ATRIAL SEPTAL DEFECT II
WITH DEFICIENT AORTIC RIM

IS IT CATH CASE!

OMAR AL TAMIMI, MD
CONSULTANT, PEDIATRIC CARDIOLOGY
CARDIAC CENTER
KING ABDULAZIZ MEDICAL CITY

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INTERCON HOTEL. RIYADH, K. S. A.
Surgical closure:

- Surgical repair is the gold standard for treatment of a secundum type of atrial septal defect (ASD).

- Morbidity and mortality are extremely low, and long-term follow-up has demonstrated excellent survival and functional capacity.

ASD rims:

- Superior/superior vena cava (SVC) rim.
- Superior-posterior/right upper pulmonary vein rim.
- Anterior-superior/aortic rim.
- Inferior/inferior vena cava (IVC) and coronary sinus rim.
- Posterior rim.
ASD rims:

Classification of rims around the ASD. A, Rim toward the coronary sinus; B, inferior-posterior rim (toward the inferior vena cava); C, posterior rim (toward the pulmonary veins); D, superior-posterior (toward the superior vena cava); E, anterior-superior (toward the aorta); F, inferior (toward the AV valves).

Butera et al. Am Heart J 2008

Color Atlas of Congenital Heart Surgery
Second Edition S. Bert Litwin, MD
2/3D image:
2/3D image:
Technique of device closure with deficient aortic rim:

- Hausdorf sheath
- Right upper pulmonary vein technique
- Left upper pulmonary vein technique
- Dilator assisted technique
- Balloon assisted technique
- Right coronary Judkins guide catheter technique
Device closure:

- Recently major advances have been made in device closure of ASDs.
- Reported closure rates have been good, and it is assumed to have similar morbidity and mortality when compared with surgical Repair.

Holzer R, Hijazi ZM. Interventional approach to congenital heart disease. Curr Opin Cardiol 2004
Device closure:
The presence of a thin or deficient aortic “rim” superiorly has been reported not to be a contraindication to successful closure, and in these cases the ASO device is positioned at the base of the aorta.

Device closure:

- However, most, but not all, secundum ASDs are amenable to device closure.
Device closure:

- However, device closure is not without complications.
- Early and late cardiac perforations are life-threatening complications with the incidence varying from 0.1% to 4%.

Device closure:

- Initial reports of aortic wall erosion led to the recommendation of intentionally over-sizing the device.
- The device disks straddle and remain flared around the ascending aorta to prevent discrete areas of pressure where erosion may occur.

Device closure:


21st Conference
Saudi Heart Association
Device closure: oversize
Device closure:

MELLO, ET AL. REPAIR OF AORTIC-LEFT ATRIAL FISTULA Ann Thorac Surg 2005
Migration of an Amplatzer Septal Occluder Device for Closure of Atrial Septal Defect into the Ascending Aorta With Formation of an Aorta-to-Right Atrial Fistula

Paul A. Grayburn, MD\textsuperscript{a,b,*}, Brian Schwartz, MD\textsuperscript{a,b}, Azam Anwar, MD\textsuperscript{a,b}, and Robert F. Hebeler, Jr, MD\textsuperscript{a,b}

The percutaneous closure of atrial septal defects is increasingly used. Serious complications of the procedure, such as cardiac perforation and tamponade, are rare and usually occur <72 hours after device placement. The investigators report the late development of the erosion of an Amplatzer septal occluder into the ascending aorta with associated aortic-to-right atrial fistula formation. © 2005 Elsevier Inc. All rights reserved. (Am J Cardiol 2005;96:1607–1609)

Percutaneous Closure of ASO

Cardiac Perforation After Device Closure of Atrial Septal Defects With the Amplatzer Septal Occluder

Abhay Divekar, MBBS,\textsuperscript{*} Tidimogo Gaamangwe, MSc, PENG,\textsuperscript{‡} Nasir Shaikh, MBBS,\textsuperscript{†}
Michael Raabe, MD,\textsuperscript{§} John Ducas, MD\textsuperscript{†}

\textit{Manitoba, Canada}
Repair of Aortic–Left Atrial Fistula Following the Transcatheter Closure of an Atrial Septal Defect
Dennis M. Mello, MD, John Fahey, MD, and Gary S. Kopf, MD

Inferior vena cava and coronary sinus obstruction after percutaneous atrial septal defect device closure requiring surgical revision
Alan Weng Siong Soo, MB, MRCSI, David G. Healy, MB, MRCSI, Kevin Walsh, FRCP, and Freddie Wood, FRCSI, Dublin, Ireland

J Thorac Cardiovasc Surg 2006;131:1405-6
The Rush to Atrial Septal Defect Closure: Is the Introduction of Percutaneous Closure Driving Utilization?

Tara Karamlou, MD, Brian S. Diggs, PhD, Ross M. Ungerleider, MD, MBA, Brian W. McCrindle, MD, MPH, and Karl F. Welke, MD, MS

Department of Surgery and Division of Pediatric Cardiothoracic Surgery, Oregon Health & Science University, Portland, Oregon; and Division of Pediatric Cardiology, Hospital for Sick Children, University of Toronto, Toronto, Ontario, Canada
Early Cardiac Perforation After Atrial Septal Defect Closure With the Amplatzer Septal Occluder
Hans-Henning Sauer, MD, Kalliopi Ntalakoura, MD, Christoph Haun, MD, Trong-Phi Le, MD, and Viktor Hraska, MD, PhD
Departments of Pediatric Cardiac Surgery and Pediatric Cardiology, Eppendorf University Hospital, University of Hamburg, Hamburg, Germany

Late Cardiac Perforation Following Transcatheter Atrial Septal Defect Closure
Ournia Preventza, MD, Sridhar Sampath-Kumar, MD, John Wasnick, MD, and Jeffrey P. Gold, MD
Departments of Cardiovascular and Thoracic Surgery, Cardiology/Medicine, Anesthesia, Albert Einstein College of Medicine-Montefiore Medical Center, Bronx, New York
Lastly the surgeon speak up:
Lastly the surgeon speak up:

Analysis of the US Food and Drug Administration Manufacturer and User Facility Device Experience database for adverse events involving Amplatzer septal occluder devices and comparison with the Society of Thoracic Surgery congenital cardiac surgery database

Daniel J. DiBardino, MD, a Doff B. McElhinney, MD, b Aditya K. Kaza, MD, a and John E. Mayer, Jr, MD a

Departments of Cardiac Surgery and Cardiology, Children’s Hospital Boston, Harvard Medical School, Boston, Mass

The Journal of Thoracic and Cardiovascular Surgery • June 2009
July 1, 2002 – June 30th 2007

223 adverse events in patients undergoing Amplatzer atrial septal defect closure were submitted to the Food and Drug Administration resulting in 17 deaths (7.6%) and 152 surgical rescue operations (68.2%).

DiBardino et al. The Journal of Thoracic and Cardiovascular Surgery June 2009
STS data demonstrated 1537 primary operations with 2 deaths (0.13%) and 6 reoperations (0.39%).

Rescue operation for device adverse events (0.83%) was 2.1 times more likely than reoperation for surgical closure (0.39%, P = .063).
Mortality per adverse event was higher for device closure (7.6%) than for surgical closure (1.2%, P=.004).

The need for surgery per adverse event was higher for device closure (68.2%) than for surgical closure (3.6%, P<.001).
The mortality for surgical management of a device adverse event (2.6%) was 20-fold higher than for primary elective atrial septal defect closure (0.13%, P<.0001).

DiBardino et al The Journal of Thoracic and Cardiovascular Surgery June 2009
Spanish experience:

(Hemodynamics Section) Spanish Society of Cardiology, 6345 cases of atrial septal defect were closed percutaneously in 2005, with an incidence of 2.9% for complications and 1.2% for death.

Marta Ruiz Lera et al. Rev Esp Cardiol. 2007
But we keep arguing:

“the patient is only getting the same operation they would have gotten anyway” does not apply to operations for device complications

DiBardino et al The Journal of Thoracic and Cardiovascular Surgery June 2009
Finally until we reach a consensus about what should we do for these cases!

Patient should be informed about surgical and interventional short and long term result of the procedure with careful follow up if percutaneous approach preferable.
THANK YOU

Omar Al Tamimi, MD
Cardiac center
KING ABDULAZIZ MEDICAL CITY

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