THORACIC ENDOVASCULAR REPAIR OF DESCENDING THORACIC AORTIC THROMBUS
Joshua Chitwood, Vernon Horst, Viraj Pandit, Peter Nelson, Kelly Kempe, and Hyein Kim
Division of Vascular Surgery, Department of Surgery, University of Oklahoma – Tulsa

INTRODUCTION

• Thoracic Aortic Thrombus (TAT):
  • Mural thrombi are attached to the luminal wall of a large blood vessel or cardiac chamber
  • Majority found in descending aorta
  • Occur secondary to atherosclerosis
  • Management includes: anticoagulation, thrombolysis, surgery
  • Thoracic endovascular aneurysm repair (TEVAR) is most common treatment modality

• Penetrating Arterial Ulcer (PAU)
  • Incidence is 2-8%
  • 40-50% of PAUs progress to acute classic aortic dissection
  • Females with PAUs tend to have worse outcomes

CASE PRESENTATION

• 80 year old woman with bilateral renal infarct and persistent abdominal/back pain secondary to extensive descending thoracic/thoracoabdominal aortic thrombus despite oral anticoagulation treatment

• CT Scan:
  • 6mm penetrating aortic ulcer (PAU) proximal to celiac artery (Figure 1)
  • > 50% stenosis of distal left common femoral artery (CFA)

• Operative Intervention:
  • Stent grafts planned across Zone 2 to Zone 4 (Figure 2)
  • Stent grafts in descending thoracic aorta distal to subclavian and proximal to celiac artery (Figure 3)
  • Thromboembolism in the left CFA and external iliac artery (EIA) on intraoperative imaging
  • Open endarterectomy, retrograde stent graft in left EIA and bilateral stents in the common iliac arteries (Figure 4)
  • Flow-limiting thromboembolism in the left superficial femoral artery (SFA) treated with covered stent graft
  • Palpable pedal pulses bilaterally at conclusion of the case

IMAGES

Figure 1: Mural thrombus with PAU in descending thoracic aorta on CTA.
Figure 2: TEVAR landing zones.
Figure 3: Stent graft extending from Zone 2 to Zone 4 on intraoperative aortogram.
Figure 4: Stent grafts in common iliac arteries bilaterally on postoperative CTA.

DISCUSSION

• TAT:
  • Incidence is unknown
  • May be symptomatic or diagnosed as an incidental finding on computed tomography (CT)
  • Reported 73% incidence of embolic events in patients with mobile mural thrombi
  • Mortality of complex plaques up to 20% in three years
  • TEVAR is minimally invasive compared to open endarterectomy
  • TEVAR allows for simultaneous stent graft placement

• Penetrating Arterial Ulcer (PAU)
  • PAU persisted despite long-term oral anticoagulation
  • We could assume thrombus was partially organized, therefore the patient was a candidate for TEVAR

• TEVAR:
  • Shortens operative times and decreases hospital stay
  • Improves perioperative morbidity and all-cause mortality

• Potential complications of TEVAR:
  • Hematoma at access site
  • Acute thrombosis of access vessel
  • Distal embolization
  • Emergent revascularization is indicated in cases of acute thromboembolism with thrombectomy and intervention (angioplasty with/without stent placement) or bypass

CONCLUSION

• Stent grafts aid in prevention of future thromboembolism
• In this case we were able to successfully restore distal perfusion and contribute to overall improved quality of life