

## The First Beginnings of Robotic Colon Surgery in Slovenia

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Received: December 14, 2024

Published: January 15, 2025

### Background

As the number of minimally invasive surgeries has increased, robotic surgery has gradually developed in various surgical fields. We present our initial observations and results of robotic operations of the large intestine with special regard to the patient undergoing robotic surgery of the colon and rectum cancer in General and Teaching Hospital Celje.

### Methods

The first totally robotic-assisted resection of rectum cancer (single docking system with da Vinci SI system) in Slovenia was performed in General and Teaching Hospital Celje. Until now we performed more than 100 colorectal operations with robotic system. Retrospectively we analysed 100 robotic operations (49% female, 51 % male). The average age was 63,6 years. 62 % patients had ASA classification II, colorectal carcinoma was presented in 77 % patients, the others had diverticulosis and benign diseases (Figure 1).

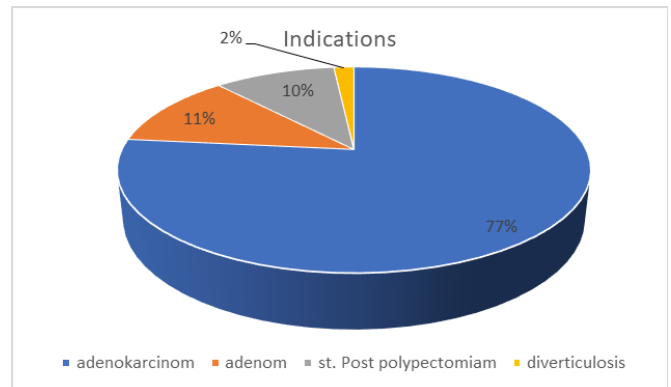


Figure 1: Indications.

62 % patients had carcinoma of rectum and recto sigma (Figure 2). The degree of differentiation of the tumour (gradus II) was presented in 68 % of robotic operated patients (Figure 3). According to the TNM classification stage T3 was presented

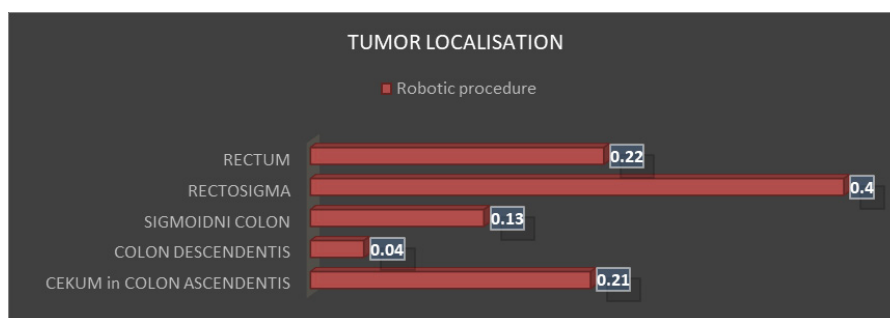


Figure 2: Tumour localisation.

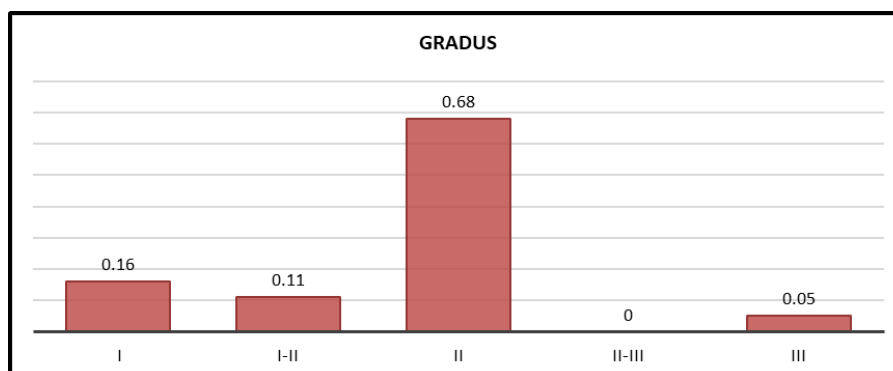


Figure 3: Gradus.

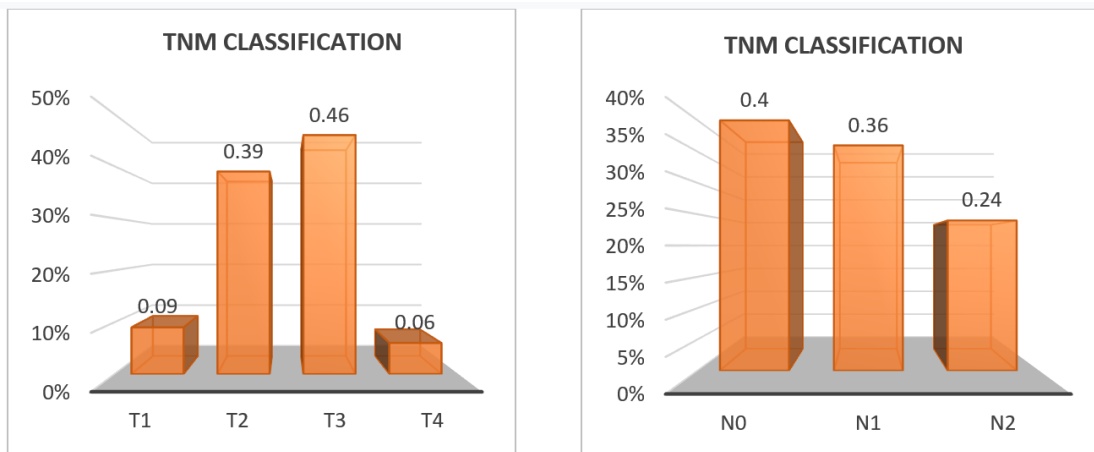


Figure 4, 5: TNM classification.

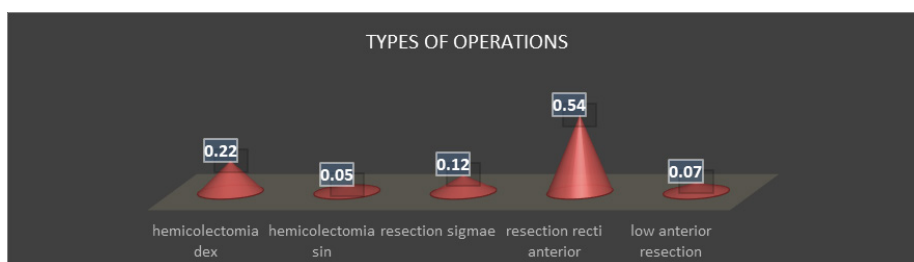


Figure 6: Types of operations.

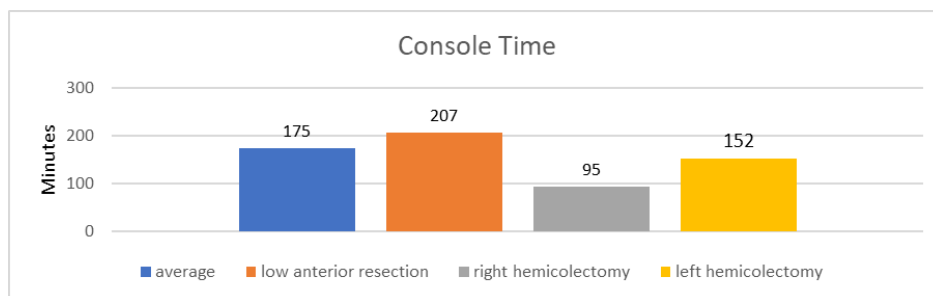


Figure 7: Console time.

Table 1: Results.

	Robotic procedure (n=100)
Duration of operation (min)	186,6 min
Intraoperative blood loss (ml) average	50-150 ml
Average number of lymphnodes	18,5
Time to resume regular diet(days)	3,7 dni
Time to passage of stool(days)	4,5 dni
Length of stay in hospital (days)	7,5 dni
Complication(n%)	(9,0%)
Conversion to open surgery (n%)	(4,5%)

in 46 % of robotic operated patients (Figure 4). Stage N0 for lymph nodes was presented in 40 % of robotically operated patients (Figure 5).

**Results**

In all patient’s radical resection has been done. The most common type of operation was resection of rectum anterior (54 %) (Figure 6).

Intraoperative blood loss was 50 ml to 150 ml. The average number of isolated lymph nodes was 18,5. The average hospitalization was 7,5 days. The share of conversions to the open method was 4.5%. Complications were 9 %. A seven-year follow-up of robotically operated patients showed a 10.3 % mortality rate (4 died due to disease progression, and the rest due

to cardiovascular diseases) (Table 1).

Average Console time was 175 minutes (Figure 7).

**Conclusion**

Robotic assisted surgery is safe and weable technique for treatment of essentially all colorectal conditions requiring surgical intervention. To determine suit able minimally invasive surgical approach it is important to recognise robotic surgery, present benefits and limitations. The Da Vinci system was particularly useful in specific stages of the procedure, e.g., take down of the splenic flexure, dissection of narrow pelvis and identification of nervous plexus. The cost effectiveness of the procedure still needs to be evaluated.