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Clinical factors impacting outcomes following surgical ablation for Atrial Fibrillation

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DISCLOSURE

NO DISCLOSURES

• NO FINANCIAL GRANTS

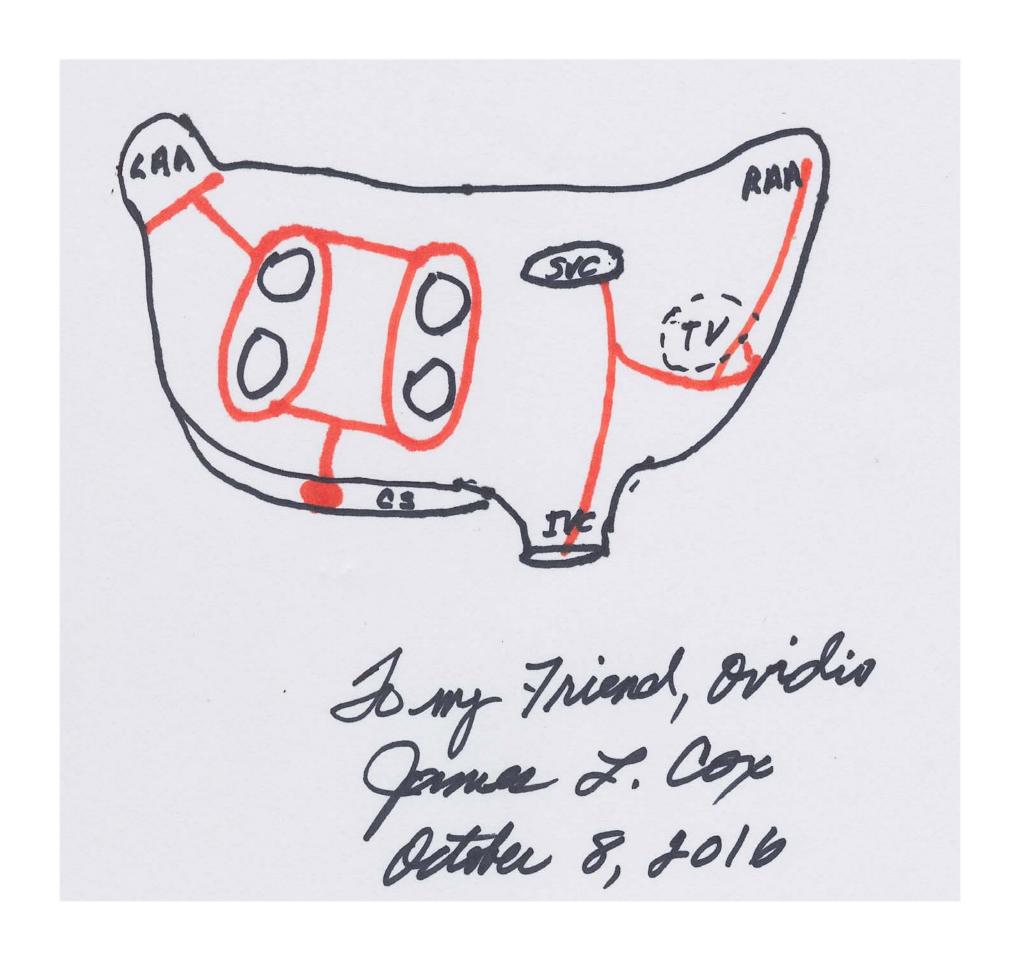
INTRODUCTION

 The success of the Cox-maze procedure is dependent on many different technical and clinical variables.

 Maze procedure is a concept, and electrophysiological concept, especially designed to eliminate all possible macro-reentrant circuits in BOTH ATRIA.

• FULL BIATRIAL LESION PATTERN, whatever the case may be.

COX-MAZE PROCEDURE



TRADITIONAL CLINICAL FACTORS AFFECTING THE OUTCOME

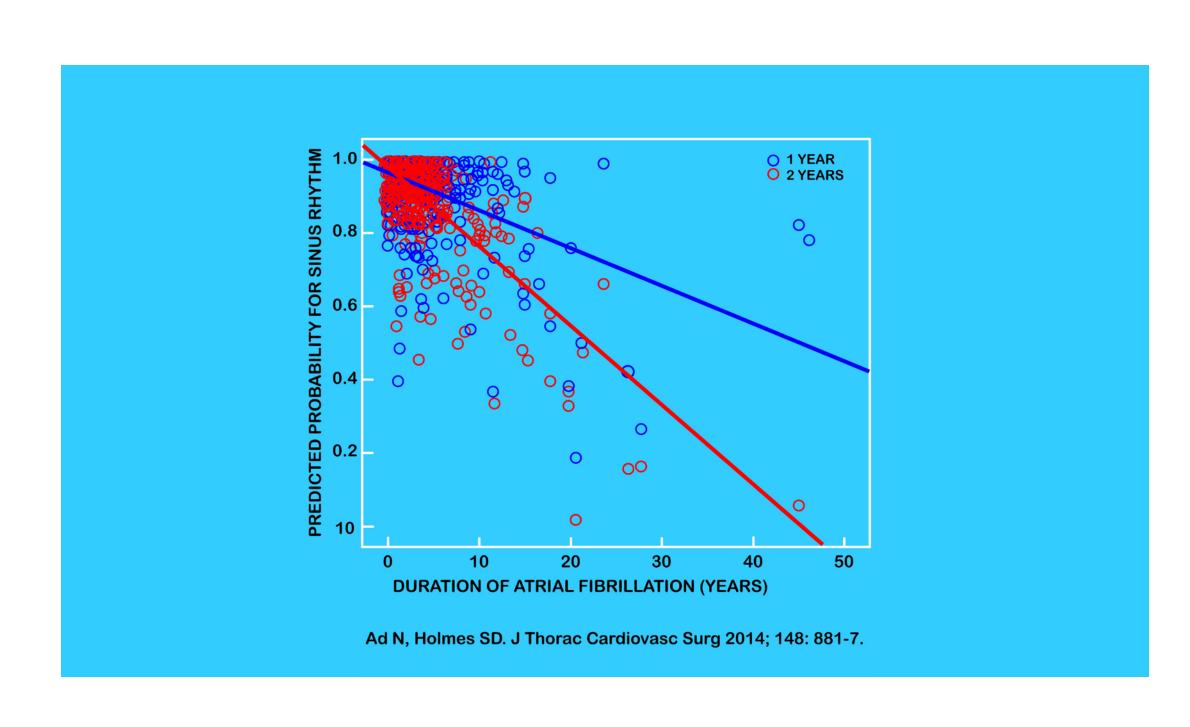
- PATIENT AGE
- PREOPERATIVE DURATION OF AF
- LEFT ATRIAL SIZE
- TYPE of AF
 - Stand alone
 - Concomitant
 - Mitral
 - Rheumatic
 - Degenerative
 - Other than Mitral
- SURGEON'S EXPERIENCE
- ENERGY SOURCES

PREOPERATIVE DURATION of ATRIAL FIBRILLATION

	RECURRE	ENCE of	f AF	NO RECURRENCE of AF			Mean Difference	Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total Weight	IV, Random, 95%CI	IV, Random, 95% CI
Chen, 2005	8	4.25	16	3	3.75	83 18.5%	5.00 [2.77, 7.23]	
Kim, 2011	10.6	6.6	20	6.5	6	72 14.0%	4.10 [0.89, 7.31]	—
Lestas, 2009	5.7	3.1	28	5.3	2.9	44 22.4%	0.40 [-1.03, 1.83]	-
Liu, 2009	15.5	20.5	3	6.3	2.4	5 0.6%	9.20 [-14.2, 32.49]	
Mc Donald, 2011	4.83	3.83	28	2.87	2.19	10 19.8%	1.96 [-0.00, 3.92]	- -
Wang, 2012	2.54	1.96	24	2.46	1.54	56 24.7%	0.08 [-0.80, 0.96]	
TOTAL (95% CI)			119			270 100.0%	2.05 [0.29, 3.80]	
Heterogeneity, Tau ² :	= 3.03; Chi ²	= 22.1	4, df= !		20 -10 0 10 20			
Test for overall effec	t Z=2.29 (p	=0.02)	RECURF	RENCE of AF NO RECURRENCE of AF			

Duan C, et al. Int J Clin Exp Med 2016; 9(2): 1073-83

PREOPERATIVE DURATION OF ATRIAL FIBRILLATION



- 1 year prediction model:
 - a 5-yr increase in AF duration,
 0.8% reduction in success

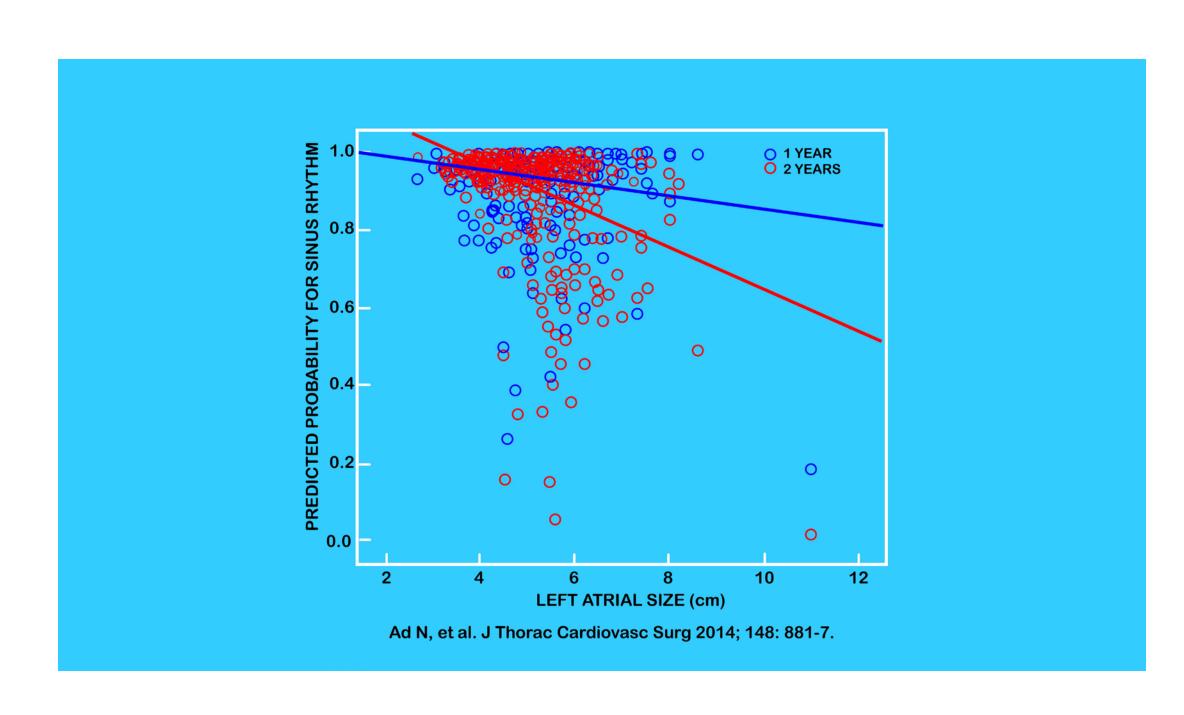
- 2 year prediction model:
 - a 5-yr increase in AF duration,
 0.8% reduction in success

LEFT ATRIAL DIAMETER

	RECURR	ECURRENCE of AF NO RECURR			RRENCE of AF			Mean Difference	Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Fixed, 95%CI	IV, Fixed, 95% CI
Chen, 2005	61.9	10.2	16	51.7	8.5	83	6.8%	10.20 [4.88,15.52]	
Kim, 2011	63.9	14.6	20	60.7	10.8	72	4.1%	3.20 [-3.67,10.07]	
Lestas, 2009	42.9	6.1	28	39.2	4.9	44	26.6%	3.70 [1.02.6.38]	-I -
Liu, 2009	46.5	4.9	3	41.7	4.2	44	4.3%	4.80 [-1.86,11.46]	
									- <mark></mark>
TOTAL (95% CI)	91					26	260 100.0% 6.24 [4.85,7.62]		
Heterogeneity, Chi2 = 7.71, df= $4(p=0.10)$; p= 48%									10 5 0 5 10
Test for overall effect	t Z=8.83 (p <0.00	0001)						-10 -5 0 5 10 RECURRENCE of AF NO RECURRENCE of

Duan C, et al. Int J Clin Exp Med 2016; 9(2): 1073-83

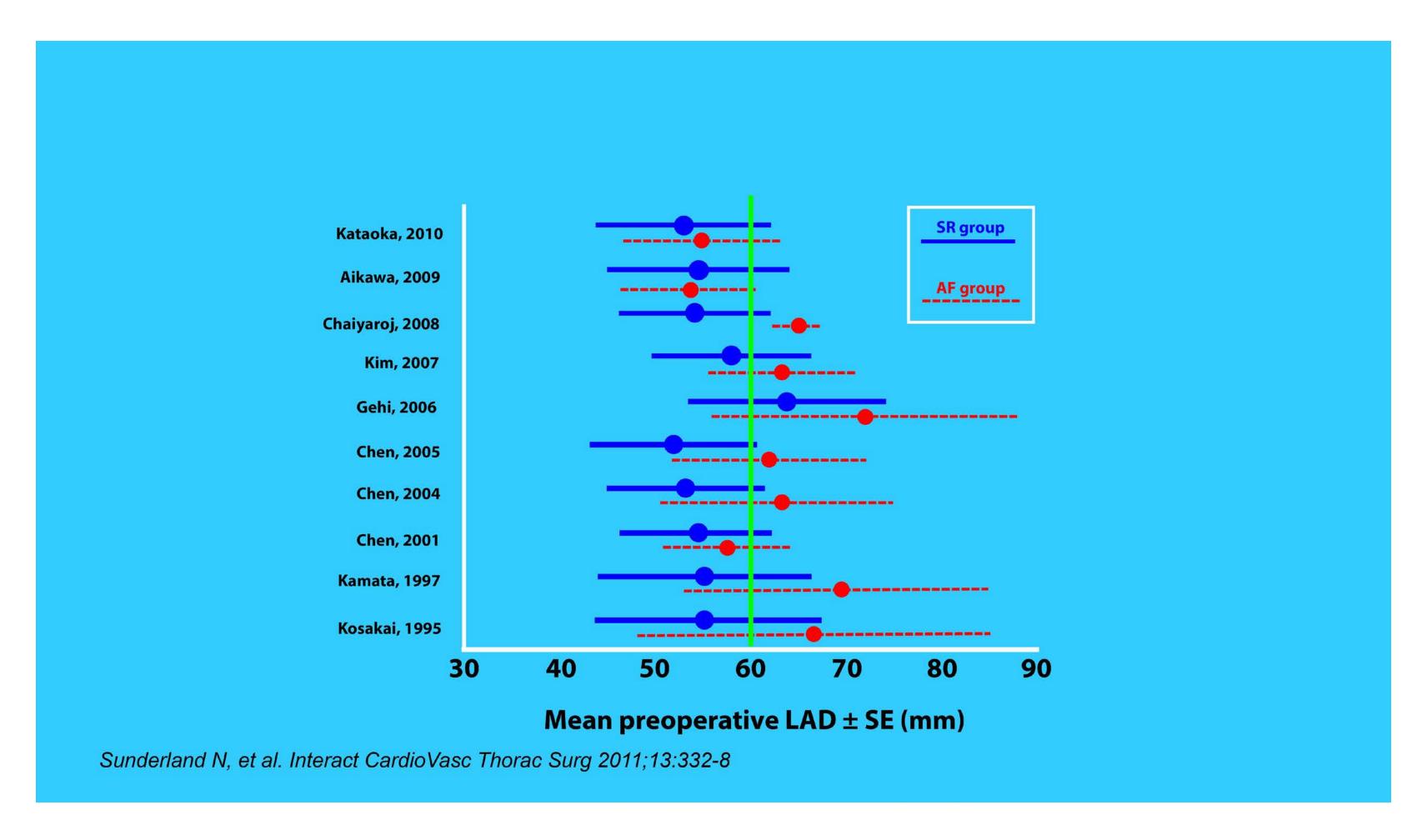
LEFT ATRIAL SIZE



- 1 year prediction model:
 - a 1-cm increase in LA size,
 0.4% reduction in success

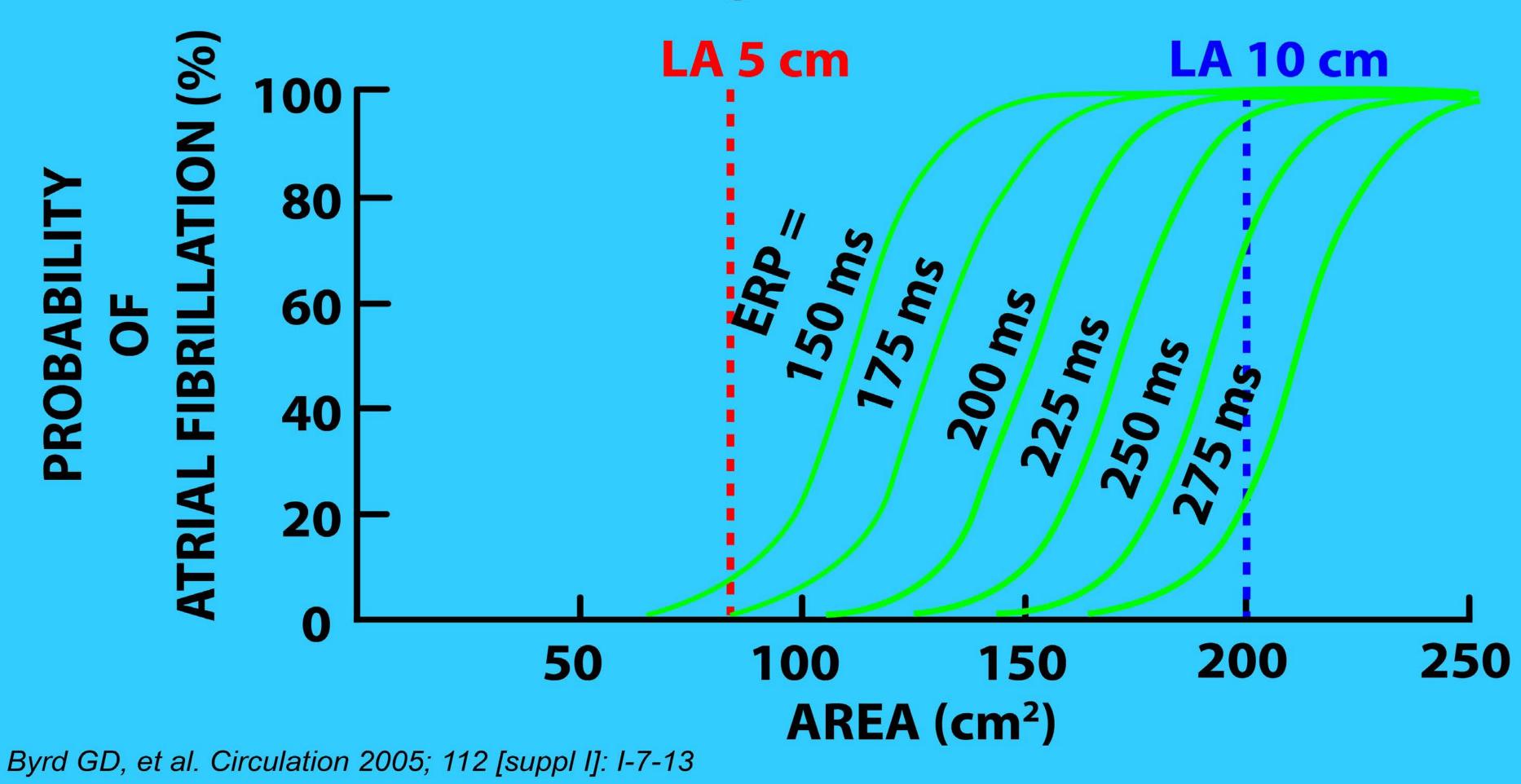
- 2 year prediction model:
 - a 1-cm increase in LA size,
 1.0% reduction in success

WHAT SIZE of the left atrium?

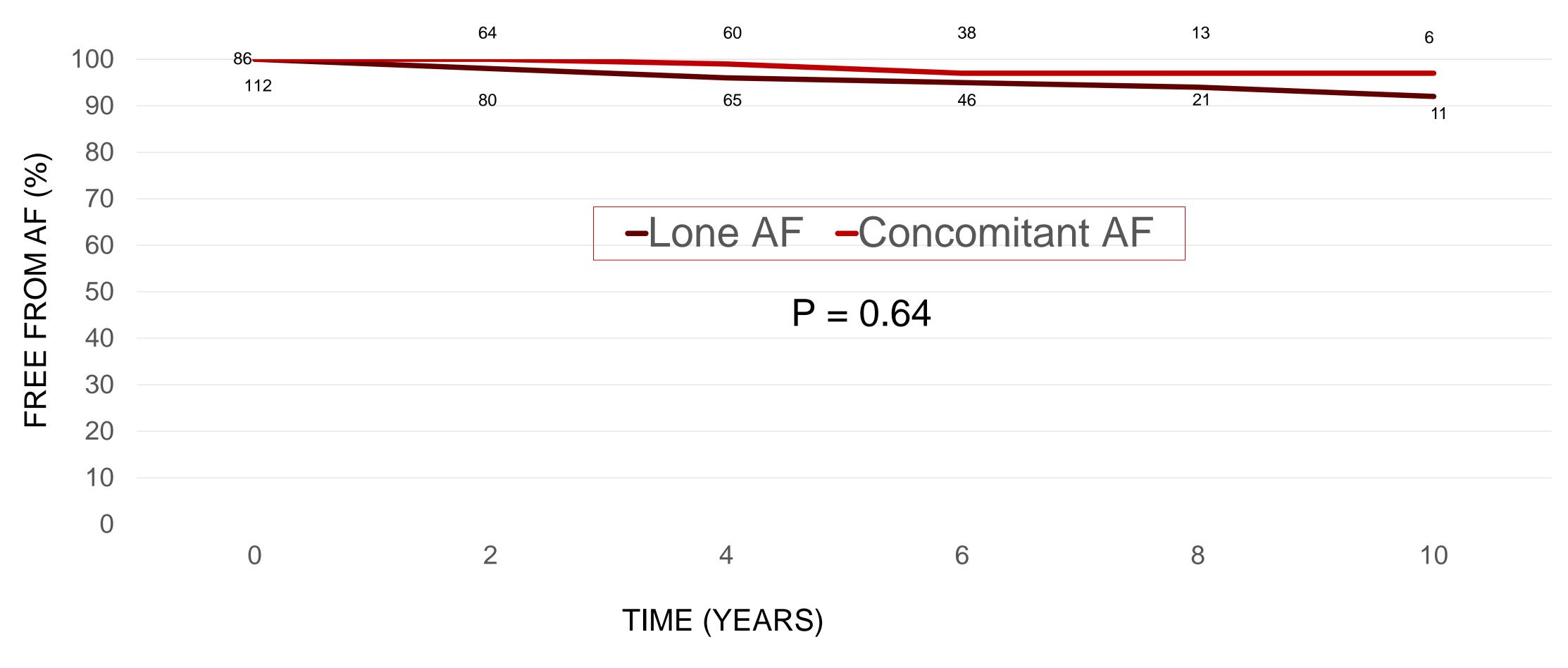




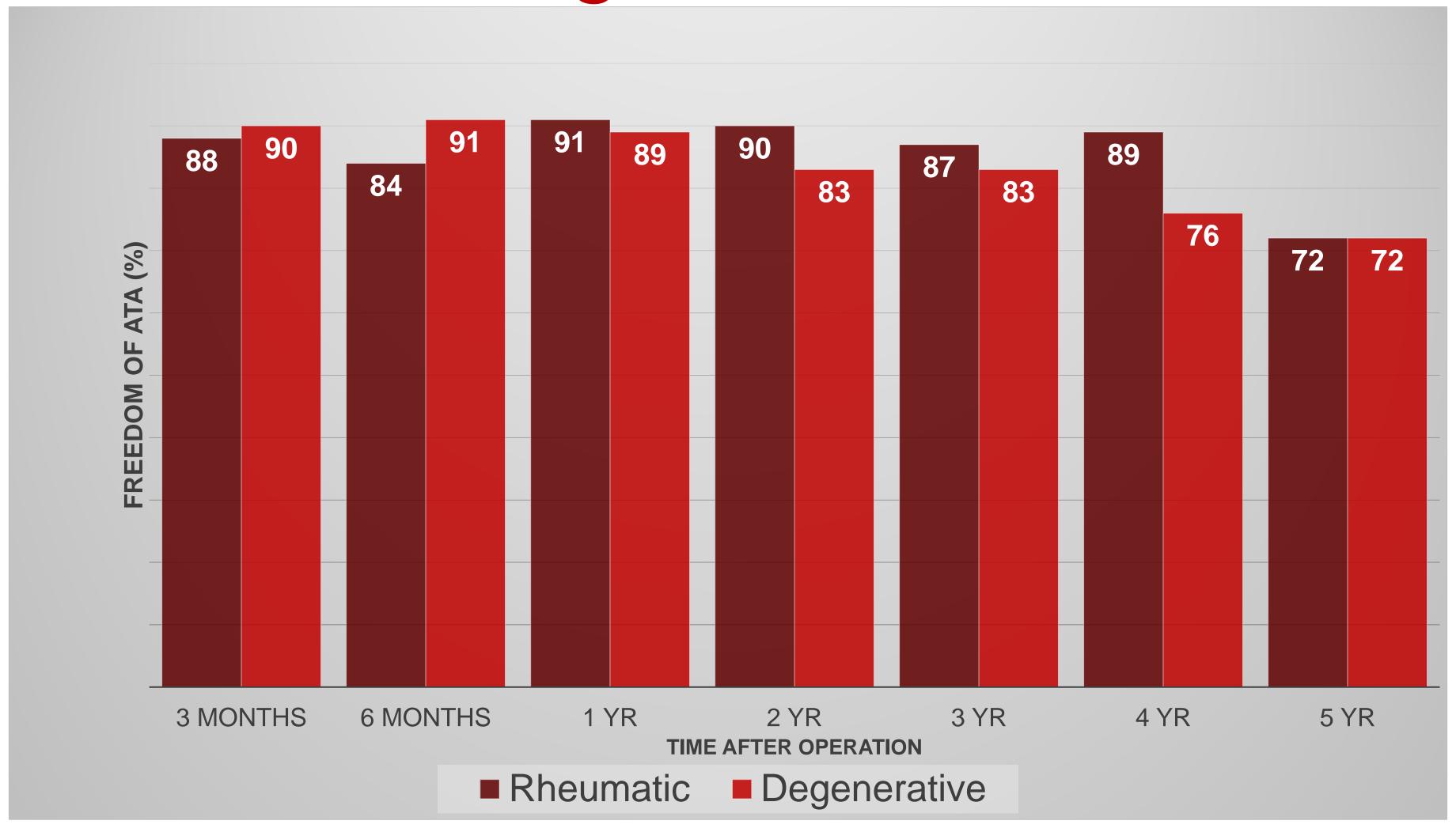
Normal range of Human ERPs: 150-275 ms



Type of AF (Lone vs Concomitant)

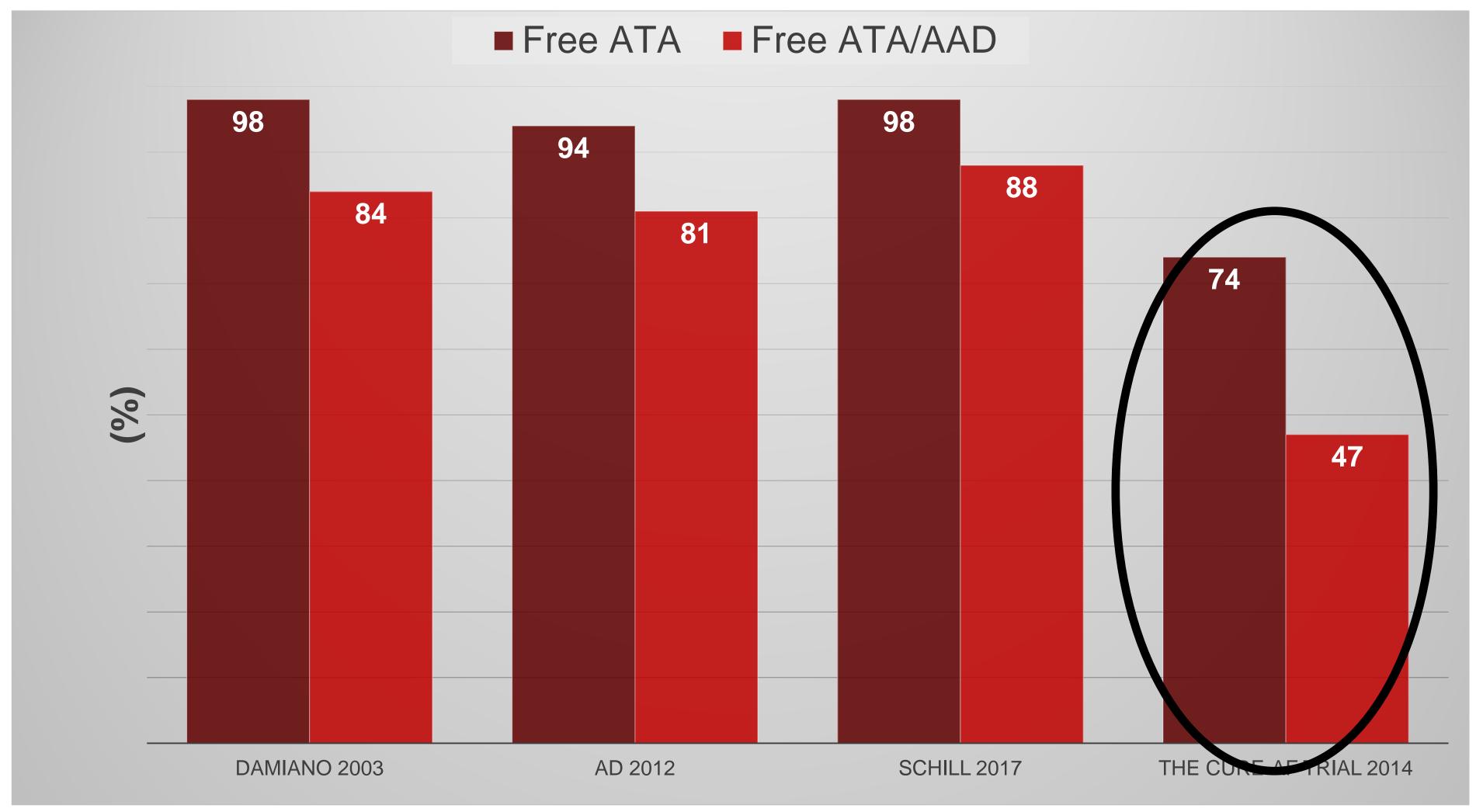


Rheumatic vs Degenerative MV Disease

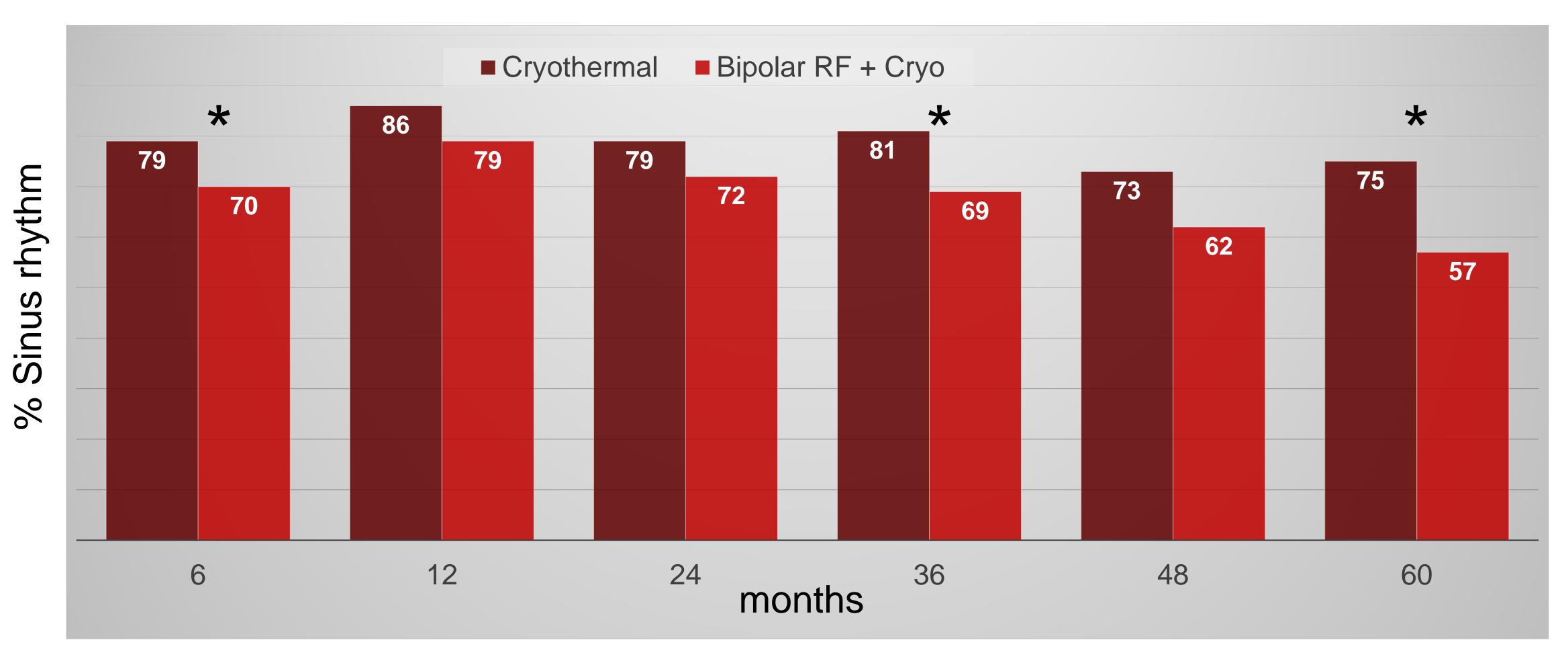


Labin JE, et al. J Thorac Cardiac Surg 2017; doi: 10.1016/j.jtcvs.2017.03.152.

Cox-maze III/IV + CABG / AVR



Comparison of ENERGY SOURCE groups on return to sinus rhythm without antiarrhythmic drugs during follow-up (asterisks denote significant differences).



SURGEON'S EXPERIENCE

- 1-year prediction model
 - a reduction by 50 cases of surgeon experience is associated with a 1.0% reduction in success.
- 2-year prediction model
 - a reduction by 50 cases of surgeon experience is associated with a 0.2% reduction in success.

• Ad N. J Thorac Cardiovasc Surg 2014; 148: 881-7

Clinical Factors Impacting Outcomes Following Surgical Ablation for Atrial Fibrillation

• CONCLUSIONS:

- Preoperative duration of AF
- Left atrial size
- Surgeon's experience
- Energy source

- Well standardized protocol
 - Full biatrial lesion pattern
 - RF ablation + Cryothermia
 - Cryothermia alone
 - Cut-and-sew + Cryothermia

