

## Editorial



# Procedural, Early and Long-Term Outcomes after Transcatheter Atrial Septal Defects Closure: Comparison between Large and Very Large Atrial Septal Defect Groups

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### Conflict of Interest

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Atrial septal defect (ASD) is one of the most common congenital heart disease and the percutaneous closure of ASD is a gold standard in the treatment of ASDs, which has shown excellent results. Most of the studies have shown that transcatheter closure of moderate-sized ASD is safe and effective.<sup>1)</sup> However, it has been still challenging to close large or very large ASD by transcatheter technique. In addition, it often needs special modified implantation techniques (MIT); balloon assisted technique, right or left upper pulmonary vein techniques, and so on. These MIT increased success rate of implantation.<sup>2)3)</sup>

Actually, there is no universally accepted definition for large and very large ASDs. However, usually ASDs more than 20 mm in adults have been considered as large ASD.<sup>4)5)</sup> In this study, the authors<sup>6)</sup> used more strict definition of large ASD that the defect is more than 25 mm but showed excellent outcome. It means that the size is not matter except very large ASDs (more than 40 mm) but the adjacent rim anatomy is concern.

The absolute contraindication for transcatheter closure of ASD is mitral rim deficiency because of mitral valve touching/erosion and the defect more than 40 mm. Also, the posterior-inferior rim deficiency is a relative contraindication because of embolization risk. Amedro et al.<sup>7)</sup> reported 44.4% of success rate of transcatheter closure of ASD in inferior-posterior rim deficiency. Recently, Chen et al.<sup>8)</sup> reported the initial experiences of transcatheter closure of very large secundum ASD (36–42 mm) using domestic septal occluder (44–48 mm) with good result but no long-term outcome. In addition, severe pulmonary hypertension or Eisenmenger syndrome are contraindicated. Of course, the fenestrated device may be considered in this situation after vasoreactivity test.

The aortic rim deficiency is not a contraindication of transcatheter closure, but it has reported that aortic rim deficiency is related with erosion risk. Therefore, the accurate imaging acquisition of ASD is very important. For this reason, real-time 3-dimensional transesophageal echocardiography guided procedure has performed at many centers and it has showed good results recently.

Intracardiac echocardiography (ICE)-guided procedure has increased and showed safe and effective immediate result in adults and pediatric patients.<sup>9)10)</sup> ICE provides excellent imaging of the anatomy of ASD and adjacent structures, and especially posterior and inferior rim are well visualized. In addition, ICE can decrease the needs for endotracheal intubation and general anesthesia during the procedure. In this point, the authors<sup>6)</sup> of this study showed excellent early and long-term outcome of ICE-guided closure of ASD. However, this technique requires the interventionist to have enough experiences and capability to interpret the ICE images. In this study, only 1 expert performed all procedures and made excellent results.

Although this study did not describe the change of exercise capacity and left ventricular function after transcatheter closure of ASD, they already reported increased exercise capacity and ventricular function in previous report.<sup>11)</sup>

Finally, this report showed the excellent early and long-term outcomes of ICE-guided transcatheter closure of large and very large ASD using MITs. The accurate anatomy and size evaluation before procedure is very important. Meticulous evaluation including age-related comorbidity, arrhythmia, pulmonary hypertension and ventricular function before and after procedure make to ensure excellent outcomes.

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