



Detachable coils versus Amplatzer Duct Occluder devices in transcatheter treatment of small-to-medium sized Patent Ductus Arteriosus: An analysis of costs and results

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OBJECTIVES

- To review our experience in transcatheter closure of small-to-medium sized patent ductus arteriosus (PDA) with detachable coils and Amplatzer Duct Occluder (ADO) devices
- To compare the results with the two devices

METHODS

- Retrospective analysis
- Inclusion criteria:
 - Patients who underwent transcatheter PDA closure in our Institution
 - PDA size between 2 and 3,5 mm
 - Period: 1994 - 2010

Methods

Calculation of the costs:

- Cardiac catheterization:
 - Cost of the PDA device(s)* + delivery system(s) ± retrieval devices used in the procedure
 - Fixed costs: not included
- In-hospital stay:
 - Taken into account if exceeding the standard duration of 2 nights

*All PDA devices used, even if not implanted

Methods

Statistical analysis:

- Categorical variables:
 - Expressed as percentages
 - Compared with the Fisher's exact test
- Continuous variables:
 - Expressed as mean \pm SD
 - Compared with the Student's T test
- P value: statistically significant if $< 0,05$

Population

127 patients

First attempt



Coil: 95 pts

Median age 6,4 (9 months - 60) years

Median weight 22 (6,9 - 100) kg

Mean PDA size $2,3 \pm 0,7$



ADO: 32 pts

Median age 1,9 (4 months - 66) years

Median weight 11 (5,7 - 73) kg

Mean PDA size $2,7 \pm 0,4$ mm

Procedures

110 coils used in 95 pts

33 ADO used in 32 pts

Cook detachable coils



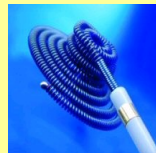
Flipper MReye®
N = 104



Jackson®
N = 4

PFM Medical

1st generation coil
N = 1



Nit-Occlud® PDA
N = 1

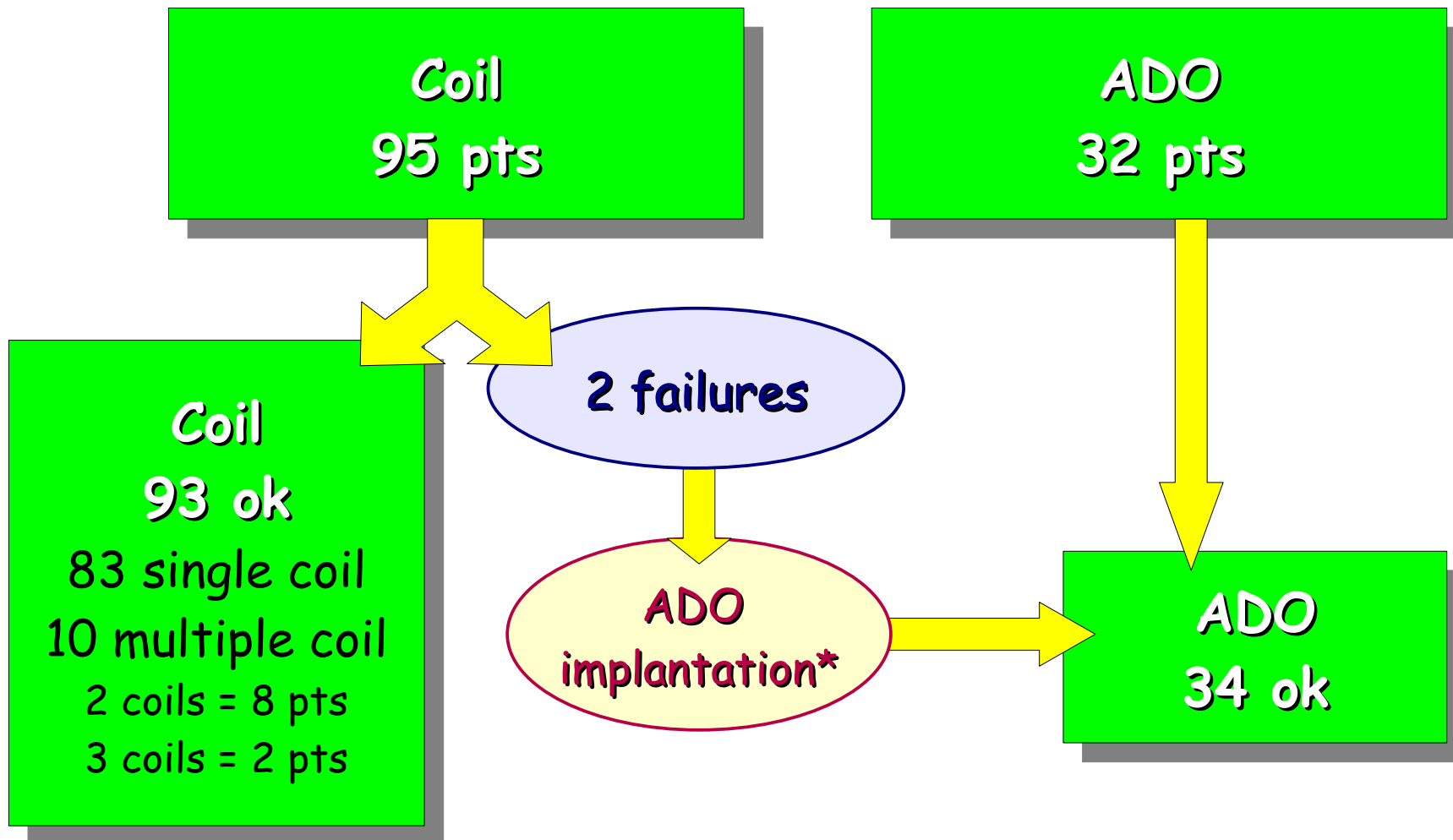


ADO I
N = 28



ADO II
N = 3

RESULTS



* During the same procedure

Results

Procedure

	Coils (n = 95)	ADO (n = 32)	p
Fluoroscopy time (min)	14,3 ± 11 (2 - 76)	12,4 ± 4,7 (6-25)	n.s.
Device embolization*	3 (3,2%)	0	n.s.
Multiple attempts**	5 (5,3%)	1 (3%)	n.s.
Procedural success***	93 (98%)	32 (100%)	n.s.
Cost (€)	538,5 ± 415 (448 - 3376)	2.436 ± 294,2 (2.384 - 4048)	p < 0,001

*All retrieved percutaneously

**With the same type of device or with a different one

*** PDA occluded with the type of device chosen for the 1st attempt

Results

Follow-up

	Coils (n = 93)	ADO (n = 34)	p
Residual shunt at discharge	8 (9%)	2 (6%)	n.s.
Residual shunt at last FU visit	2 (2,2%)	0	n.s.
Redo for residual shunt	1 (1%)	0	n.s.

Results

- No statistically significant differences between coils and ADO in terms of procedural and FU results
- The mean cost of ADO procedures was 4,5 fold the mean cost of coil procedures

CONCLUSIONS

- Although the procedure with coils can be more troublesome than with ADO, the safety and effectiveness with the two devices are comparable, even in pts with medium-sized PDA
- Given the cost-effectiveness, coils still play an important role for transcatheter treatment of PDA