LONG-TERM SURVIVAL AND REINTERVENTION AFTER TEVAR FOR ACUTE COMPLICATED TYPE B AORTIC DISSECTION
Evidence Synthesis of Published Kaplan–Meier Meta-analytic Benchmarks

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CLINICAL BACKGROUND

- Acute complicated type B aortic dissection (AC-TBAD) carries high early and late mortality
- TEVAR is the preferred intervention in complicated cases
- Long-term durability and reintervention risk determine:
    - Lifetime morbidity
    - Surveillance intensity
    - True procedural success
- Gap: Clear long-term, numerically explicit benchmarks remain under-represented

STUDY OBJECTIVE

To define long-term benchmark outcomes after TEVAR for AC-TBAD using pooled Kaplan–Meier meta-analytic data, specifically:

- Actuarial survival
- Freedom from secondary reintervention
- High-quality study–restricted estimates

METHODS

- Structured evidence synthesis of:
    - PRISMA-concordant systematic review
    - Kaplan–Meier curve meta-analysis
- Population: Adults with acute complicated TBAD treated with TEVAR
- Extracted outcomes:
    - Pooled actuarial survival
    - Freedom from all secondary reintervention
- Prespecified time points: 2, 4, 6, 8, and 10 years
- Separate analysis for high-quality studies

STUDY POPULATION

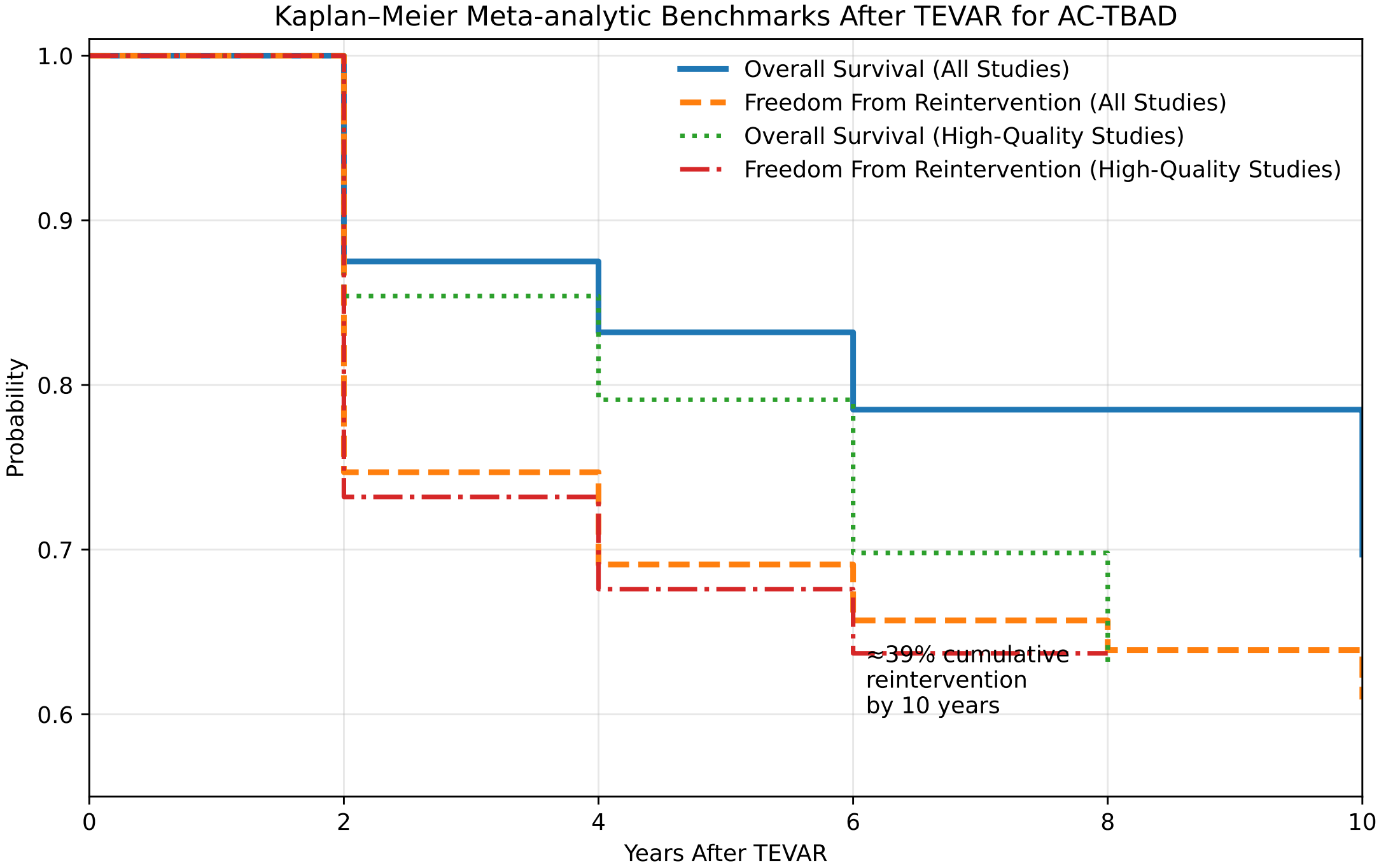
- 46 studies
- 2,565 patients
- 75% male
- Mean age: 59.8 ± 5.8 years
- Initial technical success: 96.3% ± 3.7%

ACTUARIAL SURVIVAL (ALL STUDIES)

Pooled Kaplan–Meier Survival After TEVAR

- 2 years: 87.5%
- 4 years: 83.2%
- 6 years: 78.5%
- 10 years: 69.7%

Sustained survival benefit through a decade, with gradual late attrition


Kaplan–Meier Meta-analytic Benchmarks After TEVAR for AC-TBAD
Overall Survival (All Studies)
Freedom From Reintervention (All Studies)
Overall Survival (High-Quality Studies)
Freedom From Reintervention (High-Quality Studies)
≈39% cumulative reintervention by 10 years
Probability
1.0
0.9
0.8
0.7
0.6
0
2
4
6
8
10
Years After TEVAR

FREEDOM FROM REINTERVENTION (ALL STUDIES)

Freedom From Any Secondary Aortic Reintervention

- 2 years: 74.7%
- 4 years: 69.1%
- 6 years: 65.7%
- 8 years: 63.9%
- 10 years: 60.9%

~39% require reintervention by 10 years

HIGH-QUALITY STUDIES: SURVIVAL

Restricted to High-Quality Cohorts

- 2 years: 85.4%
- 4 years: 79.1%
- 6 years: 69.8%
- 8 years: 63.1%

Slightly lower survival, reflecting reduced bias and longer follow-up

HIGH-QUALITY STUDIES: REINTERVENTION

Freedom From Secondary Reintervention

- 2 years: 73.2%
- 4 years: 67.6%
- 6 years: 63.7%
- 8 years: 63.7%

Plateau after 6 years suggests early-to-mid-term vulnerability

KEY TAKEAWAYS

- TEVAR provides durable survival through 10 years in AC-TBAD
- Late events are common:
  - ~40% reintervention by 10 years
- Outcomes remain robust even in high-quality cohorts
- Reintervention burden is a feature, not a failure, of endovascular management

CLINICAL IMPLICATIONS

- TEVAR is a **long-term viable strategy**, not a temporizing measure
- Lifelong imaging surveillance is mandatory
- Findings inform:
    - Patient counseling
    - Follow-up protocols
    - Innovation targeting late aortic remodeling and durability

FINAL MESSAGE

- TEVAR for AC-TBAD delivers strong long-term survival, but durability is incomplete.
- Success should be measured across a lifetime, not a hospitalization.