

Introduction

- Coronary artery in-stent restenosis (ISR) is a common challenge after treating coronary artery disease with a bare metal or drug-eluting stent (DES).¹
- Intravascular brachytherapy (IVBT) using radioactive isotopes is an effective treatment option for patients with recurrent ISR to avoid further luminal narrowing.¹
- There is limited data in the modern era comparing long term outcomes of IVBT used in native coronary arteries vs coronary artery bypass grafts in those experiencing recurrent ISR.

Methods

- This is a single institution retrospective study of 282 patients that underwent coronary brachytherapy following ISR of a previous DES between September 2014 and May 2023.
- Kaplan Meier analysis was used to assess the clinical endpoints of freedom from target vessel reintervention (TVR), death, and major adverse cardiac events (MACE), defined as myocardial infarction, TVR, or death.

Aims and Objectives

- To evaluate whether there is a significant difference in rates of TVR, death, and MACE in patients who underwent brachytherapy on native vessels compared to bypass grafts.

Results

- A total of 248 patients were included in the study which compared the outcomes of 49 bypass grafts and 199 native arteries that underwent IVBT for recurrent ISR.
- There was no statistically significant difference in TVR at 1, 3 and 5 year follow up ($p = 0.93$, 0.77 , and 0.34 respectfully).
- There was no statistically significant difference in death at 1, 3 and 5 year follow up ($p = 0.27$, 0.11 , and 0.48 respectfully).
- There was no statistically significant difference in MACE at 1, 3 and 5 year follow up ($p = 0.45$, 0.3 , and 0.12 respectfully).

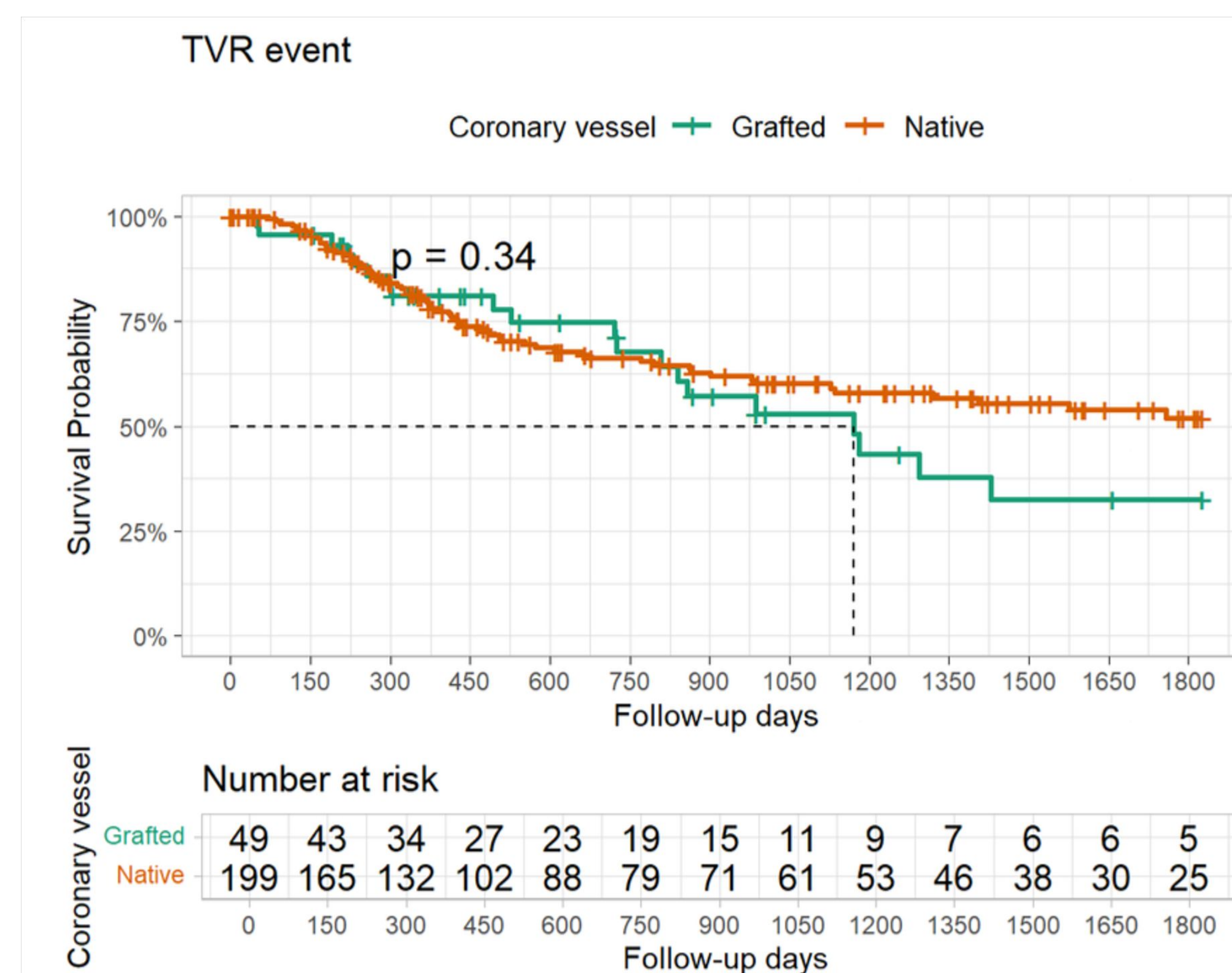


Figure 1: This figure demonstrates freedom from TVR (y-axis) over time (x-axis) since undergoing coronary brachytherapy, which showed no significant difference when comparing native and grafted vessels at 5 years ($p = 0.34$).

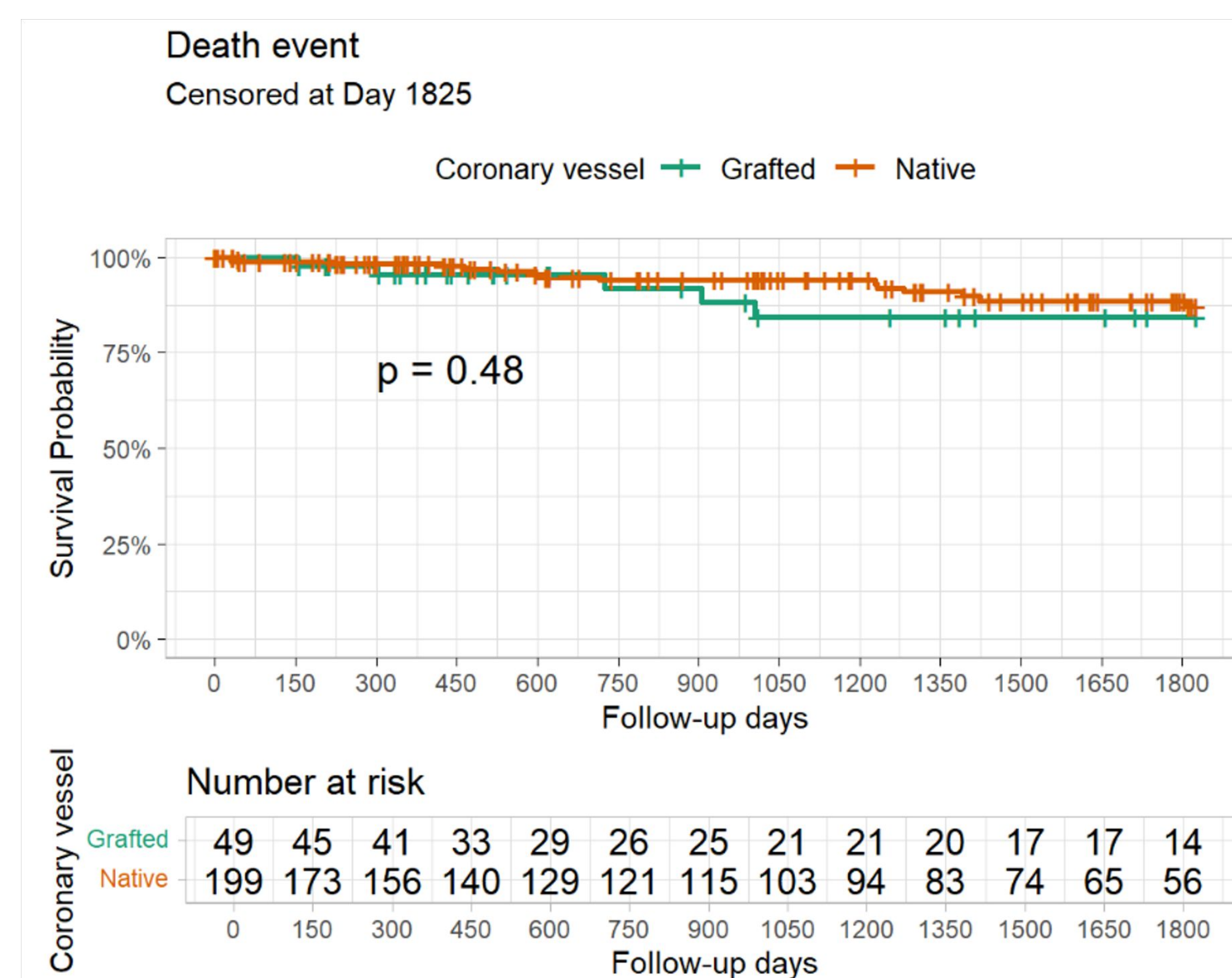


Figure 2: This figure demonstrates freedom from death (y-axis) over time (x-axis) since undergoing coronary brachytherapy, which showed no significant difference when comparing native and grafted vessels at 5 years ($p = 0.48$).

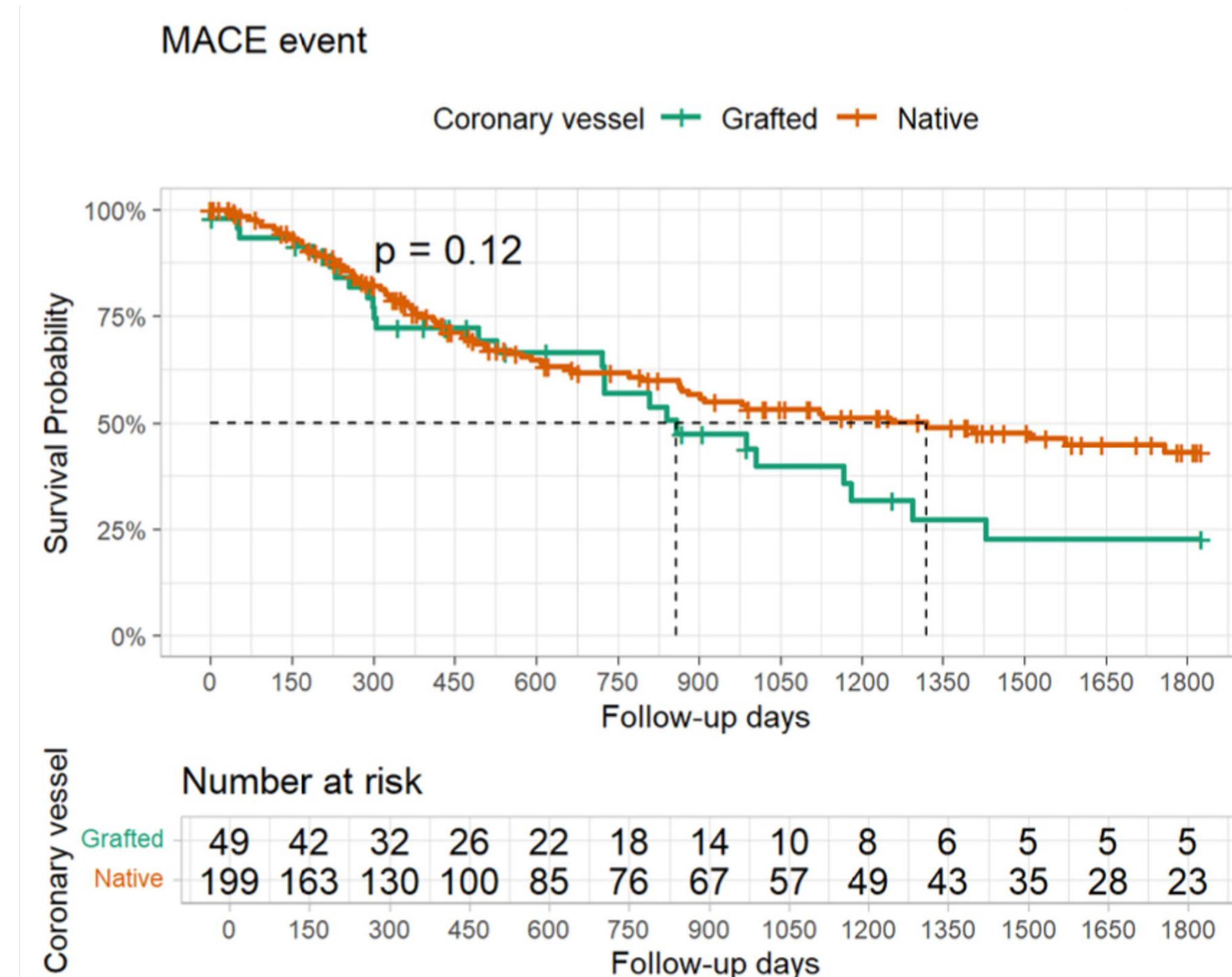


Figure 3: This figure demonstrates freedom from a MACE (y-axis) over time (x-axis) since undergoing coronary brachytherapy, which showed no significant difference when comparing native and grafted vessels at 5 years ($p = 0.12$).

Conclusions

- Our data suggest that the long-term clinical outcomes of patients with grafted vessels were similar to those with native coronary arteries when treated with IVBT for recurrent ISR.
- This data supports previous studies that suggested the clinical utility of IVBT for bypass graft vessels matches that for native coronary arteries.²
- This data further supports the safety and efficacy of coronary brachytherapy for treating complex coronary artery disease with recurrent ISR.¹

References

- Detloff LR, Ho EC, Ellis SG, Ciezki JP, Cherian S, Smile TD. Coronary intravascular brachytherapy for in-stent restenosis: A review of the contemporary literature. *Brachytherapy*. 2022;21(5):692-702. doi:10.1016/j.brachy.2022.05.004
- Ajani AE, Waksman R, Cheneau E, et al. Comparison of intracoronary gamma radiation for in-stent restenosis in saphenous vein grafts versus native coronary arteries. *Am J Cardiol*. 2003;91(1):22-26. doi:10.1016/s0002-9149(02)02992-2