A management algorithm and proposed pathogenesis for retroperitoneal ectopic pregnancies

Although retroperitoneal ectopic pregnancies are rare (estimated at <1% of total ectopic pregnancies), they deserve thoughtful diagnosis and management. Ectopic pregnancies remain the major cause of maternal mortality during the first trimester. Medical management is reasonable when appropriate, but surgical intervention may be indicated and requires careful surgical planning and performance. Surgical management can be further complicated by unusual anatomic presentations. One such location is the parametrium, a band of fibrous tissue that separates the distal portion of the cervix from the bladder and extends bilaterally between the broad ligaments, housing the ovarian ligament and portion of the uterine artery. In their video article, Di Lorenzo et al. (1) present a clinical case where a parametrial ectopic pregnancy necessitated surgical management.

In this case, a 33-year-old woman at 8 weeks gestation presented with acute abdominal pain and was taken for diagnostic laparoscopy after transvaginal ultrasound demonstrated free fluid and a concern for ruptured ectopic pregnancy. The diagnostic laparoscopy confirmed hemoperitoneum, and a 3-cm mass was noted in the left posterior parametrium. Due to the unusual and potentially risky location of the suspected ectopic pregnancy, the decision was made to proceed with medical management with methotrexate. The beta human chorionic gonadotropin (β-hCG) level rose after the first dose; thus, a second dose was administered 7 days later. When the subsequent β-hCG level did not downtrend 1 week later, surgical intervention was recommended.

On repeat laparoscopic assessment, the gestational sac was again identified in the left posterior parametrium, and pelvic endometriosis was noted. Given the close proximity of decidualized endometriosis with the pregnancy tissue in this case, it is postulated that the fertilized ovum implanted on superficial endometriotic tissue and then migrated toward the vascularized retroperitoneal structures through trophoblastic invasion. Indeed, other investigators have described a similar theory for the pathogenesis of some tubal ectopic pregnancies, suggesting that endometriotic tissue within the fallopian tube serves as a uterine-like environment on which the fertilized ovum can implant (2). It has been reported that there is an increased risk of ectopic pregnancy in women with endometriosis by twofold to threefold (3). Endometriosis may also disrupt oocyte transport and cause alternations in the normal biochemical process of implantation and growth. Alternative pathogenic pathways for retroperitoneal pregnancy, however, have also been described, including transport through the lymphatic system or through a fistulous tract (4). Regardless of the mechanism responsible, it is clear how a retroperitoneal pregnancy, and the methods used to treat this condition, can have profound consequences for an affected patient given the critical neurovascular structures located within this space.

Originally developed for the purpose of reducing postoperative neurologic deficits following surgical management of malignancy, a number of methods have been described in the literature to approach these "nerve-sparing" procedures. More recently, laparoscopic nerve-sparing surgical techniques have been described in the setting of deep infiltrating endometriosis (5). Such methods include careful identification, dissection, and preservation of the hypogastric and pelvic splanchnic nerves. Here, the goal is to minimize urinary, rectal, and sexual dysfunction following surgery, thereby preserving postoperative quality of life.

In this video, the investigators effectively walk the viewer through this complex procedure in a stepwise fashion. They take great care to identify and clearly highlight structures such as the deep uterine vein, ureter, hypogastric nerve, and pelvic splanchnic nerves. Here, their judicious technique allowed for the safe and complete removal of the parametrial pregnancy. Complete resection was confirmed on pathology, with histology also identifying decidualized endometriotic tissue within the pathology specimen. The patient's postoperative course was uncomplicated, and the β-hCG serum level subsequently became negative. This case serves as an example that laparotomy is not necessarily required for management of this rare condition, and in fact, laparoscopy may provide improved outcomes.

This video article also serves as a reminder that, although rare, ectopic pregnancies can occur in uncommon locations such as the retroperitoneum. If the location of an ectopic pregnancy is not readily apparent on surgical exploration, a thorough intraabdominal survey should include evaluation for endometriosis or other potentially associated pathology. Once identified, these pregnancies should be carefully treated and observed, noting that special anatomic consideration is warranted depending on location. In experienced hands, the use of nerve-sparing surgical techniques can potentially result in effective treatment of this condition while reducing postoperative morbidity.

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