

**5th Asia Pacific
Congenital and Structural Heart
Intervention Symposium 2014**

10 - 12 October 2014
Hong Kong Convention & Exhibition Centre

HONG KONG

Percutaneous Closure of Atria Septal Defects under Transthoracic Echocardiography Guidance without Fluoroscopy and Intubation



Xiangbin Pan

Kunjing Pang

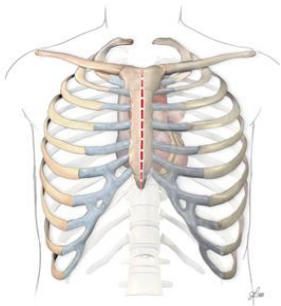
National Center for Cardiovascular Disease
Fuwai Hospital, Beijing, China

Background

◆ Atrial septal defect (ASD) repair

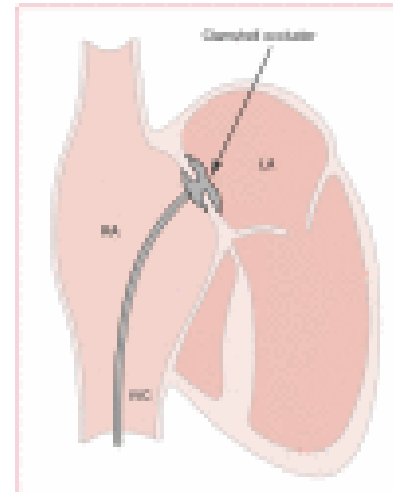
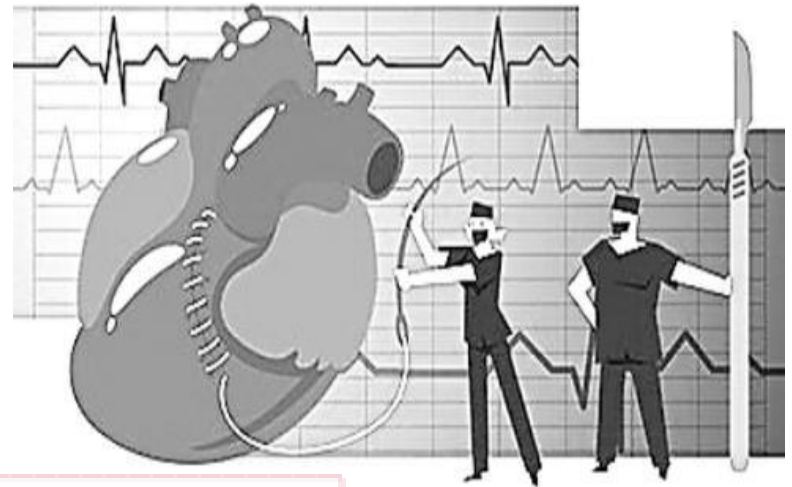


Surgeon



◆ Interventional ASD

OC

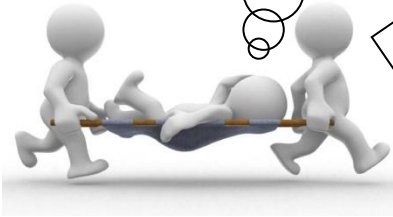


Percutaneous! No incision!

Physician

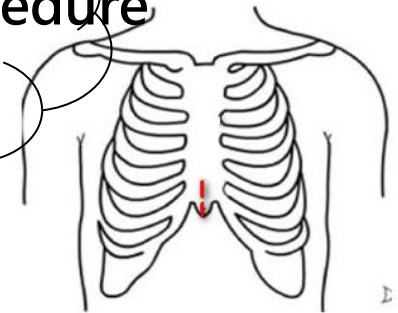
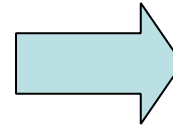
Background

Who shall I trust ?



Surgeon

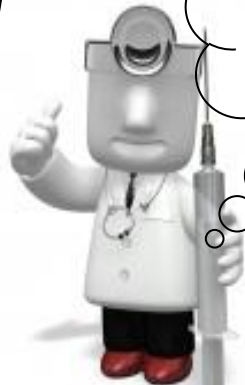
Hybrid procedure
No X-ray



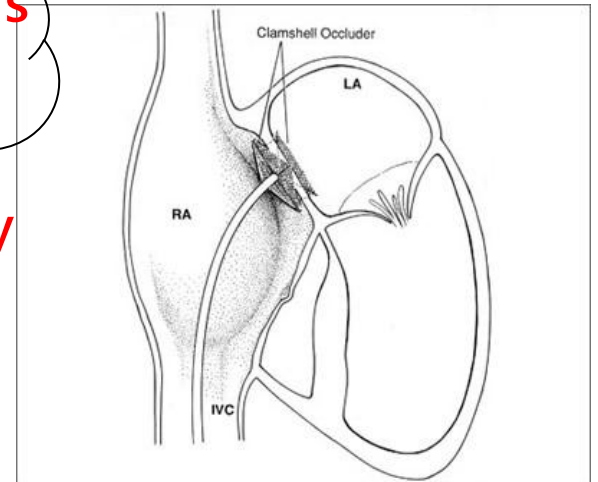
transthoracic occlusion

VS

Percutaneous procedure
No thoracotomy



Physician



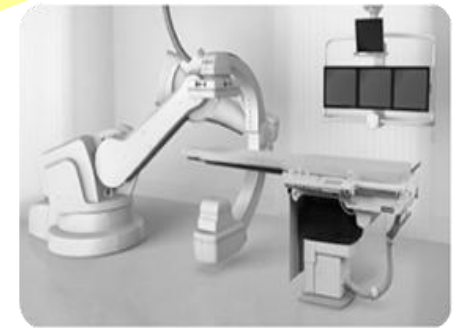
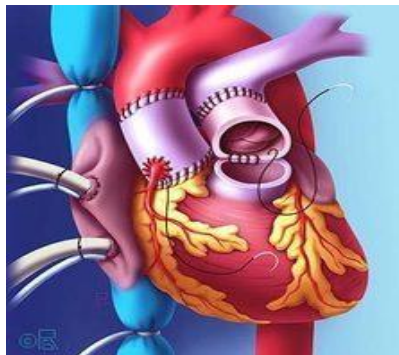
Debate

Background

No argument, Keep developing!

**Percutaneous
closure of ASD
with
echocardiography
guidance**

**No
incision**



**No
fluoroscop
y**



Percutaneous occlusion of ASD guided by Transesophageal Echo (TEE)

We perform percutaneous occlusion of ASD guided by TEE without fluoroscopy and incision

- Supine position, general anesthesia
- the right femoral vein was punctured
- TEE guidance
- Femoral vein---inferior vena cava---right atrium---ASD--left atrium
- Delivery sheath inserting via ASD
- Implant occluder to close ASD

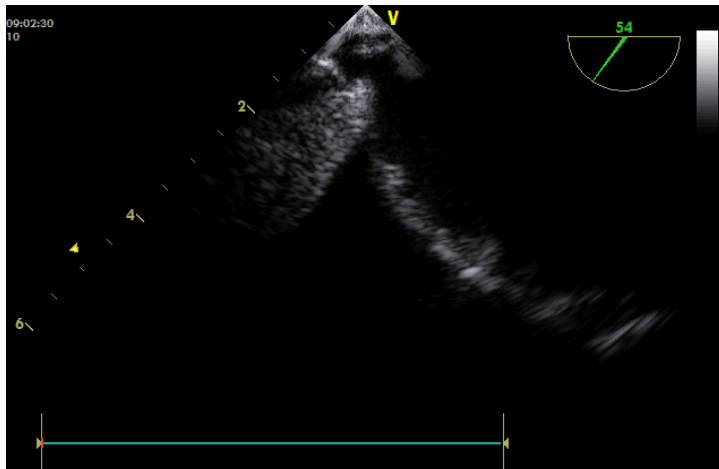


Percutaneous occlusion of ASD guided by TEE

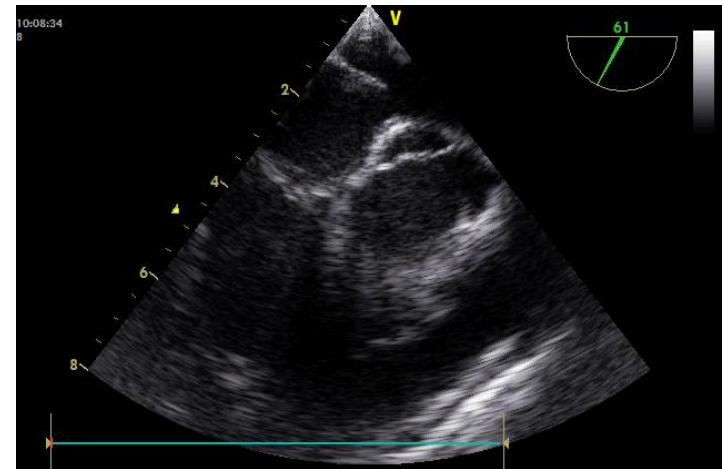


Percutaneous occlusion of ASD guided by TEE

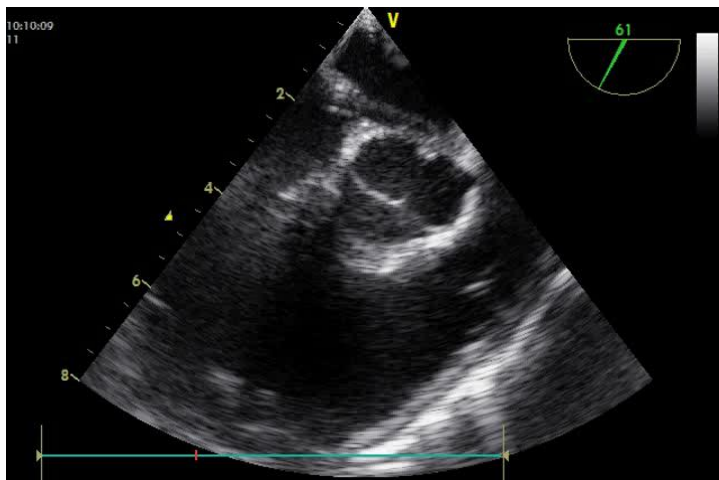
The guide wire and catheter inserted via the inferior vena cava



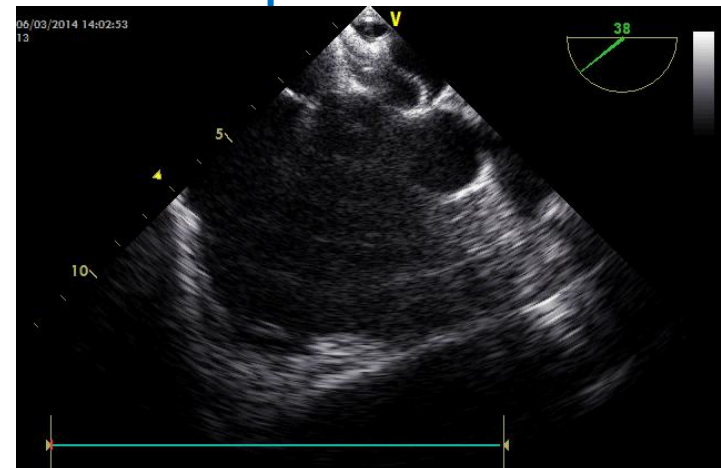
Delivery sheath passed ASD



Delivered the occluder

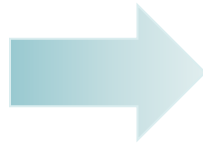


Implanted occluder



Evolution

Scarcity of percutaneous occlusion of ASD guided with TEE



General anesthesia
endotracheal intubation



- More advantage
- More difficult



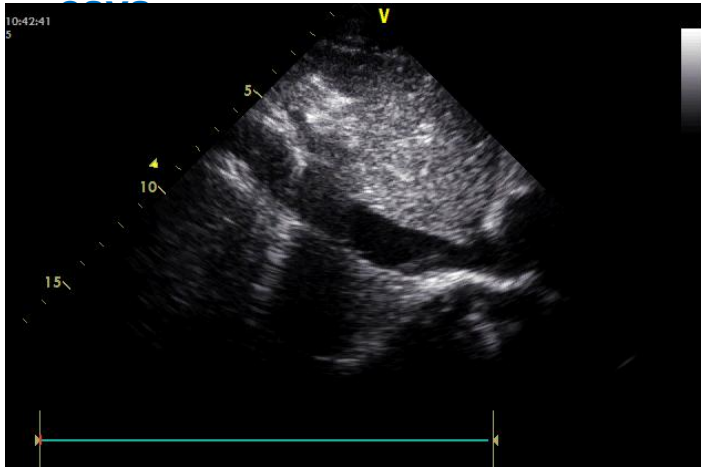
Substitute transthoracic
echo(TTE) for TEE

Percutaneous occlusion of ASD guided with TTE

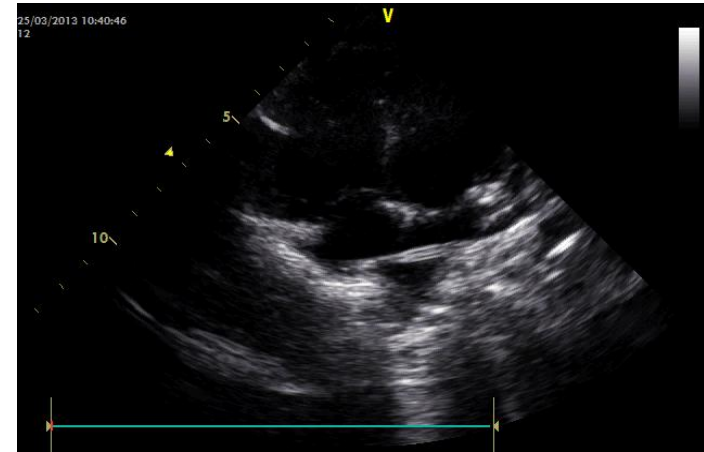


Percutaneous occlusion of ASD guided by TTE

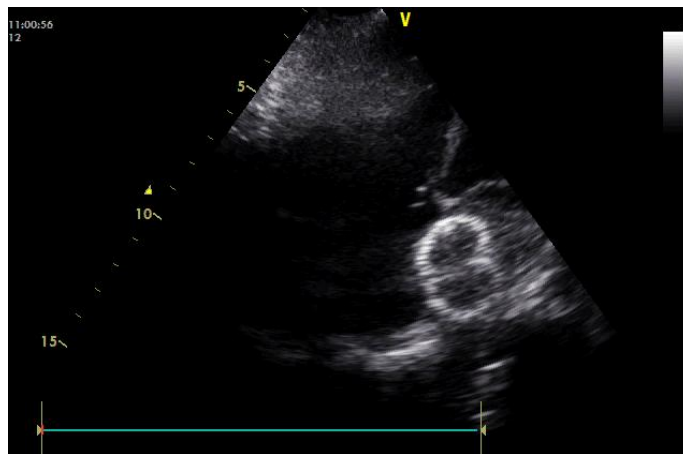
The guide wire and catheter were inserted via the inferior vena



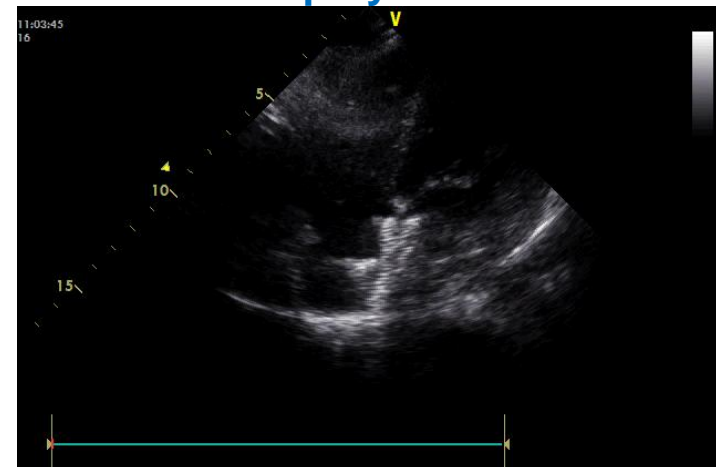
Guide wire passed ASD



Implanted Occluder



Deployed



Objective

- To explore a new method of interventional ASD closure without fluoroscopy , general anesthesia and incision.
- To study the feasibility of percutaneous closure of ASD only with TTE as imaging tool.



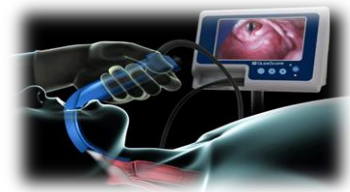
Methods

【TTE Group】

- 60 patients underwent percutaneous closure of ASDs with TTE
- Patients received local anesthesia or sedation with propofol

【TEE Group】

- 67 patients underwent percutaneous closure of ASDs with TEE
- Patients received endotracheal intubation under general anesthesia



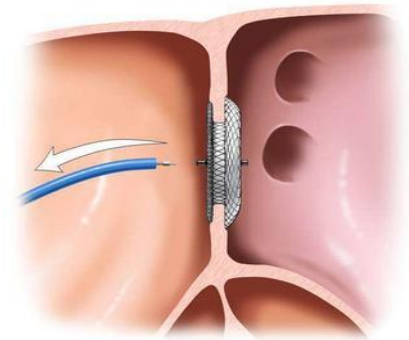
Methods

- There was no significant difference in age, defect size, success rate or hospital stay between the two groups

Group	Procedure time(min)	Costs(RMB)
TTE	50.10 ± 10.09	30814.73 ± 5089.71
TEE	63.05 ± 10.35	36244.90 ± 5082.40
	<i>P</i> < 0.001	<i>P</i> < 0.01

Results

Patients of both groups were successfully in completion of the ASD occlusion and followed-up by 1 month

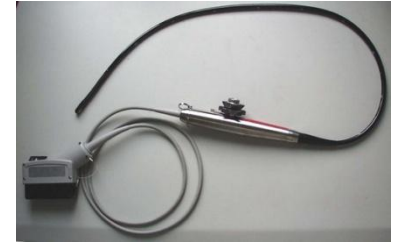


Residual shunt	Peripheral Vascular Injury	Cardiac Tamponade	Malposition
0	1 (TTE)	0	0

Discussion

- ✓ No fluoroscopy
- ✓ No contrast agent
- ✓ No incision
- ✓ Real-time monitoring
- Endotracheal intubation
- TEE probe insertion

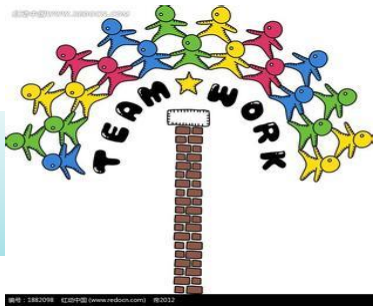
TEE



TTE



- ✓ No general anesthesia and endotracheal intubation
- ✓ No damage of endotracheal tube and TEE probe
- ✓ No mechanical ventilation
- ✓ No ICU stay



Discussion

- Stable echocardiography views
- Medical quality: team, training, skill
- Learning curve
- “Effective distance”

The distance was from the right parasternal third intercostal space to the puncture site

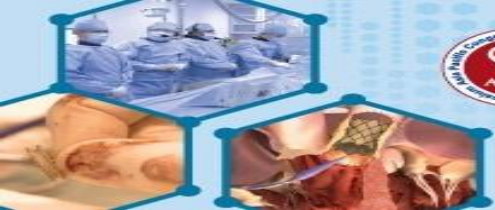


工作距离法：导管最佳插入深度为2个半指跨

Conclusion

- TTE-guided percutaneous ASD closure realized absolutely no-invasive treatment with satisfactory success rate and lower costs.
- TEE-guided percutaneous ASD closure can be served as a backup of TTE-guided percutaneous ASD closure .





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THANKS!

