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Gynaecologic robotic (da Vinci) surgery; cohort study of 100 cases in Greece.

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EMBRYO CLINIC GYNSURGERY

Introduction

Robotic surgery has been a rapidly developing field in recent years, particularly as far as Gynaecological Surgery is concerned. The robotic equipment was designed to surpass the limitation of conventional laparoscopy, providing superior, three-dimensional visualization of the surgical site, increased magnification of areas of interest, enhanced dexterity via highly articulating surgical instruments and absent tremor. Additionally, the ergonomic working configuration of the console ensures reduced strain, be it physical or mental, to the surgeon, with significant improvement to surgery ergonomics, a vital feature especially for high-volume surgeons and/or multi-hour procedures.

Since the introduction of Robotic Gynaecological Surgery in Greece, public interest on the new technique has been growing slowly, as the increased cost has impacted its spread, with the vast majority of Robotic Gynaecological Surgeons practicing in the private sector. In this retrospective study, we present our experience with the first 100 cases that underwent robotic surgery by a single, experienced surgeon (E.T.).

Methods & Materials

This is a retrospective case series including the first 100 patients treated using robotic-assisted surgery by our team. All patients operated on from January 1st, to May 20th 2023 were included. All procedures were conducted in St. Luke's Hospital, located in Thessaloniki, Greece. All procedures were conducted by the same, trained and certified lead Console Surgeon (E.T.), using the Da Vinci X Surgical System. All procedures were conducted using a multi-port approach, with 3 to 4 robotic ports (8mm) for surgical instruments and the camera and one accessory port (10-12mm) for the assistant surgeon. Data was collected based on the hospital files and analyzed using the SPSS Statistical Processing Software.

Patients were contacted and asked to provide consent for participating in the study. The study protocol was approved by the IRB of St. Luke's Hospital.

Results

From the 100 patients, all but 2 consented to be included in the study. During the period 2020-2023, in total 40 hysterectomies for benign etiology, 37 myomectomies, 12 hysterectomies for malignant etiology, 5 subtotal hysterectomies and sacrocolpopexies, 3 oophorectomies and/or salpingectomies and 1 lymphadenectomy were conducted. On average, our patients were 48.35 years of age, with individuals ranging from 24.6 to 84.6 years. Patient mean BMI was 27.34 with patients on the entire spectrum, from normal weight to morbid obesity. Additional baseline data, along with estimates per type of operation are summarized on **Table 1**.

Surgical outcomes are stratifies per type of surgery and presented on **Table 2**. Surgical time, blood loss and length of stay varied, depending on the type of surgery, patient comorbidities and severity of underlying pathology. From the observed complications, only 2 were severe enough to warrant additional surgery, namely bowel puncture in one patient and occurrence of post-operative vesicovaginal fistula. Both conditions were treated and the patients made a swift recovery. The rest of the observed complications were mild, including fever, mild inflammation or haematoserous collections at the site of incision, and post-op UTIs. From the total number of 98 included patient, only one required a transfusion of 2 RBC units. That patient made a complete recovery and return to her everyday activities with no further complications or impairment.

Parameter		B. Hys.	Myomectomy	Hys. & Lymph.	Hys. & sacr.	Other	Total
Patients (n)		40	37	12	5	4	98
Age		51.69±7.06, 50.85 (36.53-69.65)	39.68±6.2, 41.06 (24.6-47.09)	56.94±16.98, 57 (22-51)	52.03±11.35, 50.35 (40.6-70.1)	64.78±14.63, 60.8 (53-84.58)	48.35±11.54, 46.6 (24.6-84.6)
BMI parameters	BMI value	27.95±6.92, 25.95 (18.5-47.8)	25.35±5.04, 24 (19.1-39.1)	31±8.65, 29.4 (22-51)	27±5.4, 24.4 (23-36)	33.28±9.9, 31.2 (24.6-46.1)	27.34±6.79, 25 (18.5-51)
	Normal weight	16 (40%)	22 (59.5%)	4 (33.3%)	3 (60%)	1 (25%)	46 (46.9%)
	Overweight	12 (30%)	9 (24.3%)	3 (25%)	1 (20%)	1 (25%)	26 (26.5%)
	Class 1 obese	7 (17.5%)	2 (5.4%)	3 (25%)	0 (0%)	0 (0%)	12 (12.2%)
	Class 2 obese	3 (7.5%)	4 (10.8%)	0 (0%)	1 (20%)	1 (25%)	9 (9.2%)
	Class 3 obese	2 (5%)	0 (0%)	2 (16.7%)	0 (0%)	1 (25%)	5 (5.1%)
Gravidity		1.88±1.24, 2 (0-6)	0.84±1.191, 0 (0-4)	1.92±1.73, 2 (0-6)	2±1, 2(1-3)	2±0.816, 2(1-3)	1.5±1.35, 1.5 (0-6)
Parity		1.58±1.01, 2 (0-5)	0.57±0.899, 0(0-3)	1.42±0.9, 2 (0-2)	1.8±0.837, 2(1-3)	1.75±0.5, 2(1-2)	1.19±1.04, 1 (0-5)
Menopausal status	Pre-menopausal	23 (57.5%)	34 (91.9%)	3 (25%)	4 (80%)	1 (25%)	65 (66.3)
	Post-menopausal	17 (42.5%)	3 (8.1%)	9 (75%)	1 (20%)	3 (75%)	33 (33.7%)
Abdominal surgery	CS	19 (47.5%)	6 (16.2%)	3 (25%)	0 (0%)	2 (50%)	30 (30.6%)
	Surgery other than CS	15 (37.5%)	6 (16.2%)	2 (16.7%)	2 (40%)	3 (75%)	28 (28.6%)
	Either	25 (62.5%)	11 (29.7%)	4 (33.3%)	2 (40%)	4 (100%)	46 (46.9%)

Table 1 (left): Baseline characteristics of included patients. Continuous variables are presented in mean±standard deviation, median (min-max) and categorical variables in number (percentage). B.Hys.:benign hysterectomy, Hys.&lymph: hysterectomy and lymphadenectomy, Hys&sacr: subtotal hysterectomy and sacrocolpopexy.

Parameter	B. Hys.	Myomectomy	Hys. & Lymph.	Hys. & sacr.	Other	Total
Patients (n)	40	37	12	5	4	98
Operative time (min)	156.9±49.64, 150 (110-380)	149.41±46.17, 145 (90-330)	175±35.8, 180 (120-240)	168±45.5, 150 (120-240)	117.5±25, 115 (90-150)	155.23±46.5, 150 (90-380)
Estimated blood loss (ml)	62.85±51.17, 40 (10-200)	64.46±46.74, 55 (10-200)	63.75±41.35, 47.5 (20-150)	57±29.5, 40 (30-100)	87.5±78.05, 65 (20-200)	64.3±48.04, 47.5 (10-200)
HbA difference	-1.49±0.71, -1.5 (-3.5 - -0.3)	-1.71±0.92, -1,8 (-4.1 – 0.6)	-1.25±0.7, -1.2 (-2.9 - -0.3)	-1.88±0.39, -2(-2.3 - -1.3)	-0.9±0,93, -0.9 (-2 – 0.2)	-1.54±0.81, -1.5 (-4.1 – 0.6)
Length of stay (days)	1.85±0.736, 2 (1-5)	1.57±0.65, 1 (1-3)	1.92±0.669, 2 (1-3)	2.20±0.45, 2 (2-3)	1.5±0.58, 1.5 (1-2)	1.76±0.69, 2(1-5)
Transfusions	0 (0%)	1 (2.7%)	0 (0%)	0 (0%)	0(0%)	1(1%)
Complications	9 (22.5%)	5 (13.5%)	1 (8.3%)	2 (40%)	1 (25%)	18(18.4%)

Table 2 (right(: Surgical outcomes. Continuous variables are presented in mean±standard deviation, median (min-max) and categorical variables in number (percentage). B.Hys.:benign hysterectomy, Hys.&lymph: hysterectomy and lymphadenectomy, Hys&sacr: subtotal hysterectomy and sacrocolpopexy.

Discussion & Conclusion

These findings are indicative of the effectiveness, safety and applicability of robotic surgery in multiple, various gynaecological surgical procedures. The precise control, filtering of tremours and 3D visualization allow for substantially decreased surgical trauma and lead to improved outcomes. In our experience, robotic surgery is the safest option for high risk patient, such as those with severe underlying pathology, comorbidities or those who refuse transfusion due to religious, cultural or other reasons. The successful completion of the first 100 robotic surgery cases constitutes a stepping stone for further expansion and study of the methodology. Future research from our team will focus on comparative studies of robotic surgery outcomes with their laparoscopic counterparts, as laparoscopic surgery is also amongst our teams areas of specialization and expertise.

Contact

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