

### How to size ASD's during percutaneous closure

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Background: Percutaneous closure is the treatment of choice for secundum type ASD's. Adequate imaging of the ASD is essential. Incorrect sizing of the ASD may lead to complications. Oversizing may cause cardiac erosion and undersizing causes residual leak and device embolization. Balloon sizing (BS) was the method of choice for deciding on the appropriate device size. Improved 2D- and 3D-transesophageal echocardiographic (TEE) imaging raised questions about the necessity of BS. Objective: For years, BS was our sizing method. We used 2 alternative techniques to measure the stretched diameter of the ASD. The 1st method uses a stiff guide which stretches the ASD. This stretched diameter is measured by 2D TEE in 2 planes at least. The second technique is the direct measurement of the ASD using 3D TEE. We compared the results of ASD closure using these 3 sizing methods.

Methods: 236 patients with follow-up of minimum one year were enrolled in this study. The occluders used were the AGA and Occlutech devices. The population was classified into 3 groups according to the sizing method: BS (group 1) n= 90, 2D-TEE (group 2) n=87 and 3D-TEE (group 3) n=59.

Results: All groups showed a distinct correlation between the baseline dimensions and the device size ( $R_s = 0.821$ ). In case of a floppy septum, the correlation was lower. The relative expansion rate (baseline dimension to device size ratio) did not differ significantly between BS (group 1: 32.50%) and 3D-TEE (group 3: 32.80%). Group 2 with 2D-TEE sizing showed a significantly lower expansion rate (14.38%) compared to group 1 ( $p < 0.000$ ) and group 3 ( $p = 0.003$ ). The immediate success did not differ between the 3 groups (98.9%, 96.6% and 96.6%). Sizing-related issues as oversizing, undersizing, arrhythmias, device embolization and cardiac erosion were comparable between the groups.

Conclusion: These data showed no difference in sizing-related issues for the three methods. Moreover, 2D TEE sizing is the simplest method and available for all age groups with comparable results and complications. The relative device size (compared to baseline) was lower for this sizing technique without causing more undersizing. Maybe this could be interesting for the prevention of erosions.