COMPARATIVE EARLY OUTCOMES OF OPEN REPAIR, TEVAR, AND MEDICAL THERAPY IN ACUTE/SUBACUTE TYPE B AORTIC DISSECTION

Evidence Synthesis of a Contemporary Network Meta-analysis

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CLINICAL PROBLEM

- Why this matters
- Acute/subacute TBAD has high early morbidity and mortality
- Three competing strategies:
  - Open Surgical Repair (OSR)
  - Thoracic Endovascular Aortic Repair (TEVAR)
  - Optimal Medical Therapy (OMT)
- Decision-making balances:
  - Survival
  - Neurologic injury
  - Bleeding
  - Reintervention risk

METHODS

Study Design

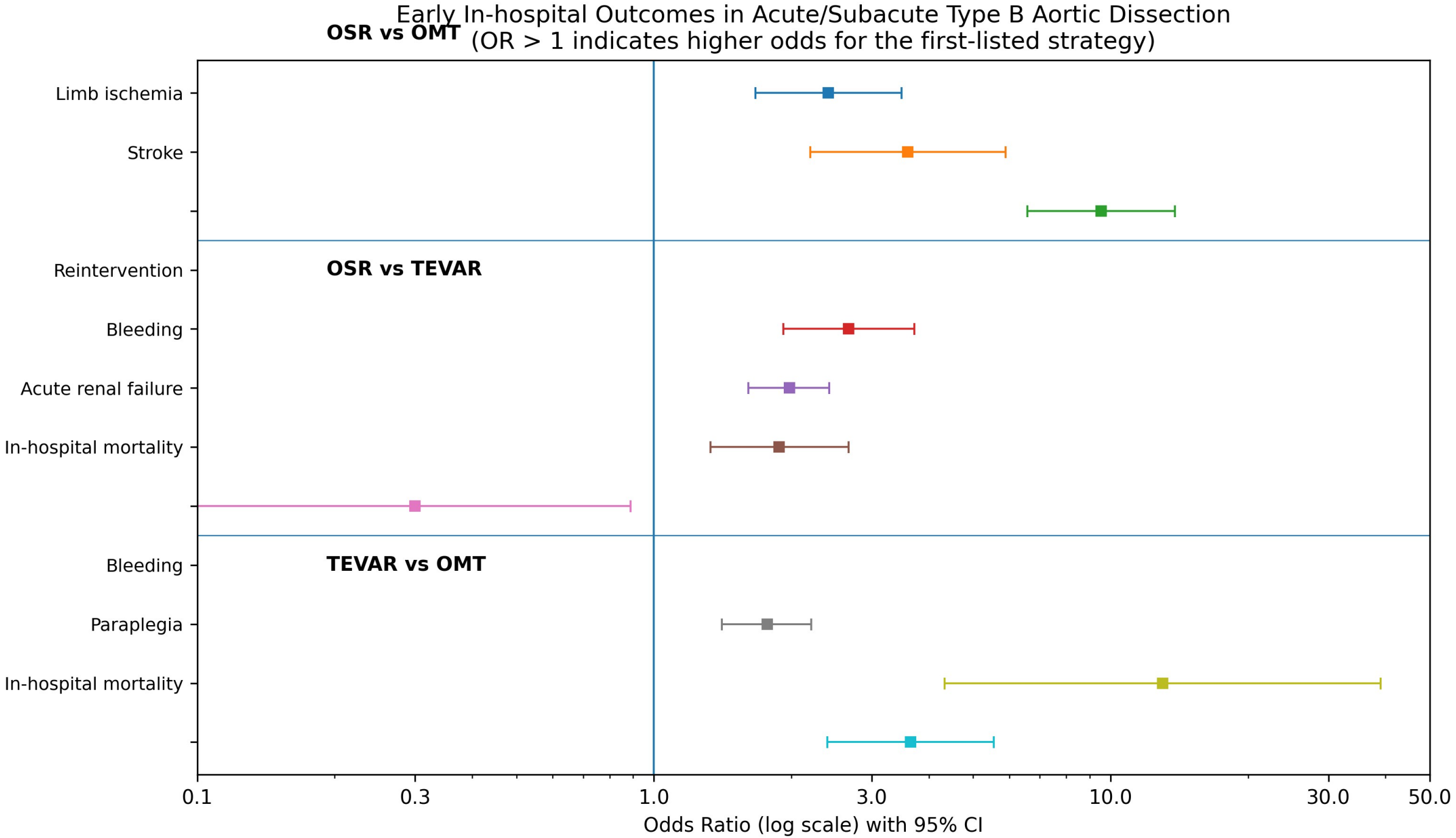
- Systematic review & network meta-analysis
- Random-effects models
- Controlled and direct comparative studies

Population

- Acute and subacute TBAD
- 31 studies | 34,681 patients

Outcomes (Early / In-hospital)

- Mortality
- Stroke
- Paraplegia
- Acute renal failure
- Bleeding
- Limb ischemia
- Reintervention


Early In-hospital Outcomes in Acute/Subacute Type B Aortic Dissection
(OR > 1 indicates higher odds for the first-listed strategy)
OSR vs OMT
Limb ischemia
Stroke
OSR vs TEVAR
Reintervention
Bleeding
Acute renal failure
In-hospital mortality
TEVAR vs OMT
Bleeding
Paraplegia
In-hospital mortality
0.1
0.3
1.0
3.0
10.0
30.0
50.0
Odds Ratio (log scale) with 95% CI

OSR vs OMT (KEY SIGNALS)

Open Surgical Repair vs Medical Therapy

Outcome	Odds Ratio (95% CI)
In-hospital mortality	**2.41 (1.67–3.49)**
Paraplegia	**3.60 (2.20–5.89)**
Bleeding	**9.54 (6.57–13.85)**

OSR vs OMT (KEY SIGNALS)

Interpretation

- OSR carries substantially higher early risk
- Particularly neurologic injury and bleeding
- Reflects invasiveness and physiologic stress

OSR vs TEVAR

Open Repair vs Endovascular Repair

Outcome	Odds Ratio (95% CI)
Mortality	**2.67 (1.92–3.72)**
Acute renal failure	**1.98 (1.61–2.42)**
Bleeding	**1.88 (1.33–2.67)**
Reintervention	**0.30 (0.10–0.89)** ↓

OSR vs TEVAR

Interpretation

- TEVAR shows clear early safety advantage
- OSR lowers reintervention but at significant early cost
- Tradeoff favors TEVAR in most anatomically suitable patients

TEVAR vs OMT

Endovascular Repair vs Medical Therapy

Outcome	Odds Ratio (95% CI)
Stroke	**1.77 (1.41–2.21)**
Limb ischemia	**13.00 (4.33–39.06)**
Bleeding	**3.65 (2.40–5.55)**

TEVAR vs OMT

Interpretation

- TEVAR introduces procedure-related neurologic and bleeding risk
- Particularly vascular access–related complications
- Reinforces importance of patient selection & technique

TAKE-HOME MESSAGES

Key Conclusions

- **OSR** → highest early mortality, bleeding, and neurologic risk
- **TEVAR** → safer than OSR, but higher stroke/bleeding than OMT
- **OMT** → lowest early procedural risk, but limited durability

Clinical Implication

- TEVAR is the preferred interventional strategy when repair is indicated and anatomy permits, with aggressive neurologic and bleeding risk mitigation

Bottom Line

- Early outcomes favor less invasive strategies
- The heart team decision remains anatomy, risk, and timing-dependent