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The Society
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EACTS
EUROPEAN ASSOCIATION OF
CARDIOTHORACIC SURGEONS

Concomitant AFIB Ablation: What Are the Right Lesion Set and Energy Source?

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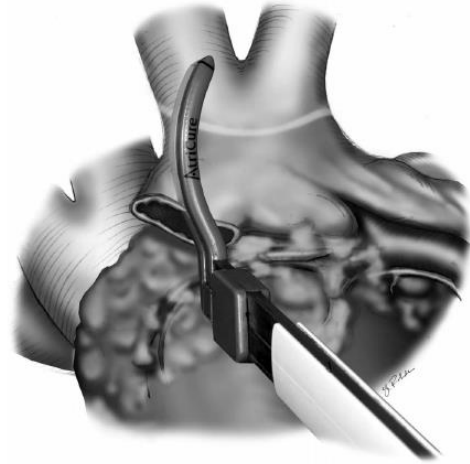
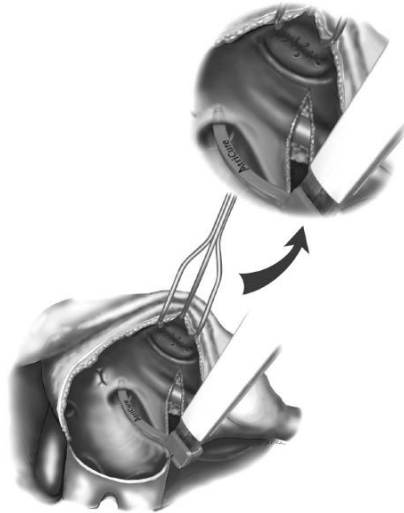
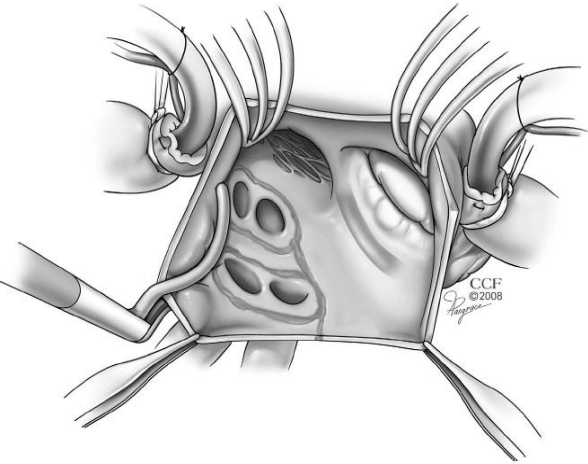
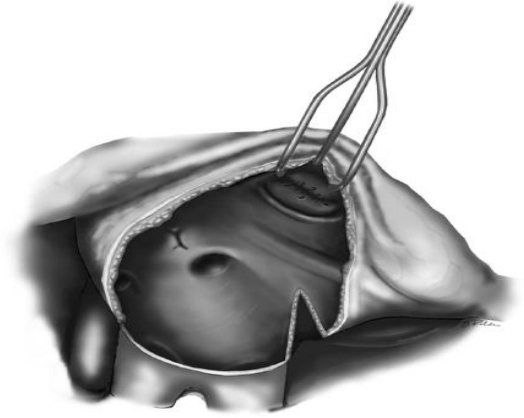
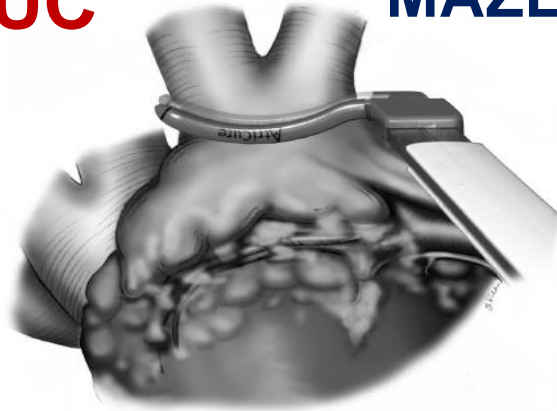
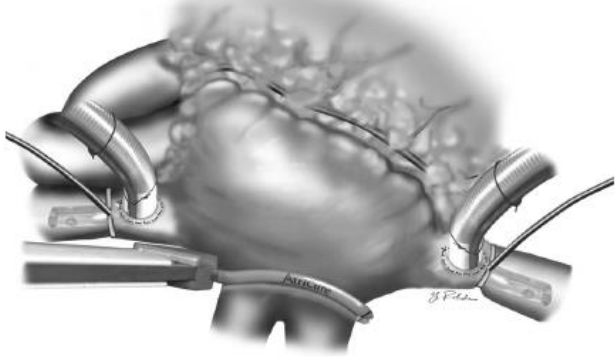
Clínica  Colsanitas

Disclosures

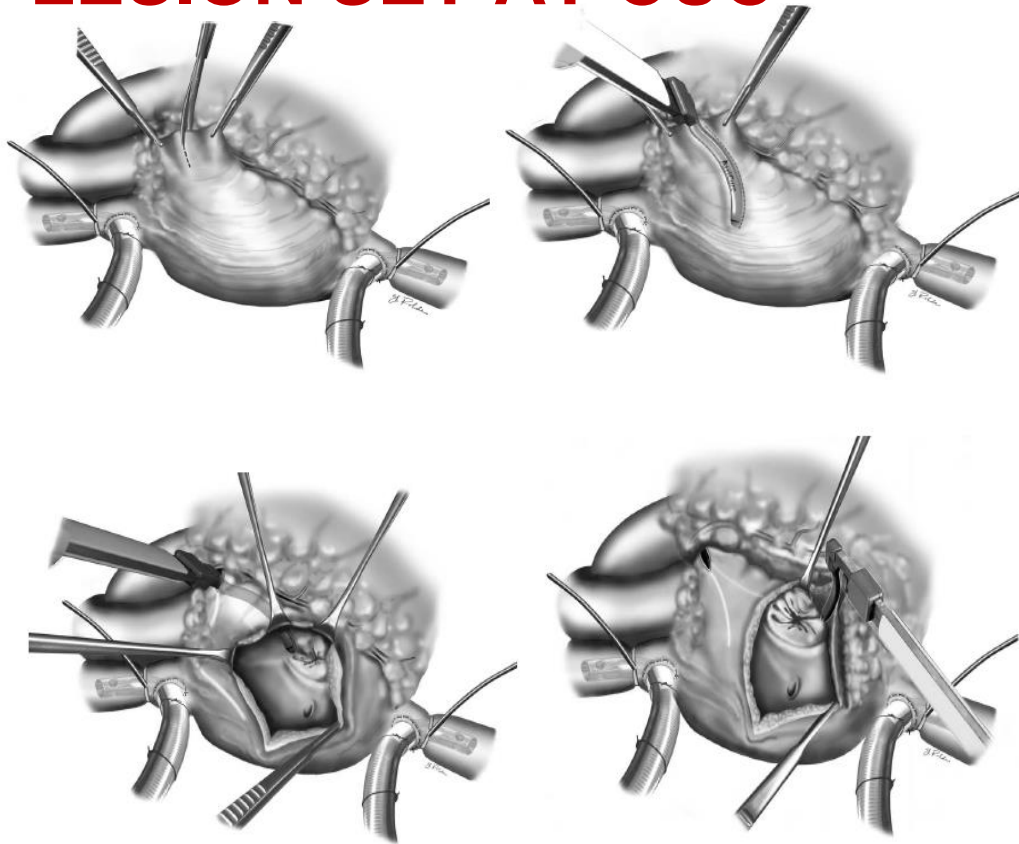
- Speakers Bureau/Honoraria: Atricure, Edwards Lifesciences, Inc.,

LESION SET AT CUC

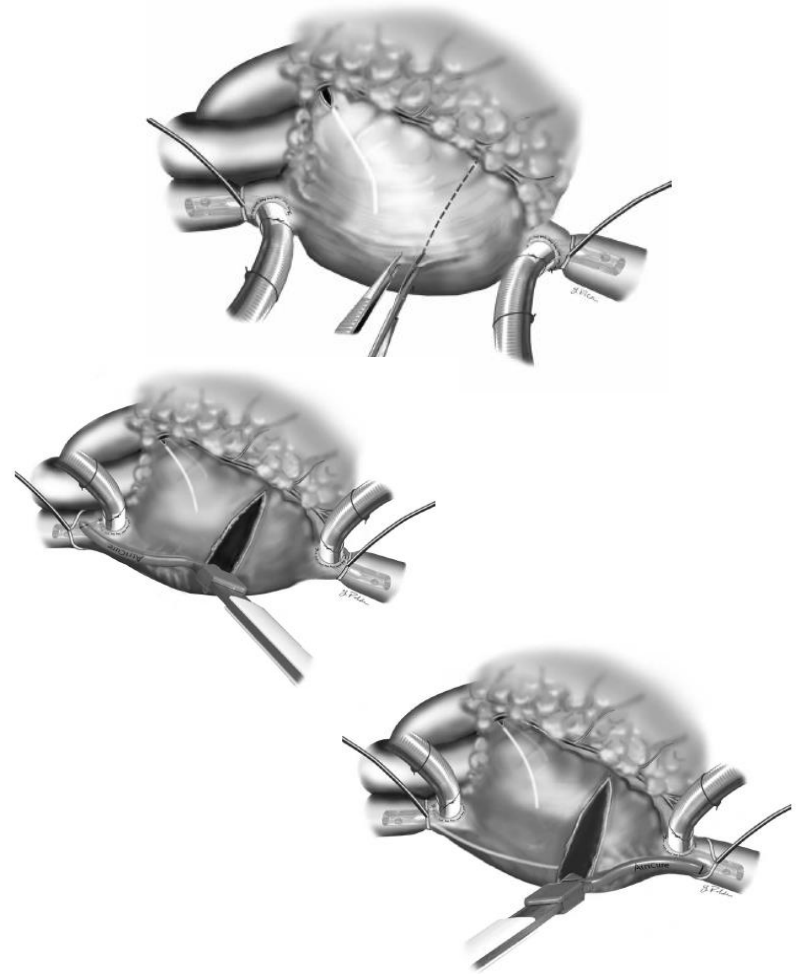
MAZE III Left side



LESION SET AT CUC



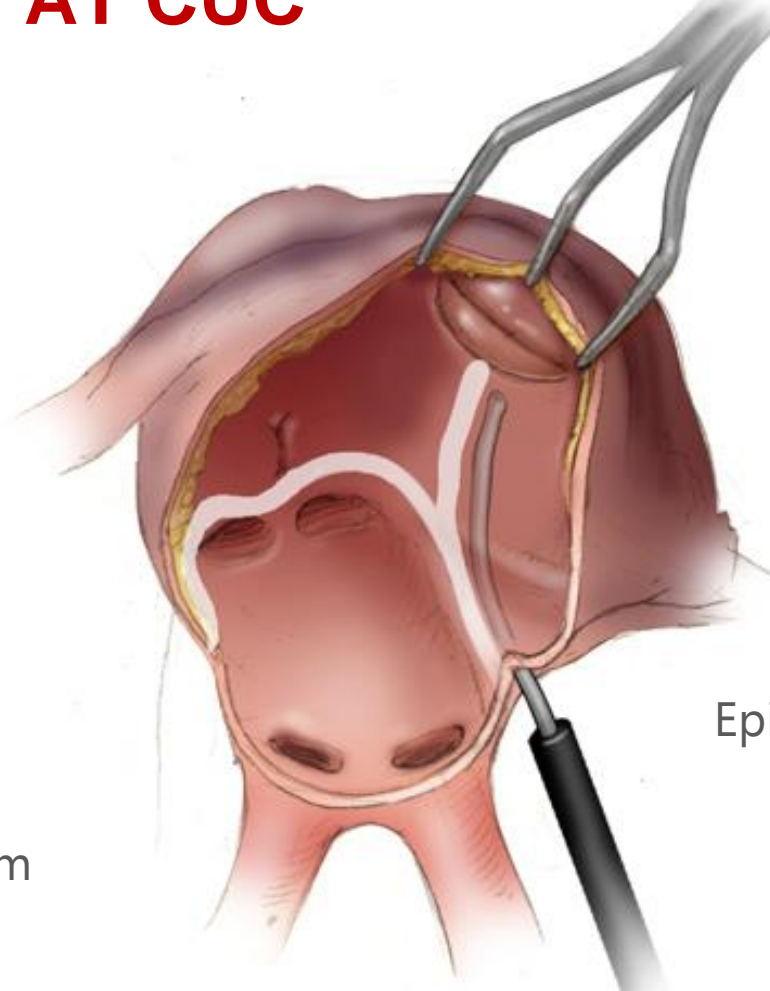
MAZE III Right side



LESION SET AT CUC

MAZE IV (Cryo) Left Side

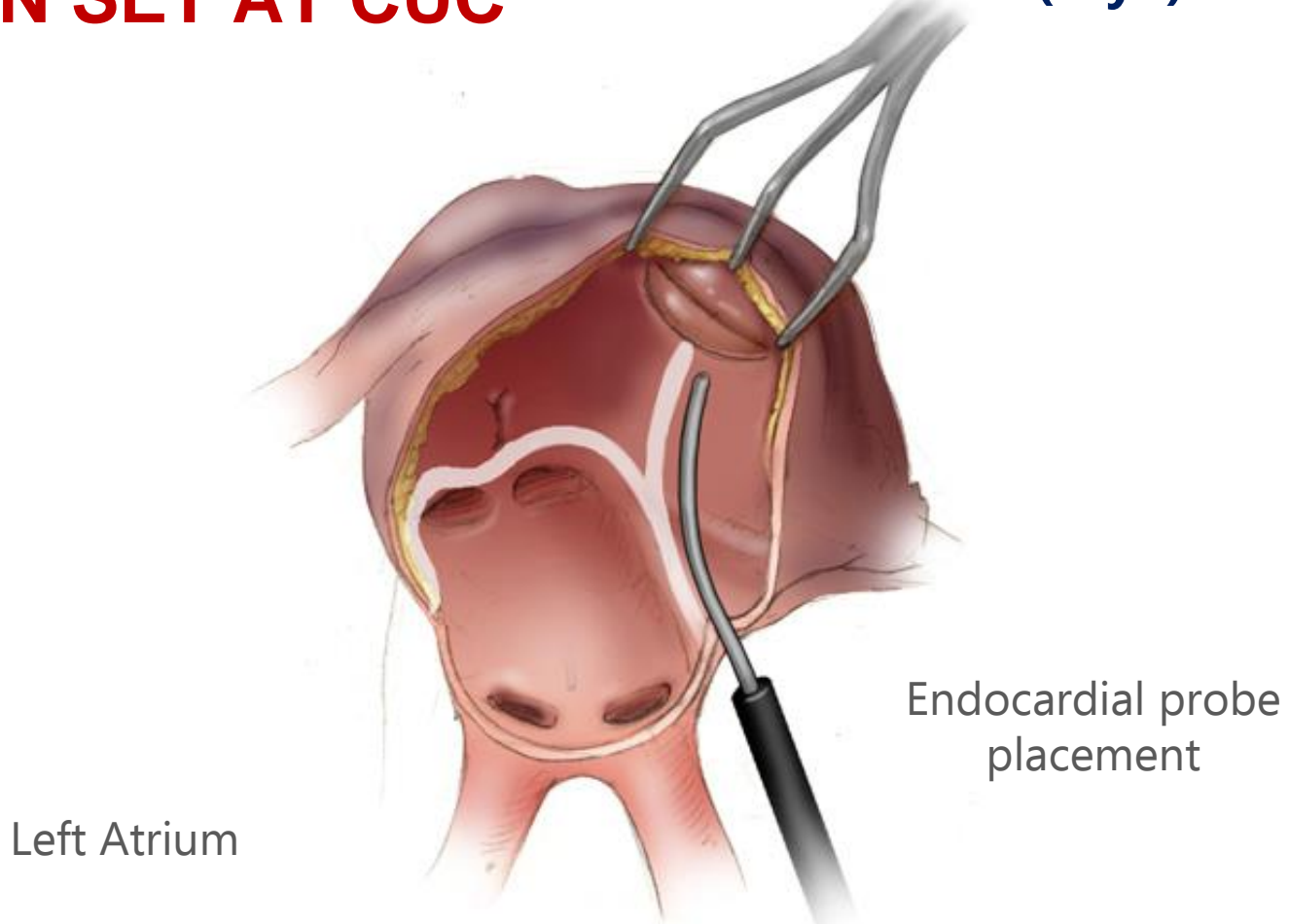
Left Atrium



Epicardial probe
placement

LESION SET AT CUC

MAZE IV (Cryo) Left Side



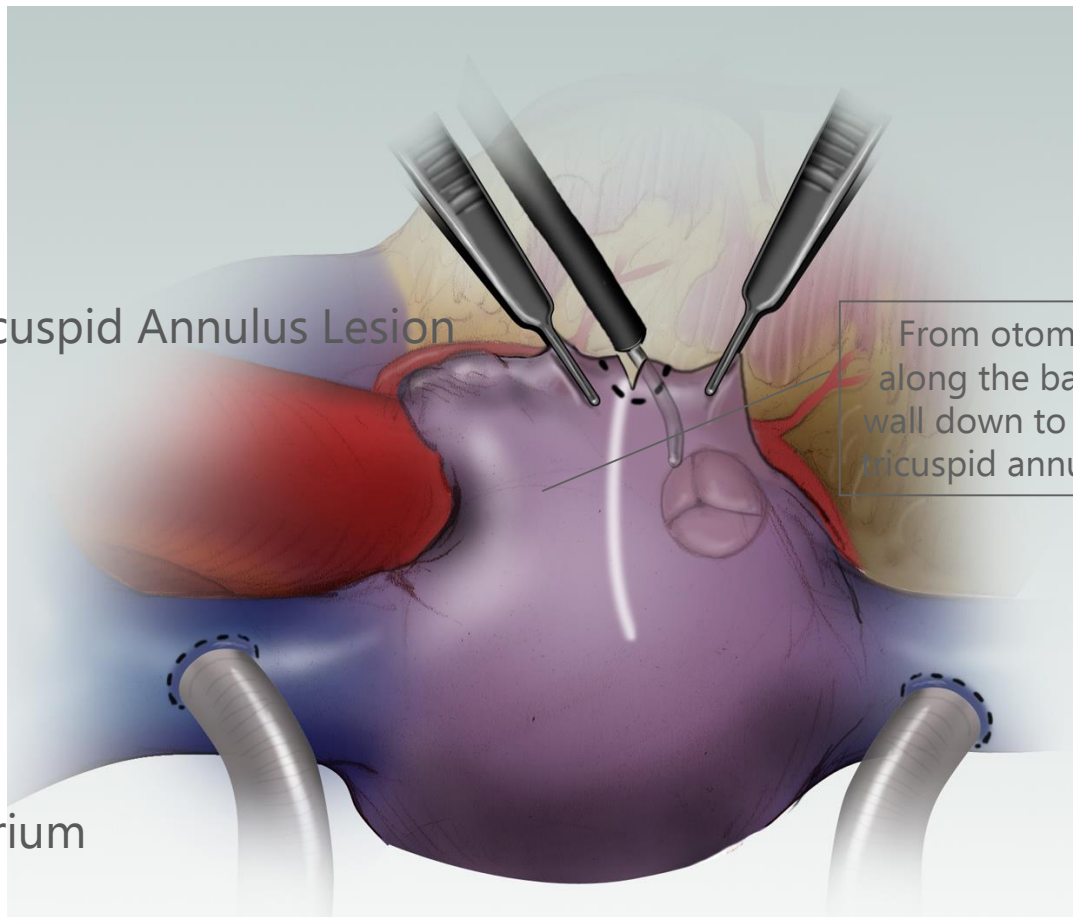
LESION SET AT CUC

MAZE IV Right Side

10 o'clock Tricuspid Annulus Lesion

Fromotomy along the back wall down to the tricuspid annulus

Right Atrium



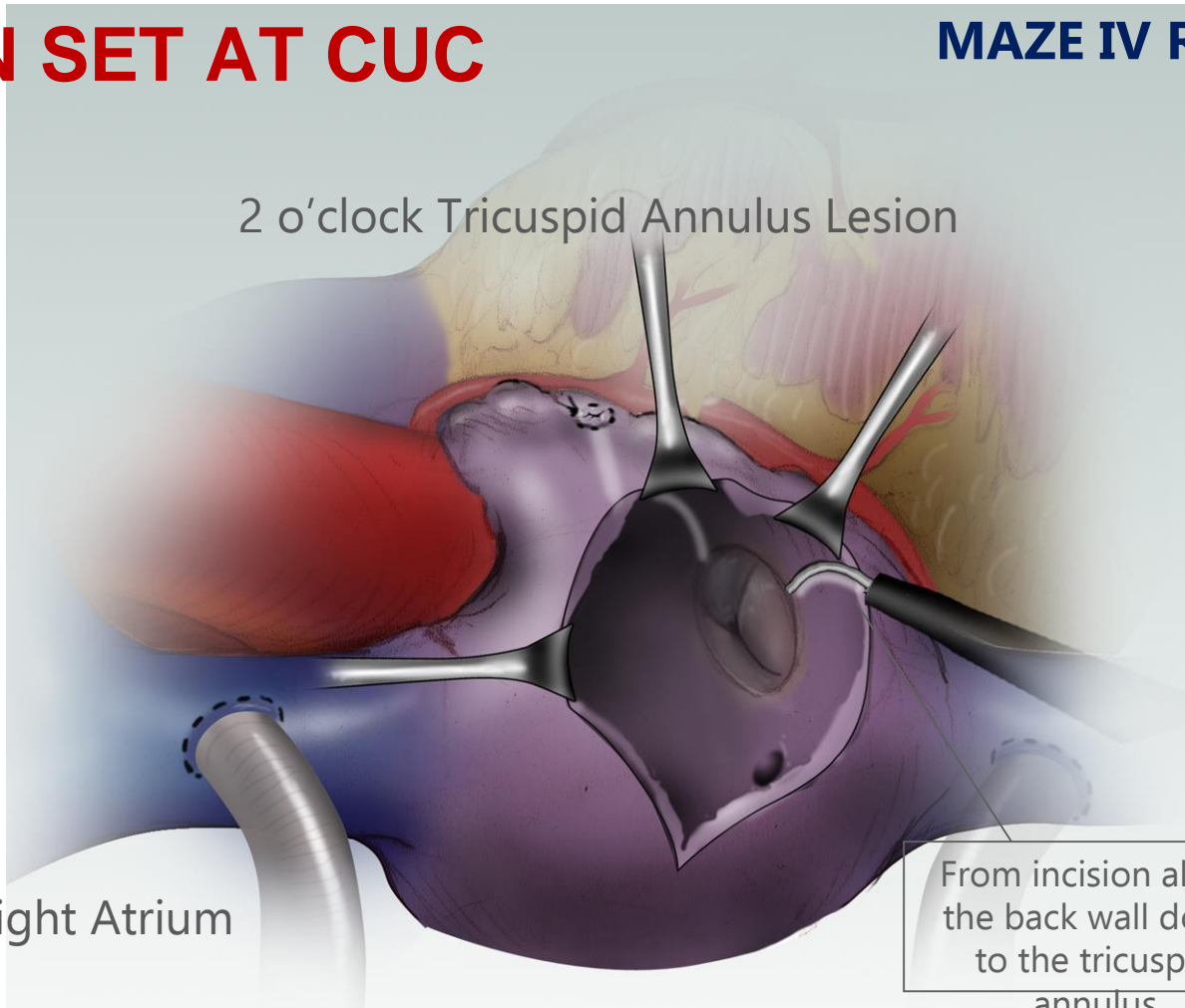
LESION SET AT CUC

MAZE IV Right Side

2 o'clock Tricuspid Annulus Lesion

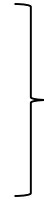
Right Atrium

From incision along
the back wall down
to the tricuspid
annulus



ENERGY SOURCE AT CUC

- MAZE III
- LEFT MAZE
- PULMONARY VEIN ISOLATION



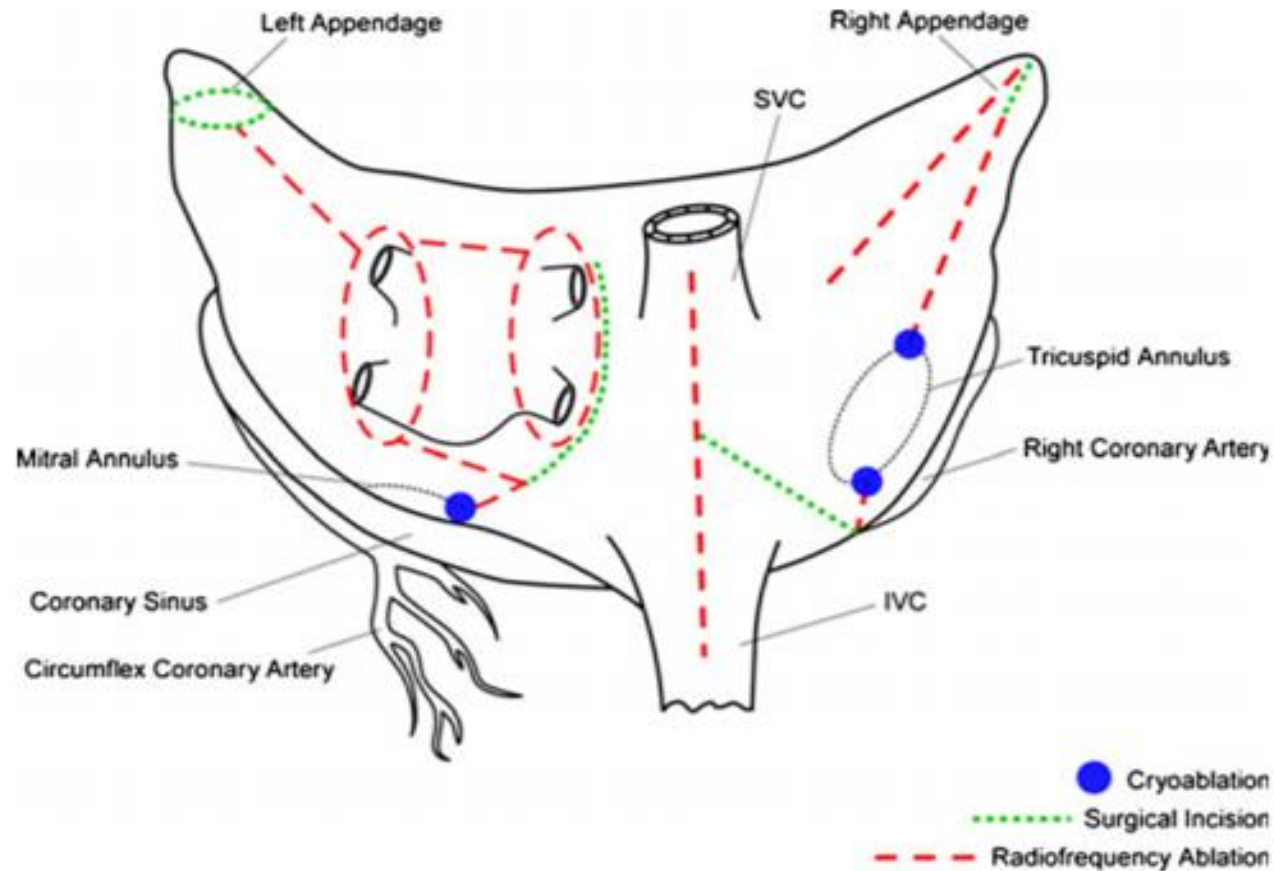
RF EXCLUSIVELY

- MAZE IV



RF + CRYO COMBINED

Fig. 1 Cox-maze IV procedure. *SVC* superior vena cava, *IVC* inferior vena cava, *Lt* left, *Rt* right bipolar radiofrequency, *Rt* right (Adapted from Lall S.C., Melby S.J., Voeller R.K., Zierer A., Bailey M.S., Guthrie, T.J., et al. [20])

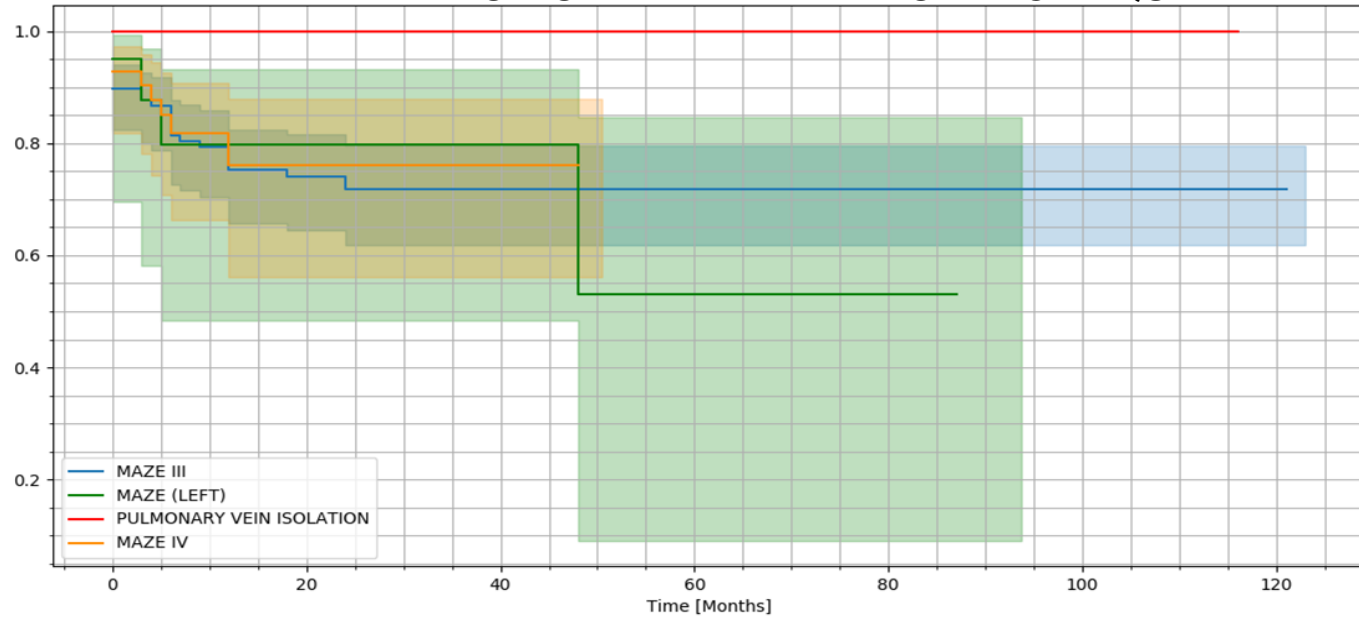


Patients Characteristics

Characteristics	Maze III N= 116	Maze IV N= 55	Maze Left N=20	Pulmonary Vein Isolation (P.V.I) N=24
Age, Years (Mean/SD)	72,1 (10, 4)	65,1 (12,6)	73,3 (12,6)	76,5 (8,4)
Sex (Female/%)	71 (61,2%)	27 (58,6%)	7 (35%)	11 (47,8%)
Euroscore, % (Mean/SD)	9,7 (7,7)	5,98 (5,6)	9,1 (7,3)	10,7 (9,7)
LVEF (Mean/SD)	46,5 (18,1)	41,9 (24,5)	38,3 (23,5)	44,4 (23,6)

FREEDOM OF AFIB BY ABLATION TECHNIQUE

Freedom of AFIB %

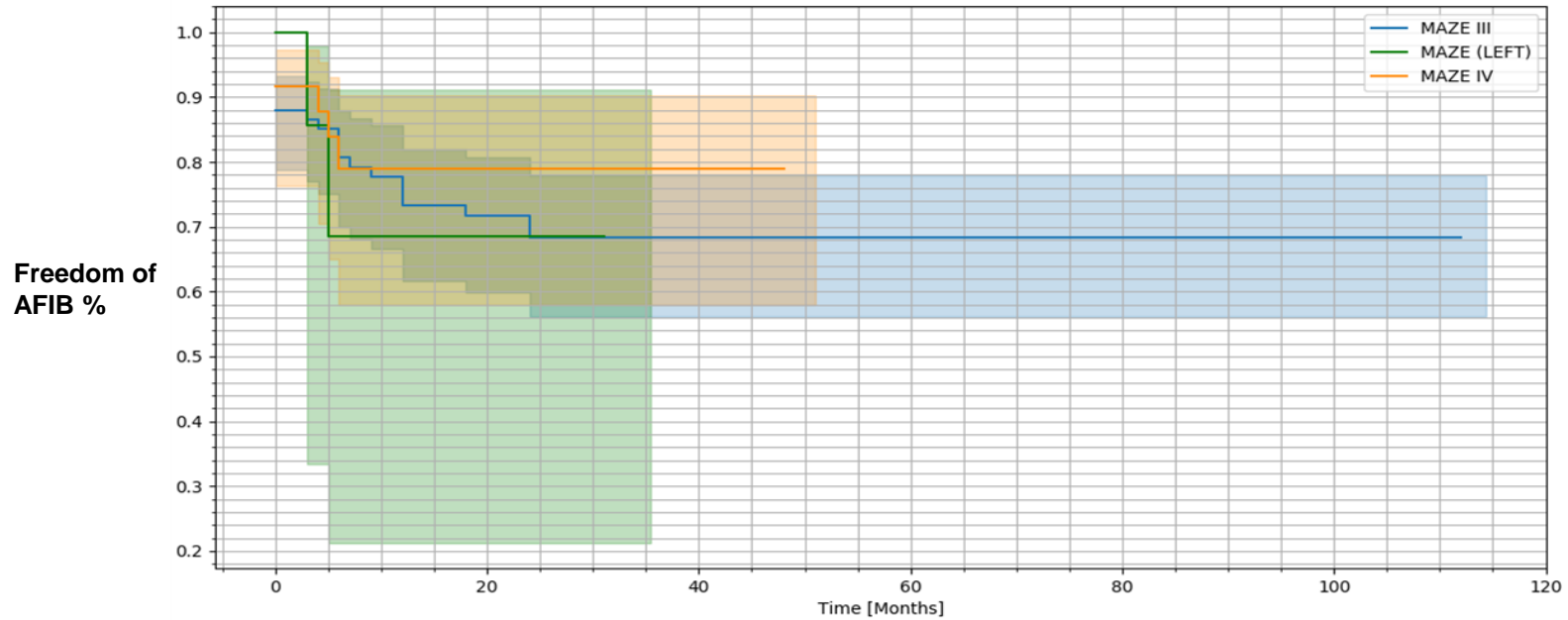


No. Ptes	0 months	20 months	40 months	60 months	80 months	100 months	120 months
MAZE III	116	68	48	34	19	9	1
MAZE IV	55	7	2	0	0	0	0
MAZE LEFT	20	7	4	2	1	0	0
P.V.I	24	16	10	5	2	1	0

Cox Model: Outcome → POP Afib

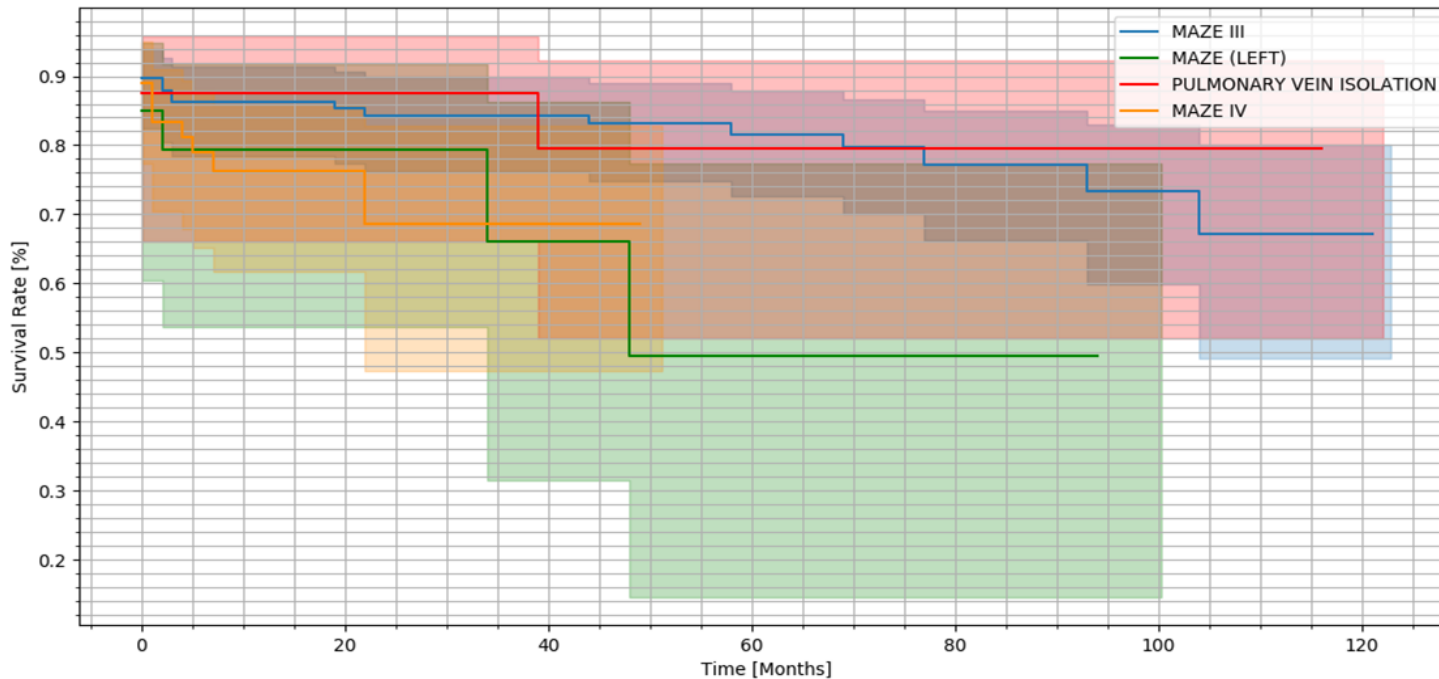
Variable	Cox Coef.	HR
EUROSCORE	-0.006	0.994
Age	0.031	1.031
LVEF	-0.026	0.974
Renal Failure	0.050	1.050
Maze IV ⁺	0.265	1.303
Maze Left ⁺	0.389	1.475

FREEDOM OF AFIB IN MITRAL PROCEDURE BY ABLATION TECHNIQUE



No. Ptes	0 months	20 months	40 months	60 months	80 months	100 months	120 months
MAZE III	82	46	32	22	10	2	0
MAZE IV	36	5	2	0	0	0	0
MAZE LEFT	11	1	0	0	0	0	0

SURVIVAL BY ABLATION TECHNIQUES



No. Ptes at Risk	0 months	20 months	40 months	60 months	80 months	100 months	120 months
MAZE III	116	95	72	52	28	14	1
MAZE IV	55	12	4	0	0	0	0
MAZE LEFT	20	8	5	3	2	0	0
P.V.I.	24	16	10	5	2	1	0

Cox Model: Outcome→Mortality

Variable	Cox Coef.	HR
EUROSCORE	0.010***	1.010
Age	0.038***	1.039
LVEF	-0.020	0.980
Renal Failure	1.287***	3.622
Maze III ⁺	0.372	1.451
Maze IV ⁺	1.078***	2.939
Maze Left ⁺	1.056**	2.875

** $p < 0.05$

*** $p < 0.01$

Bivariate Analyzes between Maze III and IV

Operatory mortality:

Maze III: 11,0%

Maze IV: 11,7% (p=0,839)

All patients

	Maze III N = 113	Maze IV N = 46	p
Mitral Procedure	91 (80.5%)	33 (71.7%)	0.316
EUROSCORE***	9.58 (7.55)	5.95 (5.98)	0.004
Age***	72.2 (10.5)	64.7 (13.4)	< 0.001
LVEF	51.9 (10.8)	53.9 (10.0)	0.277
Renal Failure	12 (10.6%)	6 (13.0%)	0.871

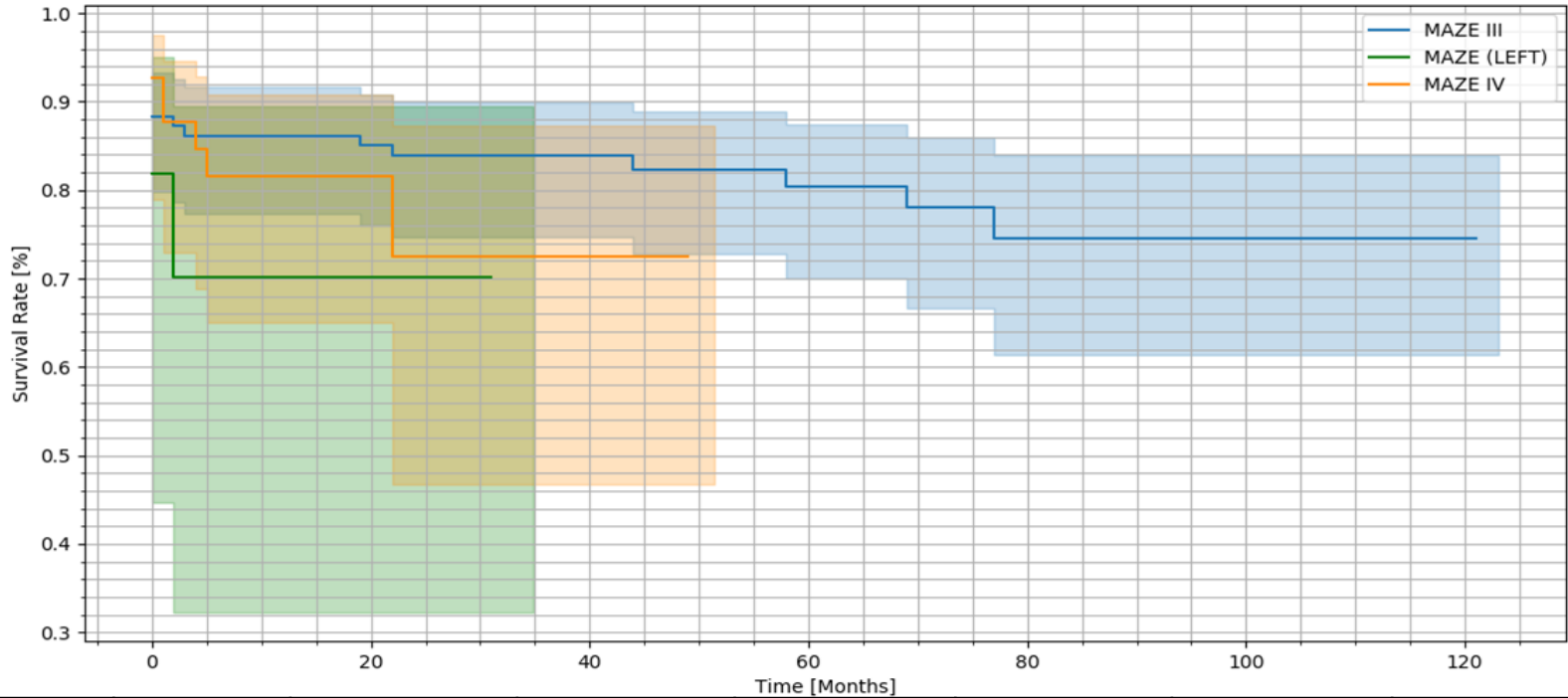
Mortality group

	Maze III ⁺ N = 21	Maze IV ⁺ N = 8	p
Mitral Procedure	16 (76.2%)	4 (50.0%)	0.361
EUROSCORE	13.3 (11.2)	8.63 (7.5)	0.278
Age	75.4 (7.5)	73.1 (7.4)	0.465
LVEF	47.8 (11.4)	51.4 (12.2)	0.466
Renal Failure	5 (23.8%)	4 (50.0%)	0.361

*** $p < 0.01$

+ Dead

SURVIVAL IN MITRAL PROCEDURES BY ABLATION TECHNIQUES



No. Ptes	0 months	20 months	40 months	60 months	80 months	100 months	120 months
MAZE III	84	68	51	36	17	7	1
MAZE IV	36	8	3	0	0	0	0
MAZE LEFT	11	1	0	0	0	0	0

PACEMAKER

Total sample size: 215

Need of pacemaker: 52 (24,1%) 34 (65,4%) sinus rhythm

By AFib Ablation Procedure (p =0,003):

Procedure	#Ptes with pacemaker
Maze III n=116	38 (32,7%)
Maze IV n=55	9 (16,4%)
Maze lzq n=20	4 (20%)
Pulmonary vein isolation n=24	1 (4,2%)

STROKE

Only 2 patients had a postoperative stroke

MAZE IV : (1/55)

MAZE III: (1/116)

CONCLUSIONS

- There is a trend towards a better aFib cure with Maze III than IV, but this could be masked by a smaller Maze IV group size
- With regard to mortality, in our experience, perioperative death is MORE dependent on the patients variables (ie: renal failure) than the Maze procedure
- The Maze procedure DOES protect against early and late POP stroke
- The POP need for pacemakers is significantly higher in Maze III.
- Be sure that the patient REALLY needs the pacemaker before the implant.
- The Cryo + RF might be better than RF alone (we still have doubts!!)
- The lesion set is as important as the energy source
- DOING A MAZE IS VERY IMPORTANT FOR THE PATIENT, EVEN IF IT IS ONLY WITH RF!!!

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THANK YOU

