Late Aortic Reinterventions after Surgery for Acute Type A Aortic Dissection

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Objectives

- To outline patterns, prevalence and outcomes of aortic reinterventions after surgical repair for acute type A aortic dissection (ATAAD)

- To identify factors associated with such aortic reinterventions

Methods

- All patients who underwent surgery for ATAAD at one center with a minimum of 10 years follow-up (January 1 2005 to December 31 2013, n=225) were included in the study

- Indication for and type of aortic reintervention(s) as well as outcomes were obtained from medical records

- Cox regression, including a Fine-Gray model to treat death as competing risk to reintervention, was performed to identify factors associated with aortic reintervention(s)

Results

- 225 patients were included in the study
  - Mean age was 62 years (11.5)
  - 151 patients (67.1%) were male
  - Mean EuroSCORE II at index repair was 8.8 (12.0)
  - 2 patients (0.9%) had a preoperatively known connective tissue disease

- Operative procedures at time of index repair for ATAAD
  - 195 patients (86.7%) underwent surgery with an open distal anastomosis
  - 33 patients (14.7%) underwent a root replacement
  - 18 patients (8.0%) underwent arch resection

- 30-day mortality after index repair was 12.9%

Results

- 37 patients underwent an aortic reintervention at a median of 7.9 years (range 0-15.3 years) after the index operation. Of those, 12 patients (32.4%) underwent more than one reintervention

- Indications for reintervention
  - Aortic dilatation (84%)
  - Aortic regurgitation (27%)

- Main types of reinterventions
  - 15 patients (40%) underwent an arch replacement
  - 10 patients (27%) underwent an aortic root replacement
  - 7 patients (19%) underwent open thoracoabdominal or descending aortic replacement
  - 6 patients (17%) underwent an endovascular procedure

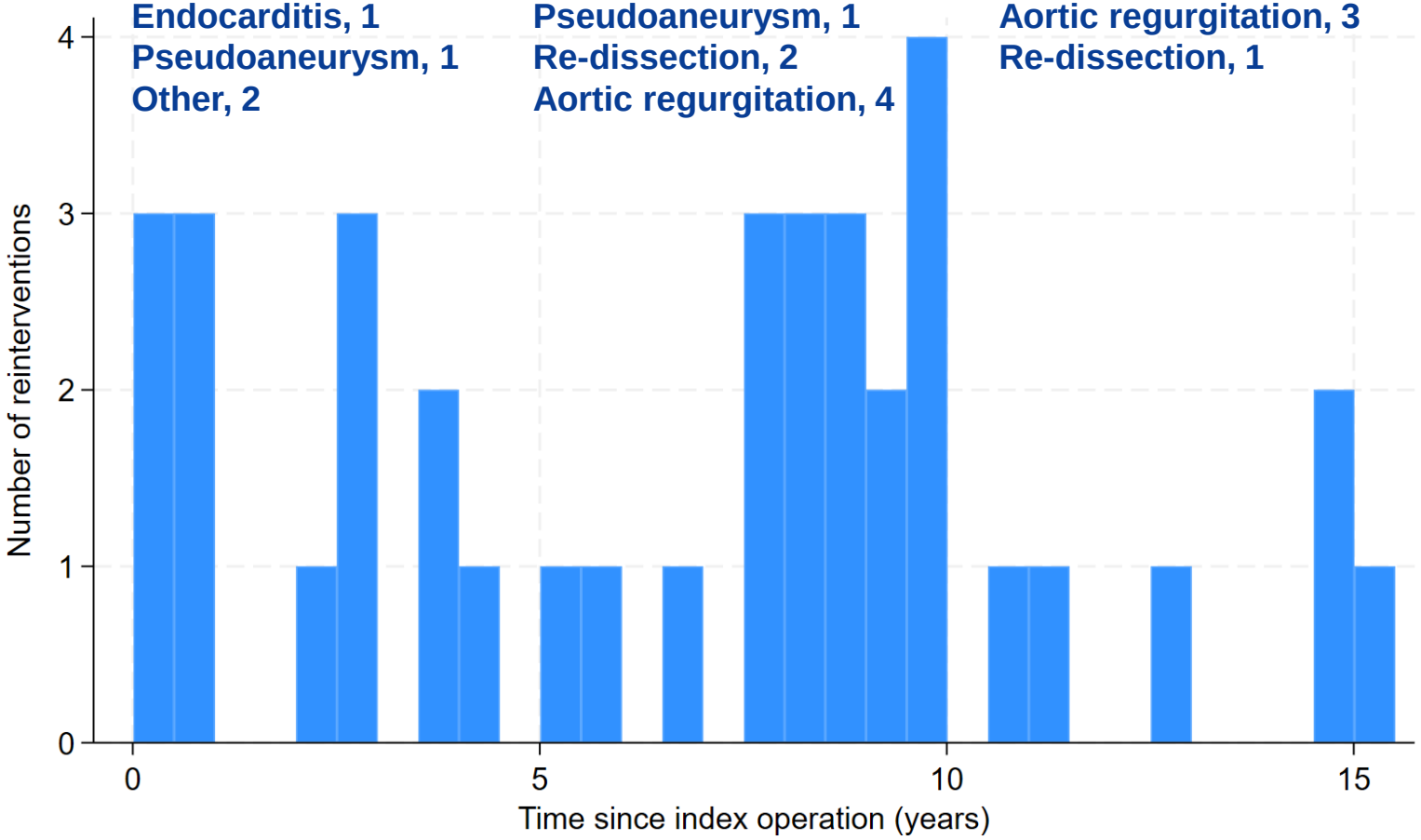
- 30-day mortality after aortic reintervention was 0%

Distribution of reinterventions during follow-up

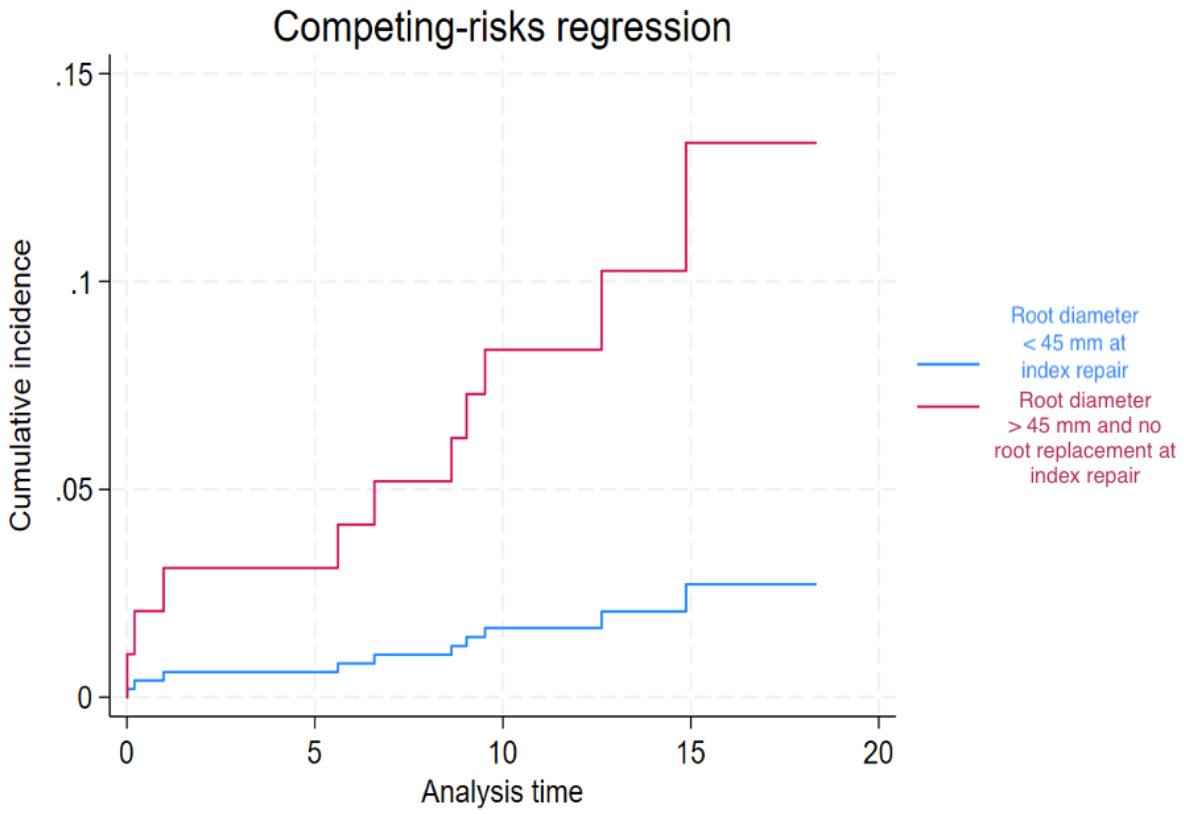
Early (<1 year)
Aortic regurgitation, 2
Endocarditis, 1
Pseudoaneurysm, 1
Other, 2

Mid (7-10 years)
Dilatation, 14
Pseudoaneurysm, 1
Re-dissection, 2
Aortic regurgitation, 4

Late (>10 years)
Dilatation, 5
Aortic regurgitation, 3
Re-dissection, 1

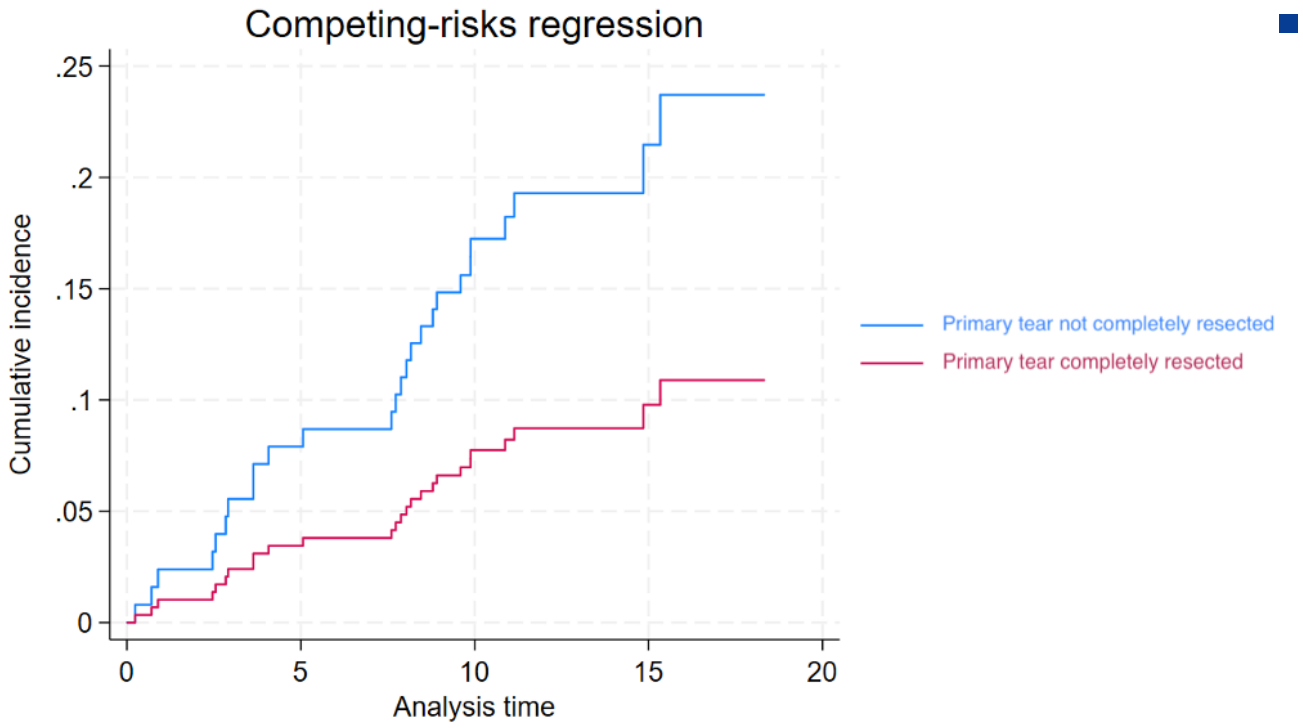


Results



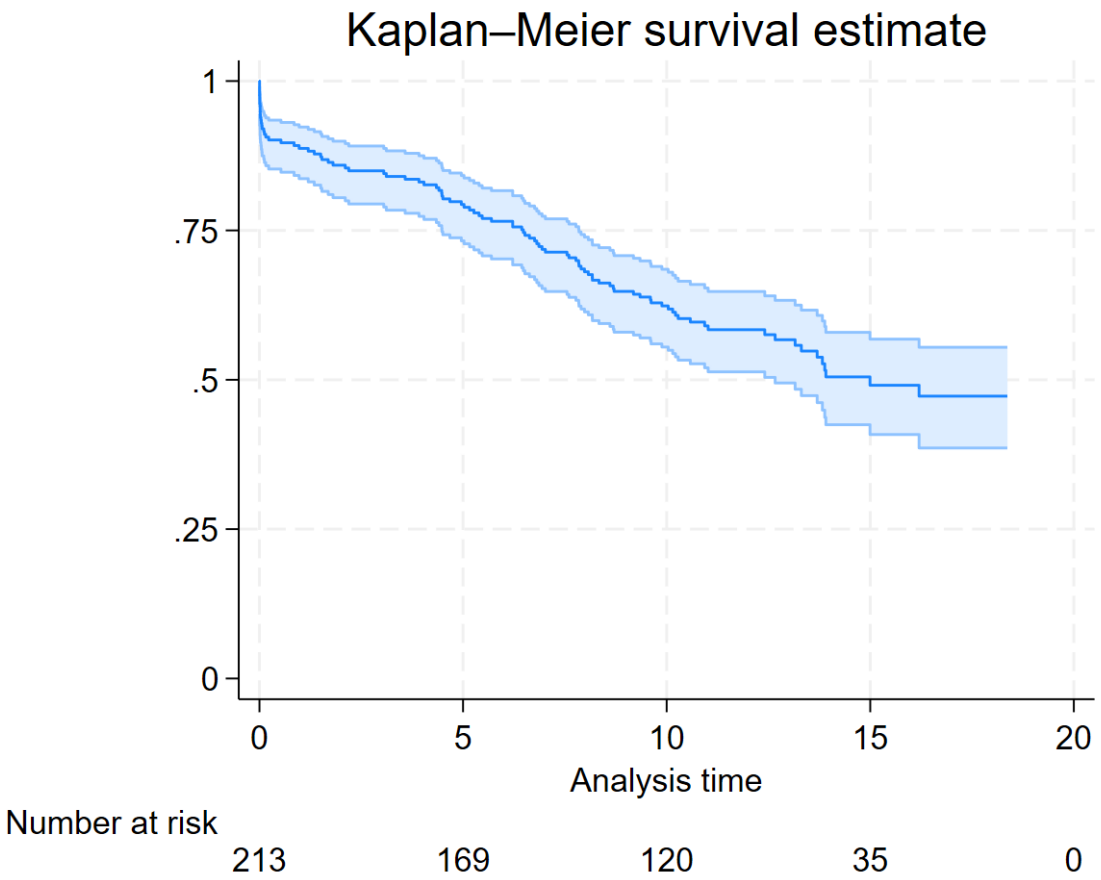
- **Factors associated with proximal aortic reintervention (treating death as competing risk)**
  - **Aortic root diameter >45 mm and no root replacement at index repair**
    - SHR 5.4 [1.3-22], p = 0.02
  - **Age (per year increment)**
    - SHR 0.9 [0.9-0.96], p = 0.001

Results



- **Factors associated with distal aortic reintervention (treating death as competing risk)**
  - **Preoperative descending aortic diameter (per mm increase)**
    - SHR 1.1 [1.0-1.2], p = 0.005
  - **Dissection of the right renal artery**
    - SHR 2.9 [1.7-2.3], p = 0.03
  - **Failure to completely resect the primary tear**
    - SHR 2.3 [1.0-5.5], p = 0.05

Results



- **Factors associated with death**
  - **Age (per year increment)**
    - HR 1.05 [1.02-1.07], p < 0.001
  - **Chronic obstructive pulmonary disease**
    - HR 3.3 [1.3-9.4], p = 0.01
  - **EuroSCORE II**
    - HR 1.02 [1.01-1.03], p = 0.001
  - **Reintervention**
    - HR 0.3 [0.2-0.7], p = 0.007

Results

- Mean follow up time was 9.2 (5.6) years
- Overall survival at 1, 5, 10 and 15 years was 84% (95% CI 78-88%), 75% (69-80), 59% (52-65) and 47% (39-54), respectively
- Event-free survival at 1, 5, 10 and 15 years was 82% (95% CI 77-87), 72% (65-77), 48% (41-54) and 33% (26-40), respectively

Conclusion

- Aortic reinterventions are not uncommon after surgery for ATAAD with a conservative approach to the extent of repair at the time of initial surgery
- The need for aortic reintervention may occur very late after the original repair, suggesting lifelong surverillance for most patients who have undergone surgical repair for ATAAD
- Aortic reinterventions can be done with a low risk for mortality in selected patients
- Replacing a moderately dilated aortic root and complete resection of the primary tear may decrease the need for aortic reinterventions