

DIAGNOSIS OF AORTIC THROMBUS AFTER PELVIC SURGERY

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We describe the case of a patient who was found to have an aortic thrombosis while in the recovery room after an abdominal perineal resection. If not treated early, aortic thrombosis can be a devastating complication, leading to paralysis, need for amputation, or death. Understanding the risk factors that pre-dispose patients to thrombosis can allow the anesthesiologist to make an earlier diagnosis in the recovery room. In addition, patients at high risk of intraoperative thrombosis may benefit from an anesthetic plan that includes particular attention to patient positioning and hemodynamic stability.

Case Description

A 62-year-old gentleman with a recto-urethral fistula after radiation for prostate cancer presented to the operating room for an abdominal perineal resection. His past medical history included hypertension, diabetes mellitus, chronic renal insufficiency, and tobacco use. His previous surgeries included a radical cystectomy with an ileal conduit and ureteral stent placement.

The patient was induced with general anesthesia and placed into lithotomy position with steep Trendelenburg for the duration of the six-hour surgery. The intra-operative blood loss was approximately 750 mL. Soon after tracheal extubation, the patient began complaining of right leg pain. He was also unable to move his leg. Both legs were cold to the touch: the right leg was pale, and the left leg was cyanotic. Dorsalis pedis pulses were not palpable in either leg. Suspecting acute limb ischemia, the anesthesiologist immediately consulted a vascular surgeon. When multiple attempts to locate a pulse with Doppler were unsuccessful, the patient was taken for a computed tomography angiogram, which confirmed the diagnosis of an aortic thrombus beginning above the bifurcation and extending into both iliac arteries (figure 1). The patient was taken emergently to the operating room for a thromboembolectomy, approximately five hours after the end of his original procedure. Three months later, the patient was discharged to a subacute rehabilitation facility, although he was unable to stand without assistance.

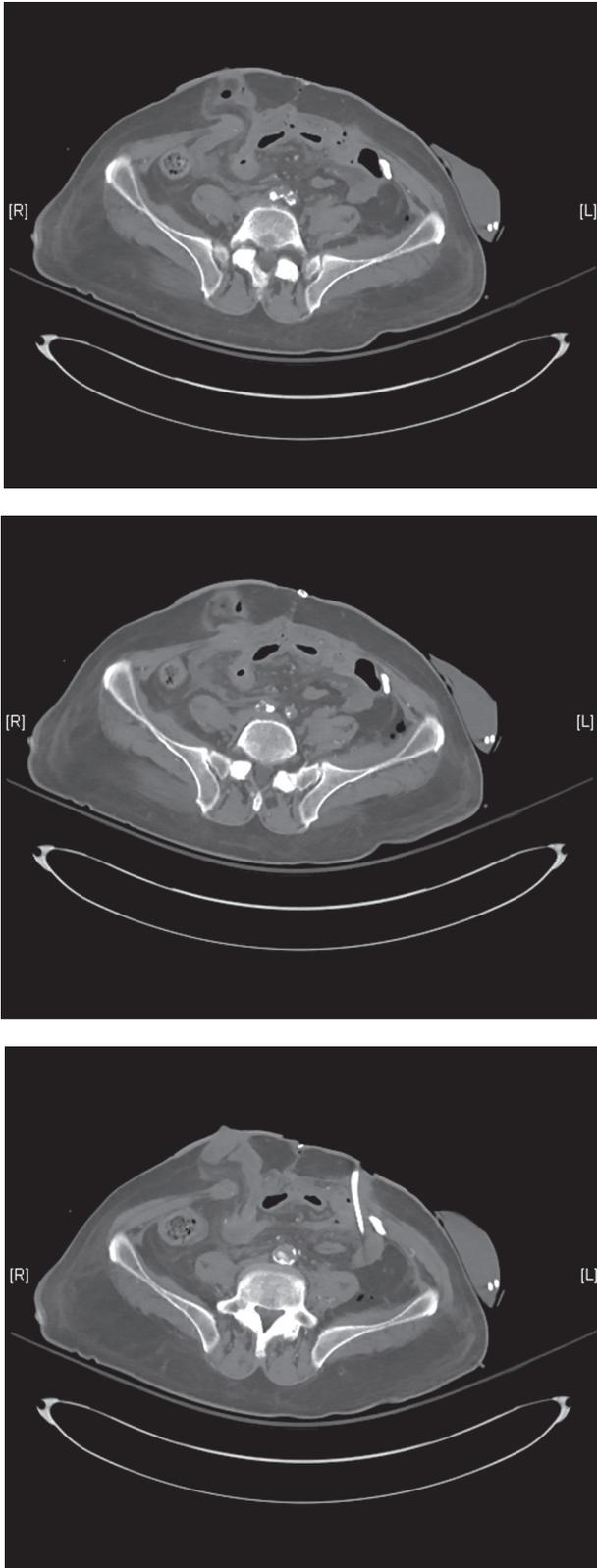
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Fig. 1

Computed tomography angiogram (CTA) showing an aortic thrombus beginning above the bifurcation (A) and extending into both iliac arteries (B, C).



Discussion

To our knowledge, only one other case report has described a post-operative aortic thrombosis after pelvic surgery¹. That patient experienced progressive weakness and decreased sensory function of both legs after undergoing a low anterior resection. These symptoms were initially mis-attributed to the patient's epidural analgesia. The diagnosis of aortic occlusion was not made until postoperative day one, when a femoral pulse could not be palpated in either groin. Despite successful surgical restoration of blood flow to salvage the lower extremities, the patient was unable to ambulate afterwards.

A similar clinical scenario was seen in two other patients who had post-operative thrombosis of their indwelling aortic endo-grafts after pelvic surgery². Both patients had undergone endovascular repair of an abdominal aortic aneurysm one week prior to their colectomy. After the colectomy, both patients had loss of palpable lower extremity pulses. However, because the diagnosis was made within two hours and re-vascularization was performed immediately, neither patient experienced neurologic or vascular sequelae. The anecdotal evidence from this limited number of cases suggests that the avoidance of adverse consequences requires early diagnosis in the recovery room and prompt treatment. Studies of spontaneous acute aortic occlusion have also shown that patients who have motor or sensory deficits at the time of diagnosis have a higher chance of adverse events³. Therefore, it may be prudent to identify patients preoperatively who are at higher risk of thrombosis and pre-emptively perform postoperative vascular checks before motor or sensory symptoms develop.

Acute aortic occlusion often presents with the signs and symptoms of acute limb ischemia: pain, pallor, poikilothermia, paresthesia, paralysis, and pulselessness. In order to avoid mistaking a patient's symptoms for a neurologic deficit and delaying appropriate intervention, physical examination of the patient with any of the first five "P's" should also include a thorough pulse (including Doppler⁴) examination, which may be the first indication that the underlying symptoms are caused by a vascular etiology and not a neurologic one³.

Spontaneous aortic thrombosis has been associated with smoking, diabetes, coronary artery disease, hypertension, hyperlipidemia, chronic renal insufficiency, atherosclerosis, peripheral artery disease, cancer, hypercoagulable states, radiation therapy, and male gender^{1,3,5-10}. Some authors have hypothesized that thrombosis occurs during low-flow states, such as with low cardiac output or hypovolemia⁶, both of which can occur during surgery.

Patients who present to the hospital on the day of surgery may be hypovolemic from NPO status or bowel preparation. Additional intra-operative factors include extensive surgical dissection or retraction leading to vascular injury¹¹; prolonged lithotomy and Trendelenberg position; and compression of legs from stirrups or serial compression devices. Both of these latter two factors - lithotomy positioning¹² and serial compression devices¹³ - have been implicated

in compartment syndrome of the lower extremities, leading to decreased circulation. Although there have not been any reports of ureteral stents causing thrombosis, it is also possible that turbulent blood flow through the common iliac arteries at the point over which the ureters and stents cross could contribute to thrombosis.

Some authors have advocated certain measures to improve circulation to the lower extremities. Confirming the presence of distal pulses when the patient is first positioned in the lithotomy position may prevent unnecessary compression of the lower extremities². In prolonged procedures in the lithotomy or Trendelenberg position, intermittently placing the patient into supine position¹⁴ or tilting the table so that the legs are below the level of the left atrium^{12,15} may decrease the duration of time that the lower extremities are hypoperfused¹⁶.

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