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1019 Catheter Closure of Atrial Septal Defects

Sunday, March 07, 2004, 9:00 a.m.-11:00 a.m.

Morial Convention Center, Hall G

Presentation Hour: 9:00 a.m.-10:00 a.m.

1019-203**Stability of the Amplatzer Septal Occluder Device:
Importance of the Atrial Tissue Rim**

Ankush K. Chhabra, Babak Azarbal, Hitoshi Anzai, Michael Fishbein, Catherine Dao, Vicki Chan, Richard Gaster, John Moore, Jonathan Tobis, University of California- Los Angeles, Los Angeles, CA

Background: Percutaneous closure of secundum atrial septal defects (ASD) with the Amplatzer Septal Occluder device requires an adequate rim of septal tissue to stabilize the device. The amount of septal tissue and atrial rim necessary for stabilization has not been quantified.

Methods: An artificial ASD was created in fresh autopsied hearts through a right atrial incision. ASDs (12 to 40 mm in diameter) were created and 9 sizes of Amplatzer (12 through 40mm) were inserted. The force required to pull these devices through the ASD was measured in 260 attempts with a handheld ergometer. In 9 hearts, sequential 30-degree segments of atrial rim 7 mm wide were removed, and the force required to pull the device through the atrial septum was re-measured.

Results: The force required to pull an Amplatzer device through a given ASD size with an intact rim was directly proportional to the increasing size of the Amplatzer (range 0.05 to 1.5 lbs). In the samples with segments of atrial rim excised, the force required was significantly less (range 0.2 to 0.85 lbs, $p < 0.02$). Loss of 30% of the atrial rim segment produced a 40% mean reduction ($p < 0.05$) in the amount of force required to dislodge the device.

Conclusion: There is a linear relationship between the size of the Amplatzer device and force needed to pull it through an ASD. The circumference of atrial rim is important in securing the device. The ASD area plus excised rim area to Amplatzer area ratio of > 0.6 causes a marked reduction in the stability of this device.

