CONCLUSIONS The use of large stents can significantly reduce the risk of restenosis and are more effective than simple balloon angioplasty. However restenosis remains common and warrants routine surveillance after the initial procedures. This may suggest a role for novel approaches including the use of drug coated balloons.

CATEGORIES CORONARY: Complex and Higher Risk Procedures for Indicated Patients (CHIP)

KEYWORDS Restenosis, Restenosis, in-stent, Venous stenting

TCT-740
Treatment Options for the Closure of Secundum Atrial Septal Defect: A Systematic Review and Meta-Analysis
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BACKGROUND Secundum atrial septal defects (ASD) are treated by surgery (SC) or transcatheter closure (TCC). There is no clear superiority of one technique and there is a scarcity of data directly comparing TCC and SC. This meta-analysis compares the clinical outcomes of the two treatment options for ASD.

METHODS A literature search was performed in MEDLINE, Embase, PubMed, Google Search, and Cochrane databases. Only studies directly comparing SC and TCC of ASDs were included. Of note, by definition and as a limitation of this work, this study compares only device-closure ASD’s (TCC) to all surgically closed ASD’s. Outcomes studied were major and minor acute complications, all-cause mortality, residual shunt, reinterventions, ICU admission, and length of stay (LOS). Odds ratios (OR), standardized mean difference (SMD) and 95% confidence intervals (CI) were calculated using the Mantel-Haenszel method. A random-effect model was used to obtain summary effect. Sensitivity and cumulative analysis was performed for each outcome. All ages were included.

RESULTS 1287 manuscripts were screened. Twenty studies fulfilled the inclusion criteria: all observational studies (total n = 4,672 patients). TCC was superior to SC for the following outcomes: total complications (OR 0.33, 95% CI 0.20 to 0.75; p < 0.01), major complications (OR 0.42, 95% CI 0.25 to 0.71; p < 0.01), minor complications (OR 0.29, 95% CI 0.16 to 0.57; p < 0.01), ICU admission (OR 0.01, 95% CI 0.01 to 0.29; p = 0.01), and LOS (SMD -2.33, 95% CI -2.81 to -1.85; p < 0.01). Residual shunts were more common with TCC (OR 3.28, 95% CI 1.57 to 6.87; p < 0.01). No difference was observed for all-cause mortality (OR 0.34, 95% CI 0.08 to 1.49; p = 0.15) or the need of reintervention (OR 1.39, 95% CI 0.49 to 3.96; p = 0.61). Amongst adult patients (>18 years) a TCC was associated with shorter LOS (SMD -2.13, 95% CI -2.39 to -1.88; p < 0.01).

CONCLUSIONS We present the largest meta-analysis comparing TCC and SC for closure of secundum ASD. Though both approaches are efficacious, for TCC-appropriate ASD’s, TCC is associated with shorter LOS, less morbidity and fewer ICU admissions, while SC has a lower rate of residual shunting. Of note, many surgical cases included in this meta-analysis likely could only be closed surgically suggesting that both approaches are of value in the care of patients with ASD.

RESULTS A total of 25 patients were included in the study. In all cases ASD was conducted uneventfully. R-W was 0.65 ± 0.13, R-LA was 0.85 ± 0.10, and R-RA was 0.84 ± 0.07. R-W differed significantly compared to the observed deformation of both disks (R-LA and R-RA), p<0.001. However, R-W was neither correlated with R-LA (r=0.175, p=0.404) nor with R-RA (r=0.123, p=0.538). This indicates that other factors besides mechanical properties of the device affect disks expansion.

KEYWORDS Atrial septal defect, Closure device, Surgery

TCT-741
Atrial Septal Occlusion: Atrial Disks’ Deformation Is Independent Of Waist Deformation
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BACKGROUND Percutaneous closure of atrial septal defect (ASD) with a self-expandable double-disk ASD septal closure device is a well-accepted technique. Recently, concerns were raised about some rare but catastrophic long-term complications such as aortic erosion. Factors that contribute to this adverse outcome have not been recognized. Intracardiac echocardiography (ICE) can be used to guide device implantation, immediate results and to evaluate device deformation. We hypothesized that additional deformation of the disks of the implanted device may occur independently of its waist compression. The importance of such deformations and their impact on surrounding tissues is not known.

METHODS Consecutive patients undergoing percutaneous ASD closure guided by ICE were enrolled. Defect sizing was conducted with color-Doppler at “stop-flow” during balloon deployment. ICE loops were recorded and retrospectively studied. The length of the compartments of the closure device was measured at horizontal plane. Subsequently, in order to evaluate device deformation, the ratio of the measured to the nominal dimensions of the device was produced. Namely, R-waist (R-W), R-left-atrial-disk (R-LA) and R-right-atrial-disk (R-RA) were calculated.

RESULTS A total of 25 patients were included in the study. In all cases ASD was conducted uneventfully. R-W was 0.65 ± 0.13, R-LA was 0.85 ± 0.10, and R-RA was 0.84 ± 0.07. R-W differed significantly compared to the observed deformation of both disks (R-LA and R-RA), p<0.001. However, R-W was neither correlated with R-LA (r=0.175, p=0.404) nor with R-RA (r=0.123, p=0.538). This indicates that other factors besides mechanical properties of the device affect disks expansion.
Additionally, the observed deformations in the two disks were positively correlated (r = 0.43, p = 0.04).

CONCLUSIONS While a minimal deformation of the waist of the ASD device is expected due to a relative intentional oversizing, in the present study the observed deformation of the disks of the device was not correlated with the deformation of the waist. Therefore potential mechanisms for this deformation, such as mechanical tension from adjacent structures, should be investigated in future studies.

CATEGORIES STRUCTURAL: Congenital and Other Structural Heart Disease

KEYWORDS Atrial septal defect, Closure device, Percutaneous

TCT-742

Catheter Ablation of Ventricular Tachycardia in Patients with Structural Heart Disease – A Meta-analysis

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BACKGROUND Drug therapy (DT) for ventricular tachycardia (VT) is not very effective and is fraught with pro-arrhythmic and other adverse effects. Catheter ablation (CA) of VT is considered an effective alternative to DT.

METHODS PubMed, EBSCO and Ovid databases were searched to identify studies comparing CA and DT for the management of VT in structural heart disease. Studies reporting outcomes of idiopathic VT were excluded. Baseline characteristics and outcomes of recurrence of VT and mortality were extracted from the included studies. Risk ratio (RR) was calculated for the outcomes of recurrence of VT and mortality using random effects model with 95% confidence intervals (CI).

RESULTS A total of 8 studies (5 randomized studies) met our inclusion criteria and included 1256 patients, 379 in the CA group and 877 in the DT group. Follow up times varied from 6 months to 5 years. Heterogeneity was assessed by Cochrane q statistic, which suggested low degree of heterogeneity (I² = 25%). VT recurred in 26% and 54% of the CA and DT groups, respectively. The overall RR of recurrence of VT was 0.67 (95% CI 0.51 - 0.89) in favor of the CA group and exclusion sensitivity of the individual studies did not alter the above results. Subgroup analysis including only randomized studies also showed a decreased recurrence of VT after catheter ablation (RR 0.72, 95% CI 0.52 - 0.99). Mortality was reported in 6 studies and mortality was significantly lower in the CA group compared to DT group (17% vs 42%). The overall risk of mortality was significantly lower in the CA group (RR 0.63, 95% CI 0.49 - 0.79). The decrease in mortality was driven by a single study (Bunch et al.). Publication bias was assessed by means of trim and fill plot and was deemed to be minimal and moderate for the outcomes of VT recurrence and mortality, respectively.

TCT-743

Safety and Effectiveness of Transcatheter Closure of Ostium Secundum Atrial Septal Defect Using Atrial Septal Occluder Device Without Balloon Sizing or Invasive Echocardiogram in Low Health Resource Setting

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BACKGROUND Transcatheter closure of ostium secundum atrial septal defect (ASD) by atrial septal occluder (ASO) device is a minimally invasive and effective alternative to surgical repair of ostium secundum atrial septal defect. This procedure is routinely been practiced with balloon sizing and invasive echocardiographic assessment. The sizing balloon usually costs around USD 600, which is not affordable for most of the patients in our setting. A method of device closure without balloon sizing had been described in recent past. We derived a sizing formula using our initial results and oversized the device ranging from 4 to 6mm to maximum ASD diameter measured by transthoracic echocardiogram. This study was designed to evaluate the safety and effectiveness of transcatheter closure of ostium secundum atrial septal defect without balloon sizing or invasive echocardiographic assessment.

METHODS Medical records and followed up data of 128 patients who underwent transcatheter closure of ostium secundum atrial septal defect by atrial septal occluder device, from March 2009 to May 2014 were analyzed. The above mentioned sizing formula was used for device sizing whereas fluoroscopy and transthoracic echocardiogram were used for device positioning and assessing the stability. This procedure was done under local anesthesia. The patients were followed up with a periodic clinical and echocardiographic evaluation and procedural outcomes and subsequent complications were retrospectively analyzed.

RESULTS Among 128 patients 68.8% (n=88) were females and 31.2% (n=40) were males. Mean age was 34.7±13.9 with a range from 13 to 63 years. The mean ASD diameter according to the transthoracic echocardiographic measurement was 17.8±5.1 mm ranging from 8mm to 30mm. Mean size of ASO device diameter was 22.6±5.5 mm ranging from 12mm to 34mm. The final success rate of the procedure was 91.4% (n=117) and failure rate was 8.6% (n=11). No major complications such as thromboembolic events, obstruction of intracardiac structures, cardiac perforation, device embolization, device erosion and residual shunting or deaths were reported during the procedure or within one year follow up period. Minor complications were reported in 3.9% (n=5) of patients. With the use of above mentioned method, average cost per patient excluding the device cost was USD 325.

CONCLUSIONS Transcatheter closure of ostium secundum ASD with ASO device using device sizing formula and non-invasive transthoracic echocardiographic assessment is a feasible, safe and cost effective method which would be more appropriate for countries with minimum resources for health care.

CATEGORIES STRUCTURAL: Congenital and Other Structural Heart Disease

KEYWORDS Atrial septal defect, Device closure, Outcomes

ALCOHOL SEPTAL ABLATION/HOCM

TCT-744

A Meta Analysis of Current Status of Alcohol Septal Ablation and Surgical Myectomy for Obstructive Hypertrophic Cardiomyopathy

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BACKGROUND Surgical myectomy (SM) and alcohol septal ablation (ASA) are the 2 invasive strategies used to relieve left ventricular outflow tract obstruction (LVOTO) in patients with drug refractory symptomatic hypertrophic cardiomyopathy (HCM). No randomized