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Infants with coarctation of the Aorta ± Hypoplastic aortic Arch: Median or lateral approach?

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Objectives: Surgical approach of infants with Coarctation ± hypoplastic aortic arch is a challenge. Choosing between Sternotomy or Thoracotomy is associated respectively with the need of extracorporeal circulation or not. We present our surgical results and follow-up.

Material & Methods: Retrospective analysis of 90 infants (age <1 year) with biventricular heart and surgical reconstruction of aortic arch during the period 2004-11: Sternotomy in 45 and Thoracotomy in 45. In Sternotomy group we use selective cerebral perfusion instead of circulatory arrest in order to eliminate the cerebral injury associated to the arrest. Cerebral monitorization is performed with invasive radial artery pressure and near infra-red spectroscopy. Statistical study with SPSS-15.0

Results: Preoperative characteristics of the groups are different: Sternotomy group has more associated cardiopathy, more hypoplastic arch, more dependence of intravenous prostaglandin, and more complexity in RASCHS-1 score. Referring to surgical techniques, Sternotomy patients received a termino-lateral anastomosis (78%), and Thoracotomy patients received a termino-terminal anastomosis (80%). Hospital mortality is 9% in both groups. Hospital morbidity analysis shows that there are no differences in neurological complications or early re-coarctation, but Sternotomy group presents more recurrent laryngeal nerve lesion and longer postoperative stay than Thoracotomies ($p < 0,05$). Mean follow up is 23 ± 19 months. One patient died in the follow-up (Thoracotomy group). Late re-coarctation is more frequent in Thoracotomy (32%) than in Sternotomy (12%) ($p:0,03$), and is generally treated with percutaneous angioplasty. We reoperated 9% patients of the Sternotomy group and 15% of Thoracotomy group (pns).

Conclusions: The use of selective cerebral perfusion in median sternotomy approach of arch surgery lets the surgeon do the anastomosis in a bloodless field and preserves neurological function. Sternotomy in comparison with Thoracotomy has similar mortality, worse Hospital morbidity (recurrent nerve lesion, prolonged stay), but better patency of the arch anastomosis in the follow-up (low incidence of recoarctation). We recommend median sternotomy with selective cerebral perfusion if there is hypoplastic aortic arch and/or associated cardiopathy needing surgery.