



BALLOON OCCLUSION TEST OVERESTIMATES THE RISK OF ACUTE PULMONARY CONGESTION AFTER THE TRANSCATHETER CLOSURE OF ATRIAL SEPTAL DEFECT IN ADULTS

i2 Poster Contributions

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Background: Previous studies demonstrated that the risk of serious acute pulmonary edema immediately after the transcatheter atrial septal defect (ASD) closure, especially in elderly patients. To avoid the risk of acute pulmonary edema after the closure, transient occlusion of ASD using sizing balloon with monitoring of hemodynamic parameters (balloon occlusion test) has been believed to be useful. However, the clinical reliability of balloon occlusion test has not been verified. The purpose of this study was to evaluate the reliability of balloon occlusion test to predict the risk of acute pulmonary edema after transcatheter closure of ASD.

Methods: Twenty-five single ASD patients who required the balloon sizing for the decision of device size were included in this study. Swan-Ganz catheter was placed into pulmonary artery throughout the procedure and pulmonary capillary wedge pressure (PCWP) was monitored at baseline, balloon occlusion (no residual shunt confirmed by transesophageal echocardiography), and after the device deployment. Amplatzer Septal Occluder was used in all.

Results: Mean age at procedure was 59 ± 19 years (range: 18 to 74 years). Fifteen of 25 patients were >60 years. Mean Qp/Qs was 2.8 ± 1.0 and mean ASD diameter was 18.9 ± 4.8 mm. PCWP significantly increased by balloon occlusion test compared to baseline (8.2 ± 2.4 mmHg vs. 13.6 ± 4.1 mmHg, $p < 0.001$). In 4 patients, PCWP increased >18 mmHg by balloon occlusion test. However, such elevated PCWP significantly decreased after the device deployment (9.0 ± 2.2 mmHg, $p < 0.001$ compared to balloon occlusion test) as same as baseline level. Univariate analysis could not demonstrate the influence of age, Qp/Qs, ASD diameter upon increasing PCWP in our cohort. All procedures, including 4 patients whose PCWP increased >18 mmHg, were completed without the symptoms of acute pulmonary edema.

Conclusions: In adult patients, balloon occlusion test tend to overestimate the estimated post-closure pulmonary wedge pressure. Although the cause of this discrepancy was not clarified in our study, role of balloon test occlusion should be re-evaluated for the high risk patients for ASD closure in adults.