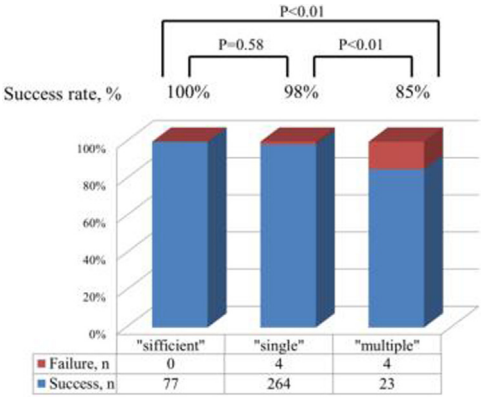
Results: Maximal diameter of ASD in "multiple" group was larger than "sufficient" or "single" group (29 mm, 16 mm, 19 mm, p<0.01). Procedural success rate was 98% with no in-hospital death. One cardiac erosion occurred in "single" group and 1 device embolization occurred in "multiple" group. In 6 patients, stable device deployment was not achieved. Although procedural success rate in "multiple" group was significantly lower than "sufficient" or "single" group, >80% of patients having multiple rim deficiencies completed the procedure (Figure).



Conclusions: Even for ASD patients with multiple rim deficiencies, device closure has the validity to be considered as an initial therapeutic option.

TCT-686

LEFT ATRIAL APPENDAGE CLOSURE WITH A SECOND GENERATION DEVICE

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Background: The objective of our study was to describe the initial worldwide experience with the AmuletTM, the second generation of the AmplatzerTM Cardiac Plug, for percutaneous left atrial appendage (LAA) closure
Methods: Between July 2012 and May 2013, all patients undergoing LAA closure using the AmuletTM were included in the study. The AmuletTM has been designed to facilitate the implantation process and minimize complications because of strategic modifications without changing the main design of the first generation AmplatzerTM Cardiac Plug. Indication for LAA closure was based on a formal contraindication for oral anticoagulation. All procedures were done under general anesthesia and transesophageal echocardiography (TEE) guidance. Transthoracic echocardiography was performed 24 hours after the procedure to rule out periprocedural complications. Further clinical follow-up and TEE was done at 1 to 3 months.
Results: Twenty one patients (mean age 74±8; 61.5% males) with a CHADS2 score of 3±1.45 were included in the study. Four patients (19%) presented with complex chicken-wing LAA anatomies with an early significant (≥100º) bend. The AmuletTM was successfully implanted in all patients except one, which presented with a very small LAA. The mean size of the device was 23.8±4.3 mm. No device embolization, procedure-related strokes or pericardial effusions were documented. One patient developed a LAA thrombus during the procedure related to the delivery sheath that was successfully trapped behind the device without sequelae. Clinical and follow-up TEE at 1 - 3 months was available in 17 patients (81%). During follow up, one patient (4.8%) had a thrombus at the atrial surface of the AmuletTM. However, the same patient also had a larger thrombus on the left atrial surface of an AmplatzerTM atrial septal occluder implanted on the same day of his LAA occlusion. None of the patients presented with any clinical events and all of them showed complete LAA sealing without any degree of residual shunt.
Conclusions: In this initial series, the AmuletTM showed good performance in terms of efficacy and safety as depicted by the successful implantation in almost all patients and the absence of procedural complications.

TCT-687

A Comparison of Angiographic and Transesophageal Measurements of Left Atrial Appendage Dimensions during Catheter-Based Left Atrial Appendage Occlusion: Implications for Sizing and Safety.

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Background: Accurate measurement of the left atrial appendage (LAA) neck and depth are important for correct sizing and safe placement of LAA closure devices. However, our experience suggests that LAA measurements derived from 2D TEE do not consistently predict closure device size, and do not consistently correlate with LAA measurements derived from LAA angiography.
Methods: Two-dimensional TEE measurements of the isthmus and neck of the LAA were performed in orthogonal planes at 0, 45, 90, and 135 degrees. During LAA angiography, the LAA neck was measured in the right anterior oblique (RAO) caudal projection and the depth in the RAO cranial plane. The diameter of a 6 Fr pigtail catheter was used as standard reference for the angiographic measurements.
Results: 43 patients underwent LAAO in the period February 2010 to May 2013. LAA closure was performed with a Watchman device in 29 patients (67%), a Coherex device in 11 patients (26%), and an Amplatzer plug in the remaining 3 patients. 9 procedures had to be abandoned, 4 because of complications, and 5 because of unsuitable LAA anatomy. On angiography, the mean LAA depth was 34 mm (range, 16-53 mm), whereas the average LAA isthmus length was 21 mm (range, 8-38 mm). Conversely, on 2D-TEE mean LAA depth was 28 mm (range, 15-44 mm), whereas the average isthmus length was 20 mm (range, 12-33 mm). The mean discrepancy between the maximal LAA neck measurements derived from LAA angiography and 2D-TEE was 0.8 mm, whereas the discrepancy between the measurements of the depth was 3 mm, with TEE undersizing the LAA dimensions compared to angiography. By contrast, 2D-TEE overestimated the LAA neck dimensions compared to angiography in unsuccessful procedures, by an average of 1.2 mm. The average discrepancy between the maximal LAA neck length measured by 2D-TEE and LAA angiography and the diameter of the implanted device was 5 mm and 4 mm, respectively.
Conclusions: TEE systematically underestimates LAA dimensions compared to angiography. By contrast, in unsuccessful procedures, TEE oversized the LAA neck compared to angiography. Implanted device diameter is on average 5 mm and 4 mm greater than the LAA neck length derived from TEE and angiography, respectively.

TCT-688

Left Atrial Appendage Closure Using the Amulet Device - A Single Center Experience

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Background: Amulet Device (St Jude Medical, Minneapolis, MN, USA) is a new self-expanding device specifically designed for LAA closure. It was designed to facilitate the implantation process and minimize procedural or device-related complications.
Methods: The Amulet Device was implanted in 17 patients with non-valvular atrial fibrillation (AF) and high stroke risk. All patients received clopidogrel 75 mg for 3 months and aspirin for minimum 6 months after the implantation. Transesophageal echocardiography (TEE) was performed for all patients as pre-procedural assessment for LAA morphology. Sizing of LAA landing zone was based on fluoroscopic and TEE measurements. Clinical data were obtained at baseline, during the procedure, at discharge and at 30 days.
Results: All devices were implanted successfully via left femoral vein under fluoroscopic and TEE guidance. Transseptal puncture was performed in 14 patients. Implantation was performed via concomitant patent foramen ovale (PFO) in 3 patients. All device deployment fulfilled the recommended criteria. Device size ranged from 20mm to 31mm. For each case a 12 Fr or 14 Fr delivery sheath was used depending on the compatibility with the size of the device. Full recapture and partial recapture was performed in 1 case and 3 cases respectively. There was 1 procedural-related pericardial effusion that was successfully managed with pericardial drainage. There was no device embolization. The mean length of stay was 2.12 days. At 30 days, there were no deaths, strokes and no additional bleeding complications. TEE repeated at 30 days showed no device-related thrombus or pericardial effusion. 2 out of the 17 patients showed minimal peri-device flow (width smaller than 2mm).
Conclusions: The Amulet device, which has new novel features in design as compared with the first generation ACP, is a feasible option for LAA closure with good short-term outcome at 30 days. Potential advantages over the first generation ACP include ease of device preparation, better fit to different LAA anatomy and sealing of LAA ostium, facilitation of device recapture and device positioning, more stable anchor and minimized risk of thrombus formation on surface of the device.

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