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Robotic Surgery for Colorrectal Cancer: A Case Serie of 20 Patients Treated by A Single Surgeon at A Single Hospital

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1. Introduction

The robotic surgery has emerged in the 21 centuries as an amazing tecnology, and has revolutionized the surgical treatment of colorectal cancaer [1]. In Brazil, more than on hundred tousand surgeries had been performed by this method, and, nowadays, there are more than one hundred Da Vinci plataforms in use in this country [2]. Despite that, there are few publications on this topic about a single surgeon and institution experience in colorrectal cancer around the world [3]. This study is a retrospective case serie, wich had evaluated 20 cases of colorrectal cancer of a single surgeon and institution experience. We evaluated locantion of the tumor, surgical margins, lymphadenectomy and if there were major complications (bleedeing, fistula or anastomotic dehiscense).

1.1. Methods

This is a retrospective case serie study carried out in the Porto Alegre Brigada Militar Hospital. From january 2023 until June 2025, a single surgeon performed 20 colorrectal cancer surgery using robotic technique. All information has been accessed from the hospital's eletronic medical record, with the consent of the surgeon and patients. Was analyzed the age of the patient, the kind of colorrectal surgery and location of the tumor, urgent or elective surgery, surgical margins, lynphadenectomy, major complications (bleeding, fistula and dehiscense) and mortality. All dates were recorded in a table for analysis. No patient was excluded from the study.

1.2. Results

Form January 2023 until June 2025, twenty patients were operated using the Da Vinci X robotic platform for the treatment of colorectal cancer by the same surgeon. Thirteen patients were male and seven were female. Avaregeage was 63 years. The youngest had 47 years and the oldest had 88 years. All information that was accessed from the hospital's eletronic medical record is descibed in Table 1. Low anterior resection was performed in 5 patients wtih tumors less than 10cm from the anal margin. Proctosigmoidectomy was indicated in seven patients with with tumors between 15cm and 30cm from the anal margin. One left colectomy was performed in a patient with a tumor form the descending colon. Subtotal Colectomy was performed in one patient with multiple malignant polips. One parcial colectomy was performed in a patient with a malignant polip form the transverse colon. Five right colectomy were performed in patients with tumor in the right colon (Figure 1). Eight patients (40%) received urgent surgery because of acute obstrutive abdome or tumor bleeding.All samples had neoplasia free margins in the pathological evaluation. An average of 33 lymph nodes were resected, with a minimum of 11 lymph nodes in patient with neuroendocrine tumor and a maximum of 58 lymph nodes. Two patients had complete response to radio chemotherapy but one had one lymph node metastasis. One patient with malignant polip of the transverse colon had no residual lesion in the colon but had lymph node metastasis. Three patients had in situ tumor, one of them with neuroendocrine tumor. Four patients had T2 lesion, one of them with node metastasis e one had a tumor recurence one year after wach and wait follow up. Nine patients had T3 tumor, three of them with node metastasis, and one with liver metastasis at the time of the first surgery. One patient with T4 neuroendocrine multifocal tumor with lymph nodes metastasis. All patients had a complete resection of their desease with free margins and a oncological lymphadenectomy. The postoperative staging is represented in Figure 2.No deaths or adverse events robotic-related were reported. There were five major complications (25%) in this case serie: one superior rectal artery bleeding caused by poor haemostasis done with the syncroseal instrument, treated by lapatoyomy and suture of the superior rectal artery; one handsewn anastomotic dehiscense in the third postoperative day caused by anastomotic tension, treated by laparoscopy and colostomy; one anastomotic fistula in the thrid operatieve day, caused by circular stapler failure, treated by laparoscopy, suture and drainage; one stapler anastomotic fistula in the ninth operative day in a patient with no comorbidities and a low tumor with previous radiotherapy, treated by laparotomy and colostomy; and another handsewn anastomotic fistula in the third operative day caused by the poor clinical status of the patient, treated by laparoscopy, suture and drainage. Only two patients with complications underwent elective surgery. The other three patients with complications underwent urgent surgery. Four patients with complications had at least two comorbidities (hypertension, diabetes, smoking, dyslipidemia, heart disease, a second primary neoplasm and other conditions). No right sidecolectomy had major complications. None of the complications could be attributed to the use of the robotic platform.

Table 1: Colected information from the hospital eletronic medical record.

ID	DATE	A/S	SURGERY	DFAM	MC	E/U	LFN	M
LMB	04/14/23	73yf	Rectosigmoidectomy	20cm	None	U	24	Free
ZCS	05/15/23	67ym	Rectosigmoidectomy	25cm	Bleeding	U	29	Free
MLS	05/18/23	65yf	Rectosigmoidectomy	30cm	None	U	52	Free
MVB	06/01/23	63yf	RightColectomy	100cm	None	E	35	Free
CJM	07/28/23	47ym	Left Colectomy	60cm	Dehiscense	U	32	Free
NRS	09/11/23	69yf	SubtotalColectomy	60cm	None	E	38	Free
WS	10/30/23	67ym	LowAteriorResection	10cm	None	E	58	Free
NAS	11/30/23	75ym	Rectosigmoidectomy	15cm	Fistula	E	49	Free
JML	01/08/24	55ym	LowAteriorResection	4cm	None	E	21	Free
NM	02/05/24	61ym	PartialColectomy	90cm	None	E	18	Free
ROC	05/13/24	51yf	LowAteriorResection	8cm	None	E	50	Free
AFJ	05/14/24	51ym	Rectosigmoidectomy	20cm	None	E	42	Free
SAS	07/24/24	57ym	LowAteriorResection	5cm	Fistula	E	15	Free
JSS	09/06/24	59ym	LowAteriorResection	4cm	None	E	16	Free
APN	10/16/24	88ym	RightColectomy	100cm	None	U	36	Free
RGP	10/30/24	58ym	RightColectomy	100cm	None	U	23	Free
VTC	01/20/25	77ym	Rectosigmoidectomy	15cm	None	U	51	Free
RPS	02/28/25	62yf	Rectosigmoidectomy	20cm	Fistula	U	37	Free
JTA	03/13/25	58ym	RightColectomy	120cm	None	E	30	Free
MLL	06/02/25	56yf	RightColectomy	120cm	None	E	11	Free

*A/S- Age andSex (y-years, f-female, m- male); DFAM- Distance FromAnal Margin; MC-Major Complications; E/U- Elective or Urgency; LFN-Lymphadenectomy; M- Margin.

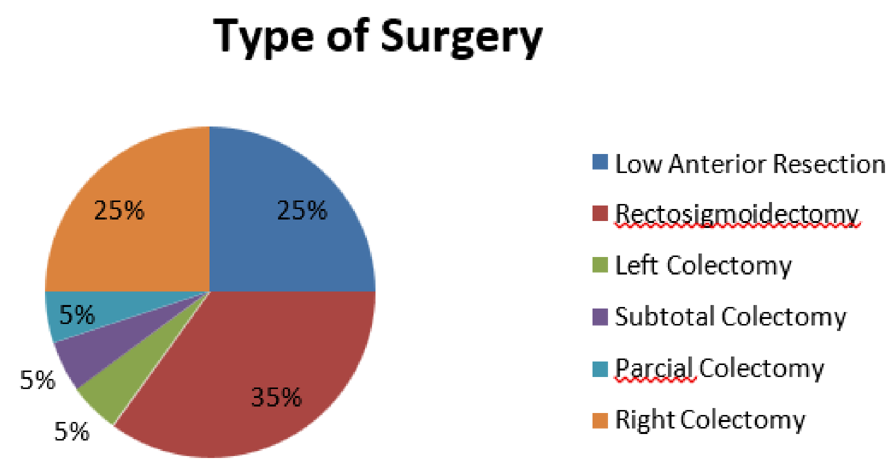

Figure1: Type of Surgery.

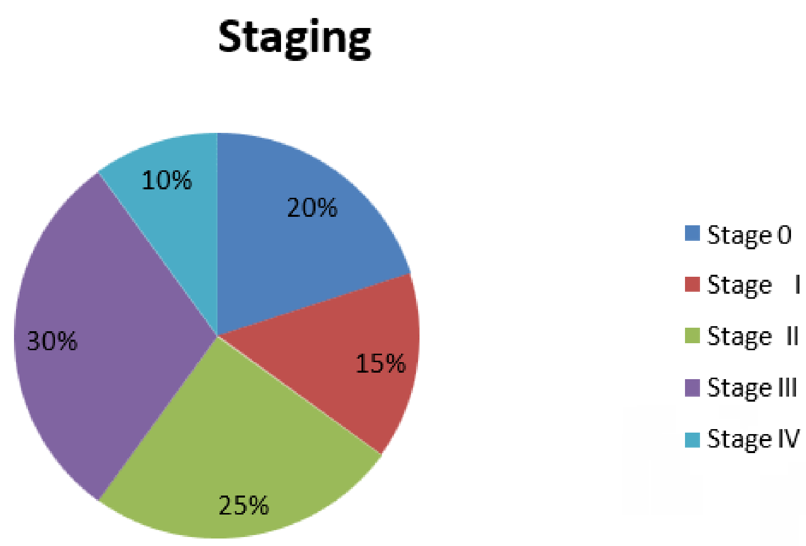

Figure 2: Distribution of tumor staging in the sample.

2. Discussion

The robotic surgery has emerged in the 21 century as an amazing tecnology, and has revolutionized the surgical treatment of colorectal cancaer [1]. In Brazil, more than on hundred tousand surgeries had been performed by this method, and, nowadays, there are more than one hundred Da Vinci plataforms in use in this country [2].Spinoglio et al. [3], noted that whilst robotic laparoscopic colon surgery was feasible, even at early stages prior to expected technological improvements, operating times were found by them to be longer than in standard laparoscopic surgery [4]. Yet it was noted that robotic assistance was particularly helpful in cases involving complex and precise dissections in a confined space [5]. Guerriri et al. [6], state that since the introduction of robotic surgery, it has proved to be safe and effective especially for complex cases in colorectal surgery (6). In assessing the potential visual advantages, the results of a study showed that robotic techniques allow the surgeon to see the images in 3D, there is more freedom and an increase in angle and degrees in movement [7]. There is a 7- degree freedom and micro-anastomosis is possible and has an ergonomic position. It has an ergonomic system which makes it easier for the surgeon to execute complex surgeries [8]. They also reduce or eradicate tremor and human error. This improves outcomes of surgery [7]. The learning curve is similar to laparoscopic training [8]. There seem to not be many barriers and it might even be easier to learn robotic surgery than laparoscopic surgery [7]. Robotic surgery provides a qualitative leap in surgical tools and the ability to provide our patients with a minimally invasive approach even when the procedures to be done are technically challenging or in "uncomfortable" anatomical regions for the average surgeon [9]. Robotic surgery does not make the treatment straightforward or easy, but it helps shorten the learning curves of less experienced surgeons by making more minimally invasive surgery possible in more patients [9].Three recent studies reported advantages in using robotic surgery for the treatment of colorectal cancer. The sistematic review and meta-analyzes, published by S Gahunia et al. [10], provided further evidence of non- inferiority of robotic-assisted surgery for colorectal cancer and demonstrates conversion rates are superior in specific, technically challenging operations. Teo NZ 2023 [11] concluded that robotic assisted colrectal surgery is safe and feasible in the elderly and despite an increased operative time, it potentially confers the benefit of lower conversion, earlier return of gut function and shorter length of stay with comparable oncological outcomes. The meta-analysis of postoperative complications, Thrikandiyur A et al. [12], revealed no significant difference between robotic surgery and laparoscopic surgery (relative risk [RR]: 0.96, 95% confidence interval [CI]: 0.79 to 1.18, p=0.72). Meta- regression analysis of postoperative complications demonstrated a significant trend favouring robotic surgery over time (yearly change in Ln(RR): −0.0620,95% CI: −0.1057 to −0.0183, p=0.005) [12]. Secondary outcome measures included operative time, length of stay, blood loss, conversion to open surgery, positive circumferential resection margins and lymph nodes retrieved. The only significant findings were shorter operative time favouring laparoscopic surgery (mean difference: 41.48 minutes, 95% CI: 22.15 to 60.81 minutes, p<0.001) andfewer conversions favouring robotic surgery (RR: 0.57, 95% CI: 0.37 to 0.85,p=0.007) [12].This series of 20 cases, performed by a single surgeon at a single institution, confirms the safety and feasibility of robotic surgery for colorectal cancer treatment. Since there were no deaths or adverse events robotic- related, the indication of robotic surgery, even in urgent cases (40% of the patients in this serie), were feasible and safe. All patients had a complete resection of their disease with free margins and a oncological lymphadenectomy. Although it is a study wtih few cases, the fact that all procedures were performed by a single surgeon in a single hospital, surgeon and institutional expertise bias were avoided. In this study, all the postoperative complications were related with left side colon and rectum cancer. Of the 5 major complications, one superior rectal artery bleeding caused by poor haemostasis done with the syndrome instrument, could be prevented with routine use of haemostatic clips in tihs vessel. One handsewn anastomotic dehiscence in the third postoperative day, caused by anastomotic tension, could be avoided with more preserving surgery, and more colon and rectum mobilization. One anastomotic fistula in the thrid operative day, caused by circular stapler failure, can not be predicted. One stapler anastomotic fistula in the ninth operative day, in a patient with no comorbidities and a low tumor (5cm from anal margin) with previous radiotherapy, could be avoided using pull- through technical. Another handsewn anastomotic fistula in the third operative day was caused by the poor clinical status of the patient. In this case, no medical intervention could prevent the complication. The fact that only two patients underwent elective surgery, one of this with previous radio chemotherapy in a very low tumor; and four patients had at least two comorbidities (hypertension, diabetes, smoking, dyslipidaemia, heart disease, a second primary neoplasm and other conditions), can explain the 25% incidence of major complications. Despite that, no mortality was reported. This case serie can give a good idea of reality outside of controlled studies.Zarnescu EC.[13].Report that, even with the introduction of minimally invasive Technologies for the treatment of colorectal cancer, the incidence of anastomotic failure does not reduced over the time. Leakage was 1,7 times more frequent in man. Alcohol and smoking history were also associated with a significant higher risk of anastomotic leak in several publications [13]. The presence of comorbid conditions (diabetes mellitus, cardiovascular disease, obstructive pulmonary disease and renal failure) in patients who underwent colorectal surgery was shown to have a 1.82 times higher risk factor for leakage [13]. Patients at nutritional risk have higher complication rates after colorectal surgery. The oppsite, obesity, is associated with longer operative time, less lymph nodes harvested, more conversion to open procedure, higher morbidity, more surgical site infection and moreanastomotic leakage [13]. The use of anti-inflammatory drugs can be related to anastomotic failure. Although studies do not prove a direct relationship between radio chemotherapy and anastomotic complications, most of them report a higher incidence of this [13]. Anastomotic leak after colorectal surgery, a major complication with increased postoperative morbidity and mortality, still remains a challenge despite surgical progress and technological advances. The awareness of risk factors should influence treatment and procedure-related decisions. Further research is required to focus on risk factors that currently are insufficiently explored, to reduce the risk and subsequent effects associated with anastomotic leakage. This serie reflects the real world reality in a clinical practice. All the findings and complications related sao explainable by this context and do not differ from controlled studies. The use of robotic surgery is feasible, safe and comparable with laparoscopy or open surgery. A single surgeon experience can give good insights about the reproductivity of robotic surgery in the clinical practice setting.

3. Conclusion

This single surgeon experiences 20 case serie can give good insights about the reproductivity of robotic surgery in the clinical practice setting. Robotic surgery for colorectal cancer is feasible, safe and comparable with laparoscopic and open surgery, even in complex scenarios. None of the complications reported in this case series are related with the use of the robotic platform.

References

1. Sung Uk Bae, Current Status and Future of Robotic Surgery for Colorectal Cancer-An English Version, Journal of the Anus, Rectum and Colon, Released on J-STAGE. 2022; 221-230.
2. Portal daVinci. 2023.
3. Ravendran K, Abiola E, Balagumar K, Raja AZ, Flaih M. A Review of Robotic Surgery in Colorectal Surgery. Cureus. 2023;15(4):e37337.
4. Spinoglio G, Summa M, Priora F, Quarati R, Testa S: Robotic colorectal surgery: first 50 cases experience. Dis Colon Rectum. 2008; 51:1627-32.
5. Hopkins MB, Hawkins AT, Tiwari V. Is newer always better?: comparing cost and short-term outcomes between laparoscopic and

robotic right hemicolectomy. Surg Endosc. 2022; 36:2879-85.

6. Guerrieri M, Campagnacci R, Sperti P, Belfiori G, Gesuita R, Ghiselli R: Totally robotic vs 3D laparoscopic colectomy: a single centers preliminary experience. World J Gastroenterol. 2015; 21:13152-9.
7. Mushtaq HH, Shah SK, Agarwal AK. The current role of robotics in colorectal surgery. Curr Gastroenterol Rep. 2019; 21:11.
8. Spinoglio G, Summa M, Priora F, Quarati R, Testa S: Robotic colorectal surgery: first 50 cases experience. Dis Colon Rectum. 2008; 51:1627-32.
9. Gomez Ruiz M, Lainez Escribano M, Cagigas Fernández C, Cristobal Poch L. Robotic surgery for colorectal cancer. Ann Gastroenterol Surg. 2020; 4:646-51.
10. S Wyatt J, Powell SG, Mahdi S, Ahmed S, Altaf K. Roboticassisted versus laparoscopic surgery for colorectal cancer in high-risk patients: a systematic review and meta-analysis. Tech Coloproctol. 2025;29(1):98.
11. Teo NZ, Ngu JCY. Robotic surgery in elderly patients with colorectal cancer: Review of the current literature. World J Gastrointest Surg. 2023;15(6):1040-1047.
12. Thrikandiyur A, Kourounis G, Tingle S, Thambi P. Robotic versus laparoscopic surgery for colorectal disease: a systematic review, meta-analysis and meta-regression of randomised controlled trials. Ann R Coll Surg Engl. 2024;106(8):658-671.
13. Zarnescu EC, Zarnescu NO, Costea R. Updates of Risk Factors for Anastomotic Leakage after Colorectal Surgery. Diagnostics (Basel). 2021;11(12):2382.