Letter to the Editor: Percardiac closure of large apical ventricular septal defects in infants: Novel modifications and mid-term results

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Title page

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To the Editor,

The research entitled "Percardiac closure of large apical ventricular septal defects in infants: Novel modifications and mid-term results" by Geoffrey J. Changwe et al. gave me great pleasure to review.[1] This post was interesting and fruitful, and I feel privileged to have read it. Pericardiac closure (PDC) of the apical muscular ventricular septal defect (AmVSDs) is feasible, effective, and safe, regardless of the patient's body weight along with residual shunt (RS) rate, which is highly related to AmVSD morphology. During the

late followup period, RS among multiple holed AmVSDs remained unchanged. While the periventricular approach was suitable for complex AmVSD, the peratrial approach was less invasive, required less time, and yielded superior cosmetic results. However, I am aware of the study's limitations, and I believe alternative methodologies could improve and strengthen the study's conclusions.

Firstly, some experts believe that the right atrial approach is the most challenging way to close multiple apical ventricular septal defects; thus, they advocate palliative surgery with pulmonary artery banding to prevent congestive heart failure in infancy and enable the heart cavities to develop. In addition to causing increasing right ventricular hypertrophy and diastolic dysfunction, a pulmonary artery banding procedure is associated with a high early postoperative death rate.[2] Small infants with apical muscular VSDs may be challenging to close surgically due to inadequate direct visibility. At the same time, percutaneous closure may be hampered by hemodynamic instability caused by manipulating a great sheath via a wire rail. Direct periventricular puncture of the RV-free wall (hybrid method) can significantly enhance access to the defect and permit the implantation of significant devices. In 1998 and in a recent multicenter analysis of 47 patients, this technique was initially disclosed. Given the magnitude of the VSD and the possibility of pulmonary hypertension, our team decided to attempt a hybrid method involving a surgical anchor for the device. As device embolization can occur in 1% to 2% of patients,[3] an RV "stay-suture" was created to prevent right-to-left device embolization. 3 The ideal surgical repair requires the total closure of many flaws. In an ideal situation, the moderator band and septomarginal trabeculation should stay intact, without the necessity for ventriculotomy, without compromising the size of the ventricular chambers, without causing ventricular dysfunction, surgical total heart block, aortic and tricuspid regurgitation, and without impeding coronary artery flow. Numerous surgical and interventional procedures and short-term follow-up studies that reveal an unfavorable incidence of perioperative mortality and morbidity demonstrate that this ideal has not yet been attained.4 Proponents of an apical right ventriculotomy have established the safety and efficacy of this technique for large solitary apical lesions with several overlaying trabeculations and for apical and anterior defects. A modest incision is made in the right ventricle near to the left anterior interventricular coronary artery without harming the blood vessel. According to Tsang and colleagues, a ventriculotomy in this region provides access to the gap between the papillary muscles and septum.[4]

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