

Thrombophlebitis of the Ovarian Vein With Free-Floating Thrombus in the Inferior Vena Cava

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Two cases of thrombophlebitis of the right ovarian vein, one occurring after cesarean section and the other after natural childbirth, are reported. The clinical diagnosis was based on the symptoms of postpartum fever in association with right flank pain and confirmed by abdominal CT scans. In both cases the thrombosis extended into the inferior vena cava and was associated with a free-floating thrombus extending up to the renal veins. Thrombectomy of the inferior vena cava and ligation of the right ovarian vein were performed with good results in both cases, as shown by late follow-up CT scans. This and alternative therapeutic strategies are discussed. (*Ann Vasc Surg* 1993;7:582-586.)

Thrombophlebitis of the ovarian vein is a rare form of puerperal thromboembolic disease that is rarely seen by vascular surgeons. Clinical signs are often misleading,¹⁻³ but the correct diagnosis can now be made by CT scanning⁴⁻⁸ and MRI.^{9,10} The severity of the disease is related to the extension of thrombosis to the inferior vena cava (IVC) and the hazard of pulmonary embolism.¹ We report two cases of thrombophlebitis of the right ovarian vein associated with a free-floating thrombus in the IVC and discuss the different therapeutic modalities.

CASE REPORTS

Case 1. A 23-year-old multiparous woman giving birth to twins underwent cesarean section because the presenting twin was in a transverse position. Postoperatively, her temperature was 38° C and she experi-

enced pain in the right flank and lower quadrant. Blood cultures as well as cultures of urine and lochia were negative. Abdominal and pelvic sonograms demonstrated pelvic vein thrombosis. An abdominal CT scan with contrast enhancement on day 8 showed a 4 cm thrombosis in the right ovarian vein. The thrombus extended into the IVC up to the renal veins (Fig. 1). Iliocavograms confirmed the diagnosis of a free-floating thrombus in the IVC. The iliac veins and the IVC distal to the right ovarian vein were uninvolved.

Exploration through a supraumbilical midline incision revealed marked edema in the right infundibulopelvic ligament. The right ovarian vein was enormously thrombosed and surrounding tissues were the site of an intense inflammatory reaction. After a temporary Adams DeWeese clip was placed on the supra-renal IVC, the thrombus was removed through a cavotomy performed at the level of the termination of the right ovarian vein, and the IVC was closed with a 6-0 polypropylene running suture. The ovarian vein was partially excised and ligated. The vena caval clip was then removed.

This patient's postoperative course was uneventful and she was soon afebrile. Heparin was administered for 8 days followed by oral anticoagulant therapy for 3 months. A follow-up CT scan performed 3 months later showed that the IVC was free of thrombus and that the size of the right ovarian vein had returned to normal

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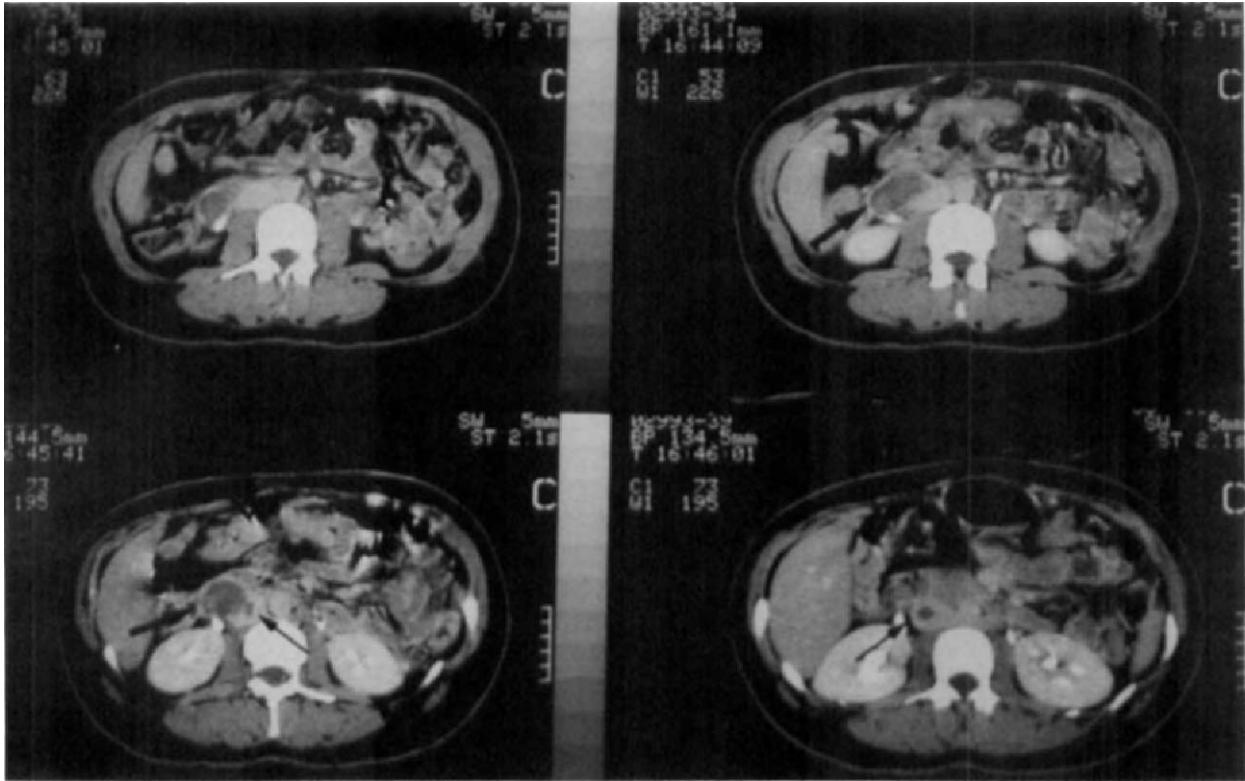


Fig. 1. Preoperative abdominal CT scans. The small arrow shows the thrombus in the IVC; the large arrow shows the voluminous thrombosed right ovarian vein.

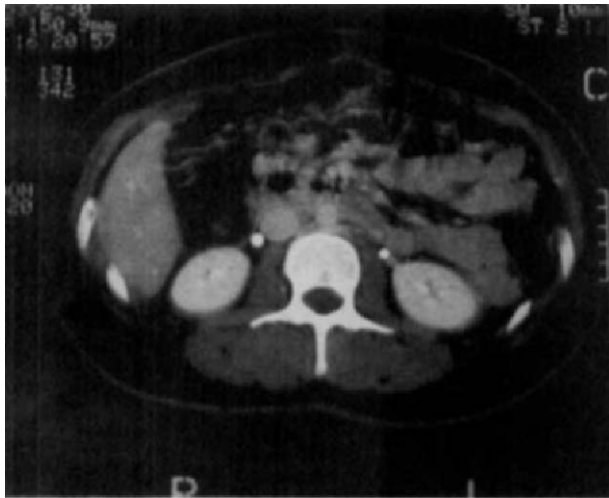


Fig. 2. Follow-up abdominal CT scan 2 months after surgery. IVC is free of thrombus.

(Fig. 2). The patient was followed regularly and was symptom free when seen at 9 months.

Case 2. This 30-year-old woman had eight previous spontaneous abortions due to incompetent cervical os. Five isthmorrhaphies had been performed. At 34

weeks' gestation in her ninth pregnancy the patient experienced fever associated with pain in the right flank suggestive of pyelonephritis. Despite these symptoms she had a natural delivery at term. Uterine revision was performed for incomplete placenta. The following day her temperature was 39° C, which persisted despite administration of broad-spectrum antibiotics. Eight days after delivery the patient became dyspneic and complained of retrosternal pain. Examination of the right flank and the right lower quadrant caused pain. ECGs and pulmonary roentgenograms revealed no abnormalities. The leukocyte reading was 15000/ml and urine cultures remained sterile. An abdominal CT scan revealed a thrombosis of the right ovarian vein associated with voluminous thrombus extending up to the renal veins (Fig. 3).

The same operation described in case 1 was performed. Intraoperatively the same appearance of the ovarian vein was observed, but the volume of the vein was less marked. The thrombus in the IVC was larger than in case 1 and extended above the renal veins. Thrombectomy was performed after placement of an Adams DeWeese clip above the renal veins. The ovarian vein was excised and ligated.

This patient's postoperative course was uneventful and she was afebrile. Heparin was administered for 8 days followed by oral anticoagulants over 3 months. A CT scan was performed 21 days later and confirmed

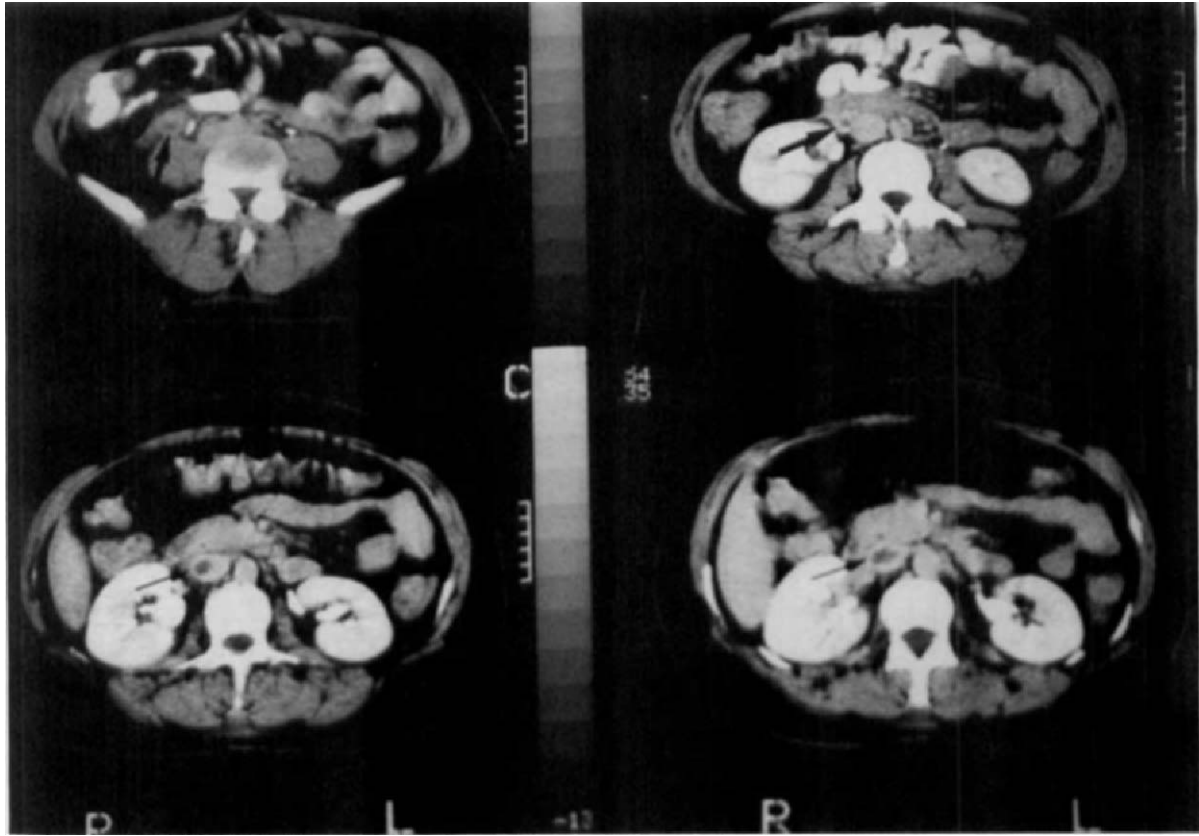


Fig. 3. Preoperative abdominal CT scan. The small arrow shows the floating clot in the IVC; the large arrow shows the voluminous thrombosed right ovarian vein.

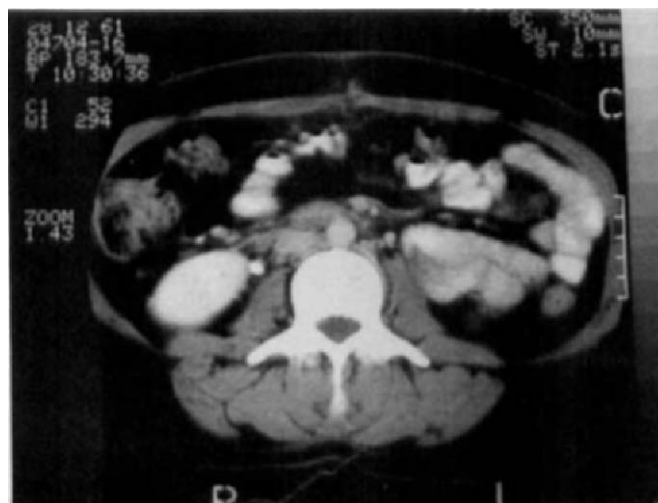


Fig. 4. Follow-up abdominal CT scan 3 weeks after surgery. The IVC is free of thrombus.

the patency of the IVC (Fig. 4). The patient has been seen regularly since and was symptom free at 6 months.

DISCUSSION

Thrombophlebitis of the ovarian vein is a rare postpartum complication first described by Austin¹¹ in 1956. The incidence during childbirth has been reported to be 0.18% by Brown and Munsick.¹² In a recent review of 158 cases published in the literature¹ the prevalence was estimated to be 0.05% for all pregnancies. The right ovarian vein is involved in 68% of cases; in 12% of cases the thrombophlebitis is bilateral, whereas the left ovarian vein is involved in only 20% of cases.¹ The clear predominance on the right side has been explained by the fact that the gravid uterus is deviated to the right and that on the left side ascending infection is precluded by retrograde flow.^{1,4,12} Several factors seem to be involved in ovarian phlebitis, including venous stasis, hypercoagulability, obstetric maneuvers, and infection.¹³ Uterine infection has been found in 45% of cases by Brown and Munsick¹² and in 67% of cases by Dunnihoo et al.¹

Clinical signs are often misleading and are usually present within 2 days of childbirth. Fever is found in all cases, whereas pain in the right flank and lower quadrant is frequent. Leukocytosis is common but blood cultures usually remain negative. Thrombophlebitis of the right ovarian vein has often been confused with acute appendicitis, acute pyelonephritis, or torsion of ovarian cyst, which explains why many cases are not diagnosed before surgical intervention.^{1-3,14} Currently the diagnosis of thrombophlebitis of the ovarian vein can be made accurately with enhanced CT scans⁴⁻⁸ and more recently by MRI.^{9,10}

The medical treatment of thrombophlebitis of the ovarian vein consists of heparin and broad-spectrum antibiotics. This therapeutic regimen has been successful in most cases.^{7,15,16} If signs persist despite medical treatment, excision or surgical ligation of the ovarian vein is required and has been performed in 65% of cases according to Dunnihoo et al.¹

Thrombophlebitis of the ovarian veins is often complicated by thrombosis of the IVC^{1,7,8,10,17} or the renal veins.¹⁸ Thrombosis of the IVC can be reversed by heparin,^{10,18} but occasionally thrombosis can become organized and of long-standing.¹⁹ The major hazard is obviously pulmonary embolism. In their review of the literature, Dunnihoo et al.¹ noted a 13.2% rate of pulmonary

embolism associated with phlebitis of the ovarian vein, and death ensued in 4.4% of cases.

In the case of thrombosis of the IVC the most common and oldest treatment proposed in the literature is ligation or plication of the IVC.^{1,16,20-23} This was performed in 6.7% of cases of phlebitis of the ovarian vein.¹ Collins²³ collected 202 cases of ligation of the IVC and ovarian veins for pelvic thrombophlebitis. Other authors have more recently proposed to place an Adams DeWeese clip whether or not thrombectomy of the IVC is performed.^{24,25} In rare instances the Greenfield filter has been used.^{26,27} This filter was placed above the renal veins in the case reported by Janky et al.²⁶ because of the location of the clot. Whenever the IVC is interrupted, the risk of postphlebotic disease is high.²⁶

Our therapeutic approach was different. In our two cases a surgical thrombectomy of the IVC was performed along with ligation of the ovarian vein. The goal was to preclude pulmonary embolism and to preserve the patency of the IVC in these young patients while avoiding the risk of postphlebotic sequelae. Thrombectomy should be performed once the IVC has been temporarily clipped above the renal veins. Four cases of death secondary to pulmonary embolism have been reported in the literature during surgical intervention for thrombophlebitis of the ovarian vein.^{1,15} The clip should thus be removed after thrombectomy once the ovarian vein has been excised and ligated. Late CT scans have shown that the patency of the IVC was satisfactory in our two patients, which confirms the rationale for our approach.

CONCLUSION

Although thrombophlebitis of the ovarian vein is rare, the risk of extension of thrombosis to the IVC and pulmonary embolism makes it a potentially serious condition. CT scanning and MRI will provide a correct diagnosis. In case of free-floating thrombus in the IVC, in our opinion surgical thrombectomy is the best treatment for young women to preclude the risk of pulmonary embolism and avoid postphlebotic disease.

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