

Dilemmas in management of bilateral ectopic pregnancies—report of two cases and a review of current practice

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Abstract Simultaneous bilateral ectopic pregnancies occurring spontaneously or following assisted conception techniques, although rare, present the clinician with diagnostic uncertainty and management dilemmas which may have an implication on the patient's future fertility. A review of available literature suggests that there is no universally accepted management strategy towards this condition, and care needs to be tailored to the needs of the patient, patient's preferences and the clinical picture. We report two such rare cases of simultaneous bilateral ectopic pregnancies with different management and outcomes highlighting the fact that these cases not only pose diagnostic and management challenges but also has complex ethical issues associated with it.

Keywords Bilateral ectopic · Salpingostomy · Salpingectomy

Introduction

Simultaneous bilateral ectopic pregnancies occurring spontaneously or following assisted conception techniques are rare, with an incidence reported to be between 1 in 725 to 1 in 1,580 of all extrauterine pregnancies Rondeau et al. [1].

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Management of these rare cases presents the clinician with diagnostic and management dilemmas. This is primarily due to rarity of the condition posing diagnostic difficulties with ultrasonography and implication of its treatment on fertility of the women.

We report two such rare cases of simultaneous bilateral ectopic pregnancies with different management and outcome, highlighting the fact that these cases not only pose diagnostic and management challenges but also has complex ethical issues associated with it.

Case reports

Case 1

History

A 37-year-old lady self-referred to the Early Pregnancy Assessment Unit (EPAU) at our local hospital at approximately 6 weeks into a planned pregnancy (Fig. 1). She presented with vaginal spotting which self resolved 7 days before attending. She denied any abdominal pain. Her previous obstetric history was that of a forceps-assisted delivery in 2008 and an early miscarriage in 2012. There was no history of previous tubal problems, gynaecological surgery or pelvic inflammatory disease. Her Abdominal and pelvic examination was unremarkable.

A transvaginal ultrasound scan on the day she presented revealed an empty uterus with an endometrial thickness of 7 mm. The right ovary showed two small haemorrhagic cysts of about the same size (18 mm × 12 mm × 16 mm). Adjacent to the left ovary was a solid cystic lesion approximately 34 mm × 33 mm × 19 mm in size (Fig. 2). This lesion demonstrated no colour Doppler flow.

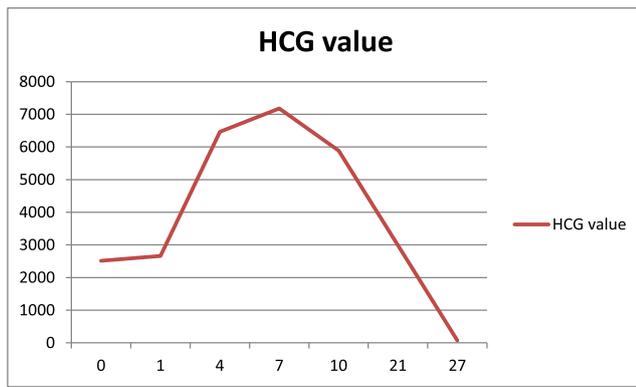
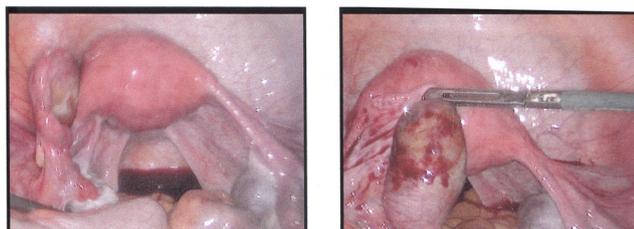


Fig. 1 Trend of HCG level in IU plotted against number of days

In view of her scan findings, particularly the empty uterus, blood was taken for serum levels of β -human Chorionic Gonadotrophin (β -hCG), progesterone and a full blood count. Her β -hCG was reported to be 2,512 IU with progesterone of 56.3 IU. Her Haemoglobin level was normal.

In view of her β -hCG level and scan findings, the decision was made to perform a diagnostic laparoscopy with a possibility of proceeding to salpingectomy as an emergency procedure. This was in line with the local guideline according to which laparoscopy is indicated in women with B-hCG more than 1,500 with no evidence of intrauterine gestation.

Laparoscopy revealed a 20-mm swelling in the mid-ampullary region covered with inflammatory material, suggestive of a chronic ectopic pregnancy. On further assessment, a smaller bean-shaped swelling of approximately 10 mm size in the mid-ampulla of the right tube was noticed (Fig. 3). This had the appearance of an acute tubal ectopic pregnancy. The options at this point were to do bilateral salpingectomy, salpingectomy and salpingostomy salpingectomy and methotrexate management or only methotrexate management. Due to the facts that the patient was asymptomatic, bilateral ectopic



Image_005

Image_006



Fig. 2 Pictures showing left chronic tubal ectopic pregnancy case 1

pregnancy was an incidental finding, patient was not consented for further surgery, right tubal pregnancy was less than 3 cm in size and serum HCG was less than 3,000; the decision was made to perform salpingectomy only on the left side. Further management of right acute unruptured tubal pregnancy was deferred pending discussion with the patient pertaining to implications on her future fertility.

Postoperatively, the findings were explained to the patient, and the options were discussed which included conservative management, medical management with methotrexate and further laparoscopic surgery with a view to do salpingostomy. After a detail discussion, it was decided to manage this patient with methotrexate, which was given the day after her initial surgery. In line with the local protocol, plan was made to monitor her β -hCG levels on days 1, 4, 7 and 10 following methotrexate treatment.

Patient was clinical assessed after it was noted that β -hCG levels were rising on day 4 (see Fig. 1) after treatment with methotrexate. She was pain free and well. She was then treated with oral mifepristone 200 mg stat and was allowed home pending her further β -hCG level on day 7.

On day 7, her β -hCG levels were still rising, but she remained asymptomatic. At this point, the option of surgical management was re-discussed, and it was decided to continue to manage her conservatively. By day 10, 18 % decline in her HCG levels was noted. The mifepristone was repeated, and she was reviewed again 7 days later. Her β -hCG was still declining but not at a satisfactory rate. As the patient was still not complaining of any symptoms, it was decided to repeat the methotrexate regime. A steady decline in HCG levels was noted after the second cycle of Methotrexate treatment. The levels dropped down to 72 on day 10 following second cycle of methotrexate.

She was followed up in gynaecology outpatient clinic, and arrangements were made for her to undergo a laparoscopy and dye to test for tubal patency. At laparoscopy, the right tube had an appearance of chronic ectopic but her serum HCG at this point was less than 1. Hydrotubation revealed a free spillage of dye from the right tube confirming its patency.

Case 2

A 34-year-old woman with a BMI of 26 was referred to the infertility clinic with a 2-year history of primary infertility. No identifiable risk factors for sub-fertility were present in her and her partner. Her hormone profile did not reveal any abnormality. Hysterosalpingogram revealed bilaterally patent tubes with normal uterus.

Following the cycle of IUI, she presented at 5 weeks of gestation to the early pregnancy clinic with light per-vaginum bleeding and mild left iliac fossa pain. Pelvic ultrasound did not show any intrauterine gestation sac and reported the endometrial thickness of 10 mm with two small cystic areas



Image_002



Image_003

Fig. 3 Pictures showing right acute tubal ectopic pregnancy case 1

near both ovaries suggestive of either a corpus luteal cyst or ectopic pregnancies. Her serum HCG level was 9,691 IU and she was haemodynamically stable. She was admitted to the hospital with a provisional diagnosis of ‘pregnancy of unknown location’, and the possibility of ectopic pregnancy was explained to her. A diagnostic laparoscopy was planned the following day, and the patient was counselled and consented for a possible salpingectomy.

Laparoscopy revealed bilateral haemorrhagic masses with a small amount of blood in the pouch of Douglas. As the patient was already seeking fertility treatment for unexplained infertility and the option of IVF was available to the couple if IUI treatment failed, the decision was made to perform bilateral salpingectomies and thereafter plan further IVF treatment. Histology confirmed the diagnosis of bilateral ectopic pregnancies. She and her partner were then offered IVF to help attain pregnancy. A year later, she had a successful intrauterine pregnancy following IVF treatment.

Discussion

Ectopic pregnancy is an important cause of maternal mortality and morbidity. Every 11 in 1,000 pregnancies are reported to

be an ectopic (CEMACH report 2003–2005). The latest CEMACH report from 2003–2005 emphasise the importance of early recognition and diagnosis of such pregnancies to save mothers’ lives. There has been a persistent failure to recognise ectopic pregnancy and hence one of the ‘top ten’ key recommendations from the latest CEMACH report is that there should be national guidelines for the management of pain and bleeding in early pregnancy. Comprehensive clinical guidelines for the treatment of ectopic pregnancy have been published by the Royal College of Obstetricians and Gynaecologists. Because of its rarity, bilateral ectopic pregnancy is not referred to in the guidelines, but the same principles of management can still be applied.

The main purpose of reporting these two cases of bilateral ectopic pregnancy is to highlight the two different management approaches for the same condition and to discuss the challenges and dilemmas faced by the clinicians while diagnosing and managing such rare cases. In both the above cases, the noninvasive diagnostic methods with transvaginal ultrasonography and serial serum HCG monitoring failed to establish conclusively the presence of bilateral ectopic pregnancy. Given the rarity of the condition, difficulties in interpretation of serum HCG and the limitations of ultrasonography, timely diagnosis can be difficult. However, its early diagnosis is imperative in preservation of future fertility of the woman.

A review of available literature reveals that in most cases, preoperative investigations with serum HCG and ultrasonography fail to diagnose the presence of bilateral ectopic pregnancy [2]. It is commonly diagnosed intraoperatively at the time of laparoscopy. In the majority of the cases, ultrasonography will diagnose the presence of ectopic pregnancy in one tube, with the subsequent unexpected finding of bilateral ectopics during laparoscopy. This emphasises the importance of maintaining a high index of suspicion and the importance of examining the contralateral tube carefully during the laparoscopy. It can be specially challenging for the clinicians making these complex decisions during an emergency procedure with limited time to discuss and think about the implications of different management options with regards to the women’s future chances of conception and the desire for preservation of fertility.

A diagnosis of bilateral tubal ectopic pregnancy at laparoscopy presents the clinician with the dilemma that the curative approach, which is to perform a bilateral salpingectomy, will render the women infertile. Thereafter, the only option of conceiving is through assisted conception technique. This is an important consideration especially as in majority of the cases the condition is found incidentally at laparoscopy giving no time for a detailed discussion with the women regarding its implications. Most of the clinicians choose to attempt conserving at least one tube if not both. In the cases where both tubal ectopic pregnancies are found to be ruptured and patient is haemodynamically compromised, it may be reasonable to

perform a bilateral salpingectomy as a lifesaving measure. Also, in cases where a woman is already considering an IVF treatment and performing a conservative tubal surgery would increase her risk of further ectopic pregnancy, bilateral salpingectomy can be considered as a treatment of choice provided that this has been discussed with the women. Loo et al. [3] reported the rare occurrence of spontaneous synchronous bilateral ectopic pregnancy in a haemodynamically unstable patient needing bilateral salpingectomy. Martinez J et al. reported one such case where bilateral salpingectomy was performed, and Marasinghe JP et al. reported a case where the patient needed emergency laparotomy in view of ruptured ectopic pregnancy.

However, in majority of the cases, it is either both ectopic pregnancies are unruptured or there is a unilateral ruptured ectopic pregnancy. Stamatellos I. et al. described a case of unrecognised bilateral ampullary ectopic pregnancy, and bilateral salpingostomy was performed for this. Eze JN et al. reported a case of spontaneous bilateral ectopic pregnancy with one ruptured and one unruptured ectopic pregnancy needing both salpingectomy and salpingostomy.

Conservative management poses further dilemma between performing a salpingostomy and opting for a medical management with methotrexate postoperatively. In haemodynamically stable patients with unruptured tubal pregnancy, systemic methotrexate and laparoscopic salpingostomy are both successful in treating the majority of cases, and there is no significant difference between the treatments in the homolateral patency rate. (Dr PJ Hajenius et al.).

Salpingostomy is a conservative tubal surgery, but it carries the risks of incomplete evacuation and persistence of gestational tissue post procedure. Moreover, salpingostomy is performed less frequently and consequently in the present system of training most of the clinicians are not trained enough to perform this competently, especially so in an emergency situation. This also re-emphasises the importance of pre-empting this rare condition so that the surgery could be as planned as possible with appropriate expertise available. Rammah A.M. reported a case of bilateral unruptured ectopic pregnancy following assisted conception technique, and the women had bilateral salpingostomy performed.

There was one report (Marcovici I. et al.) where methotrexate management was opted for bilateral ectopic pregnancy, but it failed and authors questioned the optimal dose of methotrexate to treat bilateral ectopic pregnancy. Methotrexate management postoperatively needs further monitoring of the patient with serial HCG and the risk of needing further surgery persists. However, it gives the clinician an opportunity to discuss treatment options with the women and have an informed consent to proceed with management decisions. While managing such rare but fatal cases, the clinician should carefully consider and weigh the risks and benefits of each of the treatment option in the light of individual patient's condition.

The incidence of simultaneous bilateral ectopic pregnancies is between 1 in 725 and 1 in 1,580 of all extrauterine pregnancies (Rondeau JA et al.) Although spontaneous bilateral ectopic pregnancies have also been reported, these are rare. The majority of such cases happen as a consequence of assisted conception techniques primarily with IVF. Reddy et al. [2] and Shetty JP et al. report cases of spontaneous bilateral ectopic pregnancy highlighting the diagnostic pitfalls and treatment options. Wali AS et al. also describe a similar case with diagnostic challenges and state that occurrence of bilateral ectopic pregnancies is on increase.

With the advent of artificial reproductive techniques, the risk of ectopic pregnancies has increased in the last few years. The risk of developing unilateral ectopic pregnancy following intrauterine insemination with ovarian stimulation is well recognised and is quoted to be between 4 and 8 % in literature (Azantee et al. [4] and Chang et al. [5]). However, simultaneous bilateral ectopic pregnancies following IUI is rare, and to our knowledge, there are only very few cases reported. Plotti et al. in [6] reported bilateral ovarian pregnancy after IUI. Shiau et al. in [7] reported a case of severe ovarian hyperstimulation syndrome with simultaneous bilateral tubal pregnancy following intrauterine insemination. Burgos San Cristobal D.J et al. and Woo I et al. each reports similar cases after IUI treatment. Khong et al. [8] and Mathew et al. [9] reported such cases after clomiphene ovulation induction.

Majority of bilateral ectopic pregnancies are reported after ART treatments like IVF and ICSI (intra cytoplasmic sperm injection). Bustos Lopez HH et al. reported two such cases and stated that attempts should be made to diagnose these rare conditions preoperatively using available noninvasive methods. Campo s et al. report a case of bilateral ectopic pregnancies after IVF treatment. These were the only two cases where a preoperative diagnosis of bilateral ectopic pregnancy was made based on transvaginal scan report. Sergent F et al., through their case report, have attempted to explain the reasons for an increase in rate of bilateral ectopic pregnancies in recent years and highlights the importance of thorough pelvic examination at the time of laparoscopy to avoid missing such rare condition. Klipstein S et al. and Reyad R.M. et al. report similar cases after IVF and ICSI treatment, respectively.

In summary, once bilateral ectopic pregnancies have been diagnosed, the management options include the following:

- (a) Bilateral salpingectomy
- (b) Salpingostomy and salpingectomy
- (c) Salpingectomy and methotrexate management
- (d) Bilateral salpingostomy
- (e) Methotrexate management only

Therefore, the management option has chosen needs to be tailored to the needs of the patient, patient's preferences and

the clinical picture, preferably after a detailed discussion with the patient.

Conclusion

Bilateral ectopic pregnancies occurring spontaneously or following assisted conception techniques, although rare, present the clinician with diagnostic uncertainty and management dilemmas. Available literature review suggests that most clinicians opt for a more conservative approach with salpingostomy if the ectopic pregnancy is unruptured, whereas the decision to perform bilateral salpingectomy is noted more in cases where patient is haemodynamically compromised with unilateral or bilateral ruptured ectopic pregnancies. Maintaining a high index of suspicion and examination of the contralateral tube carefully during the laparoscopy is imperative, as it can significantly influence management decisions that can have a long-term influence on the patient's fertility.

Conflict of interest Arpita Ghosh, Daniel Borlase, Tosin Ajala, Anthony James Kelly and Zaky Ibrahim declare that they have no conflict of interest.

Informed consent taken from both patients discussed above This article does not contain any studies with human or animal subjects performed by the any of the authors.

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