Original Article

Case Series of Laparoscopic Management of Unruptured Ectopic Pregnancy

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Abstract

Background: Ectopic pregnancy is one of the most common causes of the life-threatening condition. It affects the most important group of the population which contributes to the growth of society. The ease of identification through the clinical presentation and the availability of newer modalities for confirming diagnosis make the clinician duty-bound to save such patients from preventable complications and death. The patient usually presents with the triad of amenorrhea, pain abdomen, and bleeding per vagina. Unfortunately, only half of them present with such symptoms.

Patient concerns: Our case series describes different cases of unruptured ectopic pregnancy with unusual presentation. In this, we present 4 cases of ectopic pregnancy who reported to our hospital. The first case was failed medical management of ectopic pregnancy, the second was asymptomatic with a history of previous ectopic pregnancy revealing live unruptured tubal ectopic of 13 weeks, the third was ectopic pregnancy following ovulation induction and the last was multiparous with no identifiable risk factor who came with history of amenorrhea. The above cases were identified using biochemical parameters Bhcg and transvaginal ultrasonography and were subsequently confirmed by laparoscopy and proven on histopathology. Judicious use of ultrasound in an appropriate clinical setting can thus prevent mishaps and enable better management of such conditions.

Conclusion: Patients with unusual presentation who are vitally stable may be challenging to an obstetrician for early identification and diagnosis. The line of management in ectopic depends upon the condition of the patient, diagnostic findings, and lab parameters.

Keywords: Unruptured, Ectopic Pregnancy, Laparoscopy, beta HCG, Ultrasonography

INTRODUCTION

Ectopic means 'occurring in an abnormal position. Any condition that prevents or retards the migration of fertilized ovum to the uterine cavity could predispose a woman to an ectopic gestation. The incidence of ectopic pregnancy in India is 3.12 per 1000 pregnancies. (1) Though cases of ectopic pregnancy are on the rise, the incidence of rupture of ectopic and maternal death has declined because of early diagnosis and management. The recent increase in the incidence of ectopic pregnancy has been attributed to a greater incidence of sexually transmitted diseases, successful clinical detection, tubal surgeries, assisted reproductive techniques, and delayed childbearing. Ectopic pregnancy is still a major contributor to maternal morbidity and mortality. It is a disease with different presentations and different modes of management. Laparoscopy is one of the major advancements for managing tubal and uterine diseases. If laparoscopy is planned, the location, the size, and the nature of the tubal pregnancy are ascertained.

Asymptomatic and unusual presentation of ectopic pregnancy makes it a challenging disease for early identification to prevent a catastrophic outcome. We share a series of interesting cases with a different case scenario of unruptured ectopic pregnancy presented to our hospital and managed accordingly.

CASE SERIES

CASE 1 – Failed medical management of ectopic pregnancy

A 23-year-old female, G3P2L2 with 12.4 weeks of gestation with previous 2 LSCS presented with PV spotting for 10 days with a history of 2.5 months of amenorrhea. The patient revealed she was diagnosed with ectopic pregnancy 1 week prior at a private clinic with a serum beta HCG level of 1600mIU/ml and was managed medically with 3 doses of Injection methotrexate. On arrival at our hospital, her Pulse rate was 100 bpm, BP- 100/60mmhg, RR-18cpm. Abdominal examination revealed tenderness on deep palpation in the left lower quadrant and hypogastrium. There was no rebound

tenderness, guarding, or rigidity. On pelvic examination, there was spotting, the uterus was normal sized, left side fornix 5 x 4 cm mass felt associated with tenderness.
Transvaginal ultrasound findings showed well defined heterogeneous lesion noted in the left adnexa showing significant peripheral vascularity measuring 41 x 46 x 56 mm in size. The lesion was not seen separately from the left ovary with a sac-like structure within the lesion of size 3.2 x 2.6 cm corresponding to 5 weeks 6 days in the left adnexa suggestive of left unruptured ectopic pregnancy.

The patient was posted for laparoscopy. Intraoperatively, the anterior surface of the uterus was densely adherent to the anterior abdominal wall. Adhesiolysis was done with cautery and scissors. Left-sided unruptured ectopic pregnancy was identified in the ampulla of the left fallopian tube of size 4 x 4 cm, adherent to the lateral pelvic wall (Figure 1). There was no hemoperitoneum. Left-sided complete salpingectomy was done. The tissue was retrieved and sent for histopathological examination. Histopathological examination confirmed decidual elements in the left fallopian tube.

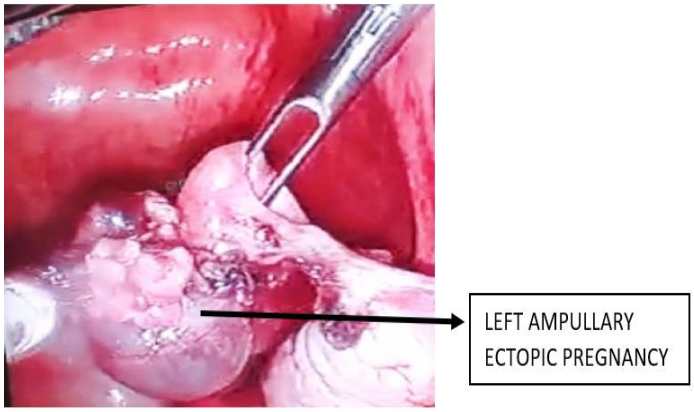

Figure 1

CASE 2 – Unruptured 13 weeks ectopic pregnancy with a history of previous laparoscopic Salpingostomy in the same tube

A 29-year-old female, G3P1L1E1 with a history of 2.5 months of amenorrhea. On arrival, Pulse rate was 96 bpm, Blood pressure was 110/70mmhg, RR-18cpm. On abdominal examination, tenderness was present in the right iliac fossa. A bimanual examination revealed fullness in the right fornix with cervical motion tenderness with normal size uterus. As the Urine pregnancy test was positive. Emergency ultrasonography was done which showed a single gestational sac seen in the right adnexa near the right ovary, and a single fetal pole of CRL-46mm, corresponding to 13 weeks of gestation seen. The decidual reaction was more prominent in the superior and right lateral portions with an endometrial thickness of 7mm. The patient gave a history of laparoscopic right-sided salpingostomy 8 years back at a private institute. The patient was posted for laparoscopy. Laparoscopy revealed hemoperitoneum and clots of 100cc were present. A mass of size 7x6 cm was seen at the infundibular part of the right fallopian tube (Figure 2). Right-sided complete salpingectomy was done. The tissue was retrieved in an endo-bag and sent for histopathological examination. One pint of PRBC was transfused intraoperatively. The postoperative period was uneventful. The patient was discharged the next day.

Histopathology report confirmed sections of the fallopian tube, blood clots, and many chorionic villi. The trophoblastic tissue invaded muscular and sub-serosal vessels. Fetal parts identified. Ectopic products of conception noted.

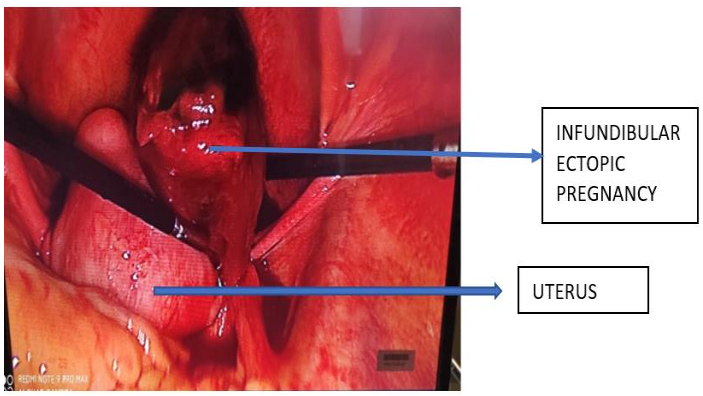

Figure 2

CASE 3 – Ectopic pregnancy following ovulation induction

A 36-year-old female, G3P1L1A1 with 6.2 weeks of gestation, conceived by ovulation induction came with complaints of vaginal spotting for 15 days with 1.5 months of amenorrhea. On examination, pulse- 106 bpm, BP- 110/78mmhg, RR-16cpm. On abdominal examination, tenderness was present on the right iliac fossa and hypogastrium. Per vaginal

examination revealed right fornix fullness and cervical tenderness. Ultrasound showed a single gestational sac of 8.6mm in the right adnexa just lateral to the right ovary, corresponding to 5 weeks of gestation suggesting right tubal ectopic pregnancy with an empty uterine cavity.
The patient was posted for laparoscopy. Intraoperatively right-sided unruptured ectopic pregnancy was noted at the ampulla of the right fallopian tube of size 4 x 5 cm. No hemoperitoneum was noted. Right-sided complete salpingectomy was done. The tissue was retrieved and sent for histopathological examination.
Histopathology sections show a fallopian tube along with various villous structures lined by cytotrophoblasts and syncytiotrophoblast. The section showed areas of hemorrhage and congested/dilated blood vessels. Features were consistent with ectopic.

CASE 4 – Ectopic in multigravida without any risk factor.

A 24-year-old female, G3P2L2 with 6.2 weeks of gestation came with a history of 1.5 months of amenorrhea. Her menstrual cycle was regular and her history was unremarkable. The patient's vitals were stable on arrival at our hospital. On abdominal examination soft and non-tender. Per vaginal examination revealed cervical motion tenderness and tenderness in the left fornix.USG findings showed an anechoic cystic lesion of size 29 x 32mm with surrounding compressed ovarian parenchyma noted in the left adnexa. A well-defined cystic lesion of 20 x 14 x 20 was noted in the left adnexa seen separately from the left ovarian cyst. It showed an echogenic area of 13 x 12 x 6 mm within. No vascularity or adjacent fluid collection was noted. The right ovary measures 27 x 20 mm. A small hemorrhagic follicle of 20 x 14 mm was noted in the left ovary. Laparoscopic findings revealed left ampullary unruptured ectopic pregnancy (Figure 3). Left-sided complete salpingectomy was done. No hemoperitoneum present.

Histopathology report of the left fallopian tube with cyst wall- section shows villous structures lined by cytotrophoblasts and syncytiotrophoblast with some villi showing hydropic changes. Positive for ectopic products of conception

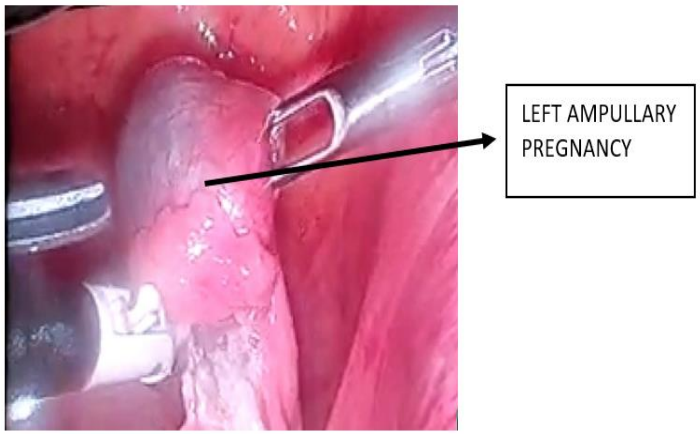

Figure 3

DISCUSSION

Ectopic gestation commonly occurs within the fallopian tubes (97%).[1] The most common site is the ampullary region (70%) of the fallopian tube, isthmus (12.0%), the fimbria (11.1%), and the cornual (2.4%) followed by other sites like the ovary, cervix, cesarean section scar, abdomen.
The reason for the fallopian tube having the most common site for ectopic pregnancy could be due to a kink in the tube, infection leading to damage of the tube, lesser space of the fallopian tube, and cilia abnormality. The fallopian tube is not designed to hold the pregnancy for a long time as the walls are very thin and might get ruptured. It can lead to profuse bleeding and create a catastrophic condition that leads to shock and death.

The most important risk factor for ectopic pregnancy is the previous history of ectopic pregnancy with a recurrence rate of 11 % in consequent pregnancies. [3] Other contributing factors include the age group of 30 to 35 years most common, previous tubal ligation surgery (39.3 %), pelvic inflammatory disease (16.1%), salpingitis due to *Chlamydia trachomatis*, *Mycobacterium tuberculosis* cause tubal damage and result in ectopic pregnancy. [1]Half of the patients with PID are asymptomatic but damage to the tube is high (13-15 % after the first episode, 35% after 2nd episode, 75% after 3rd episode), infertility treatments like ovulation induction (10.7%), IUI and IVF, failure of contraceptive methods like IUCD (19.6%) followed by progesterone pills, OCP use (5.4 %), increase the risk of ectopic pregnancy by altering the tubal motility, previous induced abortion (3.6%), abdominal wall surgeries like previous LSCS, appendicectomy.

Ectopic pregnancy presents with abdominal pain, vaginal bleeding, and amenorrhea.[3] However, half the patients do not present the above classical triad of ectopic pregnancy. In the cases described above, none of the patients presented with a classical triad. A history of amenorrhoea with no other specific presentation can often confuse ectopic pregnancy with intrauterine pregnancy. Each case was presented differently and had atypical presentations of ectopic pregnancy, which

was managed and investigated as per protocol. Patients and relatives have explained the risks and complications associated with the conditions and the options they had for treatment. Patients in particular were comfortable undergoing laparoscopy.

A study done by Meenakshi T et al. showed a maximum incidence of ectopic pregnancy in multipara (51.6%) followed by primipara (24.73%). Case 1 was a case of two previous LSCS with failed medical management which was definitively managed by laparoscopy. Laparoscopic management of ectopic pregnancy with a history of previous surgeries is a challenging task. Previous LSCS increases the risk of ectopic by 31.5% as shown by a study conducted by Geovin Ranji .[7] Our patient had received a single dose of methotrexate 1 week prior. When treated with methotrexate the patient should be explained the side effects and the importance of regular follow-up with beta-HCG levels and persistence of ectopic. Since there was no relief from symptoms, she opted for laparoscopy. In a study conducted by Surekha Appani et al single dose of methotrexate was successful in 72% whereas failure occurred in 28% of the patients. So, 39% underwent surgical treatment out of which 26% had a rupture of ectopic .[8] Treatment with methotrexate is time-consuming, and requires close follow-up with beta HCG levels and sonography since there is a life-threatening complication of rupture ectopic. However, under skilled hands, the case was successfully managed laparoscopically with a faster recovery period and better patient satisfaction.

Case 2 in particular had a history of amenorrhoea with no other symptoms. She had a history of ectopic pregnancy 8 years back. She underwent a right-sided salpingostomy for previous ectopic pregnancy. Her intraoperative findings revealed right infundibular tubal ectopic pregnancy with hemoperitoneum which was disproportionate to her clinical picture. Considering that tubal pregnancy often becomes symptomatic in the first trimester due to the lack of submucosal layer within the fallopian tube wall, it was very unlikely for an asymptomatic patient to present in OPD basis with a live unruptured 13 weeks tubal pregnancy with hemoperitoneum. A study by G. Geovin Ranji et al showed that the previous ectopic has a 19.6% risk of recurrence. The recurrence rate is high when managed by salpingostomy than by salpingectomy. Salpingostomy is time-consuming and requires close follow-up. Therefore, in this case, a high index of suspicion with early confirmation of diagnosis with serum beta HCG levels and transvaginal ultrasound was required for the timely management.[12]

Case 3 was another unique case of ectopic pregnancy following ovulation induction which presented to the OPD with complaints of vaginal spotting after 1.5 months of amenorrhoea. The ectopic pregnancy rate following ART is higher than spontaneous pregnancies (2.1 to 8.6%), especially following gamete and zygote intrafallopian transfer.[13] There is a growing body of literature describing the rise of ovulation induction and bilateral ectopic pregnancy with an incidence of 8%.[14]

Case 4 on the other hand describes an asymptomatic patient who is multigravida with no identifiable risk factors and presented to OPD with a history of amenorrhoea. Ectopic has been found to be increased in multipara in various studies and must be screened for obstetric complications in early pregnancy.[15] The patient falls under the most common age group for an ectopic presentation, that is 21 to 25 years of age, 36 .5% as shown by a study conducted by Meenakshi et al. [2] Ectopic pregnancy occurs in patients with a previous history of ectopic pregnancy, pelvic inflammatory disease, previous tubal surgeries, infertility treatments. But our patient did not have any above risk factors.

Recent developments have resulted in a shift in focus from saving the mother's life to additionally saving the woman's fertility. As many patients are asymptomatic, a high index of clinical suspicion is required for early diagnosis and timely management of ectopic pregnancy. This improves the prognosis of the patient and decreases mortality and morbidity.

With the advent of new diagnostic modalities, it is now possible to identify and intervene accordingly. The standard investigations available include monitoring beta HCG levels and transvaginal sonography (TVS) with a sensitivity is 81.1% [11]Quantitative beta HCG measurements are the diagnostic cornerstone for ectopic pregnancy. Serial beta HCG measurements are more reliable to diagnose extrauterine pregnancy than single beta HCG levels. Beta HCG levels normally double in 48 to 72 hours or by 66% in 48 hours. Its advantage is in managing patients conservatively according to its values and monitoring the success of treatment.

TVS ultrasonography showing hypoechoic mass, which is separate from the ovary, should raise the suspicion of ectopic pregnancy. The difficulty of arriving at a diagnosis with the clinical picture and TVS finding was seen in our case 4. Hence, a high degree of suspicion with meticulous management is required to identify this case at an early stage. The importance of visualizing free fluid in the peritoneal cavity (Morrison's pouch) is understated. The average ectopic pregnancy of size 1.5 cm to 3.5 cm has an increased risk of rupture and requires vigilant monitoring.

Management of the patient depends on the condition of the patient, ultrasound findings, ruptured or unruptured, hemodynamic stability, size and site of the ectopic pregnancy, serum beta HCG levels, and fertility preservation choice. Medical management with methotrexate is the preferred treatment option when the patient is hemodynamically stable, serum Beta HCG ≤5000 mIU/ml, and mean sac diameter <3.5cm with no fetal cardiac activity detected on transvaginal ultrasound. Most importantly, patients must be willing to comply with post-treatment follow-up and have access to emergency medical services. [4] Patients must be explained the advantage and disadvantage of the form of treatment she is receiving and the risk of failure in medical management as seen with Case 1. Patients must also be explained the risk of recurrence following salpingostomy and informed decisions must be made as encountered with case 2.

Surgical intervention in the form of laparotomy or laparoscopy is recommended in hemodynamically unstable patients, with signs of impending rupture, and advanced ectopic pregnancy.

Recently, laparoscopy has developed from a diagnostic aid to a highly efficient therapeutic modality. Laparoscopy permits diagnosis and treatment to be combined in the same procedure and ectopic pregnancies can be diagnosed and treated at an early stage. In fact, laparoscopy is not only suitable for early ectopic pregnancies but it is also safe and feasible in instances where there is tubal rupture and hemoperitoneum, provided the patient is not severely compromised hemodynamically. Laparoscopic salpingostomy and laparoscopic salpingectomy are being performed for treating ectopic pregnancy. Surgeons should have the expertise to safely undertake both the open and laparoscopic management of ectopic pregnancy. They should also be supported with sufficient modern equipment to facilitate safe surgery. [5]Laparoscopy is now preferred over laparotomy in the management of unruptured ectopic pregnancy and even in case of a ruptured ectopic pregnancy in experienced hands. Patients managed laparoscopically have a lesser amount of blood loss, lesser postoperative pain, fewer postoperative adhesions, and early recovery over laparotomy.[6] Laparoscopic management reduces the duration of hospital stay, better patient outcomes, and decreased morbidity.

CONCLUSION

Ectopic pregnancy still remains a gynecological catastrophe in developing country like India and pose a major challenge to the reproductive performance of women worldwide.

We have discussed unusual cases of ectopic pregnancy with various presentation which demands alertness of the obstetrician and a high index of suspicion to prevent life-threatening complications. Early diagnosis, timely referral, use of new diagnostic modalities to confirm such cases, and timely intervention with improved access to health care and blood bank facilities can reduce the morbidity and mortality associated with ectopic pregnancy.

Laparoscopic management is a safe and effective modality for the definitive treatment of ectopic pregnancy with a significant reduction in morbidity and mortality. However, a well-trained surgeon is required for performing laparoscopy to yield a better prognosis and minimize complications. Laparoscopy reduces the duration of hospital stay and offers quick recovery time and better patient satisfaction.

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