Management of abdominal compartment syndrome after rupture EVAR in 75 year IHD patient

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Disclosure

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x I do not have any potential conflict of interest
Introduction

- EVAR for rAAA was associated with lower perioperative and long-term mortality.

- EVAR is not inferior to OR in the repair of ruptured AAA in terms of short term and mid-term survival.

- In retrospective studies EVAR even offers a survival advantage over open repair for non-elective aneurysm procedures.

- Endovascular repair is recommended to be used more widely for ruptured aneurysms.

Case presentation

- 75 year old male patient

- IHD with PCI 3 months (EF 50%), A Fib, DM

- He is known to have infrarenal AAA 5 cm with CTA in early 2016 with suitable anatomy for EVAR

- 1 year after: Presented with sudden severe abdominal pain and severe hypotension of 4 hours duration
Examination

- General: Bp 90/50  HR 130  Temp 37.2  RR 20
- Severe pallor with distended abdomen
- No urine output for the past 4 hours
- Labs: Hb 7.5  creatinine 1
Procedure

- Under local anaesthetic
- Both groins were explored
- Intraoperative angiogram revealed a good neck
Introduction of main body through RT and coverage of both IIAs as both CIAs were aneurysmal and short (36 mm 90 mm body with 16x120 limbs on both sides Bolton device)
Completion angiography

No endoleak
Postoperative

- After the procedure:
  - BP 120/80 pulse 110 urine 50ml Hb 8 IAP 18

- First day postoperative:
  - Bp 100/60 pulse 110 maximum dose inotropes
  - IAP 28 and he had abdominal distension and CXR with elevated both copula of diaphragm in CXR and IAP 28
Abdominal compartment syndrome

The best option of treatment is laparotomy

But

- The patient was critically ill and unfit for transferral to operating theatre according to Intensivists

So less invasive option was applied first

- Bed side US guided aspiration of the hematoma (900 ml)
  - IAP went down to 18 and parameter of ventilation improved, BP 120/70, pulse 110 and inotropes were reduced
Second day

- IAP started to increase to 30
- Decision to do a laparotomy was taken with a doubled layers mesh and skin closure.

- After this, inotropes were much reduced and ventilation was better, IAP 15, on regular dialysis.
- Inotropes were stopped on the 13th day postoperative.
Discussion
If anatomically feasible, EVAR is preferred over open repair for treatment of rupture AAA.
Abdominal compartment syndrome (ACS)

Abdominal compartment syndrome (ACS) is diagnosed when the abdominal pressure increases to 20 mm Hg in combination with end-organ dysfunction.

Abdominal compartment syndrome (ACS) is a serious complication after surgery for abdominal aortic aneurysm (AAA) and it is more common after rupture (rAAA).

About 8 to 17% of patients treated for rAAA with EVAR developed ACS.

If left untreated, mortality is nearly 100%; with treatment, mortality is still 30 to 70%.
Pathophysiology

- The pathophysiology is multifactorial:
  I. the retroperitoneal hematoma
  II. Ongoing bleeding from lumbar and inferior mesenteric arteries in the setting of severe coagulopathy
  III. the shock state associated with ruptured AAA is associated with alterations in microvascular permeability that can lead to visceral and soft-tissue edema.
Predictors of ACS

- The need for an aortic occlusion balloon,
- The presence of severe coagulopathy,
- Massive transfusion requirements, and
- The emergent conversion of modular bifurcated stent grafts to AUI devices

Recognition and timely management of ACS after AAA repair is crucial for improved survival, and development of intestinal ischemia during ACS is associated with an increased mortality rate.

Management

- Non surgical
  - neuromuscular blockade (NMB).
- Decompression via laparotomy and Management of the OA
  - VAC ALONE
  - vacuum and mesh-mediated fascial traction
  - Direct closure
- Decompression through retroperitoneal incision
  - Non surgical
    - neuromuscular blockade (NMB).
    - positive end-expiratory pressure hypertonic albumin and furosemide, often referred to as PAL treatment
    - VAC ALONE

Less invasive Techniques
- Computed tomography–guided puncture followed by installation of tissue plasminogen activator
  - Directed decompression

The complications of VAC include intestinal fistula graft infection and wall lateralization (lateral retraction) of the abdominal wall >>> catastrophic outcome

Conclusion

- US guided decompression of postoperative abdominal compartmental syndrome is not the ideal treatment of abdominal compartmental syndrome after rEVAR, however it is a valid option as a temporary line till the patient stabilized and a full laparotomy should be done as soon as possible.

- Additionally timely intervention for Abdominal compartmental syndrome is a life saving procedure and should not be delayed for fear of risk of operation on such patient
Thank you