



ORIGINAL RESEARCH PAPER

Surgery

LAPAROSCOPIC VERSUS ROBOTIC RESECTION WITHOUT SPLENIC FLEXURE MOBILIZATION FOR RECTAL CANCER: A SINGLE-INSTITUTION EVALUATION OF OUTCOMES.

KEY WORDS:

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ABSTRACT

Background Splenic flexure mobilization has been considered the standard of practice in cases of low anterior resection; however, it has been observed in southern Indian state population, splenic flexure mobilization is may not be necessary for all patients of Dravidian ethnicity. **Methods** We evaluated the 26 patients who underwent Laparoscopic Reconstituting Subtotal cholecystectomy during July 2019 to Jan 2022. Preoperative parameters (Age, Gender, diagnosis, location of tumor and Neoadjuvant therapy) and postoperative parameters (Duration of surgery, Hospital Stay, complications, recurrence of malignancy) were compared. Aim of the study was to evaluate the outcome of Low anterior rection without splenic flexure mobilization. **Results** There was no statistically significant difference in terms of intraoperative, postoperative complications and oncological outcome when splenic flexure mobilization not done. The operative time was similar in the both groups (P>0.05). The Postop complication rate was lower after robotic than after laparoscopic (9% vs. 25.5%, P=0.07). Post operative complications observed in 6 patients (23%) including wound infection, wound dehiscence, anastomotic leak and anastomotic stricture. 5 post op complications were seen in laparoscopic cases; however, this was not statistically significant. On a median 24 month follow-up, the local recurrence rates did not differ significantly between the 2 groups (5 for LAP vs. 1 for Robotic). **Conclusion** Resection of rectal cancers by minimally invasive approach (Lap and Robotic) without the routine use of SFM do not increase postoperative morbidity or oncologic risk in our subset of patients all of whom belong to the same Dravidian ethnicity. Compared to robotic surgery, patients with laparoscopic surgery had more postoperative complications though the oncologic clearance was comparatively similar. Hence, we suggest that Splenic flexure mobilization need not be done for patients of Dravidian ethnicity as they possess small to medium stature, genetically. This needs to be validated by larger randomized studies.

INTRODUCTION

Low anterior Resection and Ultra-low anterior resection has become a routine surgery for colorectal surgeons, However Splenic flexure mobilization (SFM) is still debatable when it comes to colorectal cancer surgery. Some prefer to perform SFM routinely all cases while some prefer to do it selectively. Proponents of SFM propose that in order to guarantee a tension-free anastomosis and a secure on cological resection, SFM should be the routine practice., While Some surgeons suggest that risk of serious morbidity or mortality related to splenic injury is high, even when skilled surgeons perform SFM. So SFM should be performed selectively.

However, no conclusive clinical practices have been advanced thus far in terms of the routine mobilization of splenic flexure with regard to the oncologic out come sand anastomotic complications. Several investigators have previously reported that the efficacy of partial or selective mobilization of splenic flexure via laparoscopy for the treatment of rectal or sigmoid colon cancer was onto logically comparable with the results of conventional OS.

We have hypothesized that SFM may not be necessary for all patients of Dravidian ethnicity because of the fact that they are genetically short to medium statured.

PATIENTS AND METHODS

This is a retrospective study of collected data from 81 patients who underwent cholecystectomy in Government Royapettah Hospital & Kauvery Hospital from July 2019 to Jan 2022

Aim Of The Study

- To evaluate the outcome of Low anterior rection without splenic flexure mobilization.
- To evaluate the necessity of IMV ligation in Low anterior resection

Inclusion Criteria:

- All patients undergone Laparoscopic/ Robotic Low anterior resection or Ultra-low anterior rection

Exclusion Criteria:

- ECOG PS > 2
- Not fit for general Anesthesia

Patient demographic details were noted and outcome parameters were noted and tabulated.

Preoperative Parameters:

1. Age
2. Gender
3. Diagnosis
4. Neoadjuvant therapy
5. Location of tumor

Intra Operative Parameters

1. Duration of surgery
2. Intraoperative complications
3. Oncologic clearance

Postoperative Parameters

1. Hospital Stay
2. Postoperative Complications
3. Recurrence of malignancy

Standardization:Technique of surgery

Standard approach used for both laparoscopic and Robotic approach with standard Total mesorectal excision maintaining the correct plane. High ligation of Inferior mesenteric artery done in both the approach. Rectum divided using Endo-GIA staplers and specimen delivered from lower Pfannenstiel incision. Colorectal/coloanal anastomosis done using Circular stapler-31. We routinely place drain in the pelvic cavity which was removed on Post operative day 2.

Statistical Analysis

Data were collected from all patients and tabulated. Confidence interval of 95 % and p value of 0.05 or less was considered for statistical significance. Categorical data were expressed as numbers and percentages. Categorical data were analyzed by Chi square test. Pearson correlation test used to check two continuous normally distributed variables exhibiting linear correlation. Descriptive statistics for continuous data included median, mean, range, and standard deviation were used. ANOVA test and T test were used for comparing continuous variable.

RESULTS

We have included 26 cases in the study who underwent Low-anterior resection or Ultra-low anterior resection who had consented to take part in study. 24 patients had CA rectum, 1 had CA rectosigmoid and one case was of rectal prolapse. 6 patients had received preop neoadjuvant therapy. Nine patients had upper 1/3rd, 8 had lower 1/3rd and 8 patients had middle 1/3rd tumor. 22 patients underwent Low anterior resection and 4 patients underwent Ultra Low anterior resection.

Mean age of patients underwent IMV ligation was 60 yrs while others have mean age of 54.48 yrs.

Table 1:IMV ligation and Age comparison

	IMV ligation	N	Mean	Std. Deviation	Std. Error Mean
AGE	No	18	54.89	12.043	2.839
	Yes	3	60.00	10.440	6.028
P= 0.598					

Mean age of patients underwent splenic flexure mobilization was 66 yrs while others have mean age of 54.53 yrs. Only 2 patients underwent splenic flexure mobilization and both were females.

Table 2: Splenic flexure mobilization and Gender

		GENDER		Total
		F	M	
Splenic Flexure mobilization	N	4	20	24
	Y	2	0	2
Total		6	20	26
P= 0.007				

Table 3: Splenic flexure mobilisation and Gender

	Splenic Flexure mobilization	N	Mean	Std. Deviation	Std. Error Mean
AGE	No	24	54.21	10.766	2.198
	Yes	2	66.00	8.485	6.000
P= 0.492					

Intra-complication occurred only in one patient who had lower 1/3rd tumor underwent laparoscopic LAR and needed splenic flexure mobilization and had not received any neoadjuvant therapy. Otherwise no statistically significant correlation identified with age, gender, diagnosis, location of tumor, surgical approach (lap or robotic) and IMV ligation

Table 4: Surgical approach and Intraoperative complication

		INTRAOP complication		Total
		N	Y	
SURGERY	LAR	21	1	22
	ULTRA LAR	4	0	4
Total		25	1	26
P= 0.007				

Table 5: Splenic flexure mobilization and Intraoperative complications

		INTRAOP complication		Total
		N	Y	
Splenic Flexure mobilization	NO	24	0	24
	yes	1	1	2
Total		25	1	26
P<0.001				

Post operative complications observed in 6 patients (23%) including wound infection, wound dehiscence, anastomotic leak and anastomotic stricture. 5 post op complications were seen in laparoscopic cases; however, this was not statistically significant.

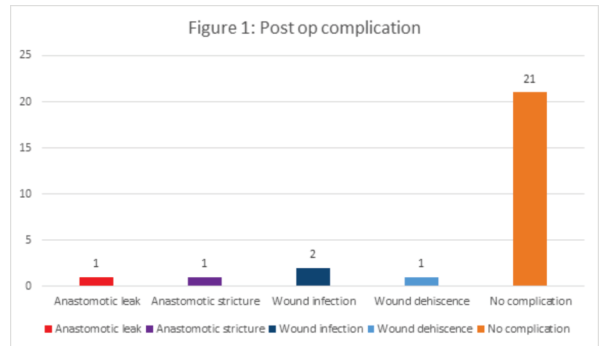


Table 6: Surgical approach and post-operative complication

		POSTOPCOM		Total
		1	2	
Surgical approach	LAP	12	5	17
	ROBOTIC	8	1	9
Total		20	6	26
P=0.070				

No significant correlation identified with IMV ligation, splenic flexure mobilization, neoadjuvant therapy, location of tumor, surgical approach, age and gender.

Table 7: IMV ligation and postoperative complication

		Post op complication		Total
		N	Y	
IMV ligation	No	18	5	23
	Yes	3	0	3
Total		21	5	26
P= 0.369				

Table 8: Splenic flexure mobilization and Postoperative complication

		Post op complication		Total
		N	Y	
Splenic Flexure mobilization	No	19	5	24
	yes	2	0	2
Total		21	5	26
P= 0.473				

DISCUSSION

Surgical therapy for rectal cancer has evolved since Ernest Miles first described the abdominoperineal resection (APR) in 1908. Total mesorectal excision (TME) has become the standard of care for cancers in the middle and lower third of the rectum and has led to a decrease in local recurrence rates, following sphincter-preserving procedures. TME requires precise, sharp dissection under direct vision in the plane of areolar tissue between the fascia propria of the rectum and

the parietal endopelvic fascia extending down to the levator muscles of the pelvic floor.,

Laparoscopic surgery has been employed for the management of colon cancer since the first laparoscopic colonic resection described by Jacobs et al in the year 1991. Several studies have indicated that Laparoscopic surgery can be conducted with acceptable morbidity and mortality for the treatment of rectal and sigmoid colon cancers. Laparoscopic Low anterior resection has become standard of practice; however, it has its own learning curve and outcomes are ontologically similar with low morbidity. Robotic approach is slowly gaining its popularity with studies showing results similar to other approaches along with advantage of better vision and ergonomic benefits.'

Routine mobilization of the splenic flexure is widely considered to be an essential part of anterior resection for rectal cancer to perform an adequate oncologic resection and achieve a safe, tension-free anastomosis. SFM is, however, a time-consuming exercise, which also has the additional risk of splenic injury and splenectomy. A mail-in survey of 35 experienced laparoscopic colorectal surgeons showed that SFM is one of the hardest procedures to perform. There is currently no consensus regarding the necessity of splenic flexure mobilization in cases of rectal and sigmoid colon cancer.

Therefore, different degrees of colon detachment may result from different techniques of SF mobilization. As a result, selective SF mobilization is currently adopted by many surgeons worldwide. Park et al compared 119 patients who underwent laparoscopic anterior resection without SFM against 145 patients with open operations. The complication rate was lower in the laparoscopic group than in the open surgery group (10% versus 25.5%), and there was only 1 case of anastomotic leak in the study group. Furthermore, local recurrence rates were similar, 0.8% in the laparoscopic group in comparison with 2.1% in the open group. Interestingly, less than 15% of all patients considered for laparoscopic surgery underwent SFM.

Katory et al. reported results in 707 consecutive patients under going high anterior resection – defined by anastomosis above the peritoneal reflection. High ligation was undertaken in all with flexure mobilization in only 25%. Comparison of the groups found no significant difference in anastomotic leakage, wound infection, mortality or disease-free survival.

In our Study it has been observed that routine splenic flexure mobilization is not necessary and with acceptable oncological outcome and morbidity. We have hypothesized that SFM may not be necessary for all patients of Dravidian ethnicity because of the fact that they are genetically short to medium statured. A description Sir Herbert Hope Risley described different body stature and habitus according to various race in India.

Minimally invasive surgery is safe approach and robotic approach is gaining the pace as more surgeons adapting to the technique. In present study outcome of Robotic approach was oncologically similar to laparoscopic approach with perceived benefit of low post-operative complication which need to be evaluated further with larger sample size.

CONCLUSION

Resection of rectal cancers by minimally invasive approach (Lap and Robotic) without the routine use of SFM do not increase postoperative morbidity or oncologic risk in our subset of patients all of whom belong to the same Dravidian ethnicity. Compared to robotic surgery, patients with laparoscopic surgery had more postoperative complications though the oncologic clearance was comparatively similar. Hence, we suggest that Splenic flexure mobilization need not

be done for patients of Dravidian ethnicity as they possess small to medium stature, genetically. This needs to be validated by larger randomized studies.

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