

The Outcome of 40 Patients Becoming Pregnancy after Conservative Treatment of Cesarean Scar Pregnancy

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Abstract

Background: The rate of uterus is successfully conserved following the treatment of scar pregnancy which is high so pregnancy outcome following caesarean scar ectopics is getting more and more attention. **Objectives:** To assess pregnancy course and outcome after conservative treatment of cesarean scar pregnancy. **Methods:** A retrospective case series of 40 patients become pregnancy after conservative treatment of cesarean scar pregnancy by Foley or Methotrexate and aspiration. Patients in present study were treated at Hung Vuong and Tu Du Hospital between 2015 and 2017. A telephone follow-up was conducted after cesarean scar pregnancy (CSP) treatment. The outcomes of these subsequent pregnancies and mode of delivery were all recorded. **Results:** In 40 pregnancies, there are 22 cases of intrauterine pregnancy with childbirth (55%); all babies were born healthy, with no complications recorded in pregnancy. 12 Women had recurrent scar ectopic (30%). There were 2 abortion cases, 2 cases of ectopic pregnancy, and 2 cases of early miscarriage. **Conclusions:** Our study shows that reproductive outcomes following treatment of caesarean scar ectopic pregnancies are favourable. The risk of recurrent caesarean scar ectopic pregnancy is a concern.

Keywords

Caesarean Scar Pregnancy, Reproductive Outcomes

1. Introduction

Embryo implantation in a previous cesarean section scar resulting in a cesarean

scar pregnancy (CSP) has extremely low incidence that is 1 per 3000 for the general obstetric population and 1 per 531 among those with at least 1 cesarean delivery [1]. It might be caused by the trophoblast which invades a defective and thinned out myometrium in a scar which is a remnant of previous cesarean section. Cesarean pregnancy is associated with catastrophic complications, such as uterine scar rupture and uncontrollable bleeding, which may lead to hysterectomy. So that it is important for early and accurate detection of such pregnancies. The majority of the CSPs have been diagnosed by transvaginal scan (TVS) in the early weeks of pregnancy that its criteria include 1) an empty uterine cavity, without contact with the sac, 2) a clearly visible empty cervical canal, without contact with the sac, 3) presence of the gestation sac with or without a fetal pole with or without fetal cardiac activity (depending on the gestation age) in the anterior part of the uterine isthmus, and 4) absence of or a defect in the myometrial tissue between the bladder and the sac. To reduce the risk of false diagnosis, additional information can be obtained by color flow Doppler to show distinct circular peri-trophoblastic perfusion surrounding the gestation sac or transvaginal three-dimensional (3-D) power Doppler ultrasound with combination of the multiplanar views and surface-rendered images which help to identify subtle anatomical details of a well-developed trophoblastic shell around the gestational sac. The opposite of diagnosis is the optimal management of cesarean scar pregnancy with no consensus. Generally, there are many conservative treatments that are to perform feticide prior to rupture, to remove the gestation sac and to retain patient's future fertility. Gestational age and viability, evidence of myometrial deficiency and clinical symptoms at presentation have been considered by various authors to determine the management. It is obvious that the women who have preserved their fertility may become pregnancy again while the high risk of recurrent CSP, uterine rupture and life-threatening complications still existed for those women, especially labor. In South Viet Nam, although majority of CSPs are case reports or small case series reported, the rate of conservative treatment appears to be increasing. This rate is 85.11% in applying the method of excision of trophoblastic tissues using either laparotomy, or 97.1% when using locally and/or systemically administered methotrexate combined with surgical sac aspiration in Tu Du and Hung Vuong Hospital. Until now, we have not followed about the chances and risks of future fertility and pregnancy of cases succeeding in preservative treatment. The aim of this study was to address this issue of what happens for pregnancies of the women with whom we successfully preserved the uterus became pregnant within 2 years after termination of the scar pregnancy.

2. Material and Methods

This is retrospective case series of 40 patients becoming pregnancy after conservative treatment of cesarean scar pregnancy. Patients in present study were treated at Hung Vuong Hospital and Tu Du Hospital between 2015 and 2017. All electronic medical records were searched for the diagnosis of cesarean scar

pregnancy according to code O008 of the International Classification of Diseases 10 (ICD 10). The cases are accepted into our study if there was present to diagnose CSP which based on transvaginal ultrasound using the following criteria: 1) an empty uterine cavity, without contact with the sac; 2) a clearly visible empty cervical canal, without contact with the sac; 3) presence of the gestation sac with or without a fetal pole with or without fetal cardiac activity (depending on the gestation age) in the anterior part of the uterine isthmus; 4) absence of or a defect in the myometrial tissue between the bladder and the sac.

In addition, these cases meet certain criteria as follows: 1) all detailed conservative treatment was reported and completing treatment course were confirmed; 2) having evidence that pregnancy remnants were no longer and 3) having evidence to confirm new gestation after cesarean scar pregnancy treatment.

We collected data from medical records including maternal age, gestational age at cesarean scar pregnancy diagnosis, conservative method. Delivery method, time interval between the scar pregnancy and subsequent pregnancy, and maternal and neonatal outcome were written down from both hospital medical records.

Our research was observational study. Before going research, we were accepted by Medical Committee of University of Medicine and Pharmacy at Ho Chi Minh City, Vietnam, and Tu Du Hospital. We used Stata software for describing and analyzing data.

3. Results

From 2015 to 2017, we searched electronic medical records with the diagnosis of cesarean scar pregnancy according to code O008 of the International Classification of Diseases 10 (ICD 10) which treated at Hung Vương hospital and Tu Du Hospital. As of June 2019, 232 patients were successfully preserved the uterus and 44 of which became pregnancy. There were 4 cases excluded from our study because not clearly evidence of having pregnancy was given. In brief, we have intercepted and analyzed 40 cases conceive after conservative treatment of cesarean scar pregnancy.

Clinical details of 40 patients when were diagnosed cesarean scar pregnancy (CSPs) are summarized in **Table 1**. Average age of patient was 35 (48 ± 4.78 years old). The gestational age at diagnosis ranged from 5 + 0 to 8 + 0 weeks (mean 5.8 ± 0.9 weeks) with an intact gestational sac. Four cases had of gestational sac containing an embryo with visible cardiac activity at 6 - 8 gestational weeks and others were classified as non-viable. HCG level was so shaky with the range from 347 to 106,247 mIU/ml. Twenty two of 40 (55.0%) women received methotrexate as the primary treatment and then had surgical sac aspiration. These cases were non-viable pregnancies that were treated successfully by systemically administered MTX followed by a dilatation and curettage under ultrasound guidance. Eighteen of 40 (45.0%) had a Foley catheter inserted and simple suction were followed. Specially, three cases of viable cesarean scar pregnancy were managed surgically without local Methotrexate.

Table 1. Clinical details of 44 cases of cesarean scar pregnancy.

Pt's file number	Pt's age	Pretreatment Pregnancy status			Treatment
		GA (wks)	hcG, mIU/ml	Fetus, FHR	
TRH150	29	5	3158	No	Foley + surgical sac aspiration
NHT112	41	6.3	83,121	Yes	Foley + surgical sac aspiration
MAD015	31	6	8897	No	MTX* + surgical sac aspiration
KIL027	26	5	1792	No	Foley + surgical sac aspiration
TRP056	36	7.1	59,110	Yes	Foley + surgical sac aspiration
NGH005	32	8.1	649	No	Foley + surgical sac aspiration
BIT020	43	6	3784	No	MTX + surgical sac aspiration
LET007	39	6	8609	No	Foley + surgical sac aspiration
NGN022	36	6	3758	No	MTX + surgical sac aspiration
OAN011	36	5	5478	No	Foley + surgical sac aspiration
CHL154	28	5	9925	No	Foley + surgical sac aspiration
HAN193	32	5	606	No	Foley + surgical sac aspiration
TRV021	37	5	3789	No	MTX + surgical sac aspiration
DUH008	36	6.1	8363	No	MTX + surgical sac aspiration
THT004	36	6	9687	No	MTX + surgical sac aspiration
CÁL016	32	6	36,406	No	MTX + surgical sac aspiration
HIH085	35	5	2255	No	MTX + surgical sac aspiration
THM046	42	6	29,529	No	MTX + surgical sac aspiration
DIT013	27	6.2	72,890	No	Foley + surgical sac aspiration
MEP017	40	5.5	3785	No	Foley + surgical sac aspiration
THN034	36	5.5	5038	No	MTX + surgical sac aspiration
PHV009	28	8	22,779	No	MTX + surgical sac aspiration
NGT003	41	5	527	No	MTX + surgical sac aspiration
MAN105	35	5	13,954	No	MTX + surgical sac aspiration
NGT006	33	5	5783	No	MTX + surgical sac aspiration
HAT038	34	5	656	No	MTX + surgical sac aspiration
NGN002	37	6.1	6015	No	Foley + surgical sac aspiration
DIN026	40	5	1254	No	MTX + surgical sac aspiration
HUN029	41	5.5	6028	No	MTX + surgical sac aspiration
THL010	44	5	2625	No	MTX + surgical sac aspiration
TRT024	40	5	3032	No	Foley + surgical sac aspiration
THN014	27	6	11,012	No	Foley + surgical sac aspiration
MIM066	29	8.3	106,247	Yes	Foley + surgical sac aspiration
HIL185	37	5	28,101	No	MTX + surgical sac aspiration
TRH057	33	6	25,834	No	MTX + surgical sac aspiration
PHH012	39	6	7348	No	Foley + surgical sac aspiration
DAT023	40	6.4	58,612	No	MTX + surgical sac aspiration
MIT082	39	8	14,796	Yes	Foley + surgical sac aspiration
NGN019	36	5	347	No	MTX + surgical sac aspiration
TRV025	36	5.5	29,854	No	MTX + surgical sac aspiration

*MTX: Methotrexate.

Pregnancy state of the patients after conservative treatment of cesarean scar pregnancy is shown in **Table 2**. The mean interval between the CSPs and subsequent pregnancy was 19.43 months (range 2.3 - 44 months) with 34/44 cases being intended pregnancy and 6/44 unintended pregnancies. Twenty six of 40 patients achieved normal intrauterine pregnancy, but 22 patients continued live pregnancy, 2 patients had early missed abortion and 2 decided induced abortion. Fourteen patients had ectopic pregnancy with 12 recurrent CSP.

Table 3 shows characteristics of 22 cases having alive fetus after conservative treatment of cesarean scar pregnancy. Maternal age smaller than 30 or larger than 39 years old was low while 59.09% of pts were from 30 to 39 years. Indications for elective cesarean section were prior cesarean section in 20 pts and emergency in 1 pts because of fetal distress. Of them, 1 case who uncomplicated placenta previa, was performed a cesarean delivery at 37 + 2 weeks in pregnancies. Median gestational ages at delivery was 38.2 ± 0.9 weeks. All neonates were in good condition, with no complications which occurred during pregnancy and surgery. Especially one case was normal delivery after labor happened naturally at 37 weeks' gestation which had not uterine rupture or blood transfusion.

Besides, there were 2 cases of early missed abortion (5%), 2 cases of ectopic pregnancy at fallopian tube (5%) and 2 cases of induced abortion (2%). One case of ectopic pregnancy tube was treated by methotrexate and one had laparoscopy removing pregnancy with whole tube. Two women received induced abortion due to unwanted pregnancy. CSP was excluded via ultrasound before termination.

The characteristics of women with recurrent CSP are shown in **Table 4**. Eleven women (27.5%) who experienced recurrent CSP were treated successfully with reservation without any severe complications. The gestational age at diagnosis ranged from 5 + 0 to 6 + 3 weeks with an intact gestational sac. These women received methotrexate combined surgical sac aspiration or Foley combined aspiration. However, there was a case which was admitted urgently in serious bleeding caused by 9 weeks CSP. Open laparotomy was performed to control gestational mass and bleeding but keeping uterus with 300 ml losing blood. Especially, one case (MIM06) had intrauterine pregnancy and recurrent CSP after treating first CSP. This woman chose induced abortion with intrauterine pregnancy.

Table 2. Pregnancy states after conservative treatment of cesarean scar pregnancy.

Characteristics	Cases (n = 40)
Time interval between the scar pregnancy	19.43 ± 15.95 (months) (min = 2.3 months; max = 44 months)
Subsequent pregnancy:	
Early missed abortion	2 (5%)
Ectopic pregnancy	2 (5%)
Recurrent CSP	12 (30%)
Induced abortion	2 (5%)
Live pregnancy	22 (55%)

Table 3. Outcome of pregnancy cases living after conservative treatment of cesarean scar pregnancy.

Characteristics	Cases (n = 22)
Maternal age	
≤30	5 (22.73%)
>30 - 39	13 (59.09%)
≥39	4 (18.18%)
Previous cesarean section	
1	13 (59.09%)
2	9 (40.91%)
Method of delivery	
Cesarean section	21 (95.45%)
Normal delivery	1 (4.55%)
Gestational age at delivery (wks)	38.2 ± 0.9
Placenta previa	1 (4.55%)

Table 4. Characteristics of 12 cases having recurrent CSPs.

Number	Pt's age	Previous CSPs				Recurrent CSPs		
		PARA	C/S (No.)	GA (wks.)	Treatment	Interval (mo.)	GA (wks.)	Treatment
TRH057	33	1011	1	6	MTX-Asp	14	5	MTX-Asp
TRT024	40	2002	1	5	MTX-Asp	8	6	MTX-Asp
PHH012	39	2012	2	6	MTX-Asp	16	6	MTX-Asp
TUN014	27	1001	1	6	Foley-Asp	10	9	operation
MIM066	29	1102	2	8.3	Foley-Asp	10	5	MTX-Asp
MIT082	39	2002	2	8	Foley-Asp	33	6.5	Foley-Asp
DAT023	40	0121	1	6.4	MTX-Asp	23	6.2	Foley-Asp
TRV025	36	2012	2	5	MTX-Asp	44	5	Foley-Asp
HIL185	37	3023	2	5	MTX-Asp	14	6.4	Foley-Asp
NGN019	36	1001	1	5	MTX-Asp	35	6	MTX-Asp
THL010	44	1202	2	5	MTX-Asp	6	5	MTX-Asp
HUN029	41	2002	2	5	MTX-Asp	3	6	MTX-Asp

MTX-Asp: Methotrexate and surgical sac aspiration; Foley-Asp: Foley and surgical sac aspiration.

4. Discussion

Cesarean scar pregnancy is rare but it can cause severe maternal morbidity and mortality [2]. CSP has increased dramatically due to the increase in Cesarean section [3]. It was recently estimated that 1 in 531 women with a cesarean scar will have a CSP and that 4.2% of ectopic pregnancies are CSP [3] [4]. There are many CSP's therapies that can preserve the uterus and subsequent fertility. In our study, 40 patients had the successful conceive treatment. That success may be caused by 2 factors: 1) earlier detection by ultrasound to determine the localization of the CSP and 2) Foley or MTX and aspiration that was considered the first choice for management. Obviously, 40 patients were diagnosed as soon as gestational age is smaller 8 weeks so that Foley or MTX and aspiration achieved effectiveness. These patients preserving fertility and they became pregnancy whether wishing to have birth again. The important thing is still a chance of recurrence.

Until now, some case study describes pregnancy state after treatment for CSP and reported the recurrence rate of CSP in subsequent pregnancy. In J. Ben Nagi's research in 2007 [5], recurrent CSPs comprised only 5% of cases after treatment CSP while others determined higher rate, 15.6% [6], 11.1% [7] and 14.3% [8] respectively. In our present study, the recurrent rate is highest with 30% of 40 women conceiving pregnancy after treatment CSP. That recurrent rate was very high because of two reasons. Firstly, Tu Du and Hung Vuong Hospital, two largest obstetric and gynecological centers in South Viet Nam admitted more patients diagnosed with CSP. Secondly, our major method for managing CSP only resolves the gestational mass but does not repair uterine scar defect. In Qiao Wang's study, the rate of repeated CSP was higher in cases were used UAE combined with D&C than in cases treated by laparotomy resection. That means of the five women with recurrent CSP, one was previously treated by UAE followed by laparotomy resection of CSP and repair of uterine scar defect, while the other four received combined therapy with UAE and D&C [6]. There is, in fact, subjective in treatment selection of our cases that Foley or MTX and aspiration is the most favorable. After diagnosis was reached, the patient underwent extensive risk-benefit counseling, including a discussion of alternative therapies and a review of the risks involved. Informed consent was obtained from all patients before treatment. Individualized management strategies were adopted, depending on specific conditions of each patient. Factors, such as hemodynamic status, gestational age, serum β -hCG level, ultrasonographic findings, and patients' request, were comprehensively considered. The most common primary treatments were Foley or MTX and aspiration if gestational age smaller than 8 weeks. Second, they were followed until serum β -hCG level became negative. All of them were advised birth control for 2 years and they can get pregnancy. In short, the potential association between previous treatment and recurrent CSP could not further evaluate because our present study is observed with relatively small sample size. More prospective studies with large population are still needed.

It is important to stress that women conceiving pregnancy after treatment

CSP are in a high risk of recurrent CSP. Obviously, 11 cases of our study followed properly the process included early sonography to confirm the intrauterine pregnancy location and reached good outcome while only one case did not do and must be controlled bleeding by emergency operation. Anyway, we lacked detecting a scar defect by trans-vaginal sonography before patient planned to have pregnancy. Seow *et al.* [9] reported detecting a scar defect by trans-vaginal sonography 4 years before a patient's in vitro fertilization-induced pregnancy in the scar. However, there is not enough evidence that a scar defect is cause of CSP [10]. The subsequent pregnancy after previous CSP may be chance.

Our study shows the obstetric outcomes after treatment of cesarean scar pregnancy which 22 cases gave healthy babies. Our successful pregnancy of 55% saw the resemblance with others ranging from 60% [6] to 65% [5]. According to our study, it seemed to be safe in women who wanted to become pregnant again, since all the successful subsequent deliveries happened in the women previously treated with medical therapy. Although we did not repair uterine scar, there were not any serious complications of having pregnancy after treating a cesarean scar pregnancy, including uterine scar rupture and internal hemorrhage, requires immediately control bleeding by hysterectomy. We decided elective cesarean section for most of cases, but one case with normal delivery did not have serious complication. This outcome was lucky. Know Min Sow [11] reported seven of the 14 patients for whom they successfully preserved the uterus became pregnant within 3 years after termination of the scar pregnancy. One patient, who became pregnant 3 months after the scar pregnancy was found, suffered uterine rupture at 38.3 weeks' gestational age. Two patients with placental accrete, and one of them who continued the existing intrauterine twin pregnancy after trans-vaginal sono-guided aspiration of the scar pregnancy received a cesarean hysterectomy at 32 weeks of gestation. The remaining four pregnancies were uneventful, followed by early cesarean sections at 36 weeks. Another result of Qiao Wang showed six of ten women were previously treated by UAE combined with D&C for CSP that had successful full-term cesarean deliveries with the median blood loss during subsequent CS operation was 450 mL (range 300 - 1000 mL) [6]. No placenta previa or placenta accreta was found in Qiao Wang' research. Thus, the result of subsequent pregnancies after conservative treatment of scar pregnancies are more complicated and we must pay attention to what the women decided get pregnancies again. However, we believe there are more likely to have successful pregnancy after treatment of cesarean scar pregnancy in future.

In brief, our present study is observed with relatively small sample size so that there is not enough evident to support subsequent pregnancy after previous CSP. We need more prospective studies with large population and long time for having pregnancy after conserving CSP treatment.

5. Conclusion

In conclusion, we reported the 2 years-follow up of reproductive outcomes after

previous CSP treatment, with a recurrence rate of 30% and a successful pregnancy rate of 55%. Our study provided some evidence about the safety of having pregnancy after conservative treatment of cesarean scar pregnancy by Foley or MTX and aspiration.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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