CASE SERIES

Laparoscopic Management of Uncommon Presentations of Ectopic Pregnancy: A Case Series

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Abstract

The incidence of ectopic pregnancy, which constitutes about 2% of all pregnancies, is increasing due to increasing risk factors and availability of better diagnostic modalities. It is one of the important causes for maternal mortality in the first trimester. Some ectopic pregnancies, usually the ones in the uterus, may be missed in the initial ultrasound evaluation and require high index of suspicion. If ultrasound is inconclusive, MRI may help in the diagnosis. Management modalities include expectant, medical, combined medical/surgical, and surgical treatment. In patients opting for surgery, laparoscopy provides excellent visualization of the pathology, decreases maternal morbidity, and improves the fertility outcome in future pregnancies. Here we are discussing four rare ectopic pregnancies: two cases of cesarean scar pregnancy, one case of interstitial pregnancy, and one case of rudimentary horn pregnancy and their successful management by laparoscopy.

Keywords: Cesarean scar pregnancy, Ectopic pregnancy, Interstitial pregnancy, Laparoscopy, Rudimentary horn pregnancy.

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Introduction

Although ectopic pregnancy constitutes only about 2% of all the pregnancies, it is responsible for 6% of all pregnancy related deaths and hence warrants high index of suspicion, proper evaluation, and appropriate treatment.[1] Ectopic pregnancies are known to occur in the fallopian tubes (the most common site), cervix, ovary, abdomen, myometrium, and previous cesarean scar.[2] The risk factors include pelvic inflammatory disease, previous intrauterine instrumentation, previous tubal surgery, previous ectopic, assisted reproductive techniques, and congenital uterine anomalies. Timely intervention, be it expectant, conservative, or definitive, and vigilant follow-up prevent rupture and massive hemorrhage and preserve future fertility.[3] Although traditional surgical management involves laparotomy, laparoscopic approach is now being adopted whenever possible due to its various advantages in experienced hands. Here we are discussing a series of four ectopic pregnancies in uncommon locations and their surgical management by laparoscopy.

Case 1: Cesarean Scar Pregnancy

A 28-year-old gravida 2 para 1 living 1 with previous cesarean section (CS) presented to our hospital with complaints of bleeding per vaginum for 10 days following intake of pills for medical abortion prescribed at 8 weeks of gestation. She was pale with a pulse rate 98/minute and blood pressure (BP) 100/70 mm Hg. On examination, there was lower abdominal tenderness. On per speculum examination, there was minimal bleeding and uterus was of normal size with no forniceal tenderness on per vaginal examination. Ultrasound showed a gestational sac of 3 × 5 cm with fetal pole and no cardiac activity in the anterior part of the lower uterine segment near the utero-cervical junction with empty uterine cavity with extensive vascularity in the area of previous cesarean scar suggesting cesarean scar pregnancy (Fig. 1). Informed written consent for laparoscopic surgery was obtained after explaining different modalities of treatment. On laparoscopy, cesarean scar ectopic of around 5 × 5 cm was noted (Fig. 2). Diluted vasopressin (10 U in 100 mL) was injected into the myometrium near the site of ectopic. Uterovesical (UV) fold of peritoneum was opened, bladder was pushed down, thinned-out myometrium over scar ectopic was incised, and contents were aspirated. The rent was sutured with barbed suture. Patient was discharged on second postoperative day without any complications. Histopathological examination (HPE) revealed products of conception.

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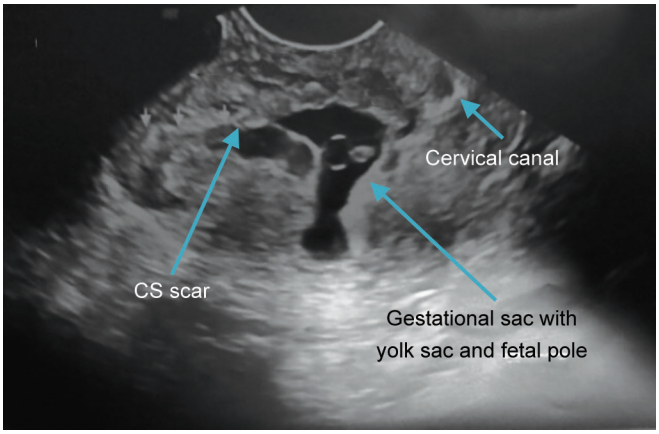
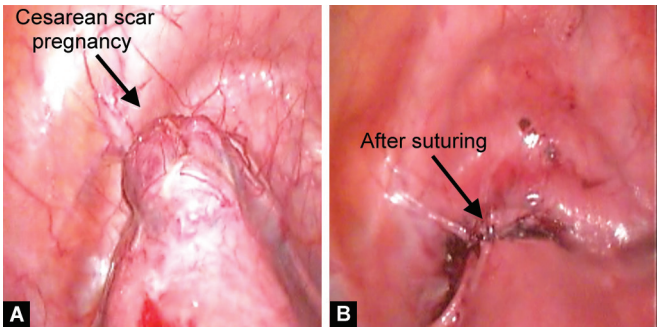


Fig. 1: Transvaginal ultrasound of cesarean scar pregnancy



Figs 2A and B: Laparoscopic picture of cesarean scar pregnancy before and after surgery

Case 2: Cesarean Scar Pregnancy

A 32-year-old gravida 2 para 1 living 1 with previous CS 3 years back with history of 1.5 month amenorrhea presented to a local hospital for termination of pregnancy. Since ultrasound report was intrauterine pregnancy of 7 weeks duration, she was prescribed drugs for medical abortion. As she did not have bleeding she was posted for D and C in the same hospital. Patient had excessive bleeding during the procedure and went into shock. She was stabilized with three units of PRBC and was referred to our hospital for further management. On admission, patient was stable and repeat ultrasound showed a hypo echoic mass measuring 4.7 × 4 cm in the anterior wall in the subserosal and intramural location in the region of the isthmus. The lesion was surrounded by multiple vascular channels. Serum βHCG was 6700 U/L. She was posted for laparoscopy after making a diagnosis of cesarean scar pregnancy and taking informed consent. There was a 4 × 2 cm mass in the isthmic region anteriorly (Fig. 3). Diluted vasopressin was injected near the lesion, UV fold of peritoneum opened, bladder pushed down, incision taken on the mass and contents aspirated. Rent was closed with barbed suture. HPE revealed products of conception.

Case 3: Interstitial Pregnancy

A 30-year-old gravida 3 para 1 living 1 abortion 1 with previous CS came with history of 2 months of amenorrhea. Ultrasound revealed empty uterine cavity with pregnancy of 7 weeks seen to the periphery of the uterus on the right side, with an endomyometrial mantle measuring around 4 mm suggestive of interstitial pregnancy. On laparoscopy, right-sided interstitial pregnancy measuring 4 × 5 cm was noted (Fig. 4). Dilute vasopressin was injected into the myometrium adjacent to the ectopic, incision taken on the mass, and contents were aspirated. Incision was closed with barbed suture. HPE revealed products of conception.

Case 4: Rudimentary Horn Pregnancy

A 36-year-old gravida 2 para 1 living 1 with previous LSCS with 2.5 months of amenorrhea presented to our hospital with ultrasound showing rudimentary horn pregnancy with twin pregnancy, one corresponding to 11 weeks gestation and another one being blighted ovum. On laparoscopy, rudimentary horn pregnancy was noted on the right side with right fallopian tube and ovary attached to the rudimentary horn (Fig. 5). Excision of the same was done with harmonic after injection of dilute vasopressin into the myometrium near the attachment of the rudimentary horn

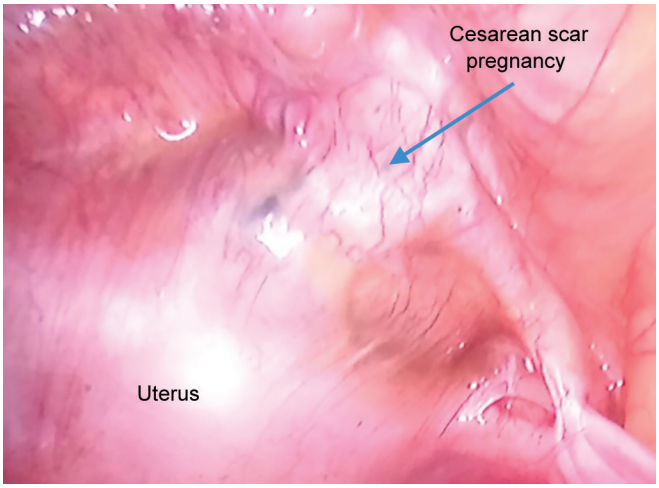
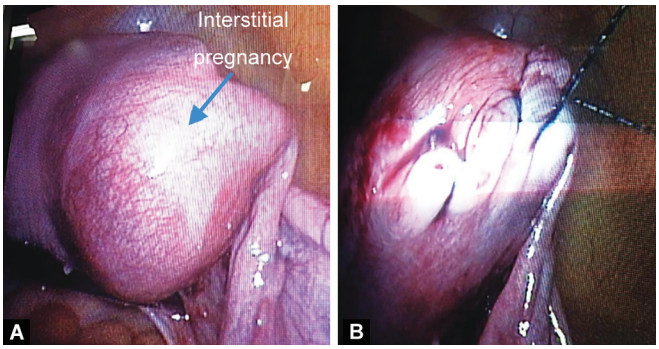
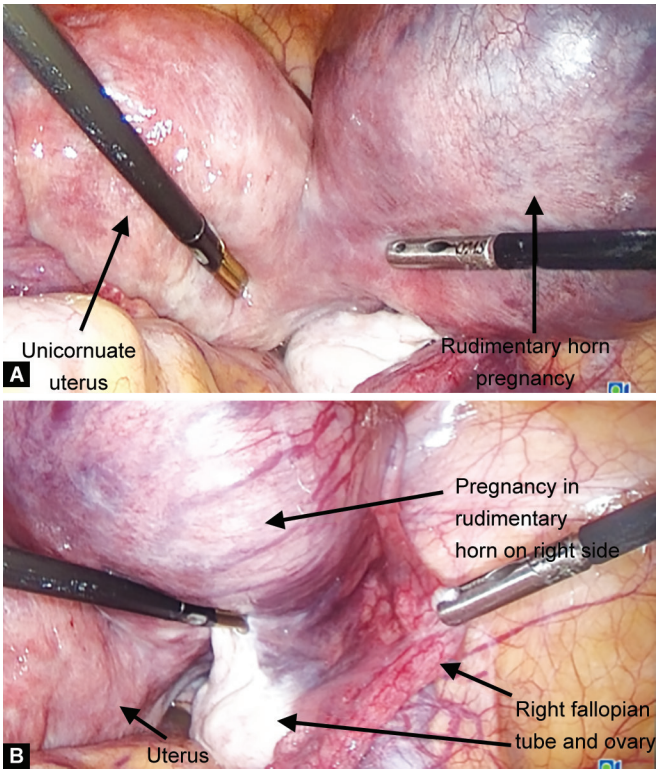


Fig. 3: Laparoscopic picture of cesarean scar pregnancy



Figs 4A and B: Laparoscopic picture of interstitial pregnancy: before and after surgery



Figs 5A and B: Rudimentary horn pregnancy

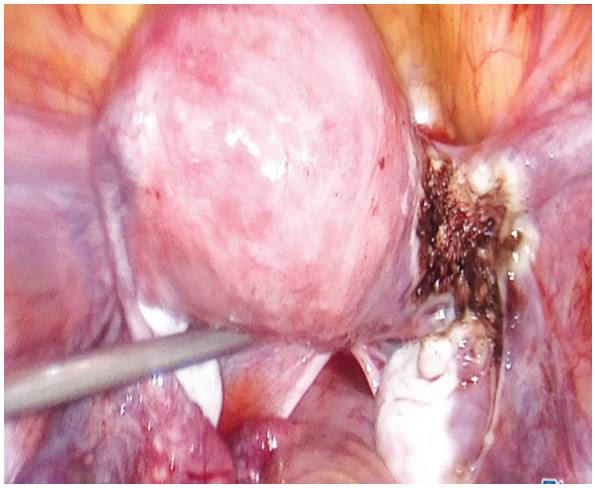


Fig. 6: Rudimentary horn pregnancy after excision

to the uterus and the bleeding points were coagulated (Fig. 6). HPE revealed products of conception in the rudimentary horn.

Discussion

Cesarean Scar Pregnancy

Cesarean scar pregnancy occurs in 1 in 2,000 pregnancies.[2,4] Incidence is on an increasing trend because of increasing primary CS rate.[4] First case of cesarean scar ectopic was mentioned in the English Medical Literature in 1978 by Larsen and Solomon.[5] Improper implantation at prior hysterotomy site occurs due to disruption of the endometrium and the myometrium.[1,5]

In cesarean scar ectopic pregnancy either the implanted gestational sac grows into the uterine cavity or grows toward the serosal surface of the uterine wall. The former might proceed to term with a viable fetus with an increased risk of life-threatening massive postpartum hemorrhage whereas the latter carries the risk of rupture and hemorrhage during the first trimester of pregnancy.[1,6]

Criteria for cesarean scar ectopic pregnancy include:

- Gestational sac embedded eccentrically in the lower uterine segment
- Implantation in the location of a prior cesarean delivery scar
- Empty uterine cavity and cervical canal
- Attenuated myometrium over the scar
- Extensive Doppler vascular flow in the area of the cesarean delivery scar.
- Negative sliding sign—inability to displace the gestational sac from its position at the level of internal OS by gentle pressure applied by the transabdominal probe.[1,2,5]

In both the cases of cesarean scar pregnancy described in this case series, initial ultrasound missed in the diagnosis. Hence high index of suspicion is the key to early diagnosis.

Conservative medical management is indicated in unruptured ectopic pregnancy of <8 weeks gestation with myometrial thickness <2 mm between cesarean scar pregnancy and bladder when the patient is hemodynamically stable. Systemic administration of methotrexate and local intrasac administration of embryocides like methotrexate, potassium chloride, hyperosmolar glucose, or crystalline trichosanthin under ultrasound guidance are other modalities of treatment which have been tried with varied success rates.[7]

Blind uterine curettage is strongly discouraged as it causes scar rupture and severe hemorrhage, as has been seen in the second case we have discussed.[8] Hysteroscopic evacuation is a safer alternative with short operating time, less blood loss, and short postoperative stay.[9] With laparoscopy, cesarean scar ectopic mass is incised and pregnancy tissue removed in endobag. Bleeding can be minimized by local injection of vasopressin and hemostasis achieved by bipolar diathermy and defect closed by endosuturing.[10]

Laparotomy is mandatory when uterine rupture is strongly suspected. Hysterectomy is done when all other treatment modalities fail to control bleeding or repair the defect.[11]

Interstitial Pregnancy

Interstitial pregnancies (IP) constitute 2–6.8% of all ectopic pregnancies. Because of distensibility of myometrium, they tend to grow to an advanced gestation before rupture. Due to proximity to the intramyometrial arcuate vasculature, the bleeding occurring as a consequence of rupture may be catastrophic and this is the reason why IP is associated with mortality rate of 2–2.5% (seven times the average for all ectopic pregnancies). "The diagnosis of IP by ultrasound is based on the following criteria: the GS is located outside the uterine cavity; the interstitial part of fallopian tube is seen adjoining the lateral aspect of the uterine cavity and GS; and the myometrial mantle extends laterally to encircle the GS".[12,13]

Medical management with methotrexate can be considered if the patient is hemodynamically stable with no signs of rupture, i.e., large GS or rapidly increasing β-hCG levels.

Surgical management of IP includes cornual wedge resection, cornuostomy, and hysterectomy either by laparotomy or laparoscopy. For ruptured cornual pregnancy, laparotomy is preferred. Hysterectomy is reserved to cases in which hemorrhage is profuse and life threatening. Other management options include ultrasound-guided transcervical forceps extraction (UTCE) and transcervical suction under laparoscopic and hysteroscopic guidance[13] which have been reported in a few recent case reports. In our patient, cornuostomy was done as it carries lesser risk of uterine rupture in subsequent pregnancy compared with cornual wedge resection.

Rudimentary Horn Pregnancy

Rudimentary horn pregnancy, another rare ectopic pregnancy with incidence of 1 in 76,000 pregnancies, occurs due to the transperitoneal migration of sperm/fertilized ovum from contralateral side or through a microscopic fistulous tract with unicornuate uterus.[14]

Natural fate of rudimentary horn ectopic when left untreated is usually rupture during the last two trimesters due to underdevelopment, poor distensibility of myometrium, and dysfunctional endometrium. Only 10% have been reported to have progressed to full term among which 2% have survived.[15,16] Ultrasound and MRI aid in the diagnosis.

The following criteria have been suggested by Tsafri et al for sonographic diagnosis of rudimentary horn pregnancy: (1) pseudo-pattern of an asymmetrical bicornuate uterus, (2) absent visual continuity between the cervical canal and the lumen of the pregnant horn, and (3) the presence of myometrial tissue surrounding the gestational sac.[17]

Late presentation of rudimentary horn pregnancy is difficult to treat by local/systemic methotrexate but there a few case reports describing successful management with methotrexate.[18]

Management is mainly by resection of the horn with pregnancy *in situ*.[14]

Conclusion

Ectopic pregnancy is on the rising trend. Diagnosis requires high index of suspicion, ultrasound, serum beta HCG, and MRI aid in the diagnosis. Ruptured ectopic causes massive hemorrhage and shock. Timely intervention prevents maternal near miss. Surgical management by laparoscopy in experienced hands reduces maternal morbidity to a greater extent. Since all the ectopic pregnancies described are rare forms of ectopic pregnancies, there is paucity of data comparing different modalities of treatment and more research is needed to know the best line of management. However, laparoscopic management of ectopic pregnancy should be the preferred line of management when possible as it is associated with lesser postoperative pain, shorter hospital stay, faster return to normal function and to work in addition to having cosmetic advantages. Vasopressin was used in all our patients and helped in reducing blood loss significantly.

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