

Technical Performance Score as a Predictor of Perioperative Outcomes in Complex Congenital Heart Surgery Performed in a Low Volume Surgical Program

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Objective: Technical Performance score (TPS) has been associated with postoperative outcomes in large volume surgical programs. We sought to validate the ability of TPS to predict perioperative outcomes in complex congenital heart surgery performed in a low volume program.

Methods: Seventy-three patients, category STAT 4 (n=63) and STAT 5 (n=10), undergoing cardiac surgery at our institution were evaluated for their surgical outcomes. A technical performance score (TPS) was assigned to each patient based on discharge echocardiographic findings and the need for re-interventions in the anatomic area of interest.

Results: Sixty-three percent of our study population were neonates (n=46), 23 % (n=17) were infants, 10% (n=3) were children and 4% (n=7) were adults. The majority of the patients were males (59%) and 14% of the patients had premature birth. An optimal TPS score (class 1) was assigned to 48 (66%) of the patients. An adequate TPS score (class 2) was assigned to 12 (16%) patients and an inadequate TPS score (class of 3) was assigned to 5 (7%) of the patients. Eight patients were not scored. Median length of stay was 15 (IQR: 9, 27) days. The 30-day and in-hospital mortality rate was 1% (n=1) and the rate of unplanned readmissions was 16% (n=12). Early post-op complications (within 30-days post discharge) included, reintubation (7%), re-operation (1%), delayed closure (26%), arrhythmias (17%), chylothorax (10%), infection (3%), stroke (1%) and pneumothorax (4%). None of the patients required dialysis post-discharge. Regression analysis showed that TPS score can predict post-operative length of stay ($p<0.05$). Other outcomes such as unplanned 30-day readmissions, need for reintubation and reoperation and 30-day mortality are not predicted by TPS score ($p>0.05$).

Conclusions: Technical performance score is a useful tool to predict postoperative length of stay after high complexity cardiac surgery in a low volume program.