Percutaneous closure of the complex interatrial defects using the modified balloon technique

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Introduction
Percutaneous closure of interatrial defects is more widely used method of treatment. It also applies to complex type defects. There are used various technical modifications in these situations.

Materials and methods.
In the period of 43 months in 27 patients with complex interatrial defects aged from 35 months to 67 years (mean 23.6 ± 25.3 years) there were performed unconventional methods of percutaneous closure of these defects. Stretched diameters of defects ranged from 19 to 35 mm (mean 26.9 ± 5.1). The smaller defects occurred mainly in the smaller children. In 19 patients (70%) there was a lack of aortic rim.

In all these patients, despite the use of multiple attempts (classical, the use of different curvatures of delivery system, left pulmonary vein and left atrial roof technique), we could not get correct position of discs of the implants in relation to the septum, because the left atrial disk constantly prolapsed into the right atrium. Therefore, the second contralateral venous access was obtained, through which the calibration balloon was introduced. When the balloon was partially inflated, both discs of the implant were released. Then the desinflation was made, the balloon and guidewire were removed subsequently.

Results
The defects were closed successfully in 25/27 (92.6%) patients. The trivial or small residual leak was observed in 7/25 (28%) patients, which disappeared in all cases during the follow-up (mean 16.5 ± 11.4 months). In the remaining 2 patients, despite many attempts to percutaneous closure, it was impossible to get proper placement of the implant. Therefore, the procedure was abandoned. In both cases, the surgical correction was performed.

Conclusion
Modified balloon technique is extremely useful method that significantly increases the effectiveness of the percutaneous closure of complex interatrial defects. This method is applicable both in adult patients and small children.