



ANGIOSCOPIC EVALUATION OF DEVICE ENDOTHELIALIZATION AFTER THE TRANS-CATHETER CLOSURE FOR THE INTER ATRIAL COMMUNICATIONS (IACS)

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Background:

Anti-thrombotic therapy and the antibiotic prophylaxis are needed after catheter closure for IACs until sufficient endothelialization. However, the endothelialization of the closure device in vivo is not elucidated.

Objectives:

To evaluate device endothelialization in vivo by angioscopy.

Methods:

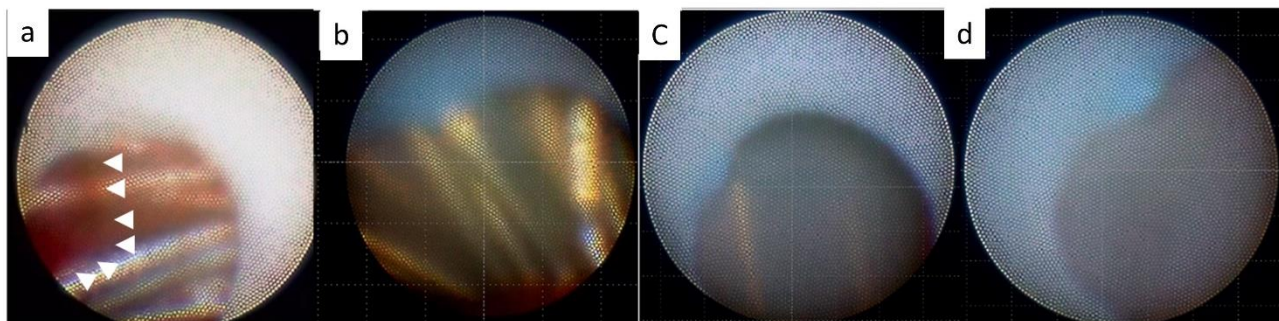
We evaluated the endothelialization of 19 closure devices for IACs by angioscopy (Visible, Fiber Tech Co., Ltd., Tokyo, Japan) from the right atrium. 1) 15 atrial septal defect (ASD) cases were evaluated at 6-months after implantation. 2) 4 patent foramen ovale (PFO) cases were evaluated at 12-months after implantation. The device was divided into 9 areas, and the extent of endothelialization of each area was semiquantitatively assessed using a 4-point scoring system (Figure A, a: Grade 0, complete exposure of device struts. b: Grade 1, sparse endothelialization. c: Grade 2, moderate endothelialization with visible device struts. d: Grade 3, complete endothelialization with non-visible device struts).

Results:

1) Endothelialization of ASD closure devices varied among the study patients; the device endothelialization was sufficient in two-thirds of patients, but insufficient in one-third of patients. The average endothelialization score of the center areas (0.59 ± 0.79) was significantly lower than that of the other areas (2.41 ± 0.93 , $p < 0.01$). The larger ASD devices (≥ 24) tended to be poorer endothelialized than the others (1.7 ± 0.5 vs 2.4 ± 0.3 , $p = 0.014$). The red thrombi were seen in poorly endothelialized areas (Figure B).

2) The PFO closure devices were well endothelialized without thrombus attachment (Figure C).

Figure A



△Thrombus

Figure B

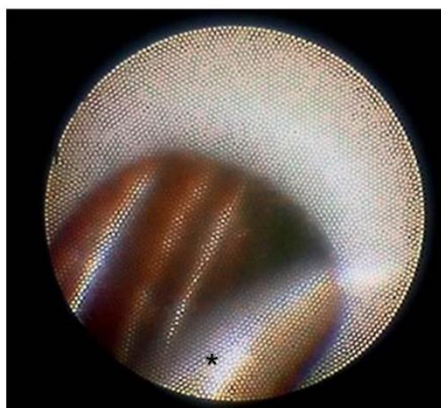
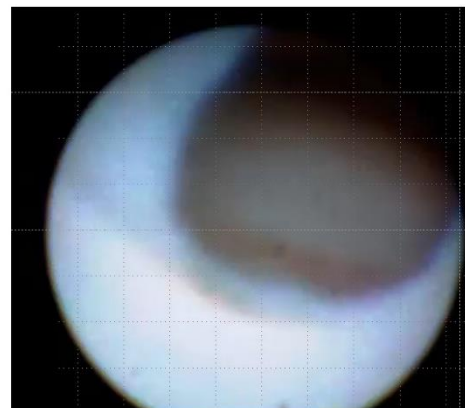


Figure C



Conclusion:

The endothelialization of the central area and the larger ASD closure device at 6-months after implantation were insufficient. The endothelialization of PFO-closure devices at 12-months after implantation was sufficient.