

# The Diagnosis and Treatment for a Special Type of Cesarean Scar Pregnancy

Shili Su, Jinping Liu, Baihua Dong\*

Department of Gynecology and Obstetrics, Qilu Hospital of Shandong University, Jinan, China  
Email: [\\*baihuadong@hotmail.com](mailto:baihuadong@hotmail.com)

Received 6 April 2015; accepted 26 July 2015; published 31 July 2015

Copyright © 2015 by authors and Scientific Research Publishing Inc.  
This work is licensed under the Creative Commons Attribution International License (CC BY).  
<http://creativecommons.org/licenses/by/4.0/>



Open Access

---

## Abstract

Caesarean scar pregnancy (CSP) is a rare form of ectopic pregnancy, and its incidence has been increased due to the increased rate of Cesarean sections performed. A special type of CSP, concealed CSP, was found in the clinical work in our institution. A retrospective review was performed. From September 2011 to June 2014, 208 women were presented with cesarean scar pregnancy by use of transvaginal color Doppler sonography. The medical records were consulted to collect the demographics and pertinent information. Six of them were determined to be concealed CSP. Four women were diagnosed in the first-trimester pregnancy after termination of pregnancy. The initial ultrasound of the other two women displayed that the gestational sacs were located in the lower uterine cavity. Placenta accrete, increta and previa were diagnosed by the following ultrasounds. Concealed CSP is a very unusual form of CSP. Continued pregnancy may be sufficiently evaluated because of subsequently serious complications. Our results indicate that continued pregnancy increases the risk of laparotomy and hysterectomy. Medical abortion in the first-trimester pregnancy should be considered as the optimal choice for the women with prior cesarean sections who want to terminate the gestation.

## Keywords

Cesarean Scar Pregnancy, Diagnosis, Treatment, Ultrasound

---

## 1. Introduction

Caesarean scar pregnancy (CSP) is a rare form of ectopic pregnancy. The first case of CSP was reported by Solomon in 1978 [1]. The incidence of CSP is from 1:2226 to 1:1800 of all pregnancies [2] [3]. But the substantial increase in the number of CSP published in the literature expects the high incidence of CSP. The incidence rates

---

\*Corresponding author.

have been increased because of the worldwide increased rates of cesarean sections and comprehensive use of more accurate imaging methods such as transvaginal ultrasound, three-dimensional ultrasound, and magnetic resonance imaging (MRI) [3] [4]. The management of CSP is highly variable and also should be individualized. The treatment mainly consists of expectant management, conservative medical treatment (*i.e.* systemic or local methotrexate injection), dilatation and curettage, hysteroscopy evacuation, laparoscopic removal, wedge resection and hysterectomy [4]. Ultrasound is the first-line diagnostic tool for CSP and the ultrasound criteria have been put forward for the diagnosis of a CSP. In our institution, a special type of CSP was found in the clinical work. We call it concealed CSP. Here, we present 6 cases of concealed CSP diagnosed and treated in our university hospital.

## 2. Materials and Methods

From September 2011 to June 2014, a total of 208 cases of CSP were diagnosed in Qilu hospital (Shandong University, People's Republic of China). Of them, six concealed CSP were determined. The study was approved by the Ethics Committee of Qilu hospital, Shandong University, People's Republic of China. All women complained of abnormal vaginal bleeding and had a history of prior cesarean section. Clinical data of the women are presented in **Table 1**. All the initial ultrasounds of the cases did not suggest CSP. The gestational sacs were located in the uterine cavity in four cases, and two were located in the lower uterine cavity at the initial ultrasound image. The following clinical manifestations and images of ultrasounds revealed typical CSP.

## 3. Results

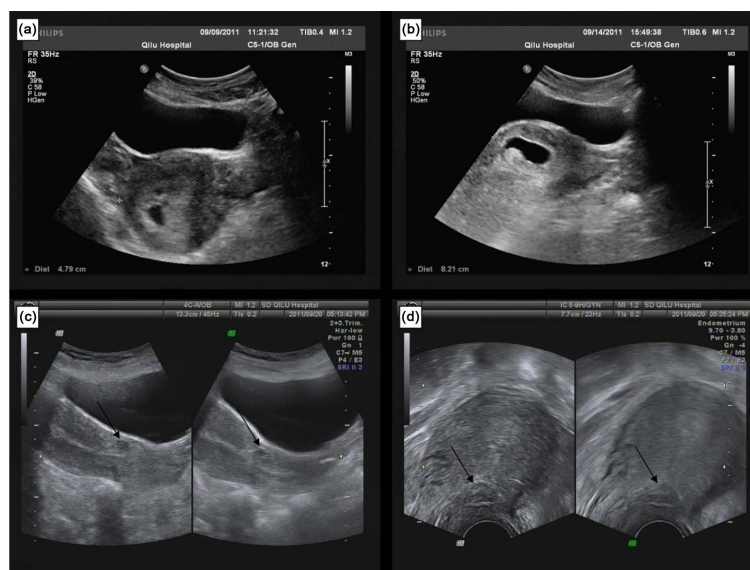
Two cases (case 1, 2) had termination of pregnancy in the first-trimester pregnancy. The ultrasound images before termination of pregnancy showed normal pregnancy. CSP were diagnosed after termination of pregnancy by mifepristone combined with misoprostol in case 1 (**Figure 1**). Case 2 was diagnosed by clinical manifestation and images of ultrasound after termination of pregnancy by dilation and curettage (**Figure 2**). Finally the woman had uterine artery chemoembolization (UAE), laparotomy, hysterotomy and curettage.

The initial ultrasound images of the other two cases (case 3 and 4) displayed that the gestational sacs were lo-

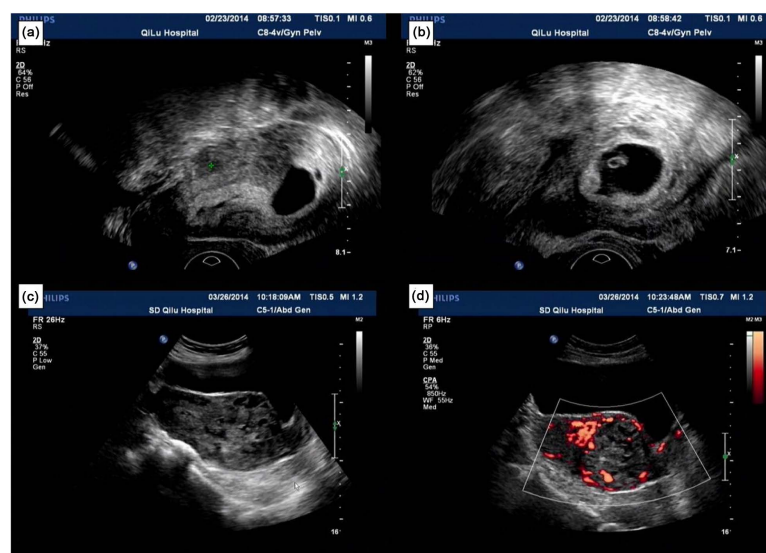
**Table 1.** Clinical data for the six women with cesarean scar pregnancy.

Case no.	Maternal age (years)	Gravidity & parity	Gestation age (weeks)	Previous LSCS (n)	Time form previous LSCS (years)	Initial ultrasound	Treatment	Ultrasound after treatment
1	35	G3P2	6	2	3	-	Medicinal abortion (mifepristone combined with misoprostol), US-guided aspiration	CSP ultrasound imaging
2	43	G5P2	10	1	2	-	Aspiration, UAE, laparotomy, hysterotomy and curettage	N/K
3	38	G4P1	7	1	8	-	Medicinal abortion (mifepristone combined with misoprostol)	CSP ultrasound imaging
4	36	G3P1	8	1	11	-	Medicinal abortion (mifepristone combined with misoprostol), systemic and local MTX US-guided aspiration	CSP ultrasound imaging
5	32	G2P1	32	1	10	+	Vaginal delivery for PROM, transabdominal hysterectomy, ligation of internal iliac artery	N/K
6	31	G3P1	37	1	7	+	LSCS, B-Lynch uterine suture, bladder repair	N/K

G, gravidity; P, parity; LSCS, lower segment Cesarean sections; PROM, premature rupture of membranes; N/K, not known; US, ultrasound; UAE, uterine arterial embolization; MTX, methotrexate. -, gestational sac located the uterine cavity; +, gestational sac located the lower uterine cavity.



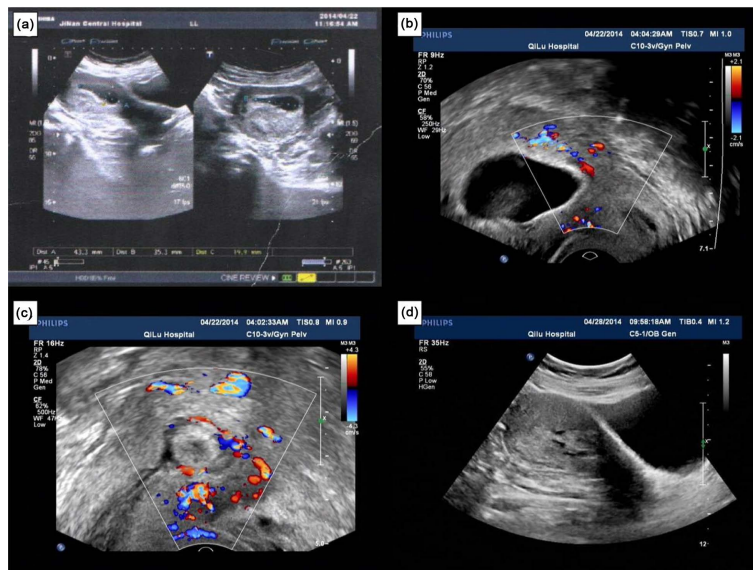
**Figure 1.** (a) Ultrasound images before medical abortion, (b) ultrasound images after medical abortion. The gestational sacs were located at the uterine cavity in ((a), (b)); ((c), (d)) ultrasound images after US-guided aspiration. A mass was located at the anterior wall of the uterine isthmus.



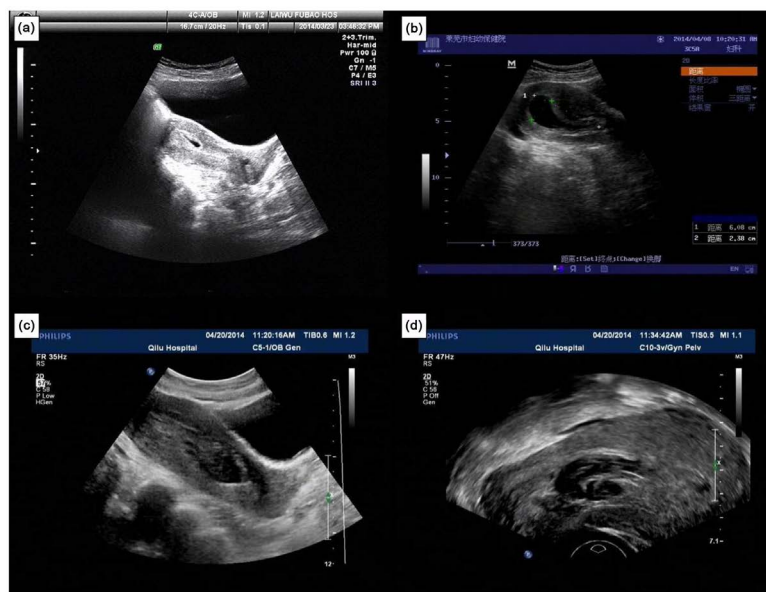
**Figure 2.** ((a), (b)) Ultrasound images before aspiration. The gestational sacs were located at the uterine cavity, ((c), (d)) image of ultrasounds after aspiration revealed typical CSP.

cated in the uterine cavity and far away from the cesarean scar. But the following ultrasound images suggested as cesarean scar pregnancies. The patients extensively consulted about potentially clinical outcomes and a clear choice between expectant management and termination of pregnancy. They chose termination of pregnancy by mifepristone combined with misoprostol because of the fear of seriously subsequent complications of CSP. The woman of case 4 also had systemic-local MTX injections and ultrasound-guided aspiration. The ultrasound images of the two cases were created as shown in **Figure 3** and **Figure 4**.

The initially ultrasound images of the cases (case 5 and 6) showed that the gestational sacs were located in the lower uterine cavity. Because the initial ultrasounds of case 5 and case 6 were performed in primary care hospitals, the image information couldn't be saved and the diagnosed papers were manuscript. We just got the ultrasound images in our hospital. They chose to continue the pregnancies. Placenta accrete, increta and previa were diagnosed by the following ultrasounds (**Figure 5**). The woman of case 5 underwent vaginal delivery of premature



**Figure 3.** (a) The gestational sac was located at the uterine cavity at the initial ultrasound; (b), (c) CSP was suspected at the following ultrasound; (d) Image of ultrasounds after medical abortion revealed CSP.

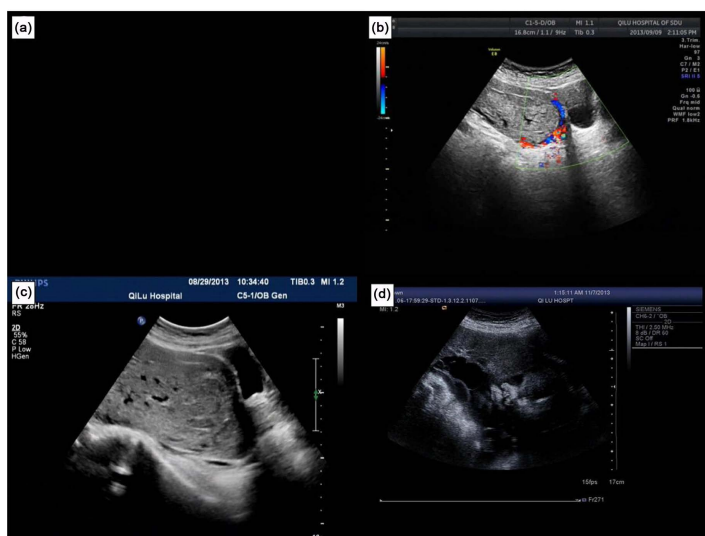


**Figure 4.** (a) The gestational sac was located at the uterine cavity at the initial ultrasound; (b) CSP was suspected at the following ultrasound; (c), (d) Image of ultrasounds after medical abortion revealed CSP.

rupture of membrane (PROM), transabdominal hysterectomy and ligation of internal iliac artery. The woman of case 6 had lower segment cesarean section, B-Lynch uterine suture and bladder repair. All of the 6 patients satisfactorily recovered during follow-up period.

#### 4. Discussion

The optimally accurate imaging method for diagnosis of CSP is transvaginal ultrasound scan. Other diagnostic tools include computed tomography (CT) or MRI. And the diagnostic criteria of ultrasound were as followed: a) the empty uterine cavity, without contacting with gestational sac; b) the cervical canal was empty; c) the gestational sac was implanted in the anterior wall of the uterine isthmus with or without cardiac activity; and d) absence of or a defect in the myometrial layer between the bladder and the sac [3] [5]. In our clinical work, we



**Figure 5.** (a) Because the initial ultrasounds of case 5 and case 6 were performed in primary care hospitals, the diagnose papers were manuscript, and the image information can't be saved. We just got the ultrasound images in our hospital; ((b), (c)) Image of ultrasounds revealed CSP in case 5; (d) Placenta accrete, increta, previa were diagnosed by the following ultrasounds in case 6.

found a special type of CSP. All the initial ultrasounds of these cases did not meet the diagnostic criteria of ultrasound of CSP. The gestational sacs were located or implanted in the lower uterine cavity. But after termination of pregnancy or during continued gestation, the clinical manifestations and ultrasound images revealed the typical CSP. So we named it concealed CSP.

In our study, the gestational sacs were implanted in the uterine cavity in 4 cases, and 2 cases were located in the lower uterine cavity as the initial ultrasound image showed. Case 1 was diagnosed after termination of pregnancy by mifepristone combined with misoprostol. Case 2 was diagnosed after termination of pregnancy by dilation and curettage. Case 3 and 4 were verified by the following ultrasounds. Case 5 and 6 were diagnosed when transabdominal hysterectomy and lower segment Cesarean sections. All the initial ultrasounds of the cases did not suggest CSP. The following clinical manifestations and ultrasound images revealed typical CSP. We call it concealed or delayed CSP.

The ultrasound images of typical CSP showed the gestational sac invaded deep into the myometrium. All of the 6 cases of the gestational sacs did not embed or surround by the cesarean section scar. But after termination of pregnancy, the ultrasound images revealed the typical CSP. Two cases who chose to continue the pregnancy shortly complicated with placenta accrete, increta and previa. If there were no termination of pregnancy in the four cases, placenta accrete, increta and previa probably occurred in late trimester of pregnancy. Several studies indicated that some CSP with expectant management might develop into placenta previa/accreta, with potentially serious complications [6] [7]-[10]. In conclusion, concealed CSP was diagnosed when the following criteria were met: a) history of previous cesarean section; b) the gestational sacs implanted in the lower uterine cavity at the initial ultrasound image in first trimester of pregnancy; c) typical CSP ultrasound imaging first-trimester abortion or placenta accrete, increta, previa occurred in late trimester of pregnancy.

With increasing incidence of caesarean section, more and more pregnant women had a prior cesarean. If the women want to terminate the gestation in the first trimester of pregnancy, more ultrasound scan should be used to avoid major haemorrhage, hysterectomy and serious maternal morbidity, because a part of CSP was not diagnosed by the initial ultrasound. In addition, the medical abortion should be considered in the first-trimester abortion.

## 5. Conclusion

Concealed CSP is one of the rarest forms of CSP. Because the sac implants in the uterine cavity, continued pregnancy may be considered. But continued pregnancy may increase the risk of laparotomy and hysterectomy. Medical abortion should be considered in the first-trimester pregnancy if the women with a prior cesarean want

to terminate the gestation. Concealed CSP is an intractable problem to manage in clinical work. Early termination of gestation is regarded as the optimization, whereas continued pregnancy must be sufficiently evaluated.

## Acknowledgements

This work was supported by the health and family planning commission of Shandong province of the People's Republic of China.

## References

- [1] Larsen, J.V. and Solomon, M.H. (1978) Pregnancy in a Uterine Scar Sacculus—An Unusual Cause of Postabortal Haemorrhage. A Case Report. *South African Medical Journal*, **53**, 142-143.
- [2] Seow, K.M., Huang, L.W., Lin, Y.H., Lin, M.Y., Tsai, Y.L. and Hwang, J.L. (2004) Caesarean Scar Pregnancy: Issues in Management. *Ultrasound in Obstetrics & Gynecology*, **23**, 247-253. <http://dx.doi.org/10.1002/uog.974>
- [3] Jurkovic, D., Hillaby, K., Woelfer, B., Lawrence, A., Salim, R. and Elson, C.J. (2003) First-Trimester Diagnosis and Management of Pregnancies Implanted into the Lower Uterine Segment Cesarean Section Scar. *Ultrasound in Obstetrics & Gynecology*, **21**, 220-227. <http://dx.doi.org/10.1002/uog.56>
- [4] Ash, A., Smith, A. and Maxwell, D. (2007) Caesarean Scar Pregnancy. *BJOG: An International Journal of Obstetrics & Gynaecology*, **114**, 253-263. <http://dx.doi.org/10.1111/j.1471-0528.2006.01237.x>
- [5] Ozkan, S., Caliřkan, E., Ozeren, S., Corakçı, A., Cakirođlu, Y. and Cořkun, E. (2007) Three-Dimensional Ultrasonographic Diagnosis and Hysteroscopic Management of a Viable Cesarean Scar Ectopic Pregnancy. *Journal of Obstetrics and Gynaecology Research*, **33**, 873-877. <http://dx.doi.org/10.1111/j.1447-0756.2007.00671.x>
- [6] Timor-Tritsch, I. and Monteagudo, A. (2012) Unforeseen Consequences of the Increasing Rate of Cesarean Deliveries: Early Placenta Accrete and Cesarean Scar Pregnancy. A Review. *American Journal of Obstetrics & Gynecology*, **207**, 14-29. <http://dx.doi.org/10.1016/j.ajog.2012.03.007>
- [7] Herman, A., Weinraub, Z., Avrech, O., Maymon, R., Ron-El, R. and Bukovsky, Y. (1995) Follow up and Outcome of Isthmic Pregnancy Located in a Previous Cesarean Section Scar. *BJOG: An International Journal of Obstetrics & Gynaecology*, **102**, 839-841. <http://dx.doi.org/10.1111/j.1471-0528.1995.tb10855.x>
- [8] Ben-Nagi, J., Ofili-Yebovi, D., Marsh, M. and Jurkovic, D. (2005) First Trimester Cesarean Scar Pregnancy Evolving into Placenta Previa/Accreta at Term. *Journal of Ultrasound in Medicine*, **24**, 1569-1573.
- [9] El-Matary, A., Akinlade, R. and Jolaoso, A. (2007) Caesarean Scar Pregnancy with Expectant Management to Full Term. *Journal of Obstetrics & Gynaecology*, **6**, 624-625. <http://dx.doi.org/10.1080/01443610701546334>
- [10] Jurkovic, D. (2014) Cesarean Scar Pregnancy and Placenta Accreta. *Ultrasound in Obstetrics & Gynecology*, **43**, 361-362. <http://dx.doi.org/10.1002/uog.13346>