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MYOKARDPROTEKTION – DAS FRANKFURTER KONZEPT

Introduction: In the department for cardiac surgery at the University Hospital in Frankfurt/Germany we use three different methods and solutions for myocardial protection. Indications, experiences and results with these different kinds of myocardial protection during cardiopulmonary bypass are shown.

Methods: Depending on the indication for surgery, we use two different blood cardioplegia methods and one crystalloid cardioplegia for optimal protection of the heart. A modified Buckburg cardioplegic solution at 20 °C is used in combined (valve and CABG) or valve procedures and if we expect long aortic cross clamping times. This cardioplegia is also used in pediatric heart surgery. The Calafiore solution, which is composed of potassium and magnesium is used in CABG at 34 °C blood temperature. We also use this cardioplegia in minimized extracorporeal circuits as so called autoperfusion cardioplegia. St. Thomas solution is used (at 4 °C) for robotically assisted procedures. Indications are ASD - closure or CABG.

Our ECC-tubing setup need no conversion when we use the different cardioplegic methods. A heat exchanger with an additional y -tube for the two different blood cardioplegia solutions can be integrated in the normal tubing set in a few seconds. The crystalloid solution is produced in our own pharmacy for a low price. Hemodilution of the extracorporeal circuit is reduced while using the Calafiore and Buckberg method (ratio is 1 part of solution, 4 parts of blood).

Conclusion: Good results of open heart surgery depend on successful surgical intervention. The adoption of an optimal cardioplegic procedure depending on the indication for surgery is an important aspect for perioperative and postoperative outcome as well as perfusionists should be well educated in the different kinds of myocardial protection and its delivery to give the surgeon the best method for an optimal result.