

INTRODUCTION:

- Temporary epicardial pacing wires (TEPWs), composed of stainless steel and a non-degradable insulation layer, are frequently used for diagnosing and managing perioperative electrical disturbances.
- Despite their widespread use, institutional practices regarding TEPW management remain variable and inconsistent.
- This review explores current approaches and compares selective versus routine wire placement, emphasizing the need for standardized, evidence-based guidelines to optimize patient outcomes.

METHODS:

- A comprehensive literature search was performed in PubMed, Embase, Scopus, and the Cochrane Library using terms related to epicardial pacing wires, cardiac surgery, arrhythmias, removal, and associated complications.
- Eligible studies included English-language reports in adults or children that addressed clinical or procedural aspects of TEPWs.
- We reviewed original research, reviews, case reports, and consensus statements to synthesize current evidence and practice patterns, emphasizing institutional variability, predictors of pacing need, and complications of retained or removed wires.

RESULTS

Domain	Routine Placement	Selective Placement
Placement Rates	Adults: 73.5–76.6% Pediatrics: 85.5–89.9%	Adults: 9.9–57.5% Pediatrics: 1.2–72%
Utilization (wires used once placed)	Adults: 2.9–17.5% Pediatrics: 4.1–29.6%	Adults: 9.4–69.7% Pediatrics: 30–100%
Unused Wires	70.4–97.1%	0–82.5%
Missed Pacing Need (patients without wires who later required pacing)	N/A (all patients wired)	0.9–3.7%
Predictors of Need	Not differentiated in routine cohorts	Intraoperative arrhythmia, prolonged cardiopulmonary bypass, surgical complexity, preoperative arrhythmia, age, diabetes, renal failure
Complications	Rare (<2%) (Isolated perforation, junctional ectopic tachycardia, retention)	Rare (<2%) Generally no added risk

CONCLUSIONS:

- Despite decades of use, TEPW practices remain inconsistent across institutions. Standardized, evidence-based protocols are needed to guide patient selection, removal timing, and complication management.
- Predictive models that account for arrhythmias, surgical complexity, and comorbidities should be validated in large studies and incorporated into workflows.
- When TEPWs are unavailable, nonfunctional, or contraindicated, alternatives such as transcutaneous, transvenous, or transesophageal pacing may be considered, though each carries distinct limitations.
- Recent work on biodegradable molybdenum wires offers a potential long-term solution by combining biocompatibility with gradual degradation to reduce complications from retained wires.

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