Caesarean scar pregnancy at 19 weeks gestation

Abstract
Due to the increased numbers of caesarean sections in the last decade, women with a caesarean section scar in pregnancy are becoming more commonly diagnosed using ultrasound. One of the rare but more severe complications of this is an implantation of the pregnancy in the caesarean section scar.

Keywords: Caesarean section scar, ectopic pregnancy, ultrasound, hysterectomy, methotrexate.

Figure 1: Ultrasound of an early pregnancy in a caesarean section scar.

Case report
A 40-year-old Gravida 3 Para 1 was referred to our hospital for termination of pregnancy due to fetal abnormalities. The pregnancy was monitored via ultrasound at nine weeks for subchorionic haematoma and 17 and 19 weeks confirming the fetal abnormality.

Past medical history was a history of one caesarean section due to obstructed labour and no other medical conditions.

At 19 weeks and four days the couple received counseling and chose to terminate the pregnancy. After induction with mifepristone and two days of misoprostil, the patient was not aware of any contractions and no contractions were recorded via tocogram. After a rest day another attempt to terminate the pregnancy with misoprostil was made. Due to a raise in temperature, elevated infectious parameters and failure to progress (cervical dilatation stable at 2–3 cm, query umbilical cord palpable), informed consent was made and given for a surgical approach. Due to the gestational age a hysterotomy was favored over dilatation and evacuation.

At laparotomy on opening the peritoneum, a non-pregnant sized uterus was visible and a firm elastic tumor was extruding from the lower uterus segment into the broad ligament. After involving a second consultant, an incision of the tumor was made and offensive amniotic fluid drained from the tumor. The incision was enlarged without blood loss until a completely separated placenta and fetus could be retrieved. On inspection an atrophic cavity with no connection to the uterus cavity was seen. A small opening to the vagina was found with the cervix being lateral and posterior. After curettage to retrieve the remaining membranes and closure of the hysterotomy the

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Figure 1: Ultrasound of an early pregnancy in a caesarean section scar.
surgery ended uneventfully. Antibiotic prophylaxis was given for three days and the patient was discharged two days after surgery.

Discussion
The diagnosis via ultrasound of a pregnancy implantation in the caesarean section scar was first described in 1990. Due to the technical development of imaging technologies it is now possible to diagnose a caesarean section scar ectopic pregnancy in the first trimester. The implantation has to be in the anterior wall with a thinning of the myometrium towards the bladder (Fig. 1.) Due to the higher caesarean section rate, the likelihood of a caesarean section scar ectopic pregnancy is now estimated to be 1:1800–1:2200.

In the worst cases the placenta infiltrates the bladder, resulting in severe bleeding and hysterectomy. As gestation advances the likelihood of complications is higher.

Treatment options in the early pregnancy include intra-amniotic injection or systemic application of methotrexate (MTX), surgical intervention or a wait and see approach.

Several protocols have been published for the intra-amniotic injection using various drugs. The published systemic medical treatments vary from single shot intramuscular (IM) MTX with 50 mg/m² up to four cycles of intravenous (IV) (50 mg/m²) + leukovin. Our data shows that the sonographic uterus at the end of a medical treatment appears to be unchanged to the uterus before the pregnancy (Fig. 2).

There are several publications with a combination of systemic and intra-amniotic treatment with or without surgical intervention.

The surgical treatment in the advanced pregnancy and in case of an emergency is in most cases a hysterectomy. Due to the risk of severe haemorrhage, curettage is discussed critically in the literature. Further treatment options are laparoscopy and embolisation. Jurkovic published two cases, in which the patients opted for a continuation of the pregnancy. In both cases the pregnancy ended due to severe haemorrhage resulting in an emergency hysterectomy (17 & 35 weeks of gestational age). We conclude therefore that this approach carries the highest maternal and fetal risks and is not advisable.

There are few case reports on pregnancies following a scar pregnancy. A case series of 24 patients reports spontaneous conception in 21 patients within the observation time. With one patient having a recurrent caesarean section scar ectopic pregnancy the other pregnancies were eutopic. Seven patients had spontaneous miscarriages, the other 13 patients continued normally. Nine patients had a caesarean section and four had vaginal deliveries.

Conclusion
An early diagnosis of a caesarean section scar ectopic pregnancy increases the treatment options and reduces the treatment risks. Therefore the ultrasound report should always mention...
the relationship of the pregnancy to the scar in an anterior implantation. Obstetricians should also alert the radiologist to the presence of a caesarean section scar by giving the relevant obstetric history.

Disclosure of interests
I hereby declare on behalf of all authors that there is no conflict of interest as defined in the author guidelines.

Contribution to authorship
Simone Petrich conceived the idea for this project and drafting of the manuscript. Helen Paterson and Nadar Hanna critically reviewed the manuscript. Florian Ebner performed all data acquisition and analysis, and was primarily responsible for writing the article. The submitted pictures are from his collection.

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References
1 Rempen A, Albrecht P. Diagnosis and therapy of an in the cesarean section scar implanted early pregnancy. Z Geburtshilfe Perinatol 1990; 194: 46–8.
2 Jurkovic D, Hillaby K, Woelfer B, Lawrence A, Salim R, Elson CJ. First-trimester diagnosis and management of pregnancies implanted into the lower uterine segment Cesarean section scar. Ultrasound Obstet Gynecol 2003; 21: 220–27.
3 Seow KM, Huang LW, Lin YH, Lin MY, Tsai YL, Hwang JL. Cesarean scar pregnancy: issues in management. Ultrasound Obstet Gynecol 2004; 23: 247–53.
4 Ebner F, Rempen A. Medikamentöse Behandlung einer in der Sectionarbe implantierten vitalen Frühschwangerschaft. Geburtsh Frauenheilk 2009; 69: 1–3.
5 Ben Nagi J, Ofilli-Yebovi D, Marsh M, Jurkovic D. First-trimester cesarean scar pregnancy evolving into placenta previa/accreta at term. J Ultrasound Med 2005; 24: 1569–73.
6 Hartung J, Meckies J. Management of a case of uterine scar pregnancy by transabdominal potassium chloride injection. Ultrasound Obstet Gynecol 2003; 21: 94–5.
7 Salomon LJ, Fernandez H, Chauveaud A, Doumerc S, Frydman R. Successful management of a heterotopic cesarean scar pregnancy: potassium chloride injection with preservation of the intrauterine gestation: case report. Hum Reprod 2003; 18: 189–91.
8 Weimin W, Wenqing L. Effect of early pregnancy on a previous lower segment cesarean section scar. Int J Gynaecol Obstet 2002; 77: 201–7.
9 Mayron R, Halperin R, Mendovic S, Schneider D, Herman A. Ectopic pregnancies in a cesarean scar: review of the medical approach to an iatrogenic complication. Hum Reprod Update 2004; 10: 515–23.
10 Haimov-Kochman R, Sciaky-Tamir Y, Yanai N, Yagel S. Conservative management of two ectopic pregnancies implanted in previous uterine scars. Ultrasound Obstet Gynecol 2002; 19: 616–9.
11 Chuang J, Seow KM, Cheng WC, Tsai YL, Hwang JL. Conservative treatment of ectopic pregnancy in a cesarean section scar. BJOG 2003; 110: 869–70.
12 Lam PM, Lo KW. Multiple-dose methotrexate for pregnancy in a cesarean section scar. A case report. J Reprod Med 2002; 47: 332–34.
13 Yang XY, Yu H, Li KM, Chu YX, Zheng A. Uterine artery embolisation combined with local methotrexate for treatment of cesarean scar pregnancy. BJOG 2010; 117: 990–96.
14 Valley MT, Pierce JG, Daniel TB, Kaunitz AM. Cesarean scar pregnancy: imaging and treatment with conservative surgery. Obstet Gynecol 1998; 91 (5 Pt 2): 836–40.
15 Fylstra DL, Pound-Chang T, Miller MG, Cooper A, Miller KM. Ectopic pregnancy within a cesarean delivery scar: a case report. Am J Obstet Gynecol 2002; 187: 302–4.
16 Ghezzi F, Laganà D, Franchi M, Fugazzola C, Bolis P. Conservative treatment by chemotherapy and uterine arteries embolization of a cesarean scar pregnancy. Eur J Obstet Gynecol Reprod Biol 2002; 103: 88–91.
17 Ebner F, Rempen A. Delivery method in a patient with a history of cesarean sections. Der Gynäkologe 2010; 43: 521–24.
18 Michener C, Dickinson J. Cesarean scar ectopic pregnancy: a single centre case series. ANZJOG 2009; 49: 451–55.
19 Ben Nagi J, Helmy S, Ofilli-Yebovi D, Yazbek J, Sawyer E, Jurkovic D. Reproductive outcomes of women with a previous history of cesarean scar ectopic pregnancies. Hum Reprod 2007; 22: 2012–15.