Multidisciplinary staged management of iliofemoral venous thrombosis caused by huge uterine fibroid: a case report

H Zhang[1], MD, **HL Li**[1], MD, PhD, **YC Chan**[1,2] *, MB, BS, BSc, **DZ Cui**[1], MD, **SW Cheng**[1,2], MB, BS, MS

[1] *Division of Vascular Surgery, Department of Surgery, The University of Hong Kong–Shenzhen Hospital, Shenzhen, Guangdong, China*
[2] *Division of Vascular and Endovascular Surgery, Department of Surgery, The University of Hong Kong Medical Centre, Queen Mary Hospital, Hong Kong*

* Corresponding author: ycchan88@hkucc.hku.hk

Hong Kong Med J 2021;27:46–9
https://doi.org/10.12809/hkmj208548

Case report

A 45-year-old woman was admitted with a 2-day history of sudden-onset swelling and pain of her left thigh and calf. There was no history of trauma or prolonged immobilisation. The patient had a history of menorrhagia and a large uterine fibroid treated conservatively. Physical examination showed that the left leg was grossly swollen and tender, with palpable pedal pulses, with a large pelvic mass 15 cm in diameter. Emergency ultrasound duplex scan revealed a left iliofemoral venous thrombosis (Fig 1a). There were no symptoms of pulmonary embolism (PE). Blood D-dimer level was elevated at 9.49 μg/mL. Pulmonary computed tomographic angiography was unremarkable.

Anticoagulation with low-molecular-weight heparin (Enoxaparin [Sanofi, France], 6000 IU, once every 12 hours) was given immediately. Venogram on the second day after admission revealed a left iliofemoral deep venous thrombosis (DVT) with total occlusion (Fig 1b). A retrievable inferior vena cava filter (Lifetech; Shenzhen, China) was placed via the right femoral vein. Left popliteal vein puncture was performed under ultrasound guidance with the patient in a prone position, and a 6F sheath inserted. A 0.035" wire was passed through the left thrombosed femoral and iliac vein, and an AngioJet catheter (Boston Scientific, United States) passed over the wire. After injection of 200 000 IU of urokinase through the AngioJet catheter for 15 minutes, mechanical thrombectomy was performed under fluoroscopy. Completion venography confirmed that

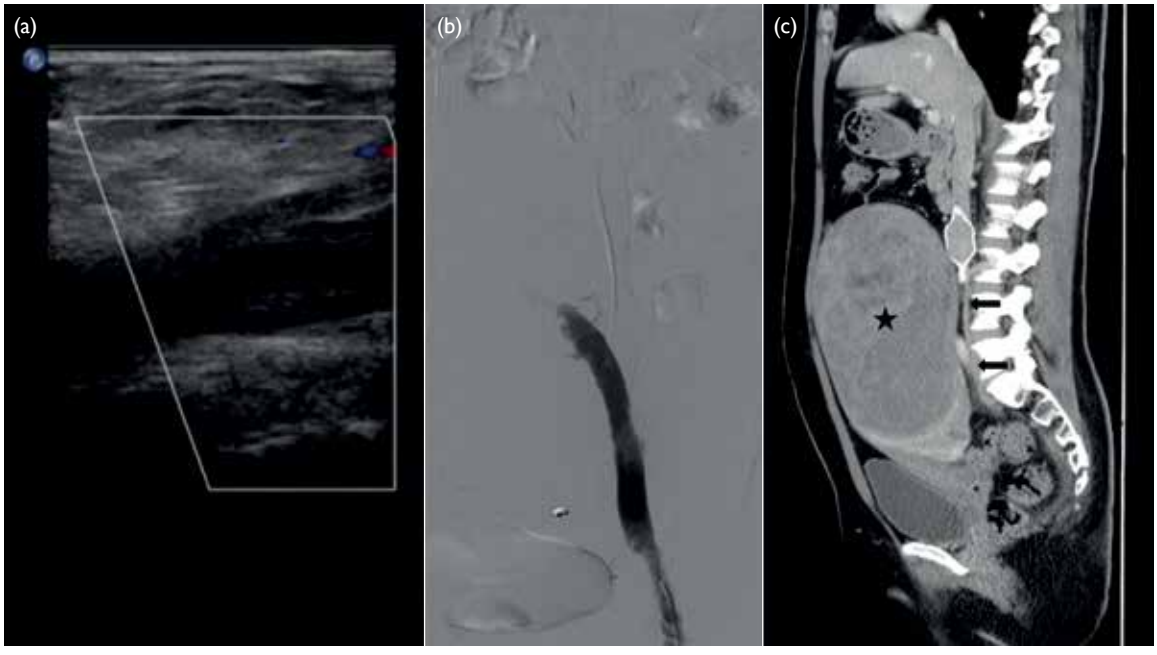

FIG 1. (a) Emergency ultrasound duplex scan showing left iliofemoral venous thrombosis with total occlusion; (b) confirmed by venogram after admission. (c) Abdominal contrast computed tomography scan showing the inferior vena cava and left iliac vein (black arrows) were flattened by a large uterine fibroid (black star)

the femoral veins and iliac veins were completely recanalised, but with some residual stenosis noted at the proximal left common iliac vein. Venoplasty with a 10-mm × 80-mm balloon (Advance 35LP Low-Profile PTA Balloon Dilatation Catheter; Cook, United States) was performed but the left common iliac vein collapsed after withdrawal. In view of her history of giant uterine fibroid, an abdominal contrast computed tomography scan was performed and demonstrated a large uterine fibroid measuring 160 mm × 100 mm × 180 mm. The inferior vena cava and left iliac vein were compressed and flattened (Fig 1c).

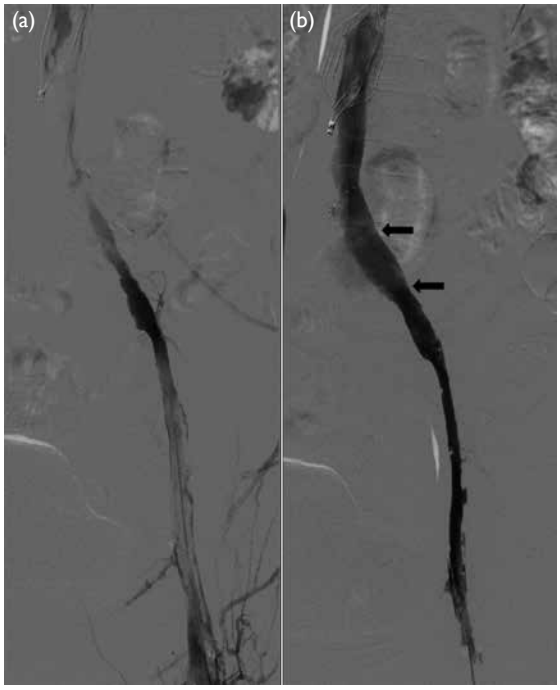

FIG 2. (a) Left proximal common iliac vein stenosis was not improved by venoplasty alone but (b) resolved after stent (black arrows) deployment

After urgent multidisciplinary consultation involving vascular surgeons and gynaecologists, a transabdominal hysterectomy and bilateral salpingectomy was performed 1 week later. The oncologist was also involved in the diagnosis and management of this case and decided against radiotherapy or chemotherapy following surgery. Anticoagulation with low-molecular-weight heparin was administered perioperatively. Although the gynaecologist encountered some difficulties dissecting the uterus that was too large with the anterior wall tightly adherent to the bladder, the operation was completed with no complications. Postoperatively, left leg swelling was much improved but repeated duplex ultrasound showed residual, albeit minimal, iliac vein thrombosis.

Repeat left iliac vein angioplasty and stenting was performed 1 week later. Left proximal common iliac vein stenosis was identified on venogram, not improved by venoplasty alone with a 12-mm × 80-mm balloon (Cook) [Fig 2a] but resolved following deployment of a self-expanding 14-mm × 80-mm Zilver stent (Cook) [Fig 2b]. The vena cava filter was not retrieved as there was a large thrombus lodged in the caval filter, demonstrated by a filling defect at the apex of the filter. Subsequently, left leg swelling significantly improved (Fig 3a and b)

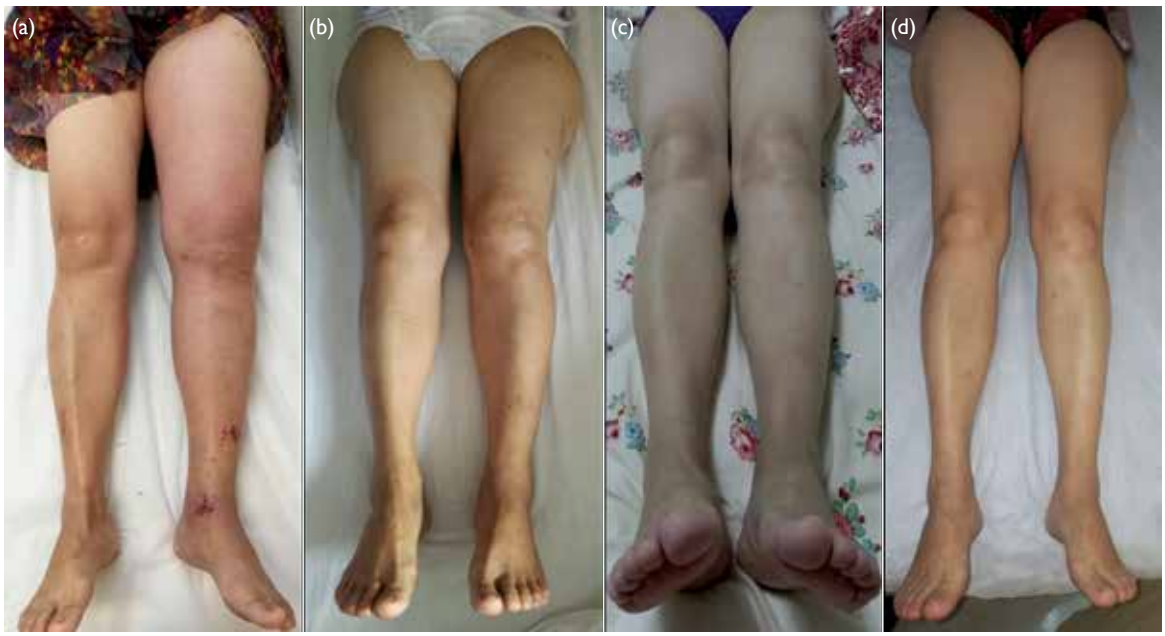

FIG 3. (a) Swollen left leg on admission, (b) improvement 1 week after thrombectomy and stenting, and complete resolution at (c) 3 months and (d) 2 years after surgery

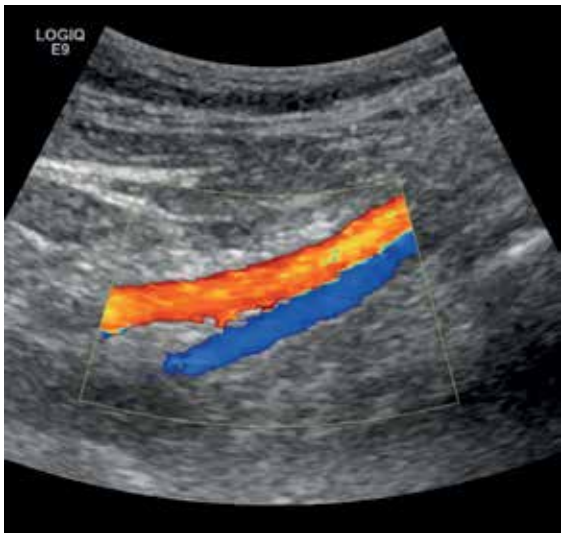

FIG 4. Ultrasound duplex scan revealed that the iliac stent was patent at 2 years after surgery

and the patient was prescribed anticoagulation with rivaroxaban for 1 year after surgery. The patient remained asymptomatic during regular out-patient follow-up examinations (Fig 3c and d) and the iliac stent remained patent on ultrasound scan at 2 years after surgery (Fig 4).

Discussion

Uterine fibroids are common and benign but can cause external compression on the iliac veins leading to venous stasis and DVT formation, akin to a subclinical May-Thurner phenomenon. Owing to the complexity of the pathogenesis and the severity of complications, patients with extensive DVT secondary to fibroid uterus should be managed urgently with a multidisciplinary approach.

Iatrogenic manipulation of the iliac veins during surgery for hysterectomy may lead to dislodgement of thrombi and increased risk of pulmonary embolus.[1] It is therefore advisable to have a caval filter in situ and to continue with systemic anticoagulation perioperatively. A caval filter during thrombolysis should also be used routinely to reduce the risk of embolisation when percutaneous mechanical thrombectomy (PMT) is planned.[2] The caval filter can be removed within 2 weeks if there are no further thrombi but must remain in situ if there are large clots in the apex of the caval filter. Ideally, in our patient with acute iliofemoral vein thrombosis, the hysterectomy should be performed safely with the inferior vena cava filter in place to prevent life-threatening PE during surgery. Thrombectomy and iliac vein stenting may be performed after hysterectomy. Percutaneous mechanical thrombectomy provides greatest benefit in patients with acute extensive proximal (above knee) DVT, and is best performed within 14 days of onset of symptoms.[3]

Compared with catheter-directed thrombolysis, the potential benefits of mechanical thrombectomy include shorter procedural time, lower thrombolytic dosage, lower associated systemic effects, and higher thrombus clearance.[4] The success rate for PMT has been reported to be 93.4%,[4] with a venous patency rate of 75% to 100% after mean follow-up of 12.3 months.[5] The potential complications of PMT include injury or perforation of the vein, PE caused by thrombus during thrombectomy, and thrombolytic agent-related haemorrhage. Nonetheless to date, there has been no report of the application of PMT in the treatment of DVT secondary to uterine fibroid. A retrospective study showed that PMT is an acceptable initial therapy in venous thrombosis patients with May-Thurner syndrome.[6] In our patient, PMT was proven effective and safe in the treatment of acute proximal DVT caused by uterine fibroid.

Current guidelines make no recommendation about the duration of anticoagulation following iliofemoral vein stenting. Nonetheless it has been reported that in selected patients with acute iliofemoral deep vein thrombosis and patent venous stent, particularly younger and otherwise healthy patients with May-Thurner syndrome, anticoagulation therapy can be safely discontinued 3 to 12 months after endovascular treatment.[7] Our patient received anticoagulation for 1 year after surgery.

To the best of our knowledge, this is the first case in the world's literature to report a dedicated staged venous procedure to treat a left iliofemoral DVT in the presence of a large uterine fibroid. Application of a staged process that combined urgent caval filter insertion, PMT to remove the DVT thrombus load as soon as possible, and then hysterectomy to remove the external venous compression, and finally completion venogram with angioplasty or stenting of any residual stenosis was an effective and safe treatment for acute iliac DVT with large uterine fibroid. This multidisciplinary dedicated staged therapeutic strategy resulted in a successful long-term outcome.

Author contributions

Concept or design: H Zhang, HL Li, YC Chan.
Acquisition of data: H Zhang and DZ Cui.
Analysis or interpretation of data: H Zhang, HL Li, SW Cheng.
Drafting of the manuscript: H Zhang, HL Li, YC Chan.
Critical revision of the manuscript for important intellectual content: All authors.

All authors had full access to the data, contributed to the study, approved the final version for publication, and take responsibility for its accuracy and integrity.

Conflicts of interest

The authors have no conflicts of interest to disclose.

Funding/support

This case report received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Ethics approval

The patient was treated in accordance with the Declaration of Helsinki. The patient provided written informed consent for all treatment and procedures and for publication of this paper.

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