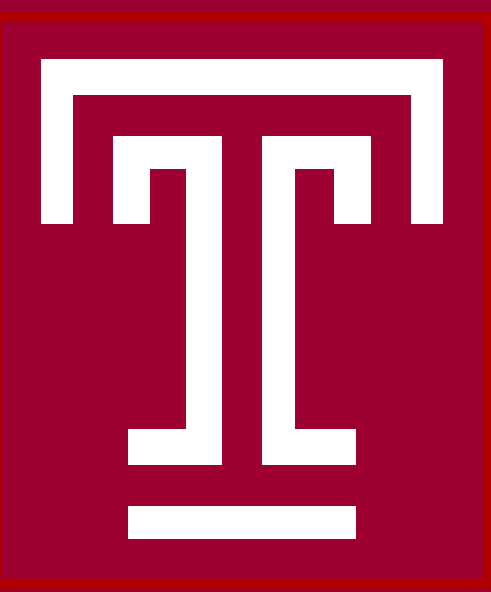




A “Thrombo-Endarterectomy” Approach: Establishing a New Center for CTEPH Patients

Yoshiya Toyoda¹, Abul Kashem¹, Bill Moser¹, Ganesh Ramakrishnan², Anjali Vaidya³, Paul Forfia³



¹ Cardiovascular and Transplant Surgery, ²LKSOM, ³Cardiology, Temple University Hospital, Philadelphia, PA, USA

INTRODUCTION

- Pulmonary Thromboendarterectomy (PTE) is a complex surgery that requires deep hypothermic circulatory arrest and cardioplegic cardiac arrest.
- Establishing a new CTEPH center of excellence for PTE surgery with safety and efficacy is vital to the CTEPH patients. We report the surgical outcomes of our first 100 cases of isolated PTE using HTK cardioplegia for myocardial protection.

METHODS

- A total of 100 CTEPH patients who underwent isolated PTE consecutively from June 2013 to September 2017, were retrospectively analyzed.
- All patients underwent bilateral PTE through a median sternotomy under cardiopulmonary bypass (CPB) with cardioplegic cardiac arrest and circulatory arrest with the core temperature of 14-20°C. Surface cooling with the head jacket and the cooling blanket for the body, and topical cooling of the heart with ice slush and cooling jacket was used for brain and myocardial protection.
- When the electroencephalogram becomes isoelectric by systemic cooling, an aortic cross-clamp (AoX) was applied and myocardial protection was provided with a single dose of two liters of cold HTK custodial cardioplegia antegradely through the aortic root.

RESULTS

- The patient characteristics were age 56 ± 16 years, 58 female, 42 male, and BMI (31 ± 7 kg/m²).
- CPB time was 261 ± 49 min, AoX time was 93 ± 24 min, and circulatory arrest time for the brain was 42 ± 14 min.
- No patients developed low cardiac output syndrome postoperatively, requiring mechanical circulatory support such as IABP with peak Tnl 8 ± 9 ng/mL, and peak CKMB 39 ± 38 U/L.
- The operative and hospital mortality was 3%. Kaplan-Meier analysis (Figure-1) and Cox-regression analysis showed survival days 577 ± 413 days (median 524), and no significant effects on survival related to age ($p=0.356$), gender ($p=0.127$), ethnicity ($p=0.137$), BMI ($p=0.499$), CPB time ($p=0.511$), AoX time ($p=0.517$), and post-surgical peak Tnl ($p=0.271$) and CPK ($p=0.569$) in survival outcome. When compared between male and female PTE survival outcome, it showed no difference (Figure-2). There was no difference in survival between white and non-white patients after PTE surgery ($p=0.13$).

Figure-1

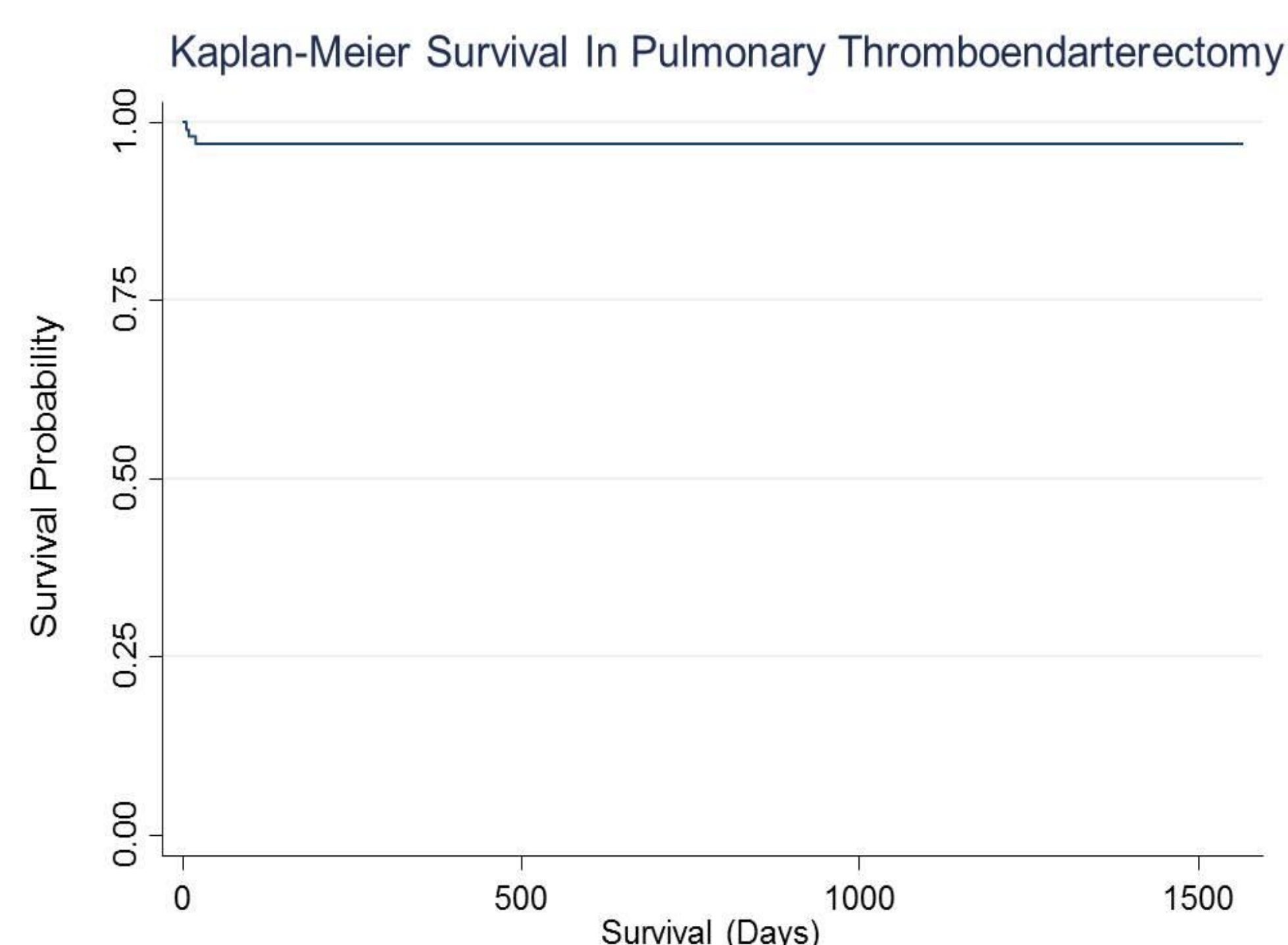
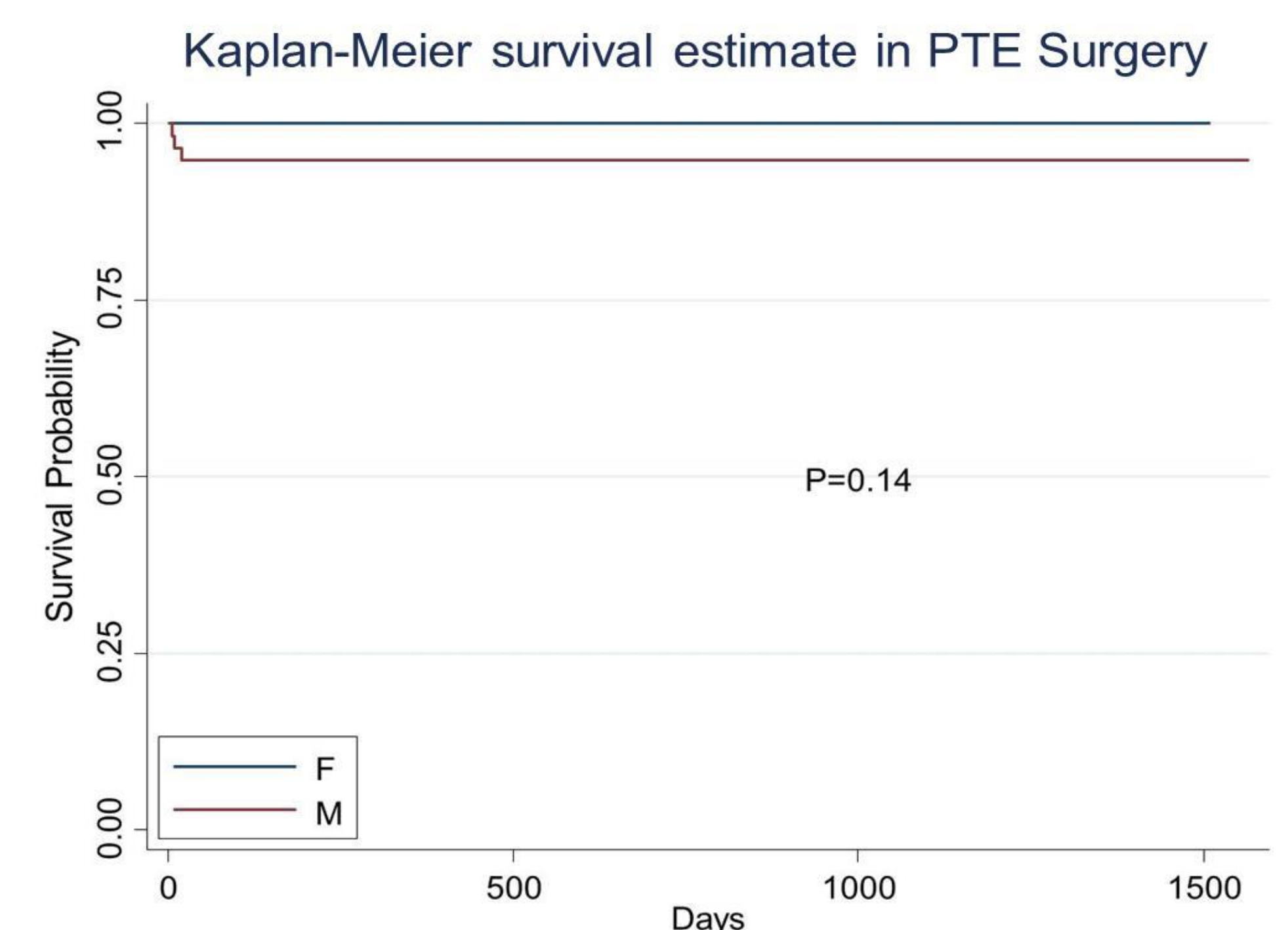


Figure-2



CONCLUSIONS

- Our surgical outcome in CTEPH was excellent in short and medium-term results. Long term results are needed.