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Customized approach in minimally-invasive pediatric cardiac surgery.

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Introduction. A minimally-invasive pediatric cardiac surgery set-up program is described. Children are offered a customized approach according to cardiac condition plus weight. Data are collected in a prospective way, spanning from January 2013 until November 2018.
Methods. Simple cases are scheduled to begin with (atrial and ventricular septal defects). Surgical approach was body-size dependent: lower mini-sternotomy for children under 10 Kg. (ventricular septal defects, mainly), postero-lateral thoracotomy in kids between 10-25 Kg. and sub-mammary crease incision over 25 Kg. (teens and young adults). On gathering experience, more cardiopathies were gradually introduced. The postero-lateral approach was shifted to an axillary one and the sub-mammary incision was swapped to a video-assisted mini-thoracotomy (with peripheral cannulation). The upper mini-sternotomy was added to fix aortic valvulopathies.
Results. 281 patients were operated on: 100 *ostium secundum* atrial septal defect, 23 *sinus venosus* atrial septal defect, 84 ventricular septal defect, 22 partial atrio-ventricular septal defect, 8 complete atrio-ventricular septal defect, 21 aortic valve repair and 23 miscellaneous. Surgical approaches selected were: 150 lower-mini-sternotomy, 35 sub-mammary, 11 postero-lateral thoracotomy, 43 axillary, 22 upper mini-sternotomy and 20 video-assisted mini-thoracotomy. The ratio of minimally invasive surgery to full sternotomy increased from 20% in 2013 to 30% in 2018.
Conclusions. A customized approach (cardiopathy and weight differentiated) in a new program for minimally-invasive congenital heart surgery proved successful. Moving to smaller incisions and adding new diagnosis is feasible as long as the surgeons become more proficient with the technique. Consequently, the percentage of less invasive approaches raises in a short lapse of time.

APPROACH	NUMBER
Sub-mammary	35
Axillary	43
Lateral-posterior	11
Upper mini-sternotomy	22
Lower mini-sternotomy	150
Video-assisted mini-thoracotomy	20
TOTAL	281

Table 1: surgical minimally-invasive approaches

CARDIAC CONDITIONS	NUMBER
Ostium Secundum Atrial Septal Defect (ASD)	100
Sinus Venosus ASD	23
Ventricular Septal Defect (VSD)	84
Ostium Primum ASD (Partial AV septal defect)	22
Complete atrio-ventricular septal defect	8
Aortic valve stenosis/regurgitation	21
Others	23
TOTAL	281

Table 2: cardiac conditions approached