Influence of different perfusion and aortic clamping techniques in minimally invasive mitral valve surgery.

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INTRODUCTION

This study analyses an experience in MIMVS from right thoracotomy with different arterial perfusion and aortic clamping strategies to determine if different techniques may impact on early outcomes. The aim of study is to determine if different techniques of perfusion and aortic clamping may impact on early outcomes including neurologic impairment.

METHODS

Between March 2014 and March 2019 **665** consecutive patients underwent MIMVS from right mini-thoracotomy. The patients who underwent fibrillating heart MVS for patent grafts than conversion to median sternotomy and the group with central cannulation and endoclamp using were not consider in the main statistical analysis. The reference population thus obtained is 625 patients on which were conducted subsequent analyzes. The patients were allocated in 3 groups: **P+EB** (retrograde arterial perfusion through the femoral artery with Endoreturn/Intraclude system) 319 (51%), **P+XC (**retrograde arterial perfusion through the femoral artery with transthoracic clamp) 262 (41.9%) and **C+XC** (antegrade arterial perfusion through the axillary artery with transthoracic clamp) 44 (7%).

RESULTS

In P+EB group was observed a higher frequency of previus cardiac surgery ($p< 0.00001$). In the C+XC group was observed a higher age ($p=0.00086$), BMI ($p=0.02618$), prevalence of COPD ($p=0.009027$) and a higher incidence of peripheral vasculopathy ($p=0.00001$) and AF ($p=0.001166$). These differences justify the higher predicted mortality in the C + XC group: Logistic EuroSCORE ($p=0.008085$) and EuroSCORE II ($p=0.0042559$). As regards intra-operative results, a higher incidence of mitral valve replacement in group C + XC was observed ($p=0.028239$). There were not significant differences in cardiopulmonary bypass time ($P=0.157144$). On the contrary, a significant reduction in clamping times has been reported in favor of group C + XC ($p=0.000429$). In the major peri-operative complications (conversion to sternotomy and aortic dissection) no significant differences were reported. In the post-operative period there were no differences in the timing of ventilation ($P=0.865823$), ICU stay ($p=0.587076$) and hospital stay (0.542686). Furthermore no significant differences were observed between the three groups regarding the main complications: re-exploration for bleeding ($p=0.736869$), Hemodyalisis ($p=0.827631$) and PM implantation ($p=0.827631$). There was not observed significant differences between minor and major neurological complications (minor $p=0.118455$, major $p=0.857835$).

CONCLUSION

The three techniques studied have reported good results with reduced complications and therefore can be considered safe, feasible and reproducible.

The availability of different perfusion and clamping techniques allows the minimally invasive method to be adapted to the different characteristics of the patients. This tailored approach give the possibility to obtain a better result by reducing complications both intra and post operatively.