Short Term Outcomes of Laparoscopic Resection for Left Sided Colon and Rectal Cancer

By

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Introduction

Colorectal cancer has gradually become one of the most significant leading causes of death from malignancies worldwide, surgical management is still the mainstay of the treatment .

Conventional open surgery is reported with significant morbidity and a long recovery period .

The evolution of minimally invasive surgery allowed laparoscopic colorectal resections, first described in 1991.

- **LCS is technically challenging** as it involves almost all advanced laparoscopic techniques, such as mobilization, intracorporeal division, dissection of major vessels, and anastomosis.
- **a steep learning curve**, but when it has been conquered, the benefits of laparoscopic surgery with respect to decreased morbidity, decreased pain, faster recovery, shorter hospital stay and possibly reduced immunosuppression, comparing with open surgery .

Initial concerns on the radicality of the resection and the oncologic outcomes as well as the early reports on the high incidence of wound recurrence limited the wide application of laparoscopic colectomy for malignancy .

Barcelona, COST, CLASICC and COLOR studies showed that, in experienced hands, laparoscopy has a beneficial effect on post-operative recovery, when compared to open surgery, without compromising the oncological results in the long run .

Aim of the work

The aim of this work was to evaluate laparoscopic resection for left sided colon and rectal cancer as regard feasibility, safety and short term outcomes.

Patients and Methods

Tanta University Hospitals and Ain Shams University Hospitals .

40 patients having left sided colon and rectal cancer.

29 patients with rectal cancer and 11 patients with left sided colon cancer.

Inclusion criteria:

- Patients with resectable left sided colon or rectal cancer.

Exclusion criteria:

- Irresectable or metastatic left sided colon or rectal cancer. .
- emergency presentation (obstruction or perforation).
- prior major abdominal surgery causing dense scar tissue.
- Coagulation disorders, hepatic dysfunction (Child-Pugh class C).
- High risk patients for general anesthesia (ASA IV).

Methodology

- Informed written consent
- **History** **Clinical examination**
  Investigations

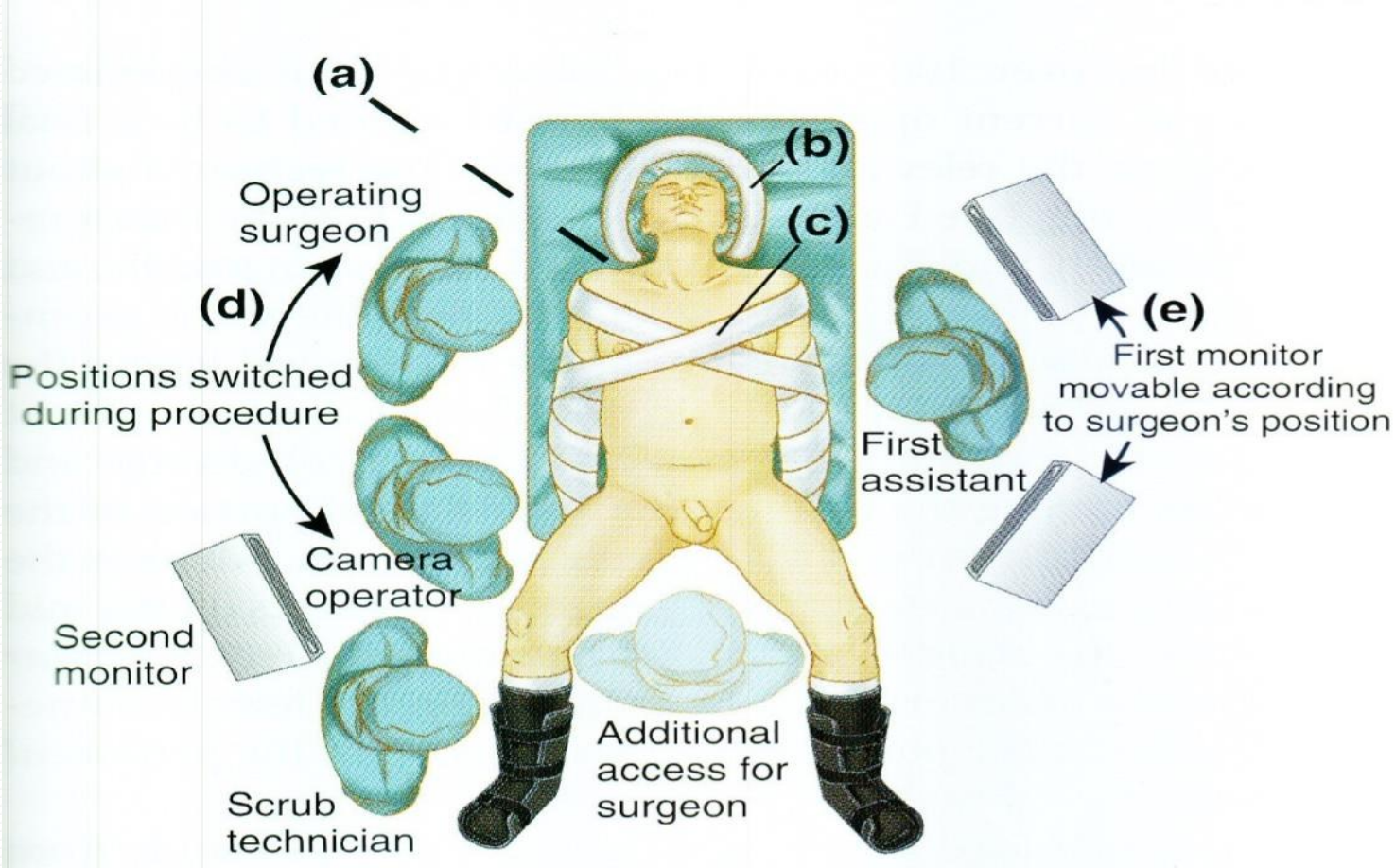
- **Laboratory:** Routine pre-operative lab.
  Tumor markers. Carcinoembryonic antigen (CEA).
- **Radiological**

1) ultrasound to detect any hepatic focal lesions or ascites.
2) CT abdomen and pelvis for regional tumor extension, lymphatic and distant metastasis and tumor related complications as perforation or fistula formation.
3) MRI for middle and lower rectal carcinoma for determining the depth of invasion, mesorectum and perirectal lymph node.
4) Barium enema helps in diagnosis, localization and exclusion of other colonic lesions.
5) Plain CXR and CT chest to exclude pulmonary metastasis.

- **Endoscopic examination**

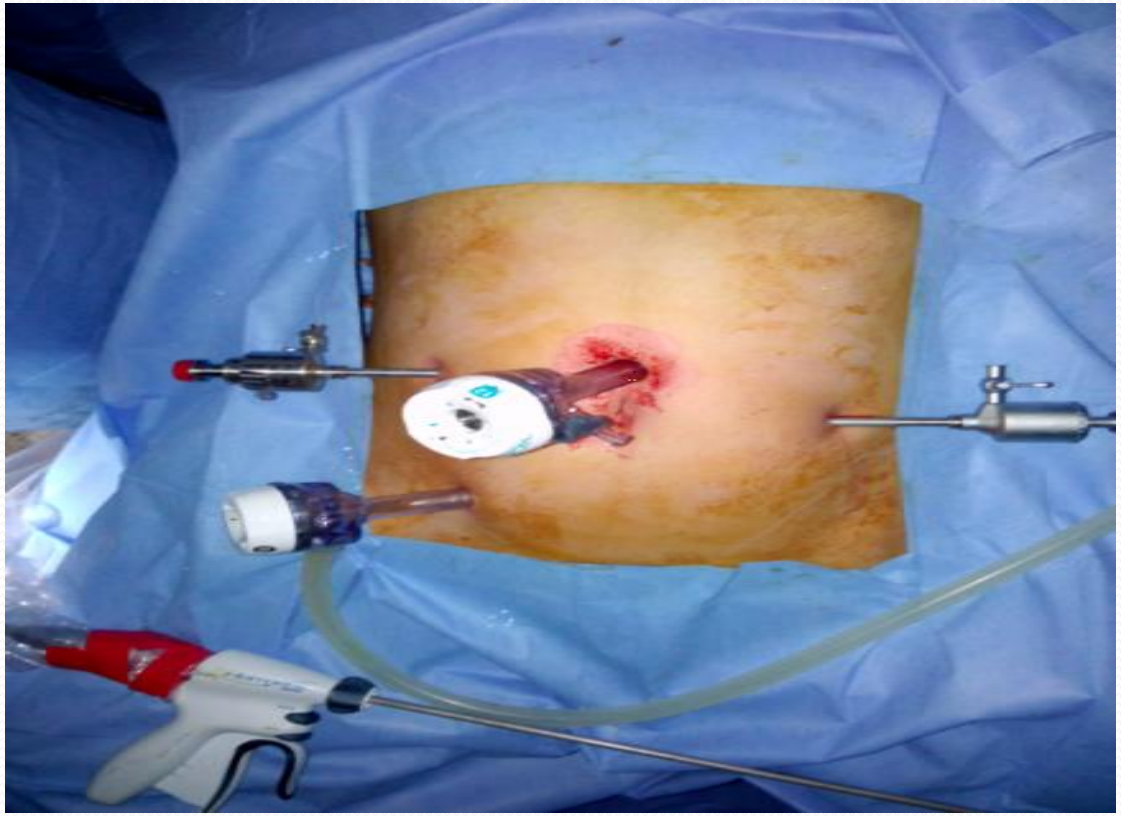
Colonoscopy and biopsy: complete colonoscopy was done in all patients.

Operative technique

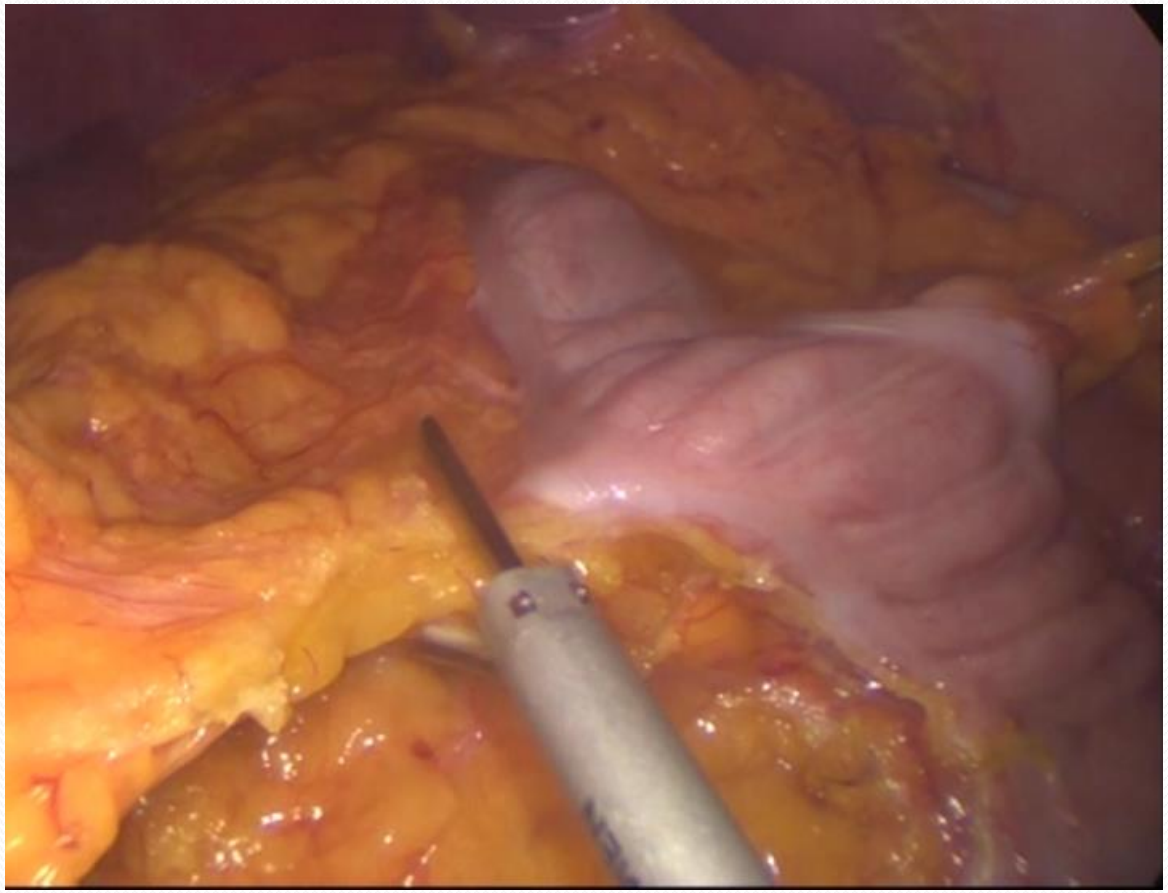


Positions of the equipment and the surgical team for the laparoscopic left side colectomy.

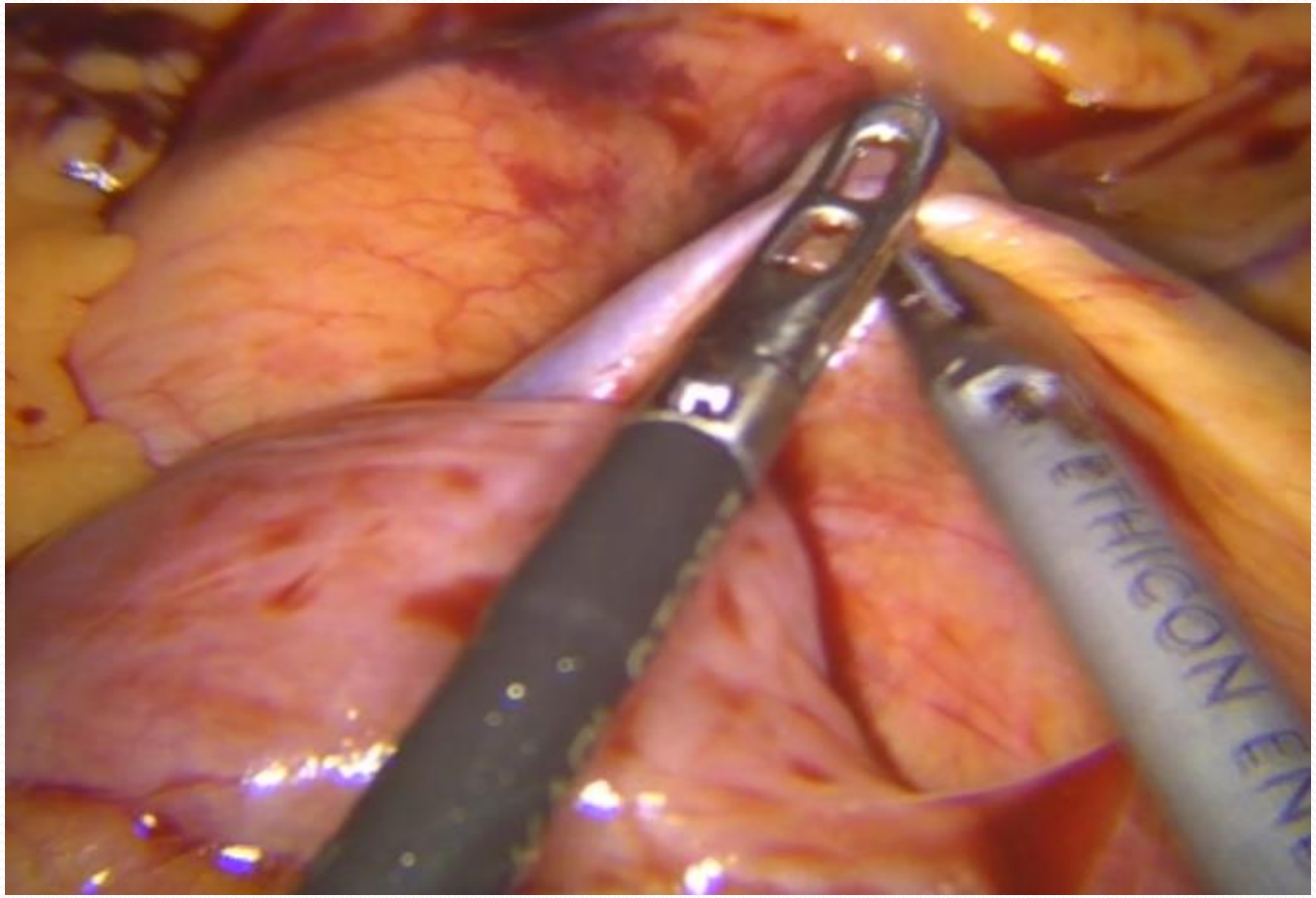
- **Peritoneal Access**
- **Position of the ports**



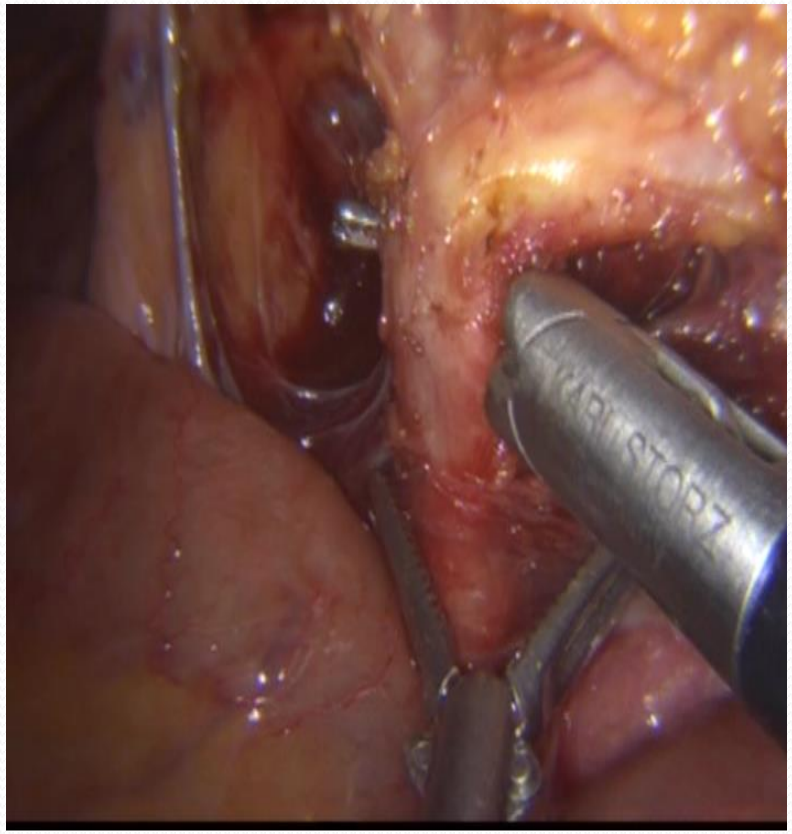
➢Division of gastrocolic omentum and opening of lesser sac

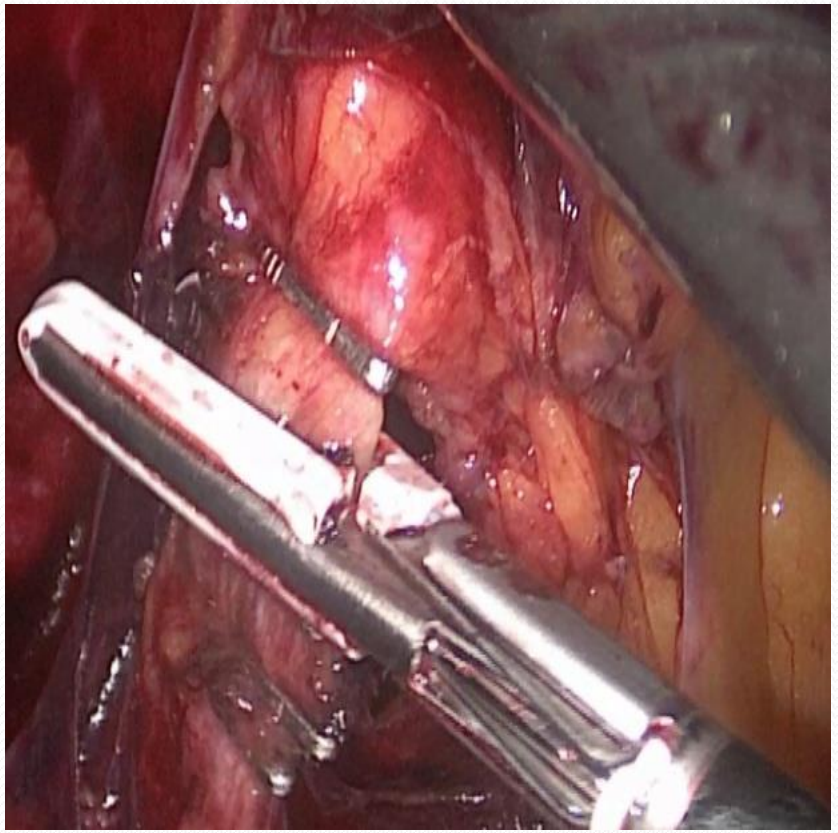


➢**Identification of IMV lateral to the fourth part of the duodenum then dissection (medial to lateral approach)**

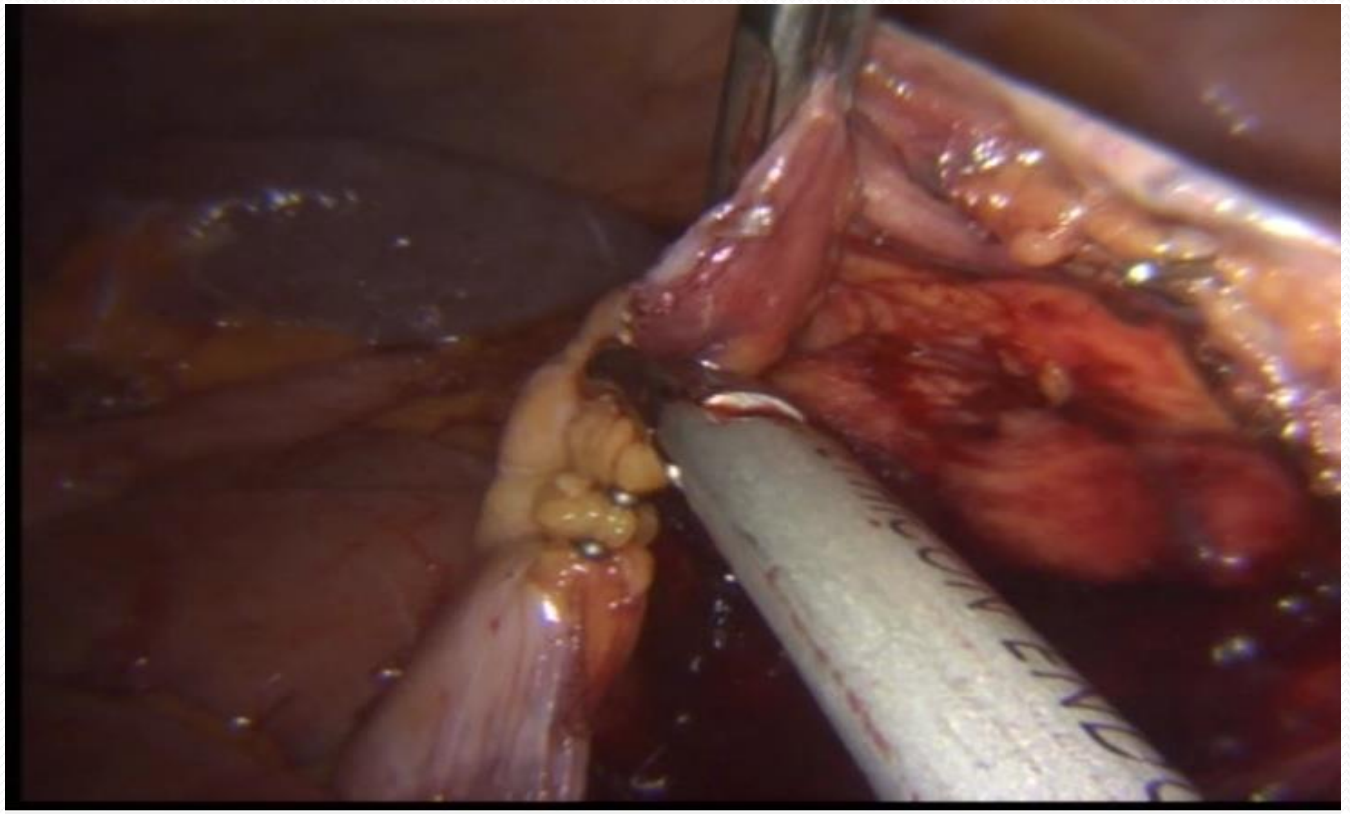


➢Division of inferior mesenteric artery (IMA)

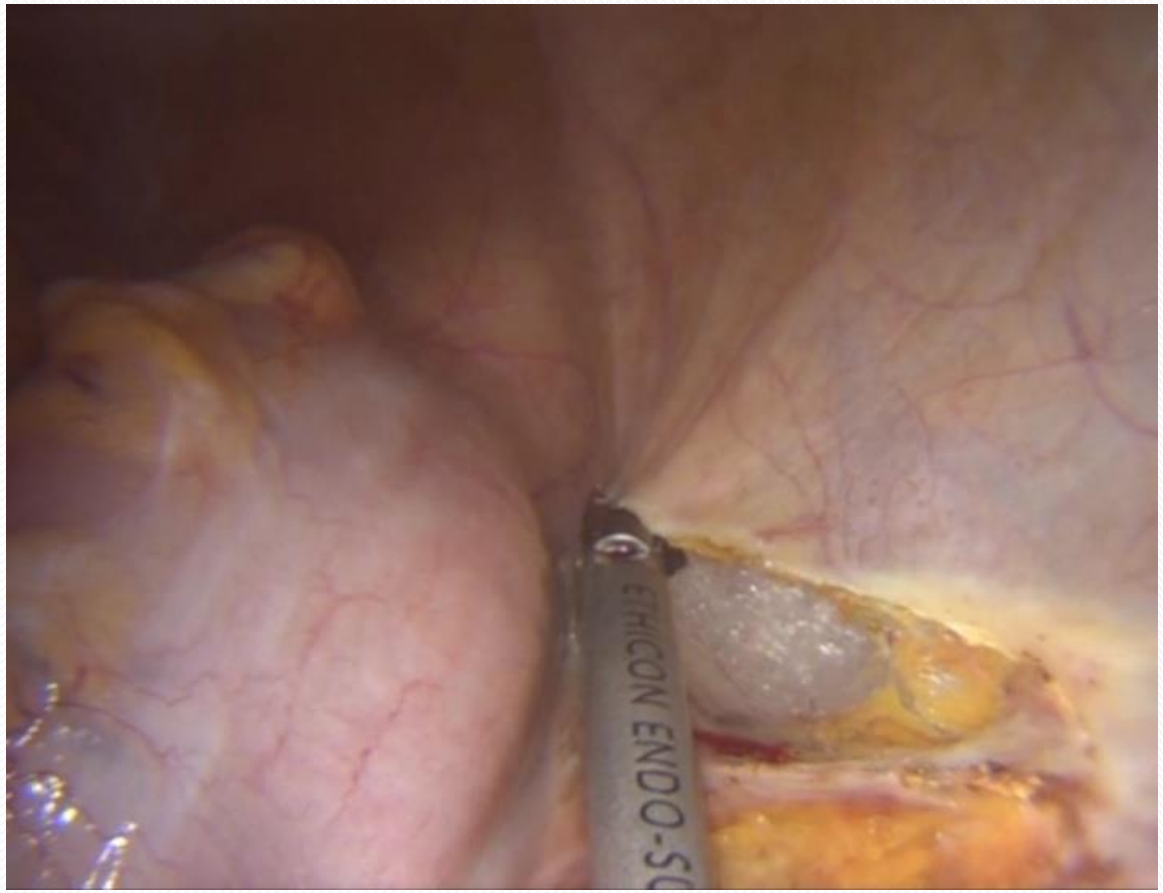




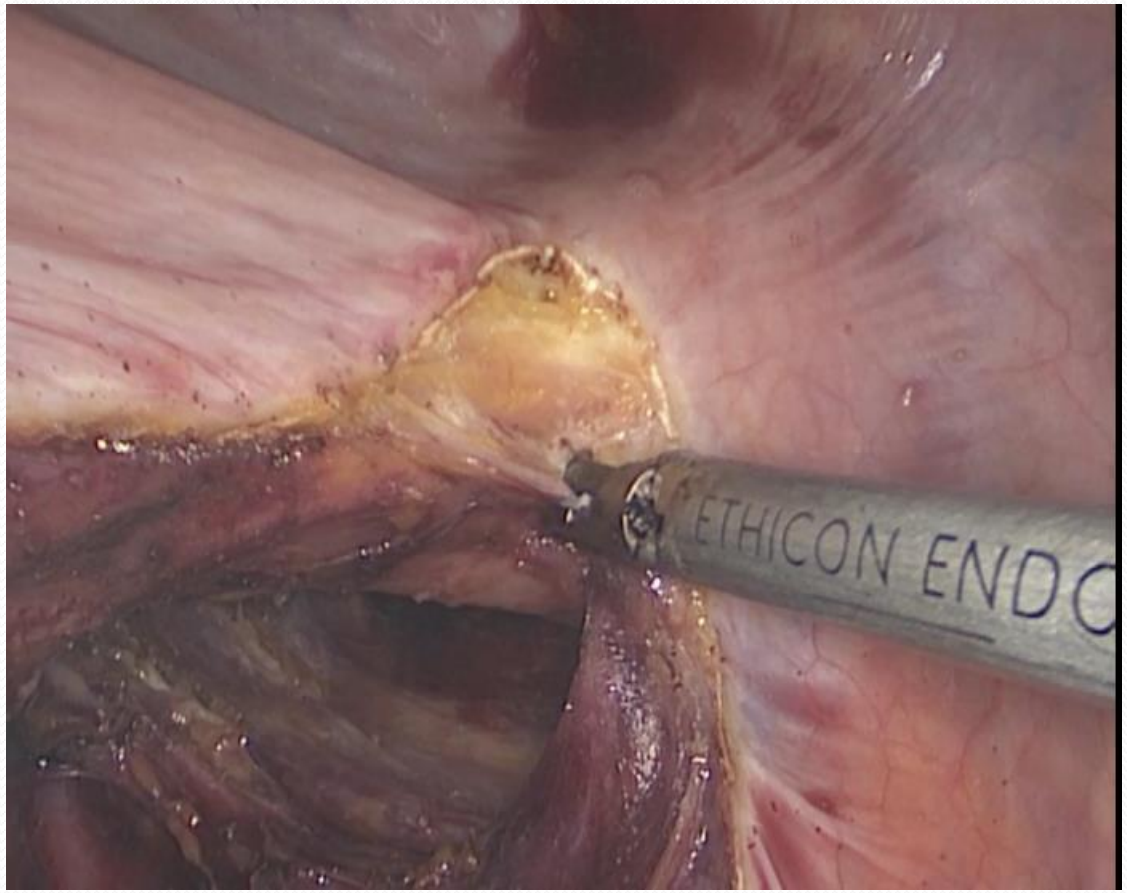
- Mobilization of the Sigmoid and Descending Colon
- Medial Mobilization of splenic flexure
- Division of inferior mesenteric vein after proximal clipping



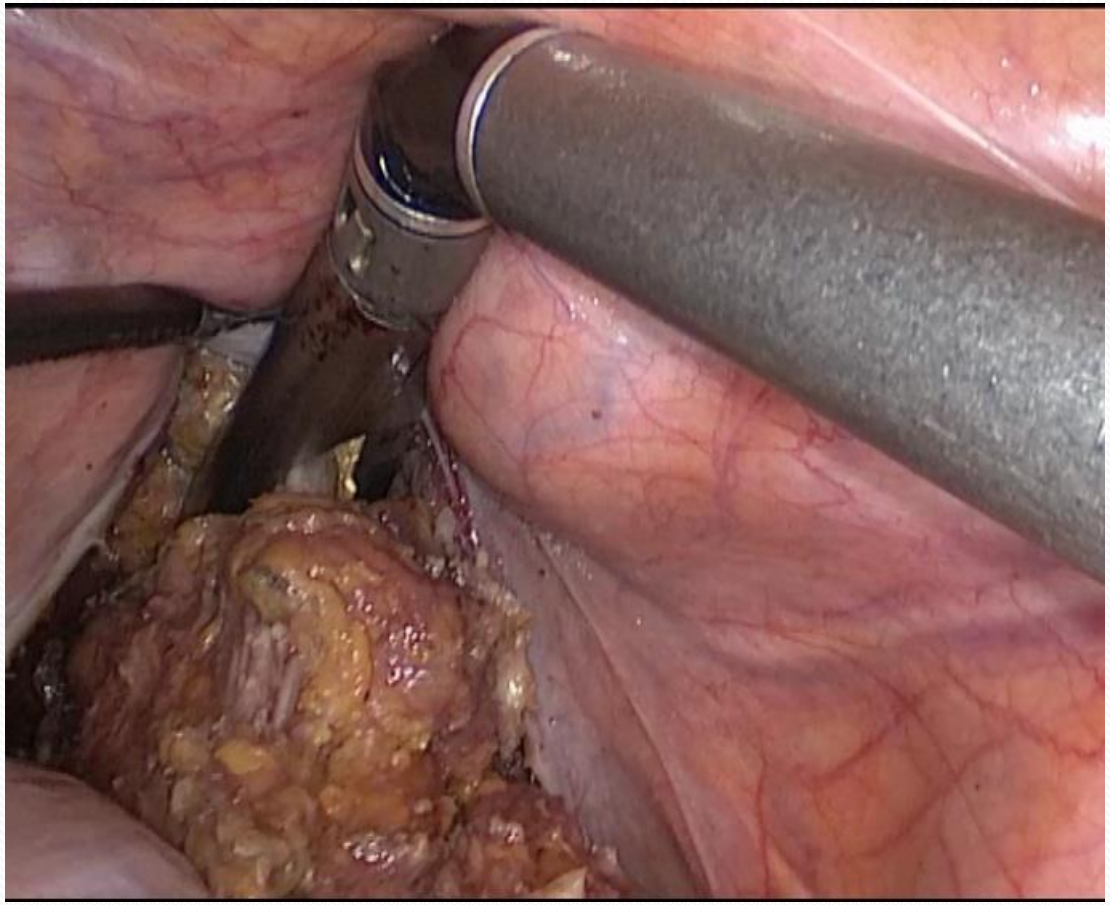
➢Lateral mobilization of the colon



➢Dissection of the Rectum (posterior-Rt lateral-lt lateral- Anterior)



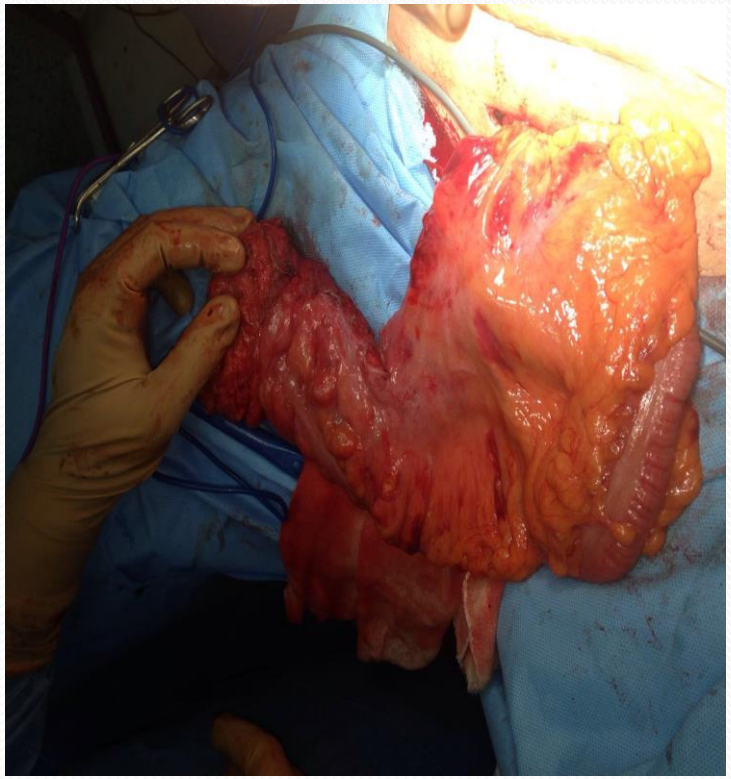
➢Distal bowel division



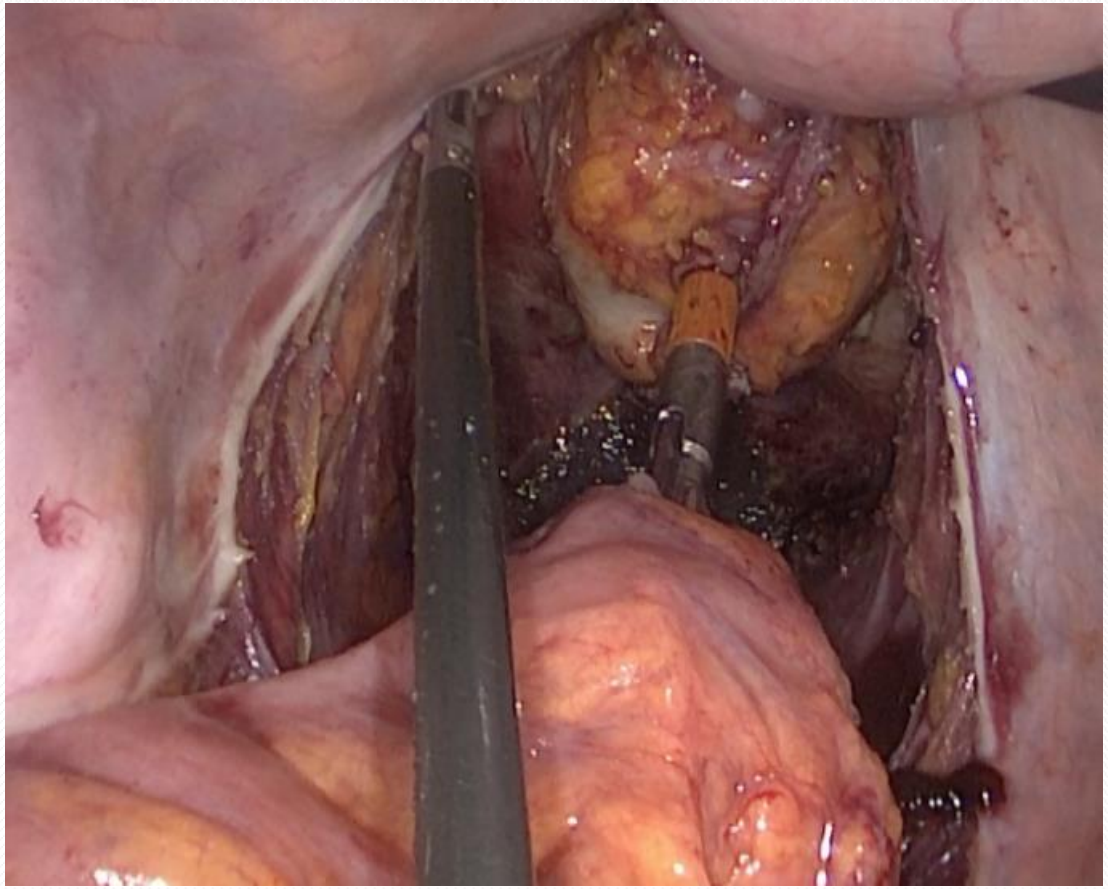
Division of distal rectum using articulated endo GIA

Proximal Division

- extracted through a small pfannestiel incision. The proximal resection is performed on the anterior abdominal wall using conventional techniques.



➢**The anastomosis is then done under laparoscopic guidance, a standard double-stapled anastomosis.**



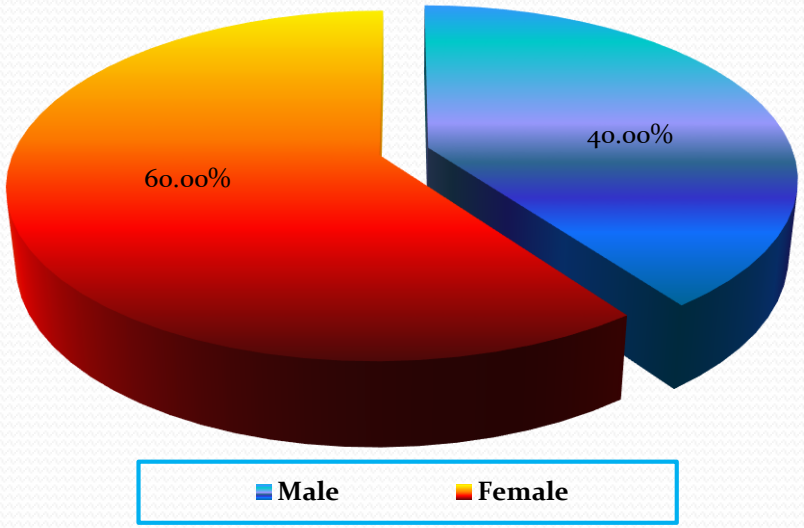
Assessment

- Short term outcomes
  - Operative time
  - Amount of blood loss.
  - Time of first bowel motion, time of first passing flatus.
  - Postoperative analgesia requirements.
  - Duration of hospital stay.
  - Operative mortality:
  - Operative morbidity
  - Pathological outcome: radial and distal resection margins and number of lymph nodes harvested.
- Conversion
- Recurrence (local and systemic).

Results

- **Patients' characteristics**

➢ **gender**



➢ **Age**

ranged from 25 to 71 years with the mean age 51.22±11.96 years.

➢ **BMI**

ranged from 22-35 kg/m2, with a mean of 28.02 ± 3.39 kg/m2.

Anatomical distribution of the tumors

Site of the tumor	The studied patients with left sided colon or rectal cancer (n=40)	
	n	%
Colon:	**11**	**27.5**
-Descending colon	**3**	7.5
-Sigmoid colon	**8**	20.0
Rectum:	**29**	**72.5**
-Upper rectum	**8**	20.0
-Mid-rectum	**8**	20.0
-Lower rectum	**13**	32.5

Operative time and Intraoperative blood loss

Variables	The studied patients with left sided colon or rectal cancer (n=40)		
	Colon	Rectum	Total (n=40)
Operative time in minutes: **Range** **Mean±SD** **P value**	140-220 159.54±23.92 0.001*	165-300 206.03±33.09	140-300 193.25±37.08
Operative blood loss (cc):			
Range **Mean±SD**	25-250 73.64±63.90	30-200 91.90±46.80	25-250 86.87±51.8

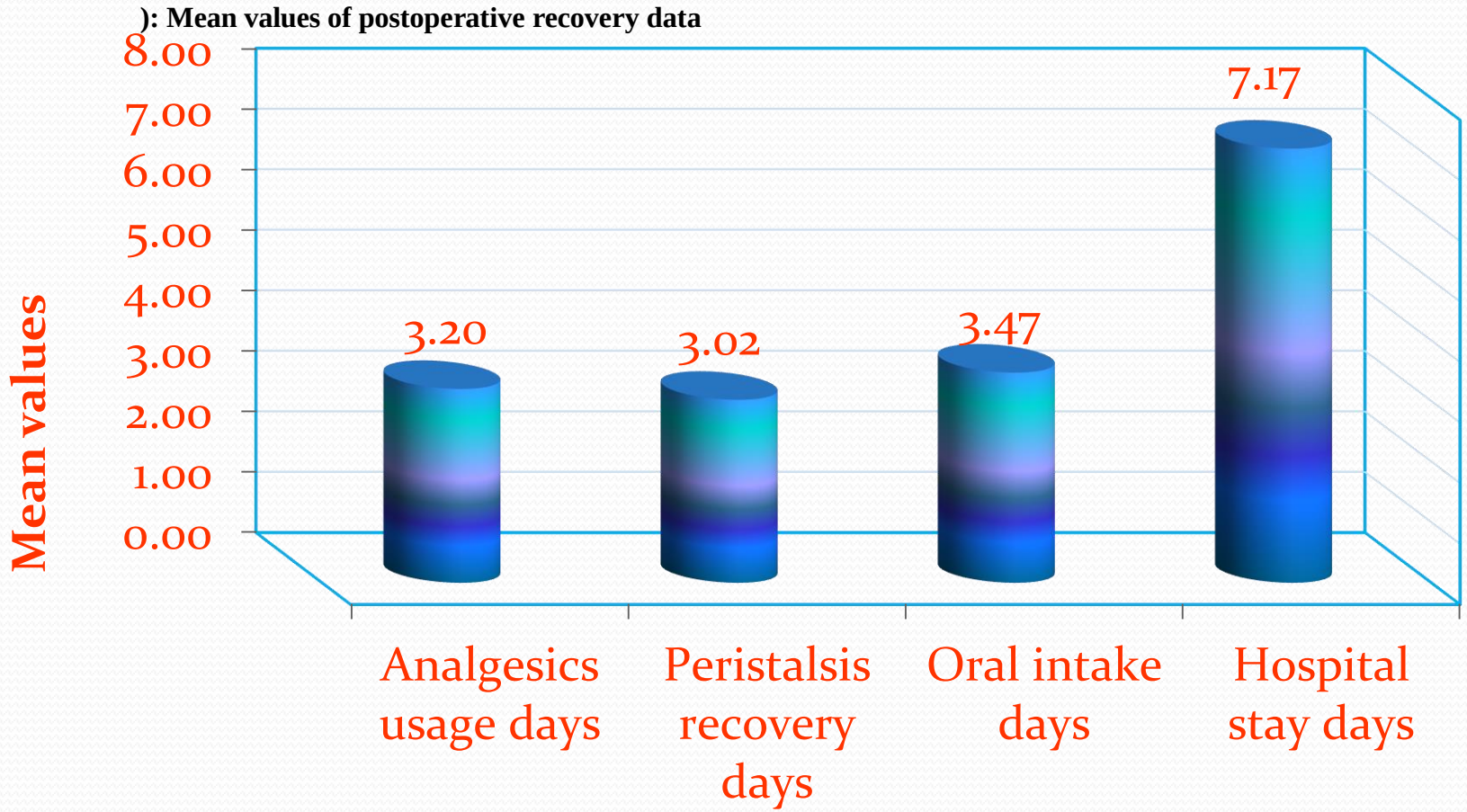
Intraoperative Complications

Intraoperative complications	The studied patients with left sided colon or rectal cancer (n=40)	
	n	%
Intraoperative complications:		
No	**33**	**82.5**
Yes:	**7**	**17.5**
-Bleeding	**3**	7.5
-Injury of colonic wall close to tumor site	**1**	2.5
-Injury of gonadal vessel	**2**	5.0
-Ureteric injury	**1**	2.5

Postoperative complications

Postoperative complications	The studied patients with left sided colon or rectal cancer	
No	30 75	
Yes:	10 25	
-Wound Infection	4	10.0
-Abdominal hemorrhage	1	2.5
-Partial Intestinal obstruction	1	2.5
-Ileus	1	2.5
-Anastomotic leakage, BPR abdominal hemorrhage	1	2.5
-Pulmonary embolism	1	2.5
-ureteric fistula	1	2.5

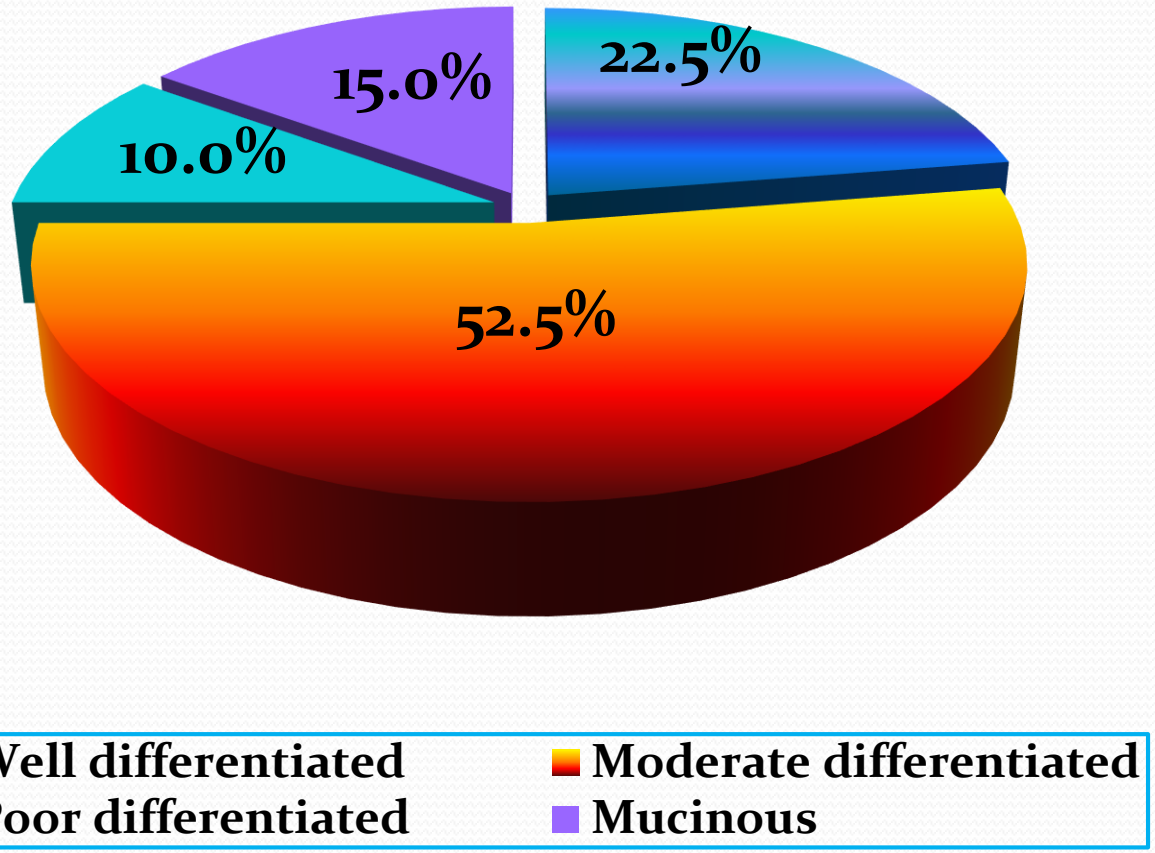
The post operative recovery data



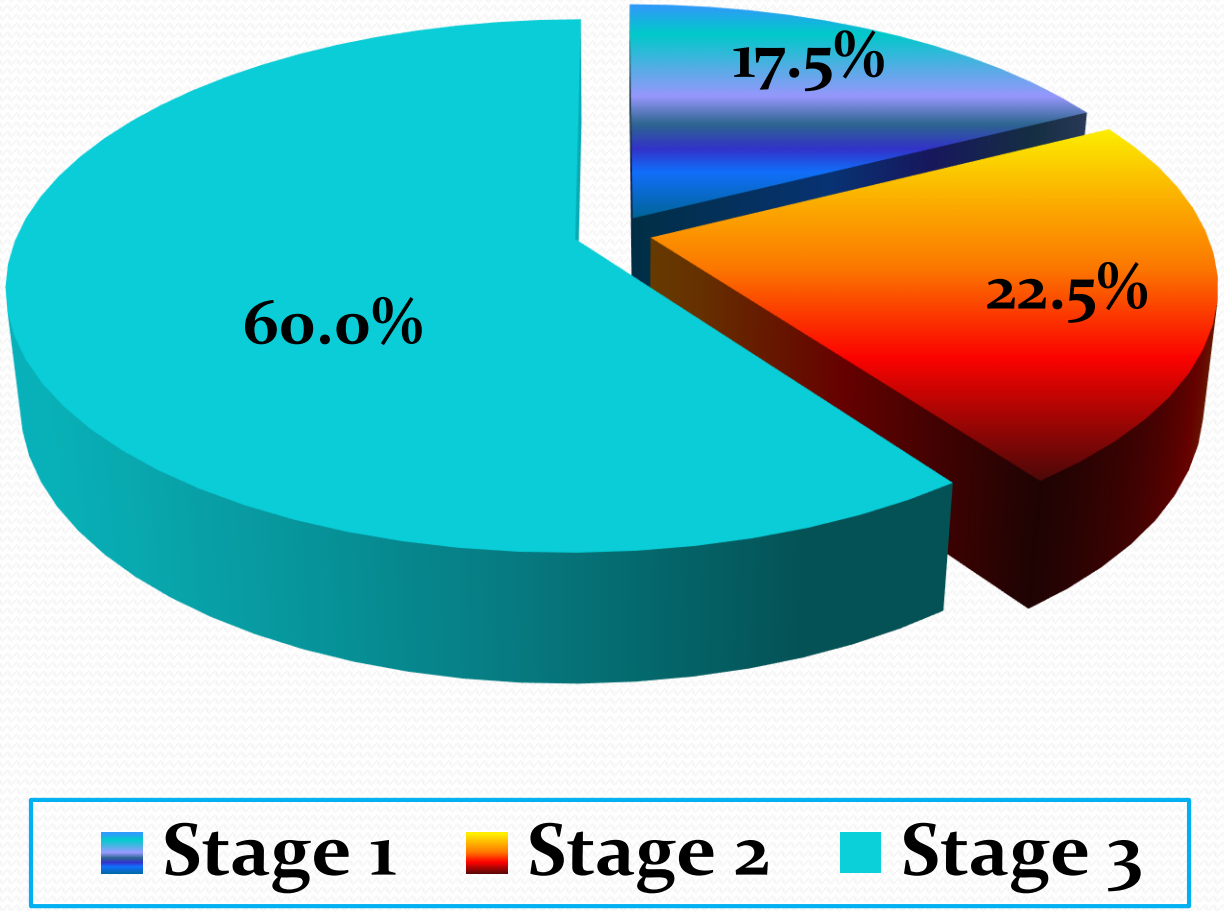
Pathological evaluation

Variables	The studied patients with left sided colon or rectal cancer (n=40)
•Tumor size (cm):	
Range Mean±SD	1-7 3.57±1.41
•Margins (cm):	
colon:	
-proximal	
Range Mean±SD	7-15 10.54±2.84
-distal	
Range Mean±SD	6.5-10.7 8.32±2.3
Rectum:	
-proximal	
Range Mean±SD	6.5-14 9.32±3.23
-distal	
Range Mean±SD	0.50-6 3.22±1.64
-Circumferential	3.45 %

Histological differentiation of the tumors



Tumor distribution according to AJCC staging system

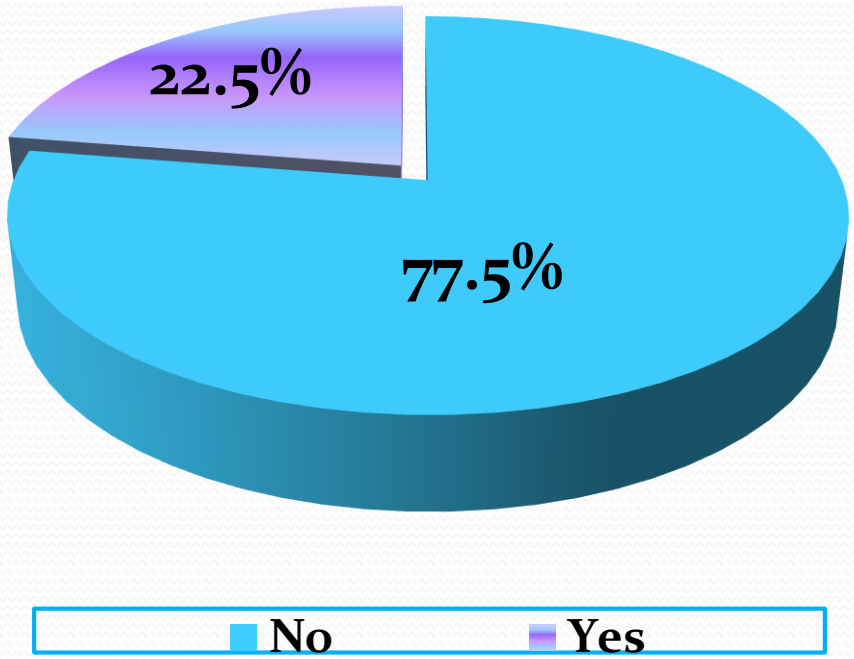


Number of lymph nodes retrieved and lymph node metastasis

Variables	The studied patients with left sided colon or rectal cancer
•Number of removed lymph nodes:	
Range Mean±SD	2-27 11.25±4.91
•Number of cases with lymph nodes metastasis:	
No	16
Yes	24

Conversion

- There was (22.5%) rate of conversion (9 out of 40).

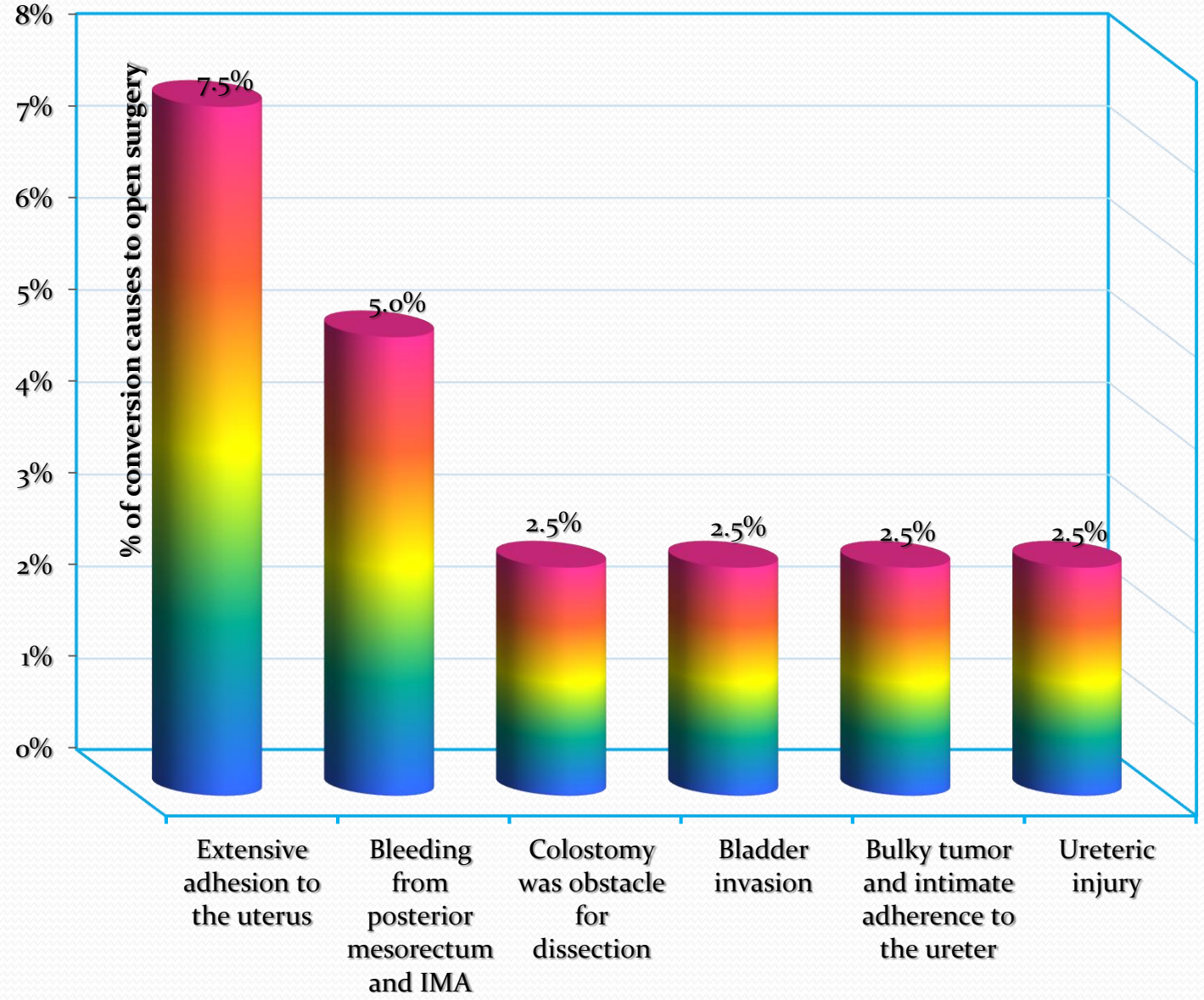


Occurrence of conversion to open surgery among the studied patients

conversion

- 9 cases, all of them were females.
- The BMI in converted patients ranged from 22-35kg/m2 with mean **30.22±3.99** kg/m2, while in non converted patients BMI ranged from 23-35 with mean **27.39±2.97** kg/m2.
- There were significant difference in the body mass index between the converted cases and the non converted cases (0.025*).

Anatomical site	Number of conversion
Descending colon	1 out of 3
Sigmoid colon	2 out of 8
Upper rectum	1 out of 8
Middle rectum	2 out of 8
Lower rectum	3 out of 13


8%
7%
6%
5%
4%
3%
2%
1%
0%
% of conversion causes to open surgery
7.5%
5.0%
2.5%
2.5%
2.5%
2.5%
Extensive adhesion to the uterus
Bleeding from posterior mesorectum and IMA
Colostomy was obstacle for dissection
Bladder invasion
Bulky tumor and intimate adherence to the ureter
Ureteric injury

- The mean operative time was longer in converted cases with significant difference .
- The mean hospital stay and the mean duration of analgesia were longer in the converted cases than non converted cases with significant difference;
- The first time of bowel motion and first time of oral intake were longer in the converted group than the non converted patients with significant difference.

- As regard to recurrence there was no recurrence during the period of the follow up neither local nor systemic. The case of involved circumferential resection margin received adjuvant treatment chemotherapy and closely observed with no evidence of recurrence till the end of follow up.

Conclusion

The results of this study showed that laparoscopic resection for left sided colon and rectal cancer is :

- technically feasible,
- oncologically safe and
- benefits of the short term outcomes of laparoscopy
  - like less analgesia.
  - early return of bowel functions.
  - early resumption of oral intake.
  - short hospital stay.
  - Less blood loss

Thank you