Endovascular treatment of Traumatic Thoracic Aortic Injuries

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INTRODUCTION

- >80% deaths on scene
- Concomitant injuries
- In hospital deaths related aortic rupture within first 4 hours.
- Remaining deaths are due to associated injuries.

Classification

- Grade I: Intimal Tear
- Grade II: Intramural Hematoma
- Grade III: Pseudoaneurysm
- Grade IV: Rupture / extravasation

Impact of TEVAR

- Open Repair  6-23%  9-50%  0-17%
- Endovascular  0%  0-23%  0-2%

Industry
Research
Opportunity (short learning curve)
Other specialties

Evidence

- Less morbidity and mortality
- Possible local anesthesia and without heparin
- Quick recovery

Graft durability
- Surveillance.
  - Angio CT
  - Radiation

Patients with Long life expectancy
VALLE DE HEBRON

- October 1999 – December 2007: 19 patients
- Men 74%
- Median age 31.2 (15-65)
- Juxta-Infra subclavian 95%
- Distal descending aorta 5%

100%
EARLY RESULTS: VALLE DE HEBRON

- Mortality 30 days 0%
- Paraplegia 0%
- Acces complications with surgical repair 21%
- Intended left subclavian artery occlusion 53%

Medium term: Valle de Hebron

Mean 40.12 month (0.3-86.6 m)

- Mortality 0%
- Paraplegia 0%
- Endoleaks 0%
- Carotid-subclavian bypass 11% 2
- Aortic reinterventions 11% 2
  - Thrombosis endograft
  - Collapse endograft

Collapse endograft

Thrombosis endograft

Long-term: Valle de Hebron:

- October 1999 – January 2015: 34 patients
- Follow-up 8.2 years (range 12-198 months.)
  - Mortality 0%
  - Paraplegia 0%
  - Endoleaks 0%
  - Carotid-subclavian bypass 5.8% 2
  - Aortic reintervention 5.8% 2
    - Thrombosis endograft
    - Collapse endograft
  - Endoleaks type III 2.9% 1
  - Intragraft mural trombus 17.4% 6
  - Fracture of the longitudinal bar 5.8% 2

Endoleaks type III
WHO AND WHEN
SHOULD WE OFFER SURGERY?

- EAST Guidelines 2000
  - Early repair
- SVS Guidelines 2011
  - Urgent repair >24 h
- EAST Guidelines 2015
  - Delay repair when possible
- ESVS Guidelines 2017**
  - Type II, III delay repair
  - Type IV emergency repair

WHO AND WHEN SHOULD WE OFFER SURGERY?

Valle de Hebrón

Median days delay repair 5.5 days (0 – 180 days)
CONCLUSIONS

- Endovascular repair of choice.
- Good early results and during follow up.
- Safely selecting patients for nonoperative or delayed repair is challenging and requires accurate assessment of lesion grade
  - TYPE I: conservative management.
  - TYPE II, III: delayed repair (semielective)
  - TYPE IV: emergency treatment