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Laparoscopic or robotic adrenalectomy for adrenal mass? A multicenter prospective study

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Introduction & Objectives: Laparoscopic adrenalectomy (LA) represents nowadays the gold standard treatment of most adrenal lesions. In the last decade, Robotic Adrenalectomy (RA) has become an effective alternative because this technology allows overcoming limitations of LA ensuring improved dexterity, ergonomics, magnification of operative field. However, the real benefits of one procedure over the other are still debated. Our aim was to evaluate if the advantages of robotic technology over standard laparoscopy could improve the surgical outcomes of adrenalectomy.

Materials & Methods: In this multicentre study, a series of consecutive non-selected patients undergoing LA or RA for adrenal masses were prospectively enrolled from April 2016 to January 2019 and divided into two groups: RA group and LA group. Perioperative data comprehended Operative Time (OT), Estimated Blood Loss (EBL), rate of glandular break-in, conversion to OS, Positive Surgical Margins (PSMs), complications and Length Of hospital Stay (LOS). Clavien-Dindo classification was used to report complications grading. Student t-test, Chi-square and Fisher-Yates tests were used for the analysis. A p-value of 0.05 was chosen to determine statistical significance.

Results: 41 patients were prospectively enrolled: 18 RA (44%) and 23 LA (56%). Pre-operative characteristics did not differ between the two groups as shown in Table. OT is higher in RA group but with no significance. No differences in term of EBL. Glandular break-in happened in 1 case both for RA and LA and in either case for benign masses. Rate of malignant lesions was higher in RA group (8 vs 2, p < 0.05). No conversion to open or laparoscopic surgery was needed. PSMs were 0% in both groups. Minor complications did not differ between the two groups even if they were higher in Group 1 (44.4% vs 30.4%); major complications were similar in both groups. LOS was of 4.7 days in RA group vs 5.1 in LA group with no significance. No mortality events registered within 30 days from surgery in both groups.

Table

	Group 1 (RA)	Group 2 (LA)	p-value
Pre-operative characteristics			
Sex			0.678
Male	9	10	
Female	9	13	
Mean age (years)	60.4 (35 – 75)	55.7 (19 – 89)	0.155
BMI (Kg/m^2)	26.4 (17.8 – 54.7)	24.2 (16 – 35)	0.146
Tumour size (cm)	4.6 (0.6 – 11)	4.2 (0.8 – 80)	0.276
Operative, peri-operative and post-operative data			
OT (min)	100.2 (44 – 270)	92.9 (50 – 160)	0.336
EBL (ml)	68 (45 – 105)	73 (55 – 120)	0.184
Glandular break-in (%)	5.6%	4.3%	0.859
PSMs (%)	0%	0%	*ns*
Malignant lesions (%)	44.4%	8.7%	***0.008***
Conversion to OS (%)	0%	0%	*ns*
Complication (%)			
Clavien-Dindo I-II-IIIa	44.4%	30.4%	0.127
Clavien-Dindo IIIb-IV	16.7%	17.4%	0.951
LOS (days)	4.7 (2 – 19)	5.1 (3 – 7)	0.332
Mortality (<30 days)	0%	0%	*ns*

Conclusions: The widespread of robotic surgery had led to its use in various surgical fields even in those where conventional laparoscopy represents the gold standard. Concerning adrenal surgery, outcomes of RA are comparable to those of LA. RA appears to be a safe and feasible procedure in selected patient populations even for malignant masses.