

Robotic Applications in Surgical Electrophysiology Procedures

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BACKGROUND

Robotic applications are gaining traction in cardiac surgery, particularly in mitral valve procedures. However, isolated robotic surgical electrophysiology (EP) procedures remain underreported. This study reviews the outcomes of robotic surgical EP procedures and highlights the versatility of the robotic approach in managing various electrophysiological conditions.

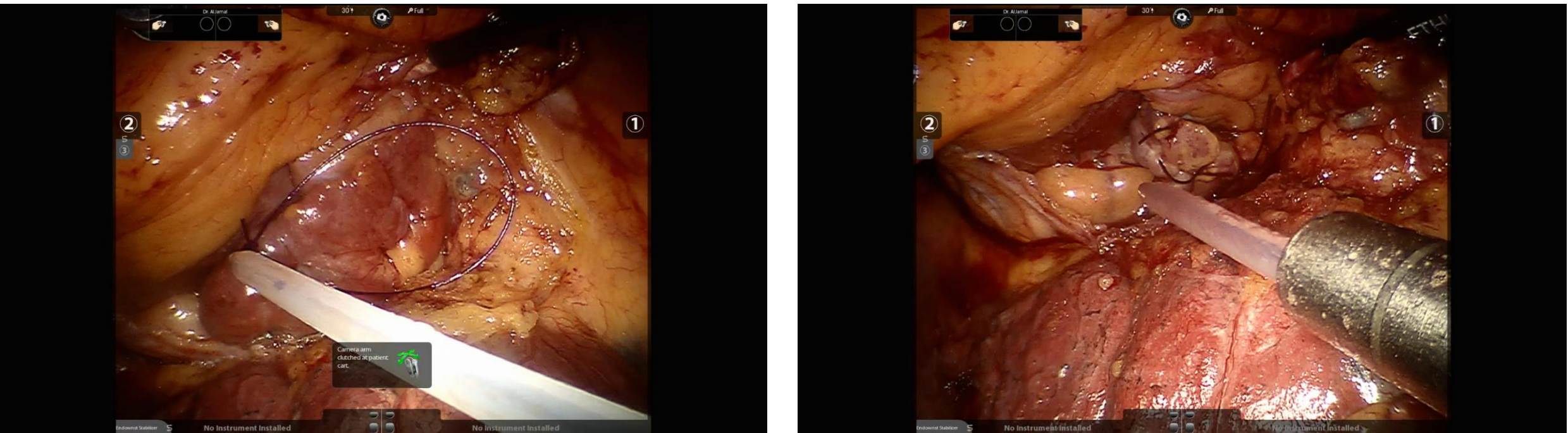
PATIENTS

July 2013 - October 2024
A total of 1850 patients underwent robotic endoscopic cardiac surgery

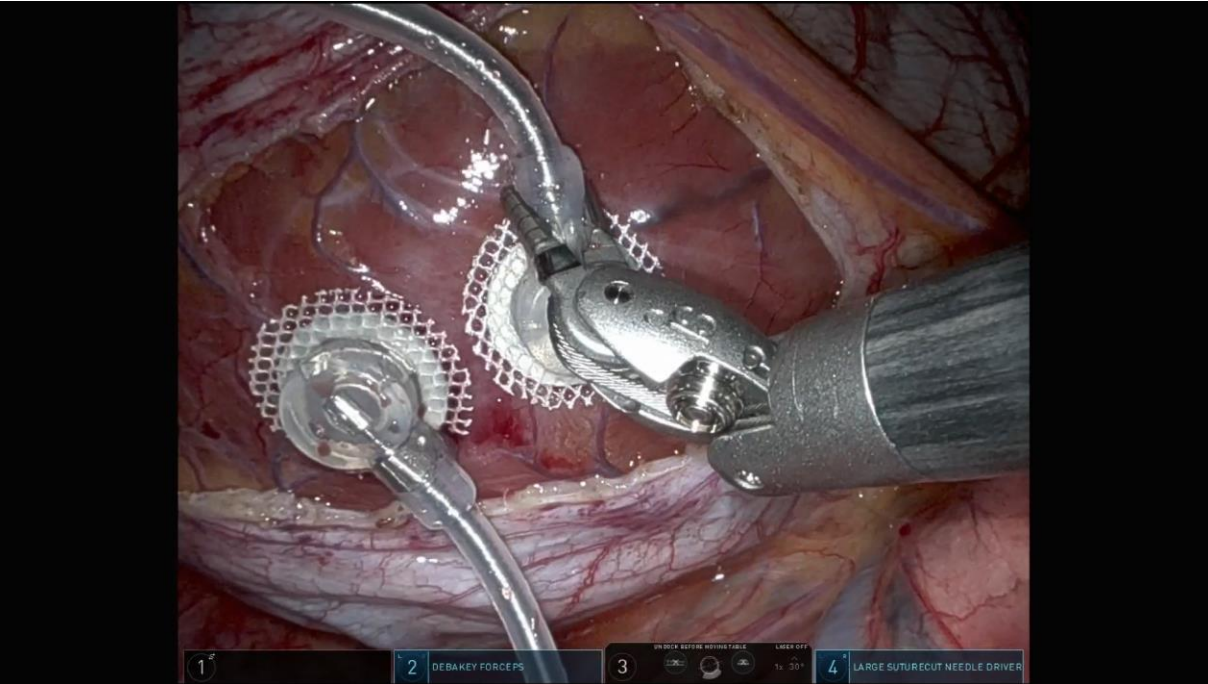
126 patients who had isolated robotic EP procedures were reviewed

ROBOTIC EP PROCEDURES

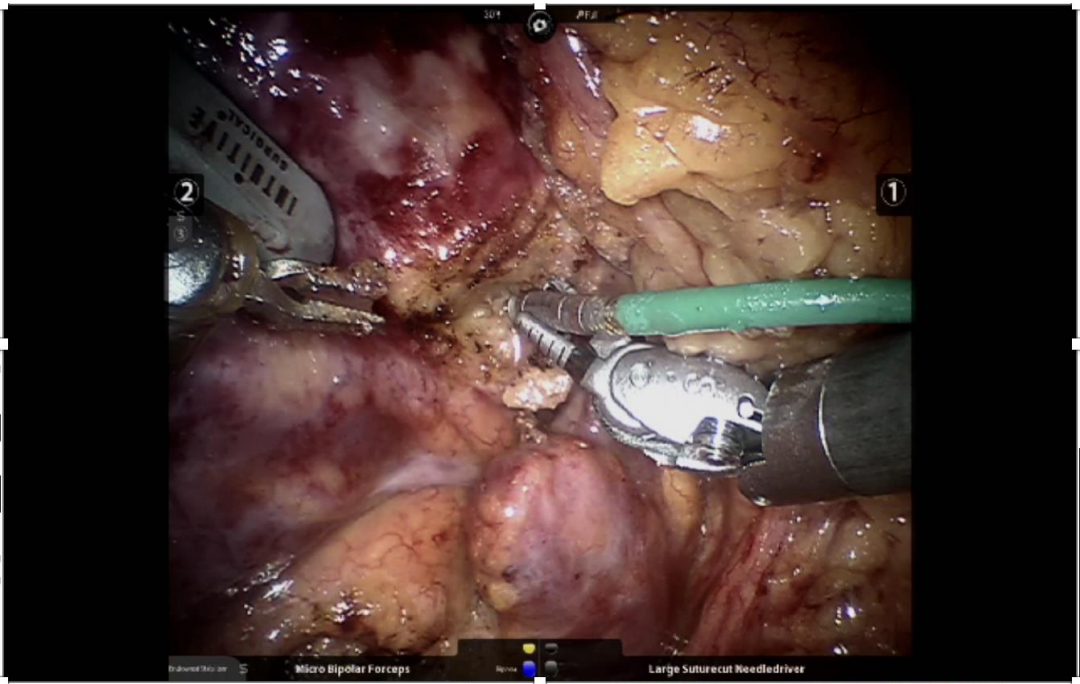
[Isolated left atrial appendage ligation, N = 12]



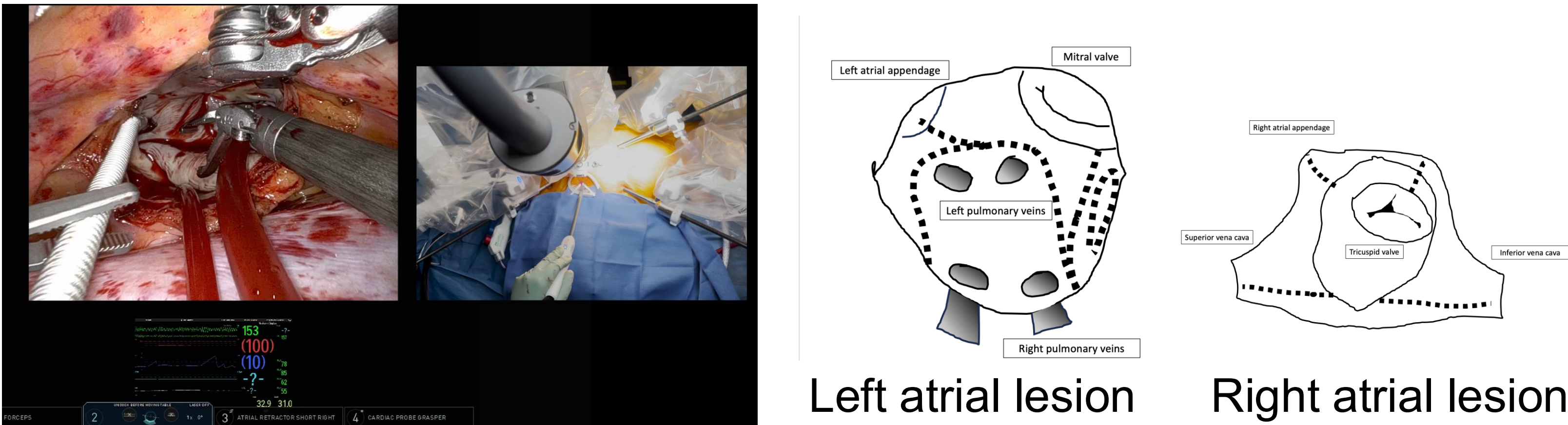
[LV pacemaker lead implantation, N = 24]



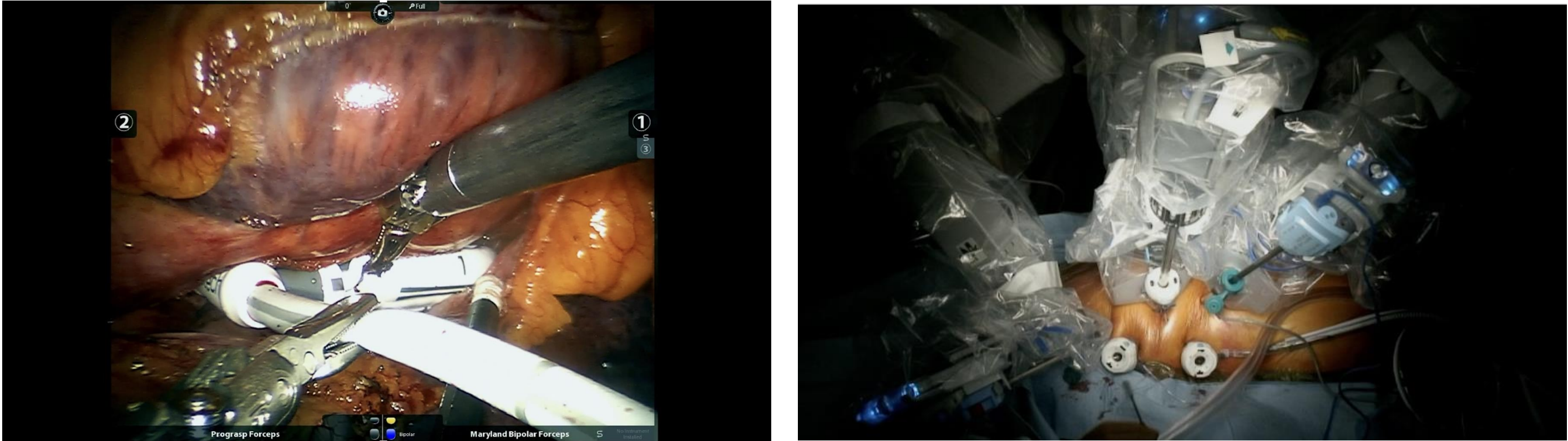
[VT ablation, N = 13]



[Endocardial Cryo Maze ablation, N = 44]



[Epicardial radiofrequency ablation, N = 33]



RESULTS: Endo- vs Epi- cardial ablation

Baseline characteristics	Endocardial ablation N=44	Epicardial ablation N=33	P value
Age (years), mean ± SD	63 ± 13	66 ± 11	0.316
Male, n (%)	34 (77)	22 (67)	0.316
Non-paroxysmal afib, n (%)	33 (75)	10 (30)	0.001
Prior catheter ablation, n (%)	26 (59)	14 (42)	0.293
Prior sternotomy, n (%)	3 (7)	0 (0)	0.256

Intraoperative data	Endocardial	Epicardial	P value
CPB time, mean ± SD	183 ± 45	-	-
Arrest time, mean ± SD	74 ± 21	-	-
Endo-aortic balloon, n (%)	8 (18)	-	-
Ventricular fibrillation, n (%)	35 (80)	-	-
Trans-thoracic aortic clamp, n (%)	1 (2)	-	-
Conversion to sternotomy, n (%)	0 (0)	0 (0)	-
Blood transfusion use, n (%)	9 (21)	2 (6)	0.103

Postoperative outcomes	Endocardial	Epicardial	P value
Acute kidney injury, n (%)	2 (5)	0 (0)	0.504
Myocardial infarction, n (%)	0 (0)	0 (0)	-
Stroke, n (%)	0 (0)	1 (3)	0.429
Hospital length of stay, mean ± SD	3.0 ± 2.0	2.9 ± 1.2	0.863
In-hospital mortality, n (%)	0 (0)	0 (0)	-
Sinus rhythm at discharge, n (%)	38 (86)	29 (88)	1.000

CONCLUSIONS

Robotic technology enables the surgical treatment of a broad spectrum of electrophysiological conditions. Its application expands the potential for minimally invasive approaches in managing EP diseases.

DISCLOSURES

Husam H Balkhy is a proctor for Intuitive Surgical.