Cardiology 2024

Transcatheter thoracic duct decompression for multicompartment lymphatic failure after Fontan

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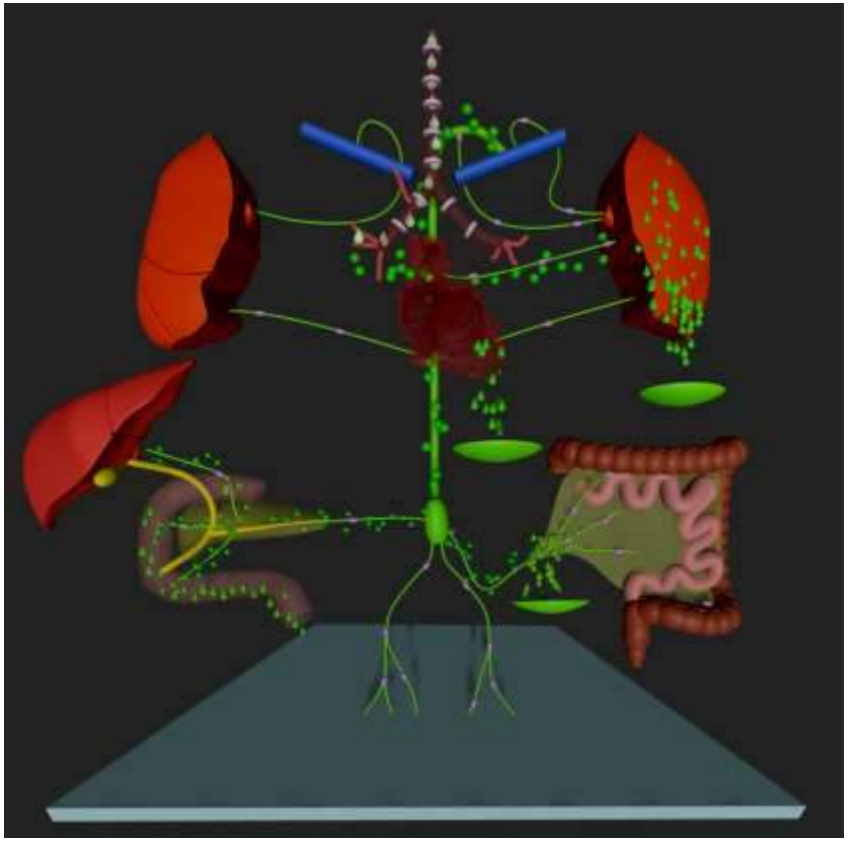
disclosures

- no relevant disclosures

- off-label use of products will be discussed

Multicompartment lymphatic failure after Fontan

- PLE
- +/- PB
- + ascites
- +/- effusions



Decompression of Thoracic Duct: New Approach for the Treatment of Failing Fontan

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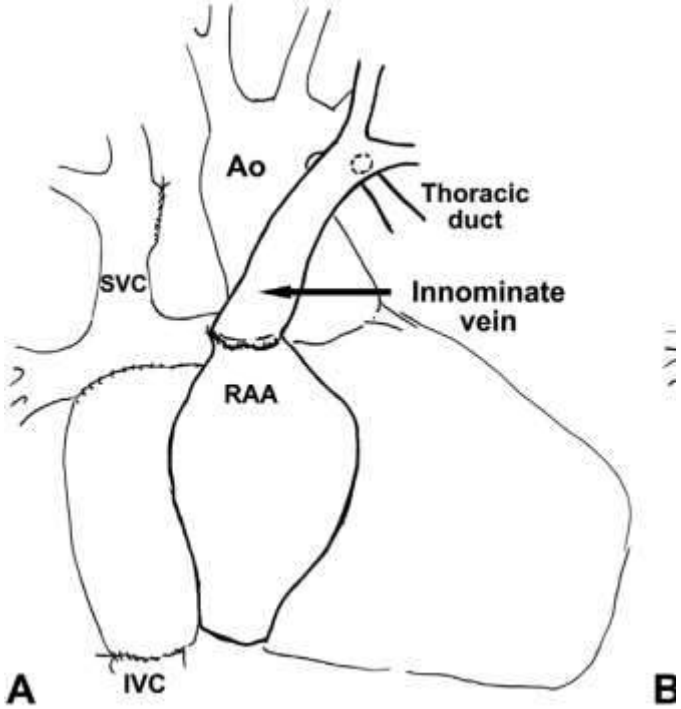
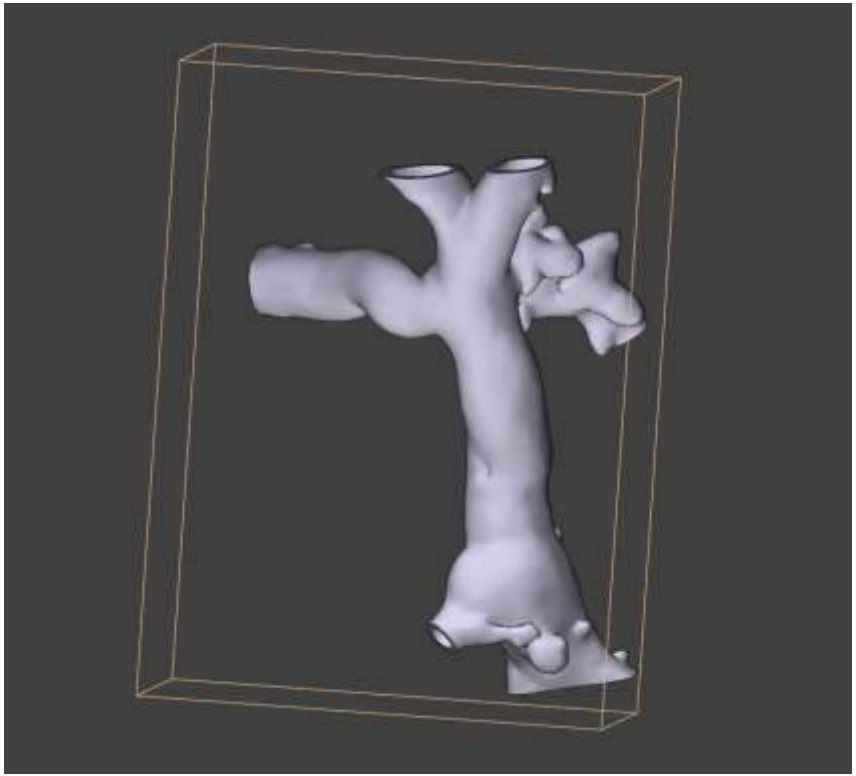
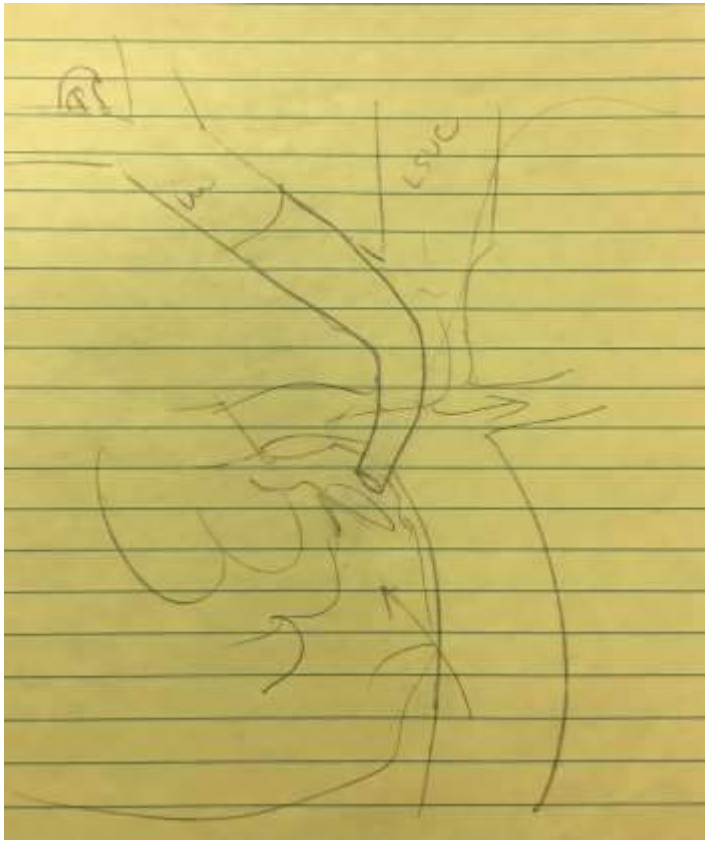
Ann Thorac Surg 2013;96:709–11



Concept: Transcatheter Strategy to accomplish TDD





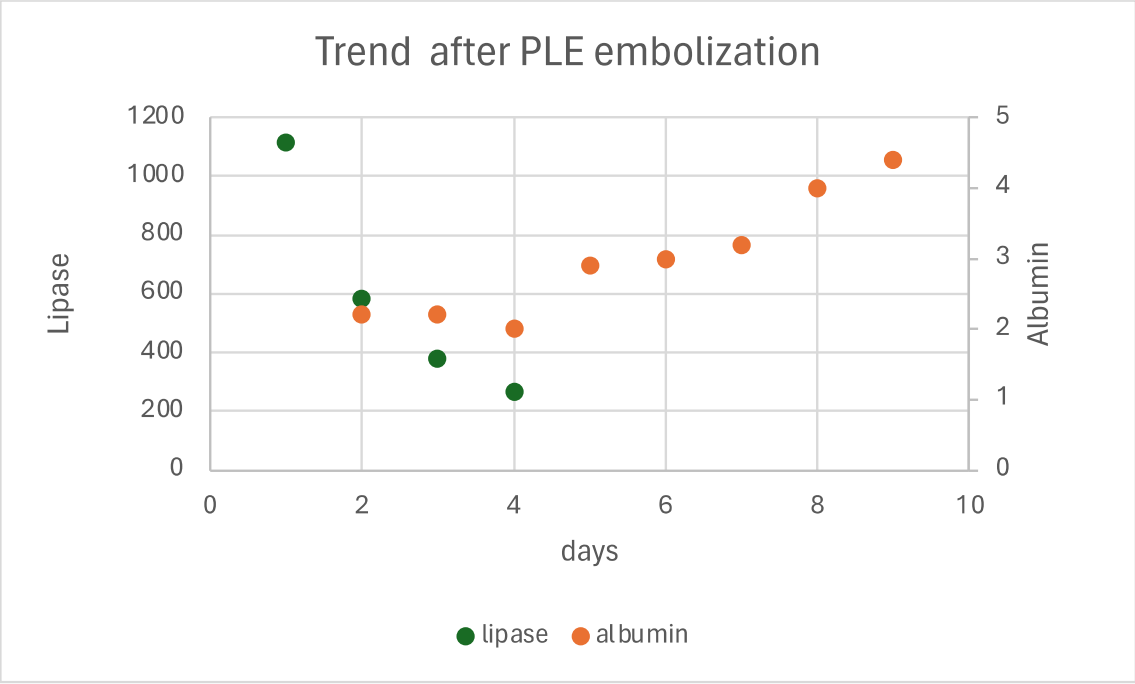
16 year old post Fontan with chronic PLE

- Tricuspid atresia with extracardiac Fontan s/p pacer
- PLE for several years
  - Medical therapies: enalapril, spironolactone, sildenafil, budesonide, and aspirin, torsemide
  - Deemed not a transplant candidate at referring center
  - Baseline
    - Albumin 1.6 g/dL
    - SpO2 91%
    - Non fenestrated extracardiac Fontan, normal LV fx.

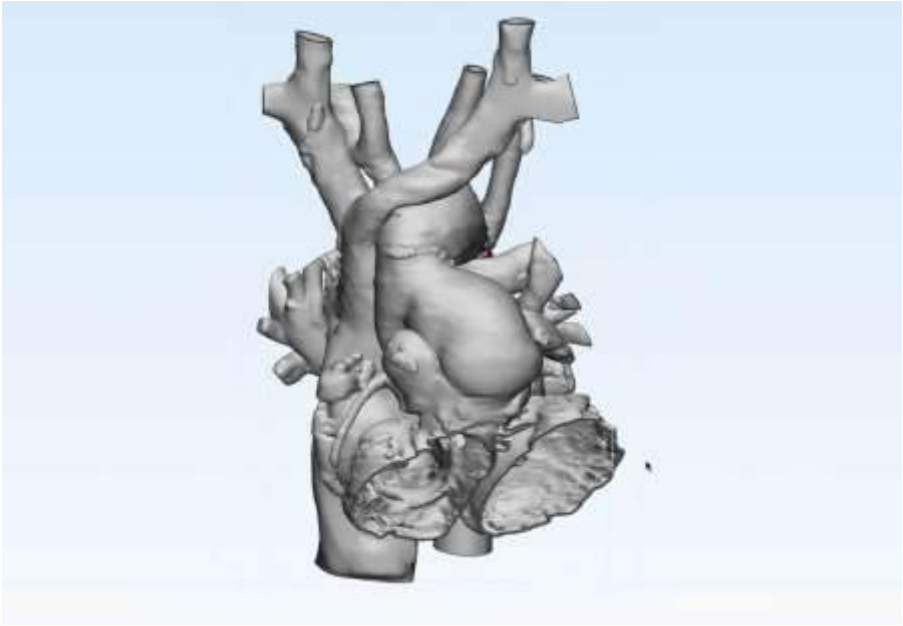
MR Lymphangiogram and PLE intervention

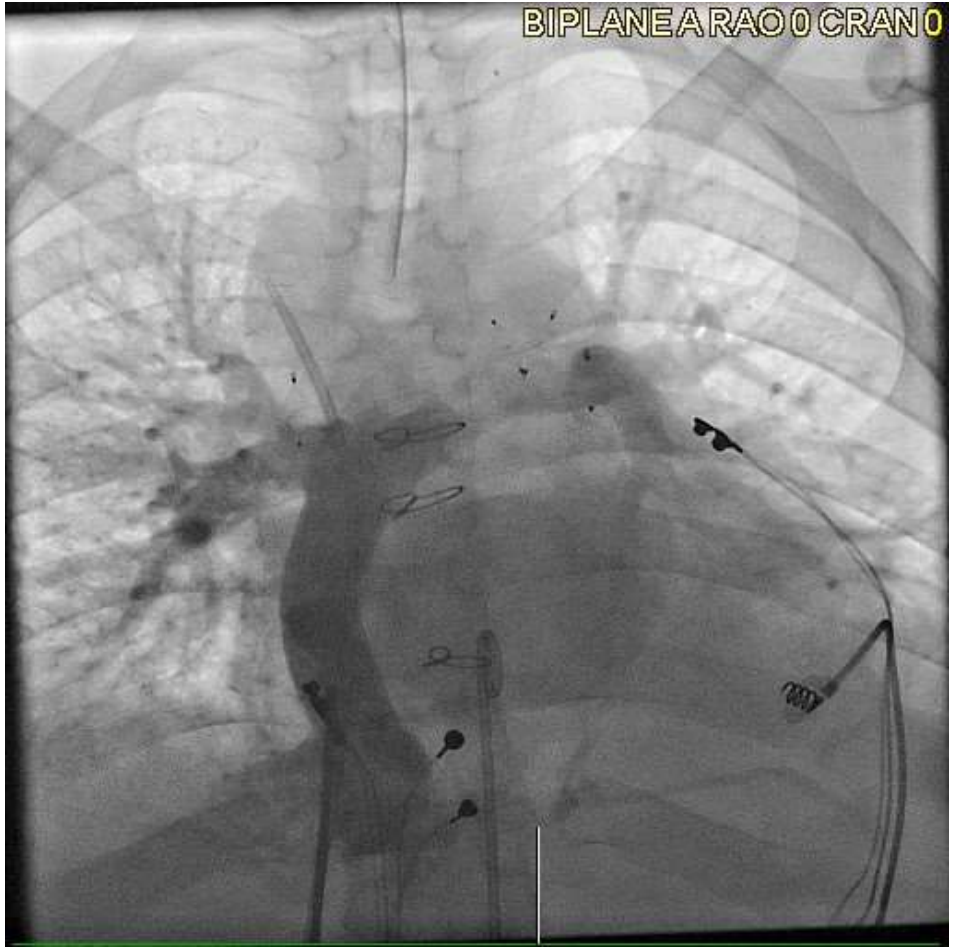
- T2: Dilated and tortuous TD, several channels joining TD T10-11, bilateral pleural effusions. Small volume ascites. Diffuse body wall edema.
- DCMRL: retrograde perfusion of mesentery and retroperitoneum, PLE signature with periduodenal enhancement and duodenal leak.
- PLE intervention: Multiple periduodenal lymphatics entered, confirmed leakage by methylene blue, embolized with STS and glue.

2 week post procedure observation



- Hemodynamic Data:
  - Cavopulmonary pressure 20mmHg, Pcwp 8mmHg.

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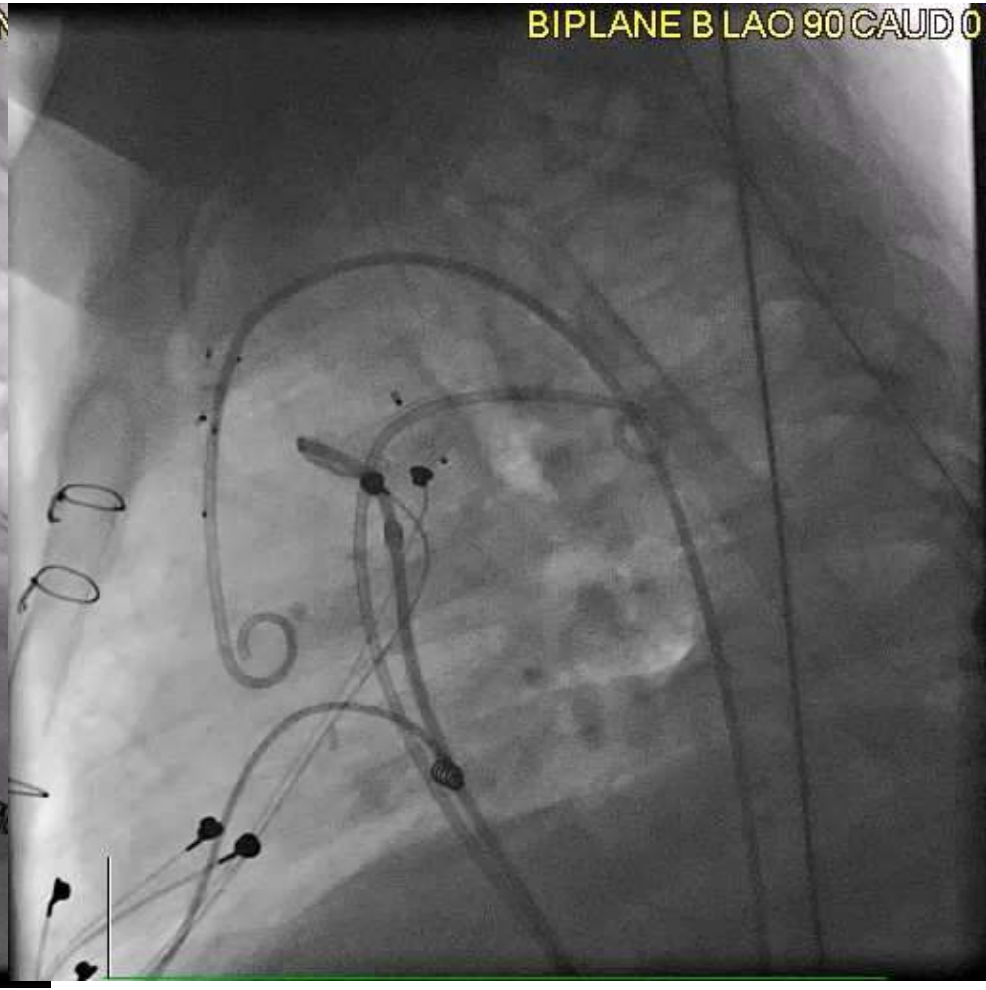
BIPLANE B LAO 90 CAUD 0


BIPLANE A RAO 0 CRAN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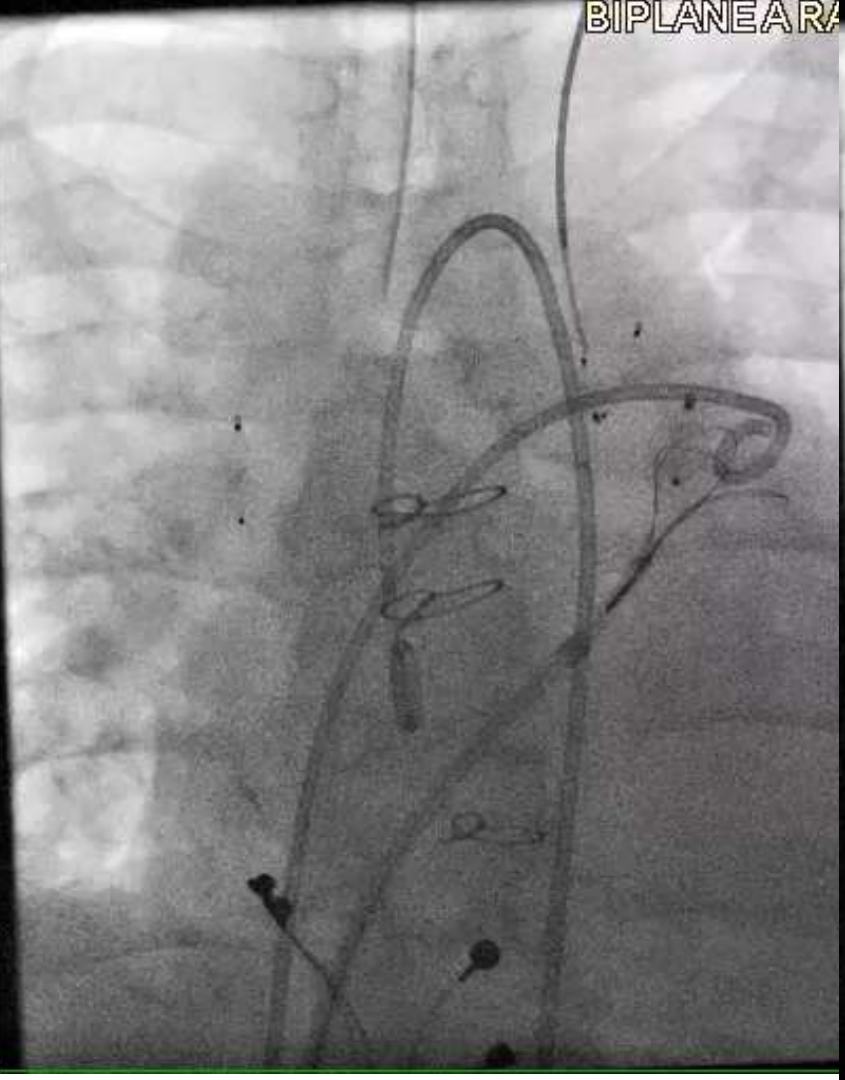
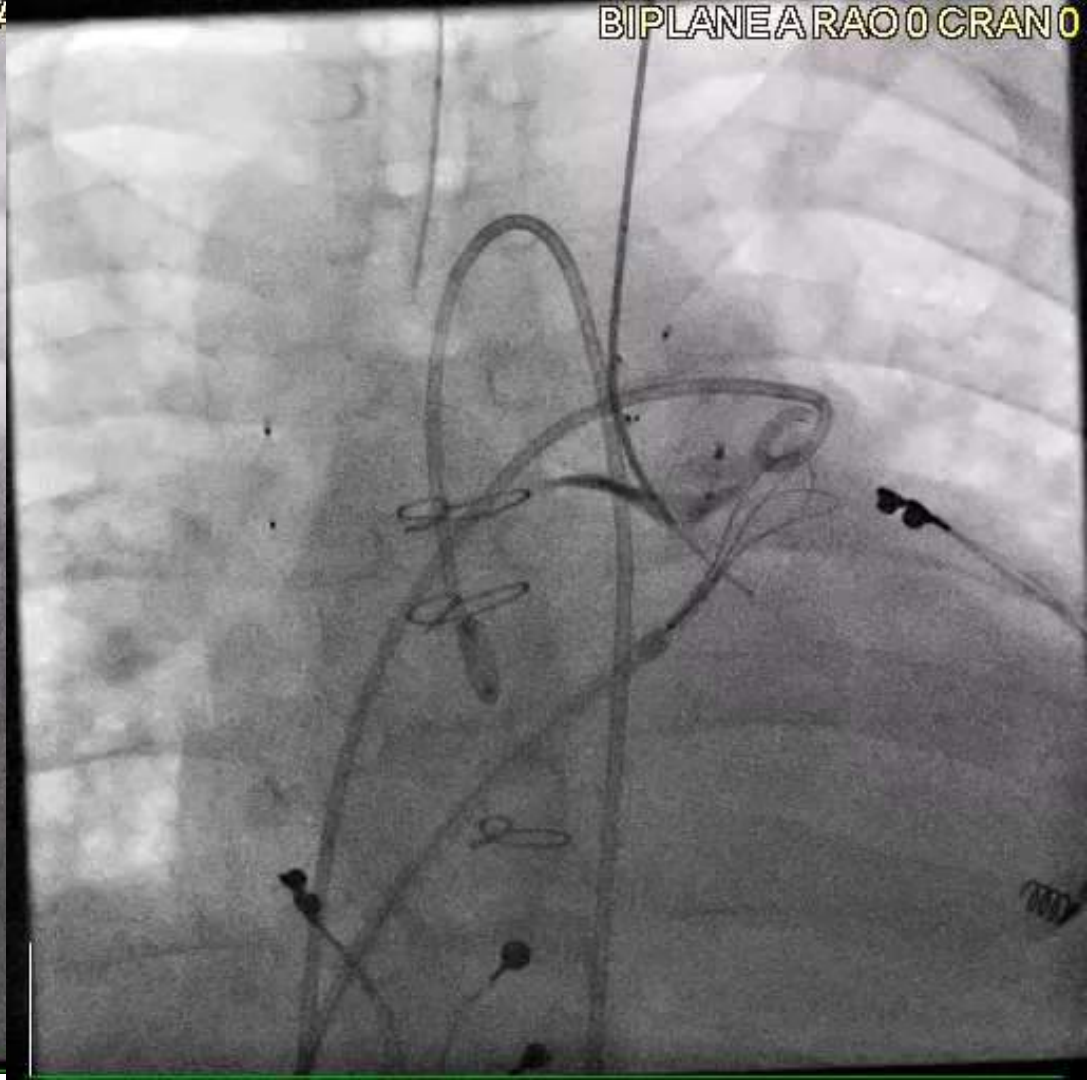

BIPLANE A RA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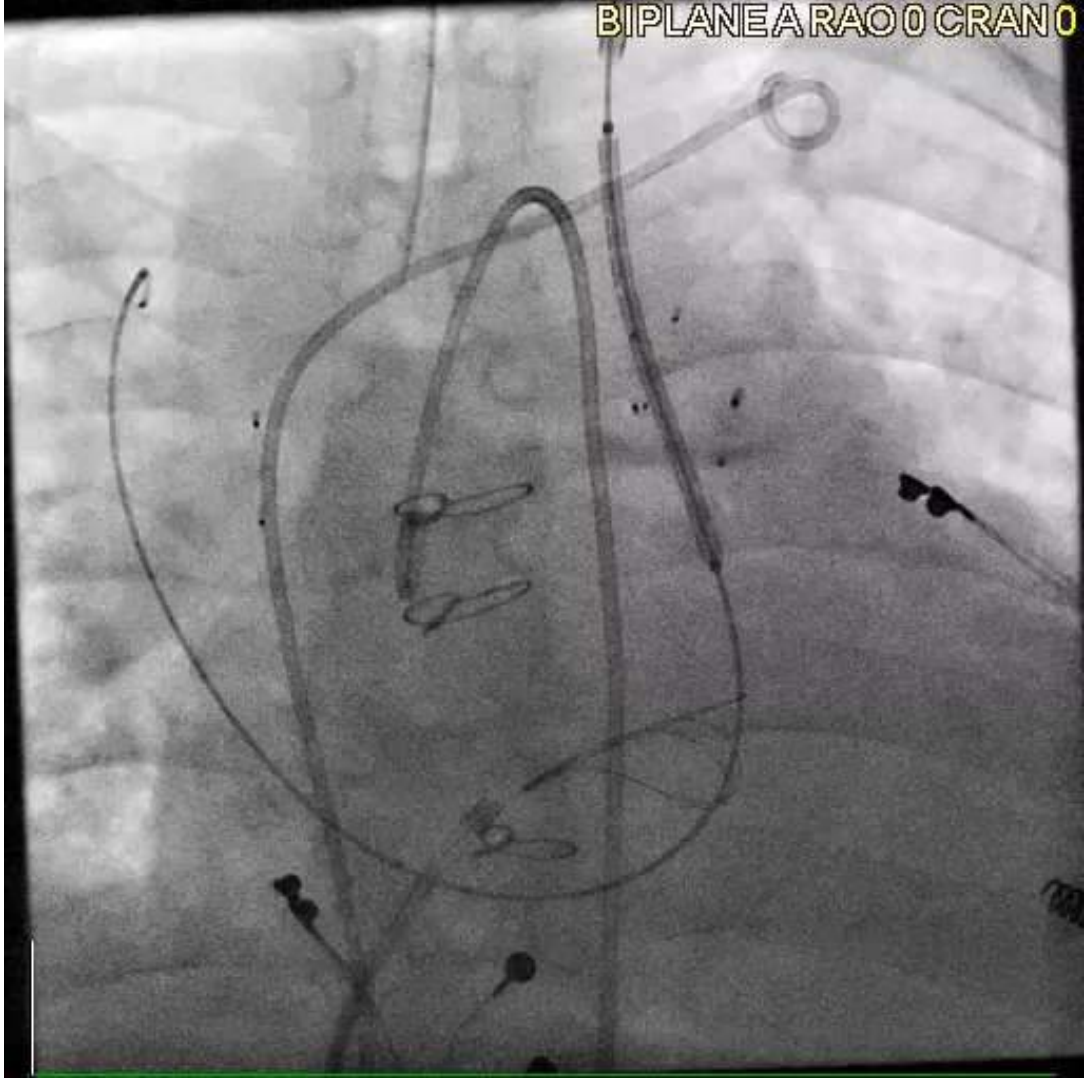
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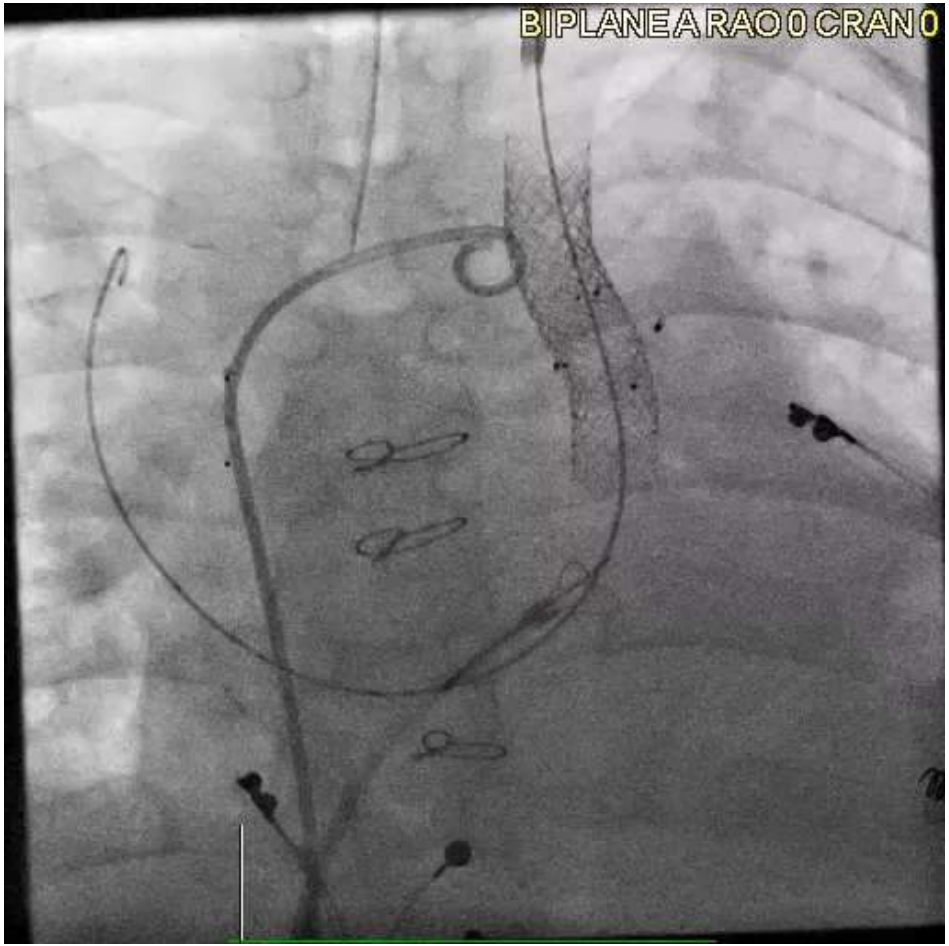
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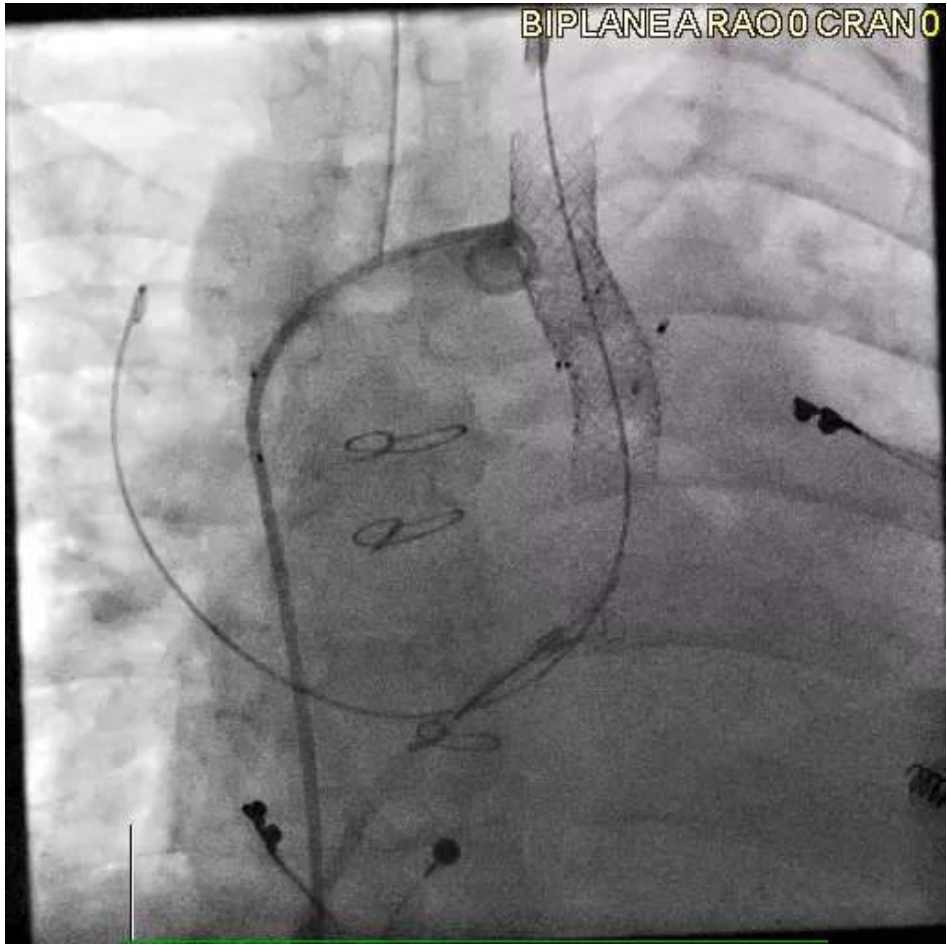
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30 performed to date
Information from 2023 on first 20 pts

- mean 15 (3-26) years of age
- Lymphatic compartments - median of 2.5 (1-3)

PLE	PB	Ascites	Effusions
17	4	13	16

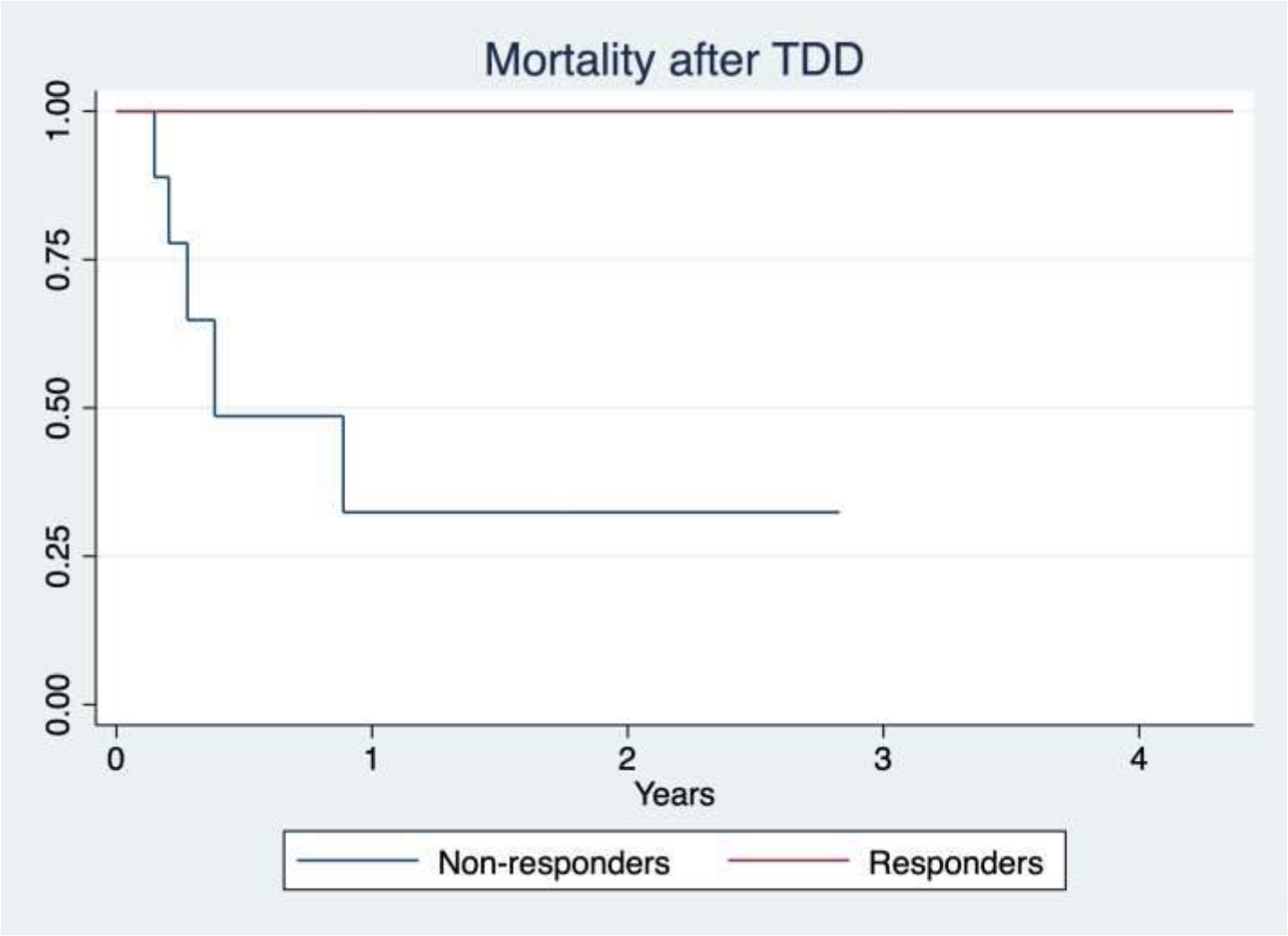
- Mean duration of symptoms 5 years (2m – 13 y)
- TDD technique:

Intra-Fontan tunnel to atrium	Direct LSVC/Innominate to atrium	Other
5	14	1

- Selective lymphatic embolization; Patent TD

Outcomes

- No major procedural morbidity/mortality
- Clinical Response:
  - 11 patients responded, no significant response in 9.


Mortality after TDD
1.00
0.75
0.50
0.25
0.00
0
1
2
3
4
Years
Non-responders
Responders

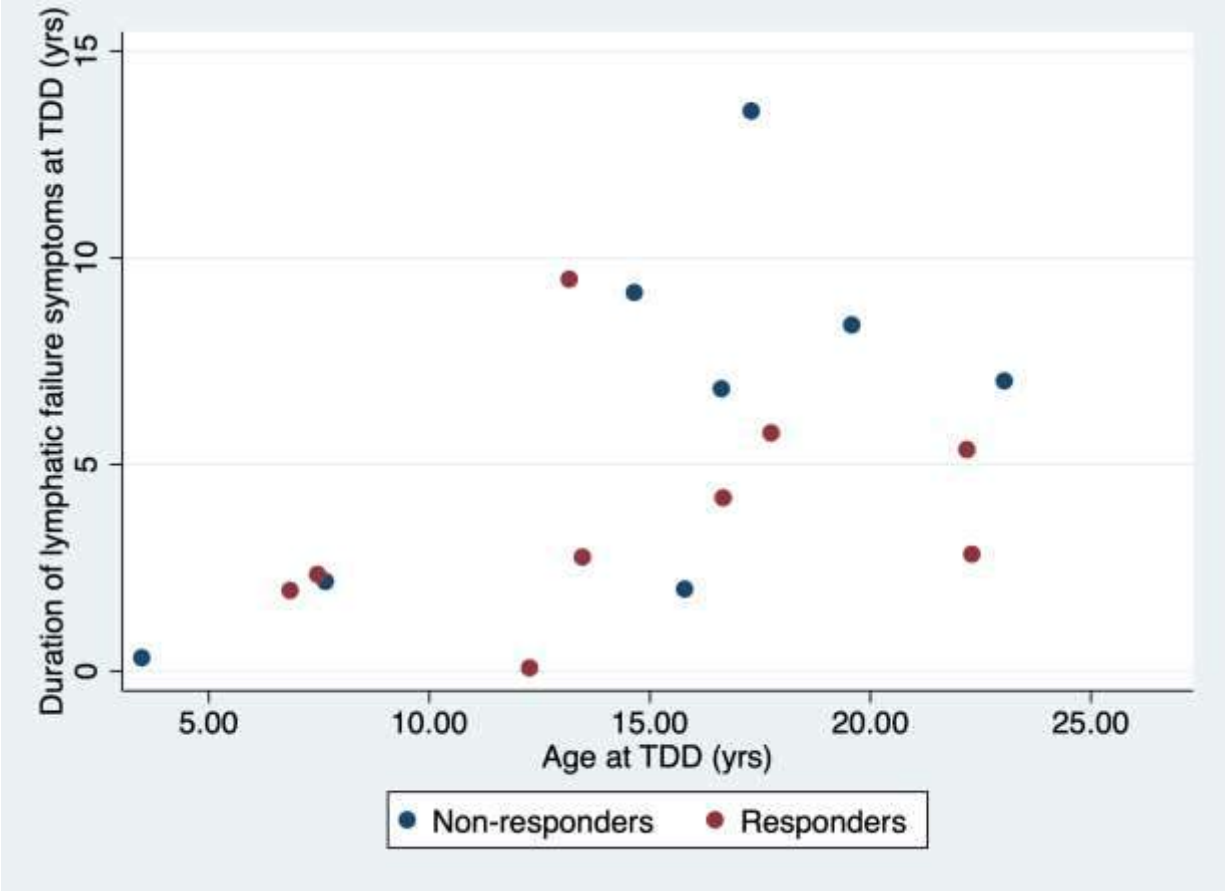
Follow-up

1y 5m mean (range: 1 m to 4 1/2 yrs)

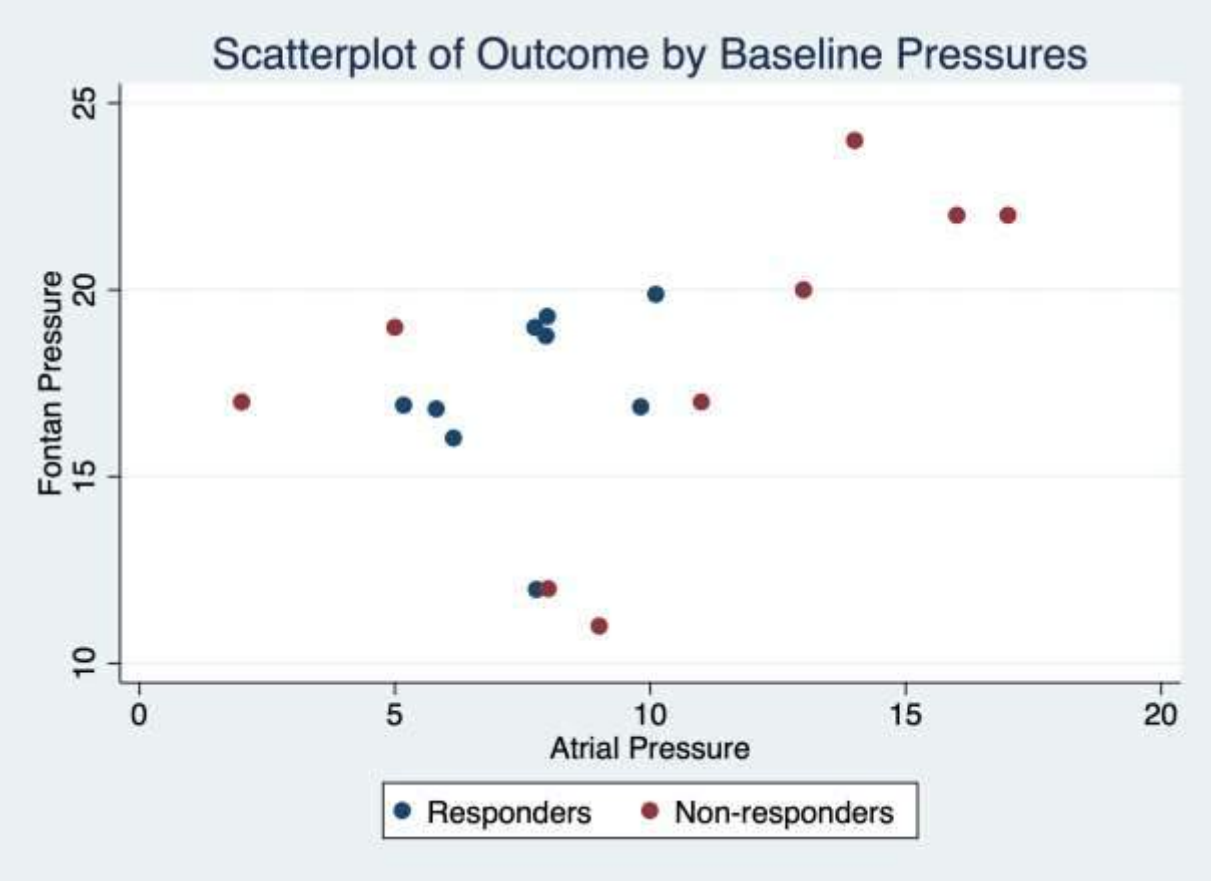
- Reinterventions in 8 – sealing of endo-leaks (6), thrombolysis, stent (1)
- 2 patients with pathway thrombosis
  - one successfully recanalized with local tpa
  - one died after redirection of care
- 4/11 responders had recurrent symptoms

can we predict who will respond?

Duration of Symptoms/Age



Hemodynamic Data



Conclusions

- Patients with chronic lymphatic failure after Fontan are at high risk.
- Lymphatic embolization is effective therapy for treating single compartment disease but is not sufficient to treat multicompartment lymphatic failure.
- We have had success in treating such patient with a combination of embolization and TDD.
- Not all patients responded and some have recurred.
- Our data suggest patients with elevated atrial pressures may not benefit from TDD.
- It is still early days in our experience.