-0.114**	0.467
endometrial thickness	**-0.192**	0.216
Hysteroscopic findings and duration of CS		
Adhesions	0.259	0.058
Uterine cavity irregularity	**0.056**	0.681
Scar niche	**0.206**	0.130

r: Pearson coefficients, * significant p value <0.05, CS: Cesarean Section, US: ultrasound.

There was insignificant negative correlation between development of intrauterine adhesions and cervical length, scar thickness while there was insignificant positive correlation with endometrial thickness. There was significant Negative correlation between development of uterine cavity irregularities and endometrial thickness ,there was significant negative correlation with scar thickness and Insignificant positive correlation with cervical length. There was significant negative correlation between development of scar niche and cervical length while there was insignificant positive correlation with endometrial thickness. **Table 4**

Table 4: correlation between hysetroscopic findings (intra uterine adhesions, uterine cavity irregularities and scar niche) and us findings.

	Intrauterine adhesions and US findings	
	r	**P value**
Cx length	**-0.030**	0.824
Scar thickness(mm)	**-0.148**	0.271
Endom. Thickness(mm)	0.213	0.104
Uterine cavity irregularities and us findings		
Cx length	**0.056**	0.675
Scar thickness(mm)	**-0.29**	**0.03***
Endom. Thickness(mm)	-0.449	**≤0.003***
Scar niche and us findings		
Cx length	-0.267*	0.045
Scar thickness(mm)	-0.158	0.239
Endom. Thickness(mm)	0.029	0.822

r: Pearson coefficients, * significant p value <0.05 and highly sign if ≤0.001CS: Cesarean Section, US: ultrasound.

Discussion

In line with our study, Mousa et al., (2022) [11] investigated the effects of the cervical advancement method and examined the cervix in patients handled with this approach at El Minia University. The study included a short-term follow-up period. A 3-month follow-up was conducted for all women who were diagnosed with placenta previa or accreta. A total of 70 individuals were identified with placenta accreta and underwent the cervical advancement method. In relation to the cervix fornices, 19 cases (28.8%) have intact fornices that can be palpated, while 47 cases (71.2%) have partially or completely obliterated fornices. This finding aligns with our study, which indicates that the ectocervix was preserved and palpable in 14 cases (32.55%), preserved but not palpable in 30 cases (67.45%), and the fornices were obliterated in 30 cases (67.45%).

Upon careful analysis of the group under study, it was found that 57 cases (86.4%) had no trouble with sound entering through the cervix, while 9 cases (13.6%) experienced difficulty. This finding contrasts with our own study, which showed that 13 cases (30.2%) had no trouble with sound entering, while 30 cases had difficulty with the hysteroscope sheath.

According to our research Mousa et al., (2022)[11], observed a notable disparity in the cervical length and the inner to inner width of the cervical canal. The average cervical length is 2.6±0.6 cm, and the average inner to inner diameter of the cervical canal is 0.7±0.8 cm. The results of our study indicate that the average cervical length measured by ultrasound was 2.658 ± 0.33, the average endometrial thickness was 5.1349 ± 0.60114, and the average scar thickness (in millimeters) was 3.0977 ± 0.31281.

In line with our research, ra prevalence of 16.27% with uterine cavity irregularity and 11.6% with intrauterine adhesions,Saker et al., (2021)(12)revealed that 15.0% had uterine cavity irregularity, while 15.0% had intrauterine adhesions.

In contrast to our study, Saker et al., (2021)[12] discovered that 30.0% of participants had cervical stenosis, 10.0% had endometrial scarring, and 5.0% had scar niche as observed during hysteroscopy. The findings of our study revealed that 69.8% of the participants had cervical stenosis, 4.7% had endometrial scarring, and 20.9% had a scar niche. This discrepancy may be attributed to the specific cohorts we examine, focusing on cases with cervical advancement rather than encompassing all forms of conservative therapy.

In contrast to our study, Khallaf et al., (2022)[13] discovered that out of 40 people who underwent

uterine preservation operations for MAP, 36 patients (90%) had a seemingly normal uterine cavity during hysteroscopic exams, whereas 4 participants (10%) had an aberrant uterine cavity. Our investigation revealed a seemingly normal uterine cavity in 29 out of 43 participants (67.44%), while an aberrant cavity was seen in 14 out of 43 participants (32.56%). The hysteroscopic examination revealed endometrial polyps in 2 out of 40 individuals (5%) and scar niches with unilateral tubal ostial blockage in 2 out of 40 participants (5%). Our study found that 20.9% of participants had a scar niche. This discrepancy may be associated with additional parameters such as age, BMI, and the kind of operation.

In contrast to our results, Saker et al., (2021)[12] demonstrated a statistically significant positive correlation (correlation coefficient r = 0.3, p value 0.042) between the development of cervical stenosis and endometrial thickness as measured by ultrasound. However, our study found a strong and significant negative correlation between the development of cervical stenosis and endometrial thickness.

In contrast to our results, Saker et al., (2021)[12] demonstrated a statistically significant inverse relationship between uterine cavity irregularity and duration of cesarean section (correlation coefficient r = -0.320 with p value 0.044). However, our study found no significant negative correlation between the duration of cesarean section and endometrial thickness as measured by ultrasound.

In contrast to our own results, Saker et al., (2021)[12] demonstrated a statistically significant negative correlation between intrauterine adhesions and scar thickness (correlation coefficient r = -0.470, p value 0.002). However, our study revealed an insignificant negative correlation between the development of intrauterine adhesions and cervical length, as well as scar thickness.

In a multicentric retrospective study conducted by Sentilhes et al., (2010)[14], 96 women with MAP were conservatively managed in French university hospitals. The study found that 8.3% (8/96) of women experienced severe intrauterine adhesions and amenorr,hea. In our study, 2.3% (1/43) of women showed severe intrauterine adhesions, 2.3% (1/43) showed moderate adhesions, and 6.97% (3/43) showed mild intrauterine adhesions.

Consistent with our investigation conducted by Chikazawa et al., (2018)[15]. A case classified as PAS was researched and handled using conservative care. The outcome of the treatment was reported as intrauterine. After analyzing adhesion, it was shown that Asherman's syndrome can develop following conservative therapy for placenta accreta.

The limitations of our study include a limited sample size, as well as the fact that it was conducted at a single center. It is important to note that the results may vary in different settings. Additionally, we did not have a comparison group and there was no follow-up to assess potential problems.

Conclusions

Following cervical advancement of placenta accreta, aberrant hysteroscopic findings are frequently observed for a few months following the procedure. The three most discovered abnormalities cervical stenosis, uterine cavity irregularity, and intrauterine adhesions are linked to cervical advancement. Some factors are correlated with duration of CS and US findings including scar thickness, endometrial thickness and cervical length .

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References

1. Jauniaux E, Collins S, Burton GJ. Placenta accreta spectrum: pathophysiology and evidence-based anatomy for prenatal ultrasound imaging. Am J Obstet Gynecol. 2018; 218:75-87.
2. Varlas VN, Bors RG, Birsanu S, Maxim B, Clotea E, Mihailov M. Maternal and fetal outcome in placenta accreta spectrum (PAS) associated with placenta previa: a retrospective analysis from a tertiary center. JML. 2021;14:367-432.
3. Silver RM, Barbour KD. Placenta accreta spectrum: accreta, increta, and percreta. Obstet Gynecol Clin North Am. 2015; 42:381-402.
4. D'Antonio F, Iacovella C, Palacios-Jaraquemada J, Bruno CH, Manzoli L, Bhide A. Prenatal identification of invasive

placentation using magnetic resonance imaging: systematic review and meta-analysis. Ultrasound Obstet Gynecol. 2014; 44:8-16.
5. Eller AG, Porter TF, Soisson P, Silver RM. Optimal management strategies for placenta accreta. Bjog. 2009;116:648-54.
6. Washecka R, Behling A. Urologic complications of placenta percreta invading the urinary bladder: a case report and review of the literature. J Med Case Rep. 2002;12:15-25.
7. Jauniaux E, Alfirevic Z, Bhide A, Belfort M, Burton G, Collins S, et al., Placenta praevia and placenta accreta: diagnosis and management: green-top guideline no. 27a. Bjog. 2018;126:e1-e48.
8. Bhaskaran S, Radhika A. Placenta Accreta Spectrum. Labour and Delivery: An Updated Guide. 5. 2nd ed: Springer; 2023. p. 281-301.
9. Sentilhes L, Kayem G, Chandraharan E, Palacios-Jaraquemada J, Jauniaux E. FIGO consensus guidelines on placenta accreta spectrum disorders: Conservative management. Int J Gynaecol Obstet. 2018; 140:291-8.
10. Orlando MS, Bradley LD. Implementation of Office Hysteroscopy for the Evaluation and Treatment of Intrauterine Pathology. Obstet Gynecol. 2022;140:499-513.
11. Mousa AB, Abdelhamid K, Yassien HF, AbdelMooty EA. Short term follow up for morphological cervical changes in cases of placenta accreta managed by cervical advancement as a natural tamponade. Minia J Med Res. 2022;33:9-15.
12. Saker M, Elshwaikh S, El-Dorf A, AbdAlla M. Hysteroscopic Evaluation of Uterine Cavity after Conservative Management of Placenta Accreta. J Adv Med Med Res. 2021;7:17-25.
13. Khallaf MS, Shehab MA, Abdelazim IA, Amer MI, Mohammed WE. Uterine cavity evaluation after uterine preservation surgeries for morbidly adherent placenta. Prz Menopauzalny. 2022;21:246-52.
14. Sentilhes L, Kayem G, Ambroselli C, Provansal M, Fernandez H, Perrotin F, et al., Fertility and pregnancy outcomes following conservative treatment for placenta accreta. Hum Reprod. 2010; 25:2803-10.
15. Chikazawa K, Imai K, Liangcheng W, Sasaki S, Horiuchi I, Kuwata T, et al., Detection of Asherman's syndrome after conservative management of placenta accreta: a case report. J Med Case Rep. 2018;12:344-450.