Title: Comparison of Early and Long Term Clinical Outcome of Single Dose Cardioplegic Techniques Versus Conventional Protocols in Minimally Invasive Aortic Valve Surgery

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Abstract:

**Background:** Single dose cardioplegic techniques offer comfortable conditions for especially valve surgery but extending the adjunct myocardial preservation further is a major question. Different randomized controlled trials did comparison to conventional techniques in the context of traditional cardiac surgery but no specific data are available for minimally invasive techniques. Our aim was to compare the long-term protective effects of different cardioplegia based on early and 30-day clinical outcome via thorough continuous monitoring.

**Methods:** This prospective cohort study included high-risk patients (Euroscore II >5) undergoing aortic valve surgery who received different cardioplegia solutions between March 2015 and November 2017. Patients were matched for age, gender, BMI, valve size and type, STS score, surgical access, pre-op creatinine, diabetes, and COPD: Group 1: St. Thomas- N=78; Group 2: Blood Cardioplegia (standard 4:1)- N=81; Group 3: Del Nido- N=82; Group 4: HTK- N=76. Patients were monitored perioperatively by memory loop recording (MLR) and auto-triggered MLR for 30 days via documentation of predefined symptomatic and asymptomatic events.

**Results:** Early perioperative data demonstrated that all four types or cardioplegia techniques provided effective clinical outcome with no difference in myocardial injury enzyme release (peak cTnI value; p=0.245). No significant differences were observed for mortality, LCOS, atrial or ventricular arrhythmias onset, transfusions, mechanical ventilation time duration, intensive care unit and total hospital stay (Table 1). Long-term telemetry monitoring with respect to arrhythmia detection and diagnostic symptoms are summarized in Fig1 (*:p<0.01).

**Conclusion:** Myocardial preservation is a concept without clear and specific clinical signs. Especially long-term outcomes have not been studied in details. Our data underlines the importance of long-term efficacy of cardioplegic techniques which becomes more prominent in high-risk patients who have truly a chance to benefit from adjunct cardioprotection.