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Endovascular Intervention for Tracheo-Innominate Fistula: A Systematic Review and Meta-analysis

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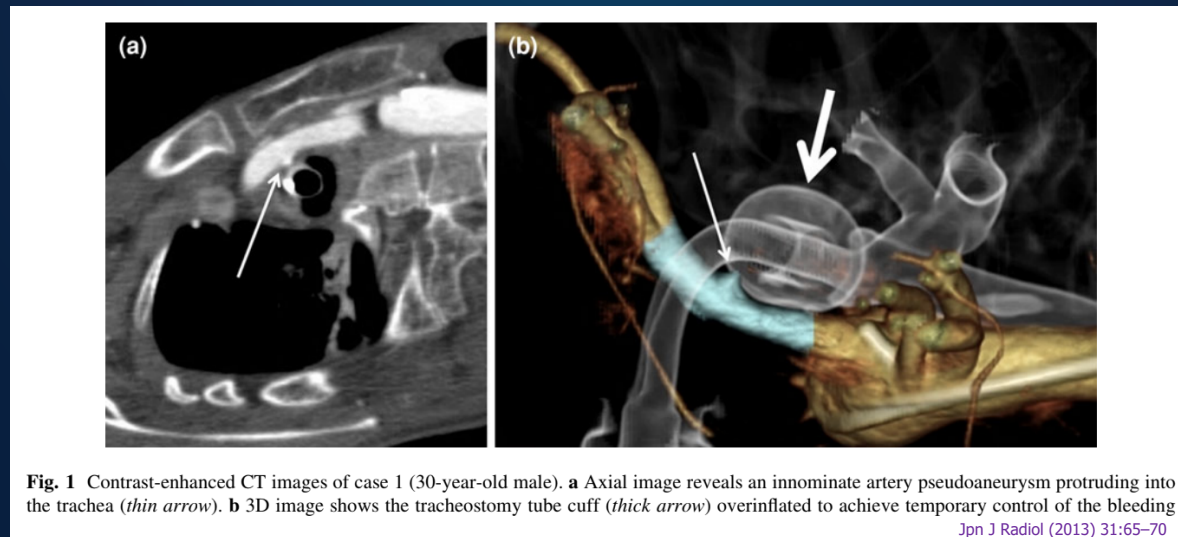
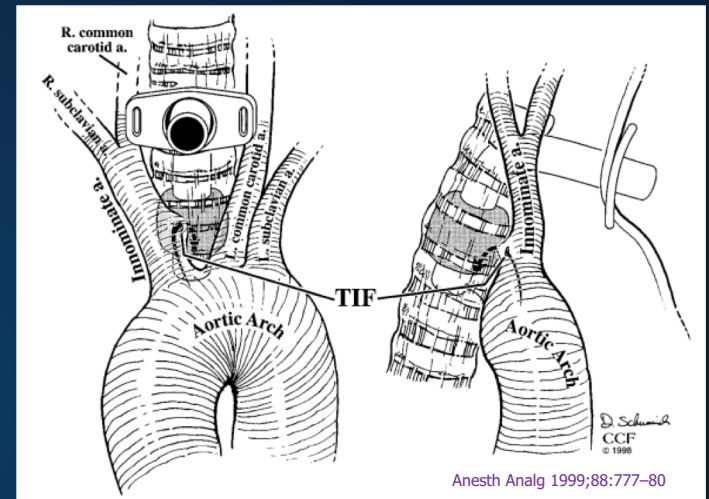
Endovascular Intervention For Tracheo-Innominate Fistula: A Systematic Review

Andrew M. Jordan, Thomas J. O'Malley, Kyle W. Prochno, Abhiraj Saxena, Elizabeth J. Maynes, Brandon Ferrell, T. Sloane Guy, John W. Entwistle, H. Todd Massey, Robhinton J. Morris, Babak Abai, Vakhtang Tchantchaleishvili*

(* indicates primary project advisor)

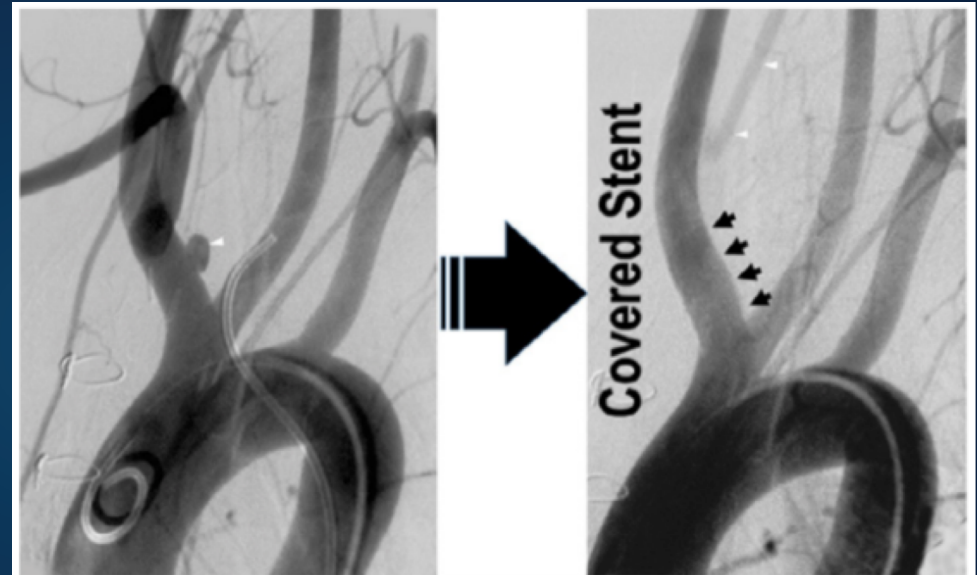
Tracheo-innominate Fistula (TIF)

- Rare complication following tracheostomy
- Prone to rupture leading to fatal hemorrhage
- No standard of care



Tracheo-innominate Fistula (TIF)

- Earlier case studies report median sternotomy repair for TIF
- Combination of critical condition and sternotomy repair may exacerbate morbidity and mortality
- Can endovascular repair be a viable alternative?



Treatment of a tracheo-innominate artery fistula with severe hemorrhage by a covered stent.

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Objective - Pool data and evaluate outcomes of endovascular intervention for TIF



Question & Hypothesis

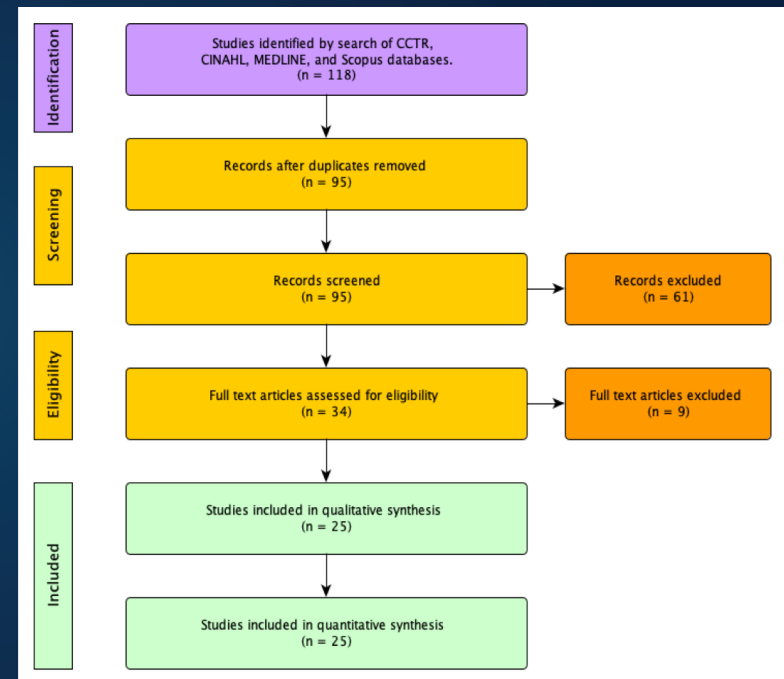
Question

- What are the survival outcomes of endovascular treatment for TIF and what materials/operative characteristics are most common?

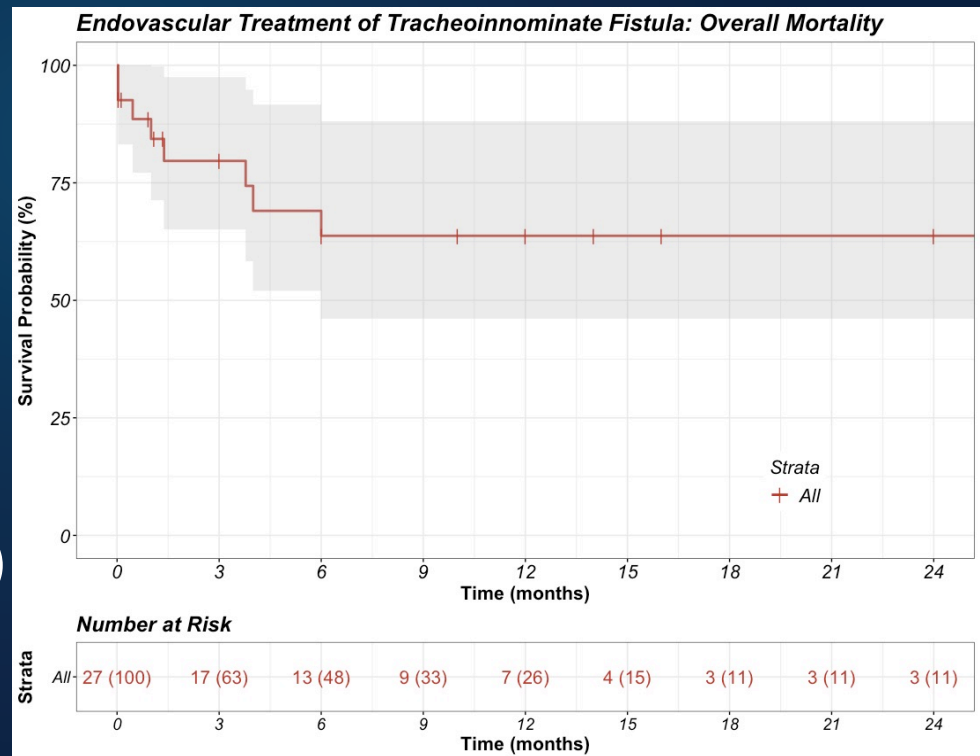
Hypothesis

- Endovascular treatment for TIF is a feasible alternative to surgical intervention.

- Systematic search of existing case studies discussing endovascular repair of TIF
- Patient-level data extraction and analysis
- **27** patients from 25 studies identified fit inclusion criteria
- Statistical analysis with R software, version 3.5.1
- Kaplan-Meier Survival Analysis



- TIF Presentation
 - Median duration to TIF following tracheostomy was 2.2 months [0.5, 42.5]
 - 84.6% (22/27) presented with bleeding from tracheostomy site
- Procedural
 - Covered stent graft placement in 96.3% (26/27)
 - Coil embolization in 3.8% (1/27)
- Complications
 - 18.5% (5/27) required repeat endovascular intervention for recurrent bleeding
 - Rescue sternotomy in 11.1% (3/27)
- Overall mortality was 29.6% (8/27) with a median follow up time of 5 months [1.2, 11.5]





Conclusions

- Endovascular repair for TIF may be a feasible alternative to open surgical intervention
- Covered stent graft was the most common method of endovascular repair

Future Directions

- Assembling TIF kit for Jefferson Vascular Surgery
- Meta analysis and case-control vs surgical repair

Obstacles & Limitations

- Small sample size with limited data
- High risk patients with considerable heterogeneity
- Selection bias
- Publication bias
- Case studies restricted to English medical literature

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- Images
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