

Clinical Efficacy of Laparoscopy and Hysteroscopic Dilation and Curettage Procedure in Managing Cesarean Scar Pregnancy

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Abstract

Objective: To evaluate the success rate of laparoscopy and hysteroscopic Dilation & Curettage in treating cesarean scar pregnancy.

Methods: This cross-sectional study was carried on patients suspicious to CSP referred to Imam Khomeini Hospital, Ahvaz from Jun 2016 to March 2018. Gestational site was carefully evaluated by hysteroscopy and then curettage was carried out under laparoscopic guidance. The primary outcome in the study was time interval from treatment to hCG resolution. Moreover, the secondary outcomes were vaginal bleeding time and residual mass size.

Results: In this study, 30 women with intrauterine CSP were evaluated. Of these, 5 had live embryos and 25 had dead fetuses. The success rate of treatment was 100%. Only one patient needed to transfusion. The mean and median duration of Bhcg resolution were 30.9 and 28 days, respectively. Moreover, The mean and median duration of vaginal bleeding were 30.9 and 28 days, respectively. The mean level of residual mass was 9.8 mm³ (ranged from 1 to 25 mm³).

Conclusion: Overall, the findings of this study showed that D&C effectively treated CSP patients (100% success rate), reduced the time of Bhcg resolution and also reduced vaginal bleeding time.

Keywords: Dilation and Curettage, Ectopic Pregnancy, Cesarean, Hysteroscopy

1. Introduction

Pregnancy may be influenced by many factors (Valadbeigi et al., 2017). Ectopic pregnancy (EP) with an incidence of 1-2% of the total pregnancy is responsible for 3 to 4% of maternal deaths. In the United States, it has been reported that EP causes 31.8 deaths per 100,000 pregnancies. It is the most common cause of maternal death in the first trimester of pregnancy. Although Ep appears in the fallopian tube in more than 98% of cases, it rarely presented in other sites (inside the abdomen, ovaries, and in the cesarean section scar). Cesarean scar pregnancy (CSP) is referred to as replacement of a pregnancy product within the myometrium at the site of the previous cesarean section. In fact, CSP is due to a uterine endometrial defect, which can be caused by other reasons such as rough curettage, myomectomy, metroplasty, Hysteroscopy or manual removal of the placenta (Lin, Yang, Chi, Lian, Wang, Huang, Lu, Liu, & Qiao, 2017).

There are two types of CSP: 1- Implantation of the gestational sac (GS) in the scar and progressing towards the cervical uterus; 2- Progressing the GS to the myometrium and uterine serous. Thirty-two percent of CSP have a history of more than 2 times CS, while it can be seen even in those with a history of one previous CS. It has recently been estimated that the overall incidence of CSP is 1 per 531 pregnancies in women with CS and 4.2% of those with EP. CSP incidence is rising due to an increase in CS. CSP must be diagnosed quickly, because its life-threatening nature. It could be rupture the uterus, severe bleeding, circulatory dysfunction and maternal death (Litwicka & Greco, 2011; Petersen, Hoffmann, Larsen, & Nielsen, 2016). There are several strategies for treating CSP. In patients who are clinically stable, conservative treatments are include uterine artery embolization with methotrexate, D & C, curettage and hysteroscopy. D&C under trans-abdominal ultrasound guidance is the common procedure in treating CSP. Despite the D&C advantages including simple, low-cost, and well-therapeutic effect, it carried series dangers such as uterine perforation, bleeding, and low success rates.

Patients treated with D&C have a longer time to resolve the ectopic mass and B-hCG, and in some cases, such as intense hemorrhage, they require laparotomy and hysterectomy (Jurkovic, Knez, Appiah, Farahani, Mavrellos, & Ross, 2016). According to some studies, hysteroscopic removal of CSP is an effective, safe, and non-invasive process. This method provides direct observation, less surgical operation, less hospitalization after surgery, and faster resolution of B-hCG levels.

Due to the low prevalence of CSP, there is no general agreement to choose the best treatment. Although studies have shown the benefits of hysteroscopy and D&C in the managing of CSP, most of them designed as case studies or case series with little sample size that reduce the reliability of their results (Litwicka & Greco, 2013). In the current study we have aimed to evaluate the success rate of hysteroscopic and D&C in treating CSP.

2. Material and Methods

2.1 Study Design

This cross-sectional study was carried on patients suspicious to CSP referred to Imam Khomeini Hospital, Ahvaz from Jun 2016 to March 2018. Inclusion criteria was confirmed diagnosis of CSP. Patients with acute severe blood loss, hypovolemic shock, renal failure, active pelvic infection and those with coagulation disorders were excluded from the study. Patients demographic informations were extracted from the files. This study was approved by the Ethics Committee of Ahvaz Jundishapour University of Medical Sciences. Prior to entering the study, patients were provided with necessary explanations. The signed informed consent was received from all participants.

2.2 Measurements

EP diagnosis was performed based on history, clinical examinations, and B-HCG level. The B-HCG serum level more than 25 IU is considered positive. CSP diagnosis confirmation was done by abdominal or vaginal ultrasonography by an expert prenatalologist. Hemodynamic factors and B-hCG serum level were checked weekly. The patients were followed-up until B-hCG resolution. Moreover, one week after treatment, residual mass size was evaluated by transvaginal sonography (TVS) (Medison Accuvix V20, Samsung, Korea).

2.3 Interventions

Initially, patients were treated by medical procedures including single or multiple dose of MTX. To cervical ripping, 400 milligrams of misoprostol suppository was administrated. Gestational site was carefully evaluated by hysteroscopy and then curettage was carried out under laparoscopic guidance.

2.4 Outcomes

The primary outcome in the study was time interval from treatment to hCG resolution. Moreover, the secondary outcomes were vaginal bleeding time and residual mass size.

2.5 Statistical Analysis

All variables were subjected to descriptive analysis including mean, standard deviation and frequency. The mean time to event was calculated by Kaplan-Meier plot. Computations were performed using SPSS version 19 software (Statistical Package for Social Service Inc., Chicago, IL, USA). The significant level for analyses assigned 0.05.

3. Results

Table 1. Patients characteristics

Variables	Median	Mean	Std. Deviation	Minimum	Maximum
Age	31.00	30.66	2.581	25.00	35.00
BhCG	2887	8176	11601	224.0	49717
Time to BhCG resolution	28.00	30.97	14.05	7.000	75.00
Time of bleeding	30.00	40.48	20.41	14.00	120.0
Gravidity	3.0	3.4	1.09	2.0	7.0
Parity	2.0	2.24	0.78	1.0	4.0
Abortion	0.0	0.31	0.66	0.0	3.0
Cesarean section	2.0	2.17	0.84	1.0	4.0
Residual Mass(mm ³)	6.0	9.8	7.4	1.0	25.0
Hospitalization	3.0	2.9	0.5	2.0	4.0

In this study, 30 women with intrauterine CSP were evaluated. Of these, 5 had live embryos and 25 had dead fetuses. Of the 5 patients with the live fetus, 3 patients were injected with one dose of MTX into the GS. The mean Gravidity and Parity levels in patients were 3 and 2 (range 2 to 7 and 1 to 4) respectively. The average abortion rate in patients was 0.3 with a maximum of 3 (Table 1). One patient was excluded during the study.

The success rate of treatment was 100%. Only one patient needed to transfusion. We have not detected any procedure related complications in the studied patients. BHcg levels strictly decreased during monitoring time in all studied patients (Figure 1).

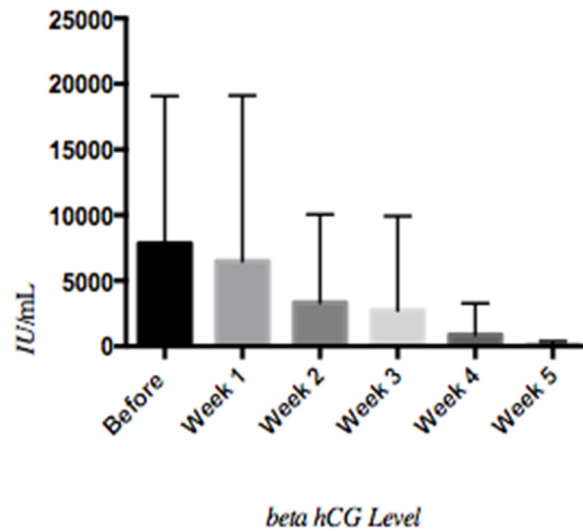


Figure 1. Changes in BHcg level

The mean and median duration of Bhcg resolution were 30.9 and 28 days, respectively. Moreover, The mean and median duration of vaginal bleeding were 30.9 and 28 days, respectively (Table 2, Figure 2). The mean level of residual mass was 9.8 mm³ (ranged from 1 to 25 mm³).

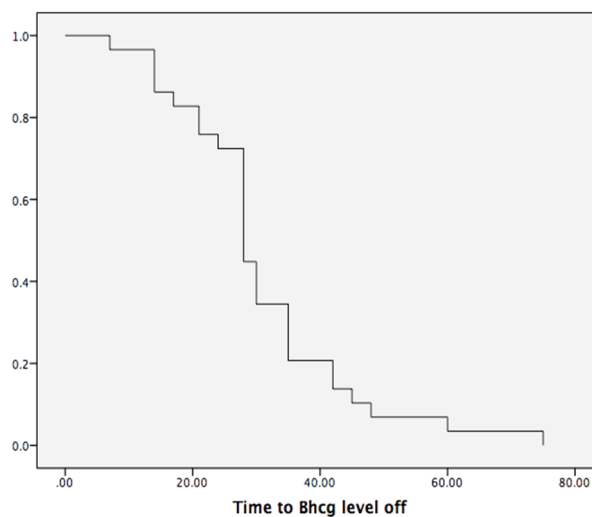


Figure 2. The Kaplan Meier chart of the Bhcg resolution time

Table 2. Outcomes assessment

Variables	Mean			Median		
	Estimate	95% Confidence Interval		Estimate	95% Confidence Interval	
		Lower Bound	Upper Bound		Lower Bound	Upper Bound
BhCG resolution time	30.966	25.850	36.081	28.000	25.375	30.625
Vaginal bleeding time	40.483	33.054	47.912	30.000	29.046	30.954

Comparison of live and dead embryos in terms of the studied factors have shown that the initial level of Bhcg, BhCG resolution time and vaginal bleeding time in patients with live fetuses were significantly higher than those with dead embryos (Table 3).

Table 3. Comparison of the studied variables between dead and live embryos

Group Statistics	Live N=5	Dead N=24	P value
Bhcg	23480±18091	4987±6736	p<0.0001
Mass	2.5±3	6.44±7.9	p=0.29
Bhcg resolution Time to Bleeding Time	47.6±20.3	27.5±9.9	p=0.002
Hospitalization	63±34.2	35.79±13.06	p=0.004
Gravity	3±0	2.8±0.54	p=0.612
Parity	3.8±0.44	3.4±1.17	p=0.484
Abortion	2.4±0.54	2.2±0.83	p=0.629
Cs	0.4±0.54	0.2±0.69	p=0.745
	2.4±0.54	2.12±0.89	p=0.719

4. Discussion

Larsen and Solomon reported the first case of CSP in 1978 (Larsen & Solomon, 1978). However, there are still no specific guideline available for the treatment of these patients. Some researchers have suggested that conservative treatment is preferred in patients with cesarean section scar greater than 2 mm, absence abdominal pain and hemodynamically stable (Ghezzi, Lagana, Franchi, Fugazzola, & Bolis, 2002; Khunda & Tay, 2007). However, recent studies have shown that surgical-based therapies, including local lesion resection of the uterus, and D&C have many beneficial effects when compared with uterine embolization. Patients undergoing surgical treatment needs significantly less blood transfusion than patients treated by uterine embolism, shorter hospitalization time, and shorter duration of time for Bhcg resolution. Wang et al. Also showed that the recovery time is much shorter when surgical treatment performed along with systemic or topical methotrexate administration (Wang et al., 2009). In addition, preservative treatments can be associated with various complications such as uterine rupture, bleeding and the need for surgery (Stevens & Ogburn, 2011; Jurkovic, Hillaby, Woelfer, Lawrence, Salim, & Elson, 2003). Surgical treatment not only results in the termination of pregnancy, but also preserves fertility, reduces the amount of bleeding and shortens the duration of hospitalization. Although abdominal surgery is an effective treatment and first choice for CSP patients, it causes severe complications (Litwicka & Greco, 2011; Chang et al., 2011; Deans & Abbott, 2010). On the other hand, hysteroscopic surgery can reduce the incidence of hemorrhage by identifying the location of the sac and the vascular distribution surrounding the gestational implant (Deans & Abbott, 2010; Wang, Yuen, Chao, Lee, Yen, & Soong, 2005; Chao et al., 2005). Laparoscopic hysteroscopy can reduce the need for bladder surgeries and reduce the amount of bleeding during surgery (Li, Guo, Han, Wang, Xiong, Shen, & Zhang, 2011). This surgery requires specialized equipment and specialized surgeons with specialized skills, which makes it difficult to do in small hospitals. Abdominal surgery is preferred in patients with confirmed uterine rupture. This can actually be the best treatment for patients with CSP, which can remove the pregnancy sac and restore uterine in order to reduce the risk of relapse (Hasegawa et al., 2005; Fylstra et al., 2002). Although this procedure causes more trauma, longer recovery time and hospitalization time (Fylstra et al., 2002). Although a general consensus suggests that D&C is not a good treatment for CSP patients, it also has a high risk of extensive bleeding and uterine rupture, but recent studies have shown that ultrasound D&C can treat nearly 100 % of patients (Liu, Sun, Cai, Xi, Yang, & Sun, 2016).

According to the findings, the average time needed to normalization the Bhcg level and stopping vaginal bleeding was 30.9 and 40.4 days, respectively. In a recent study, Liu and colleagues evaluated the success of

D&C in managing patients with CSP and found that the treatment was successful in 97.6%, and their findings showed that after three weeks of treatment Bhcg was undetectable. Also, 40 days after treatment, all patients had normal menstrual cycle (Liu, Sun, Cai, Xi, Yang, & Sun, 2016). Contrary to the current study, Liu et al. Did not prescribe methotrexate in any of the patients. Qian et al. Compared hysteroscopy with curettage in treating CSP. The researchers concluded that both D&C and hysteroscopy along with curettage are successful in treating CSP (the success rate was 95.56%) (Qian, Huang, & Zhu, 2015s).

5. Conclusion

Overall, the findings of this study showed that D&C effectively treated CSP patients (100% success rate), reduced the time of Bhcg resolution and also reduced vaginal bleeding time. The lack of allocation of comparative groups was the main limitations of this study, which is suggested to be addressed in future studies.

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Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the local ethics committee of Tehran University of Medical Sciences and with the 1964 Helsinki declaration. Written informed consent was obtained from all patients and normal individuals.

Conflict of interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

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