

Treatment and outcomes of Type IIIb endoleaks affecting the main fenestrated-branched aortic stent-graft component among patients treated for complex abdominal and thoracoabdominal aortic aneurysms

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Introduction & Objective

- **Fenestrated-branched endovascular aortic repair (FB-EVAR)** has become the preferred treatment for complex aortic aneurysms due to its lower morbidity and mortality.
- **T3bE**, caused by fabric tears, is rare but can lead to aneurysm sac enlargement and rupture.
- **Objective:** To describe the incidence, diagnosis, management, and outcomes of T3bE affecting the main component of FB-EVAR devices.

Methods

- **Study Design:** Retrospective analysis of prospective, non-randomized PS-IDE studies (2013-2024) at two centers.
- **Patients:** 717 patients treated with company-manufactured devices.
- **Diagnosis:** T3bE was confirmed by contrast-enhanced ultrasound (CEUS), dynamic CTA, and/or angiography.
- **Endpoints:**
 - **Primary:** Cumulative incidence of T3bE.
 - **Secondary:** Treatment strategies, mortality, aneurysm rupture.

Figures

Fig. 1: T3bE (Row A, red) and repair techniques (Row B) after FB-EVAR in seven patients.

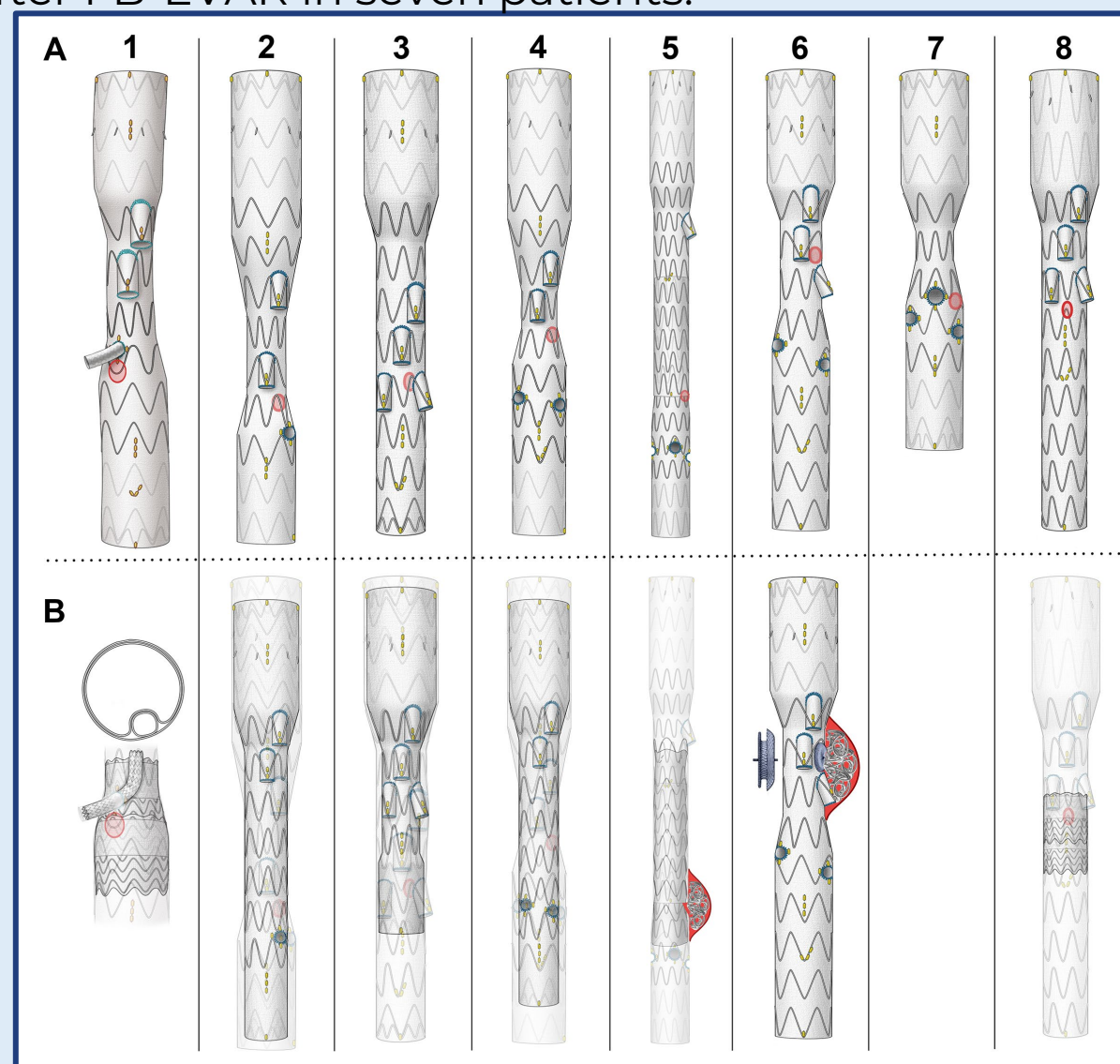
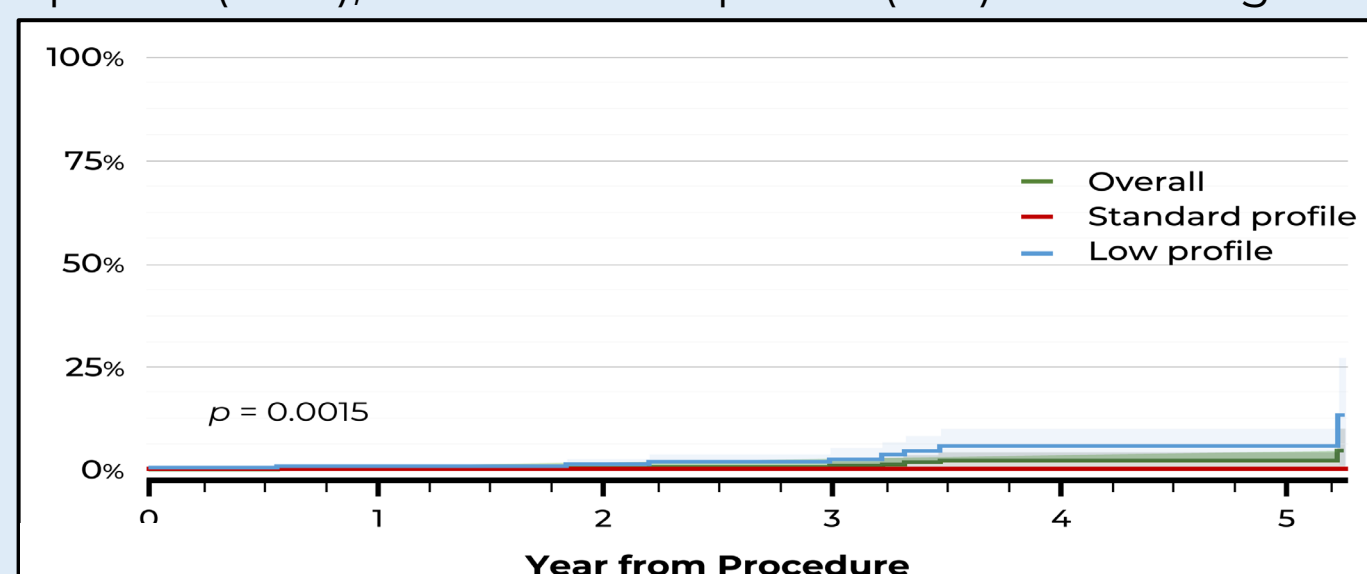


Fig. 2: Cumulative incidence of T3bE: overall (green), low-profile (blue), and standard-profile (red) FB-EVAR grafts.



Results

- **Patients:**
 - 717 patients (69% male sex; mean age 74±8 years-old)
 - 406 Low profile (57%)
 - Median follow-up to T3bE diagnosis: 37 months (range 6–62)
- **Clinical presentation:**
 - 2 Ruptures
 - 6 Asymptomatic
- **Cumulative incidence:**
 - 8 patients (1.1%) diagnosed with T3bE after a median 37 months (IQR, 25–40).
 - **Overall: 2.4%** (95% CI: 0.6-4.3%) at 5 years.
 - **Low Profile: 5.3%** (95% CI: 1.1-9.3%)
- **Treatment:**
 - 7/8 patients (87.5%) underwent endovascular repair:
 - Redo FB-EVAR (3), parallel stent-graft (1), cuff extension (2), plug/coils (1).
 - Successful eradication of T3bE in all treated cases.
 - 1 aortic-related mortality due to rupture.
 - 1 patient managed conservatively had spontaneous endoleak resolution.
- **Follow-up:** Median follow-up post-T3bE repair: 20 months (IQR, 5–28).

Conclusion

- T3bE after FB-EVAR is rare but poses significant diagnostic and management challenges.
- Redo endovascular repair is effective in selected patients, preventing aneurysm-related complications.
- Higher cumulative incidence in low-profile devices (5.3% vs. 0% in standard-profile) warrants further investigation.