

Inferior Vena Cava Syndrome Secondary to a Large Uterine Leiomyoma Presenting With Venous Thromboembolism

Tyler Kelly — Senior House Officer, Queensland Health

Key message: Venous thromboembolism may be the presenting feature of underlying structural pathology.

Case description

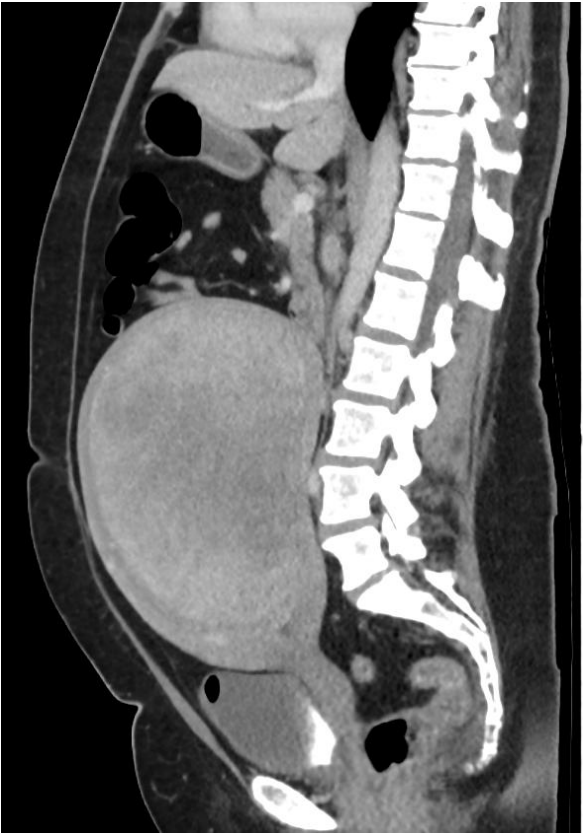
A non-pregnant, nulliparous woman in her 40s with intellectual impairment presented by ambulance to a rural hospital with sudden dyspnoea, chest and back pain, and several days of left calf pain. She was pale, diaphoretic and peripherally cool, with prehospital oxygen saturations of approximately 70% on room air and systolic blood pressure around 80 mmHg. Examination demonstrated a distended, tender abdomen with a large palpable midline abdominopelvic mass and tenderness of the left calf and thigh. Initial investigations indicated haemodynamic stress, with lactate 5.5 mmol/L, pH 7.219, troponin 0.29 on i-STAT and electrocardiographic features of right-heart strain. With the cause of her shock initially uncertain, the rural team treated empirically for both sepsis and pulmonary embolism using intravenous piperacillin–tazobactam and therapeutic enoxaparin before retrieval transfer to a regional facility.

At the regional emergency department, BNP was 838 and retrieval point-of-care echocardiography demonstrated right-heart strain. CT pulmonary angiography confirmed extensive bilateral pulmonary emboli with acute right-ventricular strain. CT of the abdomen and pelvis demonstrated a 12 × 19 × 21 cm uterine mass, considered likely to represent a fibroid, causing significant compression of the inferior vena cava and common iliac veins. Further history identified previous heavy menstrual bleeding that had improved following insertion of an etonogestrel contraceptive implant. No prior pelvic ultrasound was identified in the records available for review.

The remainder of the admission focused on identifying the provoking cause of the pulmonary embolism and excluding a malignant pelvic process. Lower-limb Doppler ultrasound confirmed non-occlusive left-sided deep venous thrombosis involving the distal femoral, popliteal and paired posterior tibial veins. MRI demonstrated a large uterine fundal mass with benign imaging features consistent with leiomyoma. Staging CT of the chest, abdomen and pelvis demonstrated no metastatic disease and confirmed marked mass effect on the inferior vena cava and external iliac veins. Blood cultures were negative, inherited and acquired thrombophilia testing was unremarkable, and tumour markers were reassuring apart from an isolated CA 125 elevation. These findings made infection, inherited or acquired thrombophilia, and an overt malignant process less likely as alternative causes of the venous thromboembolism, supporting mechanical venous compression by the leiomyoma as the most plausible provoking mechanism.

Following tertiary gynaecological and vascular medicine consultation, the mass was considered benign. Vascular medicine advised that an inferior vena cava filter would not be required if surgery followed at least three months of therapeutic anticoagulation. After a nine-day hospital admission, the patient was discharged on ongoing therapeutic apixaban. Although clinically stable, definitive hysterectomy was deferred following advice to allow at least six months for recovery of cardiac function after the extensive pulmonary embolism.

Imaging



CT demonstrating 12x19x21cm mass arising from the uterus.

References

1Mathew et al., 2021; 2 Gupta & Manyonda, 2009; 3 Afaq et al., 2025; 4 Lawrensia & Khan, 2026; 5 Freund et al., 2022; 6 Dicks et al., 2024; 7 Becattini & Cimmini, 2023; 8 Health NZ, 2026; 9 ACSQHC, 2024; 10 RANZCOG C-Gyn 10, 2021.

Discussion

Uterine leiomyomas are common benign tumours, affecting up to 70% of women by menopause, and most often present with abnormal uterine bleeding or pelvic pressure symptoms [1]. Acute complications are uncommon; however, large leiomyomas may exert mass effect on adjacent structures, including the iliac veins and inferior vena cava [2,3]. Inferior vena cava syndrome describes impaired caval flow caused by obstruction or extrinsic compression. In the setting of a large pelvic mass, reduced venous return may produce venous stasis, deep venous thrombosis and pulmonary embolism [3,4].

This case demonstrates the importance of continuing diagnostic reasoning after identifying the acute pathology. Extensive pulmonary embolism explained the patient’s hypoxia, shock, right-heart strain and biomarker elevation, but did not explain why the thrombosis had occurred. The uterine mass provided a unifying mechanism: direct compression of the inferior vena cava and iliac veins, producing inferior vena cava syndrome, left-sided DVT and subsequent embolisation. Because caval obstruction may also result from malignant abdominopelvic disease or primary inferior vena cava tumours, excluding malignancy was important. Benign MRI characteristics, reassuring tumour markers and specialist review supported leiomyoma rather than malignancy, while negative blood cultures and thrombophilia testing reduced support for alternative provoking mechanisms [3,4].

Acute management appropriately prioritised therapeutic anticoagulation for extensive pulmonary embolism with right-ventricular strain [5]. However, recognising inferior vena cava syndrome as a persistent structural provoking factor meant that management could not end with anticoagulation alone. Classification of VTE as provoked, minimally provoked or unprovoked informs recurrence-risk assessment, treatment duration and further investigation [6,7]. Definitive hysterectomy was therefore planned after an appropriate period of anticoagulation and cardiopulmonary recovery.

Previous heavy menstrual bleeding may have represented an earlier manifestation of the leiomyoma. No prior pelvic ultrasound was identified in the records available for review. In people with intellectual disability, communication barriers may limit the recognition or reporting of symptoms associated with structural uterine pathology, including progressive bleeding, pelvic pressure and abdominal enlargement. Clinical history alone may therefore be insufficient to confidently exclude an underlying structural cause, and appropriate objective assessment may help reduce diagnostic delay [9,10]. Current abnormal uterine bleeding guidance supports pelvic ultrasound where the history or examination suggests structural pathology, or where symptoms persist despite conservative management [8]. Although inferior vena cava syndrome secondary to a benign leiomyoma is rare, its consequences may include extensive DVT, pulmonary embolism and haemodynamic compromise. Earlier recognition and investigation of possible structural pathology is therefore important, particularly where communication barriers may obscure the symptoms or examination findings that would ordinarily prompt imaging.