Severe Iatrogenic Injuries: Etiologies, Locations, Diagnosis And Safe Endo Treatment Techniques: Precautions And Prevention

Samy S. Nitecki
Dept. of Vascular Surgery
Rambam Health Care Campus

AN EXCELLENT ACADEMIC MEDICAL CENTER
RAMBAM Health Care Campus

NO DISCLOSURES

BACKGROUND

- Iatrogenic complications are common. Almost 250,000 preventable adverse events per year. Medical errors are now the third-leading cause of death in the US, having surpassed strokes, Alzheimer's, and diabetes.
- More frequent with hospitalization (especially in ICU), multiple chronic diseases and treatment by multiple clinicians.

- Vascular iatrogenic complications are less common, occurring during diagnostic procedures or therapeutic interventions.
- Iatrogenic vascular injuries range from minor to severe resulting in morbidity and mortality. Thus, their treatment varies accordingly.

Risk Factors

- Patients' co-morbid diseases and/or use of anticoagulants
- Difficult anatomy/anatomical variation/anomaly
- Prior procedures
- Learning curve (new procedure/equipment)

- Diagnostic procedures: radial, femoral, thoracoscopy, arthroscopy
  - hematoma/tear
  - pseudoaneurysm
  - a-v fistula
  - dissection and distal emboli
- Closure devices:
  - failure >>> bleeding
  - arterial occlusion >>> ischemia
  - infection

- **Treatment procedures/Operations:**
  - General surgery: Appendectomy, cholecystectomy, tumor resection
  - Urology 0.1-1%: Nephrectomy
  - Gynecology 0.3-1.5%: Tumor resection, Hysterectomy, BSO
  - Orthopedic 0.5-2%: Spine, acetabulum, femur, tibia, THR, TKR
  - Vascular surgery 0.5-3%: EVAR, TEVAR, venous surgery
  - Cardiology 1-6%: PCI, TAVR
  - Central venous catheter 5-10%

Anatomy

Femoral-Popliteal	41%
Aorto-Iliac	28%
Innominate-Brachial	25%
Carotid	3%

Fem stop

Occluding angioseal

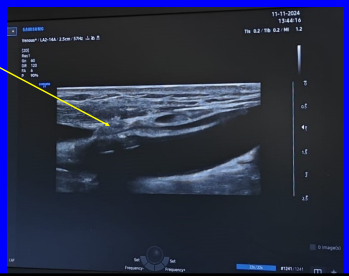
Treatment Options

- Angioseal application – for local bleeding
- Stent insertion – for dissection/partial occlusion
- Stent graft insertion – for bleeding/ partial tear

- Open surgery

Central venous catheter to carotid

Treatment by angioseal



Bleeding treated by stent graft

Laparoscopic Appendectomy

Laparoscopic Appendectomy

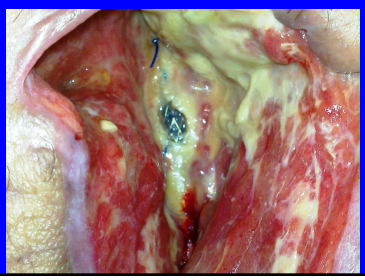
Treatment by stent graft

Endovascular treatment, however, is not always possible or successful…

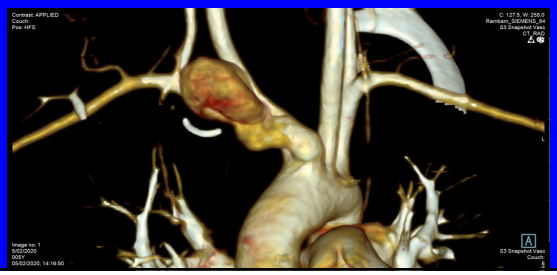
Laminectomy

Wound infection with stent exposure

Artery ligated, Stent excised Ilio-fem bypass, via obturator canal, fashioned



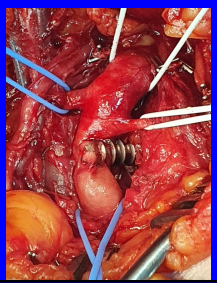
ECMO in Innominate of a 6 year child



ECMO to Innominate

acetabulum

end to end anastomosis



TEVAR for trauma

Ilio-fem bypass

TAVR with Aortic Dissection and Perforation

Aorto-bi-Iliac bypass

CONCLUSIONS

- Iatrogenic vascular injuries are uncommon but may be serious and can risk life or limb.
- The preferred intervention is endovascular to minimize invasiveness and decrease operative trauma.
- When endo is difficult or unsuitable, do not force it, early conversion to open surgery is required.


Thank you