TRANSCATHETER CLOSURE OF ATRIAL SEPTAL DEFECTS WITH DEFICIENT INFERIOR VENA CAVA RIM IS SAFE AND FEASIBLE OPTION: EXPERIENCE FROM TERTIARY CARE REFERRAL HOSPITAL OF EASTERN INDIA

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Background:

Now, a day's transcatheter device closure of atrial septal defect (ASD) is treatment of choice worldwide. Traditionally applicable for single defect with adequate surrounding rims. However, due to technical improvement and availability of larger size ASD devices, even large defect and or associated with borderline rims can be closed with device. Device closure of atrial septal defect with deficient inferior vena cava (IVC) rim is possible but technically challenging. Proper case selection, device size selection and using of special deployment techniques are key factors for successful device closure in such defect.

Aims and objectives:

We aimed to assess the safety and feasibility of transcatheter closure of atrial septal defects with deficient inferior vena cava rim, special consideration of case selection, device size selection and special deployment technique.

Methods:

This is single centre, retrospective, observational study, Form August 2016 to September 2021 all atrial septal defect device closure reports were analysed and found out that 408 atrial septal defects were successfully closed by device in this time period in our institution (NH- Rabindra Nath Tagore international institute of cardiac sciences Kolkata). In 300 cases Amplatzer septal occluder (ASO) (AGA Medical Corporation, Plymouth, Minnesota, United States of America) devices have been used . Another 108 cases LifeTech (LifeTech Scientific Shenzen Co Ltd) devices have been used.

Total 28 cases were identified, where atrial septal defect (ASD) with deficient IVC rim (<4mm) were attempted in catheterization laboratory for device closure in this time period in our institute.

Retrospectively this study has analysed 28 patient's medical records, echocardiography reports and transcatheter device closure reports, procedure (fluoroscopy) recording.
Demographic data such as gender, age, weight of the patient, defect size, rim size, device size, device/ defect size, device/ weight was analysed. Technical data as like routine deployment technique or any special deployment technique were used, number of attempts (single release vs multiple attempts) were analysed. Major and minor complications were also analysed.
Informed written consent was available for each patient prior to device closure. As this is a retrospective study ethical committee approval was not mandatory.

Inclusion criteria: -
All atrial septal defect with deficient IVC rim(<4mm) was attempted in catheterization laboratory.

Exclusion criteria-

1. Successful ASD device closure with adequate rims.
2. Multi-fenestrated OS ASD device closure.

Results:

Out of 28 patients with deficient IVC rim, 21 (75%) cases underwent successful transcatheter closure. 4 (14.2%) cases failed to be closed by device and sent for surgical closure on next day. In 3 cases (10.7%) device was embolized on table few minutes after release and patients were immediately shifted to operation theatre and surgical removal of device and closure of ASD done on those patients. No other major complications were documented in this series.

Conclusion:

Transcatheter closure of atrial septal defects (ASD) with inferior vena cava (IVC) rim deficiency is challenging but safe and feasible option. Regarding case selection, total absence of IVC rim or IVC rim deficiency is associated with multiple other rims deficiency, or rims are deficient in two orthogonal planes then that case is not suitable for device closure. On the other hand, as oversizing is the rule, not an exception for such cases, better not to take smaller kids with large defect associated with deficient IVC rim. Most of the time special deployment technique with multiple attempts are necessary that is the reason, success is highly dependent on operator expertise. In nutshell proper case selection, device oversizing and technical expertise are key factor for successful device closure in this case scenario. Long term follow up is necessary where oversized devices had been used.