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Role of Diagnostic Laparoscopy in the Management of Gastro Oesophageal, Pancreatic and Colorectal Cancers

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Abstract:
Background: *Most of the abdominal malignancies on explorationwere found to be unresectable or inoperable.Despite advances in radiology, pre- operative imaging studies are far less accuratein staging.Staging of the malignancy is very important that each patient receives necessary treatment with less morbidity. This study evaluates peritoneal and liver tumour deposits, which were not detected on pre - operative imaging.*
Materials and methods: *The study was done in 70 patients.Patients with gastro-oesophageal, pancreatic and colorectal malignancies which were found to be operable on pre-operative imaging studies were included. Patients with distant metastasison pre-operative imaging evaluation were excluded.A thorough examination of peritoneal cavity was made and if requiredbiopsy was taken.*
Results: *Out of 70 cases, 54 were operable and 16 were inoperable on diagnostic laparoscopy due to liver and peritoneal metastasis. 54 cases underwent definitive procedures.In 16 inoperable cases, 5 cases underwent palliative proceduresto relieve obstruction.In 11 cases, only biopsies were done for tissue diagnosis without unnecessary laparotomies.*
Conclusion: *Diagnostic laparoscopywas very accurate in detecting peritoneal and hepatic deposits which were not detected on imaging modalities.The procedureis found to be safe and effective.Staging Laparoscopy gives more details about extent of thedisease which changed the course of management in significantnumber of patients.*
Key words: *Diagnostic laparoscopy, staging of gastro intestinal cancers, operability.*

I. Introduction:

Gastrointestinal tumours are one of the most common malignancies causing significant morbidity and mortality. Staging of the malignancy is very important that each patient receives necessary treatment with less morbidity. Treatment approach can be curative resection, palliative procedures resection or bypass, neo adjuvant chemotherapy in advanced cases[1,2,3].

Despite advances in radiology, pre-operative imaging studies are far less accurate in staging. Most of the abdominal malignancies on exploration were found to be un-resectable or inoperable. Laparoscopy has been being increasingly used for staging of intra-abdominal malignancies. This technique may reveal generalised peritoneal metastases or surface tumour deposits in the liver, which were not detected on preoperative imaging studies [1- 6].

Diagnostic laparoscopy reduces morbidity and mortality and can change the course of management to a morepalliative approach or initiation of other modalities of management and helps in avoidingunnecessary laparotomies.

II. Materials & Methods:

An observational, prospective and longitudinal study with cases from October 2012 to 2014 was included in the study. A sample size of 70 patients were studied.The cases were taken from patients admitted in hospitals attached with Kasturba Medical College, Mangalore

Patients with gastro-oesophageal, pancreatic and colorectal malignancies which were found to be operable on pre-operative imaging studies were included in the study.

Pre-operative imaging evaluation.showing distant metastasis &those patients who presented with features of obstruction due to abdominal malignancy were excluded from the study.

III. Diagnostic Laparoscopy Procedure:

All four quadrants of the peritoneal cavity were examinedto look for metastatic disease. Ascitic fluid for cytologicexamination was taken before manipulation of the primary or metastatictumour. The primary tumour was then assessed for any evidence of local extension to adjacent organs. Liver and the mesocolon were inspected for any suspicious nodules .For patients with pancreatic malignancies, the lesser sac was assessed.To facilitate this, liver is elevated and gastro hepatic omentum to be incised.A thorough examination of peritoneal

cavity was made and if requiredbiopsies were taken. Subsequently staging was done, if feasible atherapeutic procedure was performed by open/ laparoscopic assisted procedure.

IV. Results:

During 2 years of study period from October 2012 to October 2014, total of 70 new cases of gastro intestinal malignancies underwent

Stomach malignancies constituted 45 cases(64.3),colon malignancies 17cases(24.3) followed by pancreatic malignancies 8 cases(11.4).

On staging laparoscopy 14 cases (20%), had liver metastases. Out of 14 cases, 9 cases were from stomach malignancy and 3 from colon & 2 from pancreatic malignancy. Rest 56 cases had no hepatic metastases on staging laparoscopy.

16 cases (22.9%) had peritoneal metastases found on staging laparoscopy. Out of 16 cases, 11 cases were from stomach malignancy and 3 from colon & 2 from pancreatic malignancy. Rest 54 cases had no peritoneal metastases on staging laparoscopy.

In 16 cases (22.9%), ascites was found on staging laparoscopy. Out of 16 cases, 11 cases were from stomach malignancy and 3 from colon & 2 from pancreatic malignancy. Rest 54 cases, no ascites on staging laparoscopy.

Out of 70, 54 were operable and 16 cases were inoperable on diagnostic laparoscopy.

In 45 cases of stomach malignancies, 34 cases found to be operable. There were 11 inoperable cases, out of which 4 cases were in Body, 2 in pyloric antrum, 3 cases in proximal stomach, 2 diffusely located.

Out of total 17 cases of colon malignancies, 14 cases found to be operable. 3 cases were inoperable, 2 cases in ascending colon, one case in hepatic flexure.

Out of 8 cases of pancreatic (head) malignancies, 6 were operable, 2 were inoperable.

In 70 cases, 54 underwent definitive surgeries.

Definitive surgery	Frequency	Percent
no	16	22.9
yes	54	77.1
Total	70	100.0

		Definitive surgery		
		no	yes	Total
GIT cancer	colon	3	14	17
		17.6%	82.4%	100.0%
		18.8%	25.9%	24.3%
	pancreas	2	6	8
		25.0%	75.0%	100.0%
		12.5%	11.1%	11.4%
	stomach	11	34	45
		24.4%	75.6%	100.0%
		68.8%	63.0%	64.3%
Total		16	54	70
		22.9%	77.1%	100.0%
		100.0%	100.0%	100.0%

		Definitive surgery		
		no	yes	Total
location	ascending colon	2	5	7
		28.6%	71.4%	100.0%
		12.5%	9.3%	10.0%
	body	4	10	14
		28.6%	71.4%	100.0%
		25.0%	18.5%	20.0%
	descending colon	0	1	1
		.0%	100.0%	100.0%
		.0%	1.9%	1.4%
	diffuse	2	0	2
		100.0%	.0%	100.0%
		12.5%	.0%	2.9%
	head	2	6	8
		25.0%	75.0%	100.0%
		12.5%	11.1%	11.4%
	hepatic flexure	1	2	3
		33.3%	66.7%	100.0%
		6.3%	3.7%	4.3%
	proximal	3	7	10
		30.0%	70.0%	100.0%
		18.8%	13.0%	14.3%
	pyloric antrum	2	17	19
		10.5%	89.5%	100.0%
		12.5%	31.5%	27.1%
	sigmoid colon	0	3	3
		.0%	100.0%	100.0%
		.0%	5.6%	4.3%
	splenic flexure	0	1	1
		.0%	100.0%	100.0%
		.0%	1.9%	1.4%
	transverse colon	0	2	2
		.0%	100.0%	100.0%
		.0%	3.7%	2.9%
Total		16	54	70
		22.9%	77.1%	100.0%
		100.0%	100.0%	100.0%

In 16 inoperable cases, 5 cases underwent palliative proceduresto relieve obstruction. Anterior gastro-jejunostomy was done in 2 cases of .pyloric antrum growth. Feeding jejunostomy was done in 1 case of proximal stomach growth.Right hemicolectomy was done in 2 cases of ascending colon growth.

Palliative surgery		Frequency	Percent
	no	65	92.9
	yes	5	7.1
	Total	70	100.0

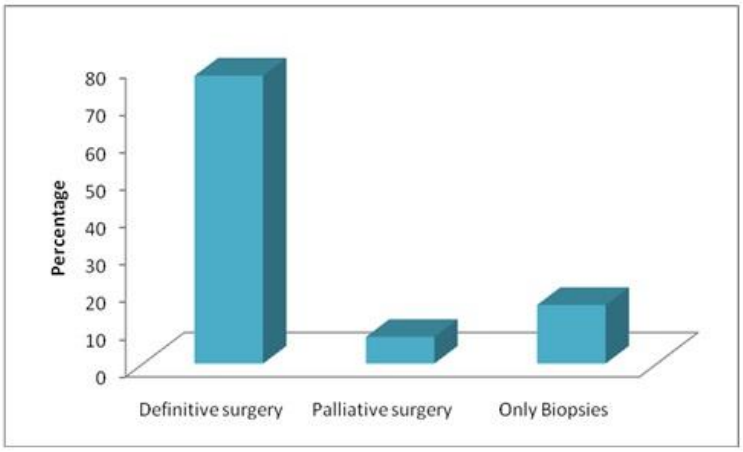
		Palliative surgery		
		no	yes	Total
GIT cancer	colon	15	2	17
		88.2%	11.8%	100.0%
		23.1%	40.0%	24.3%
	pancreas	8	0	8
		100.0%	.0%	100.0%
		12.3%	.0%	11.4%
	stomach	42	3	45
		93.3%	6.7%	100.0%
		64.6%	60.0%	64.3%
Total		65	5	70
		92.9%	7.1%	100.0%
		100.0%	100.0%	100.0%

		Palliative surgery		
		no	yes	Total
location	ascending colon	5	2	7
		71.4%	28.6%	100.0%
		7.7%	40.0%	10.0%
	body	14	0	14
		100.0%	.0%	100.0%
		21.5%	.0%	20.0%
	descending colon	1	0	1
		100.0%	.0%	100.0%
		1.5%	.0%	1.4%
	diffuse	2	0	2
		100.0%	.0%	100.0%
		3.1%	.0%	2.9%
	head	8	0	8
		100.0%	.0%	100.0%
		12.3%	.0%	11.4%
	hepatic flexure	3	0	3
		100.0%	.0%	100.0%
		4.6%	.0%	4.3%
	proximal	9	1	10
		90.0%	10.0%	100.0%
		13.8%	20.0%	14.3%
	pyloric antrum	17	2	19
		89.5%	10.5%	100.0%
		26.2%	40.0%	27.1%
	sigmoid colon	3	0	3
		100.0%	.0%	100.0%
		4.6%	.0%	4.3%
	splenic flexure	1	0	1
		100.0%	.0%	100.0%
		1.5%	.0%	1.4%
	transverse colon	2	0	2
		100.0%	.0%	100.0%
		3.1%	.0%	2.9%
Total		65	5	70
		92.9%	7.1%	100.0%
		100.0%	100.0%	100.0%

11 cases underwent only biopsies for tissue diagnosis. No procedure related complications were noted during the study.

Only biopsies	Frequency	Percent
no	59	84.3
yes	11	15.7
Total	70	100.0

		Only Biopsies		
		no	yes	Total
location	ascending colon	7	0	7
		100.0%	.0%	100.0%
		11.9%	.0%	10.0%
	body	10	4	14
		71.4%	28.6%	100.0%
		16.9%	36.4%	20.0%
	descending colon	1	0	1
		100.0%	.0%	100.0%
		1.7%	.0%	1.4%
	diffuse	0	2	2
		.0%	100.0%	100.0%
		.0%	18.2%	2.9%
	head	6	2	8
		75.0%	25.0%	100.0%
		10.2%	18.2%	11.4%
	hepatic flexure	2	1	3
		66.7%	33.3%	100.0%
		3.4%	9.1%	4.3%
	proximal	8	2	10
		80.0%	20.0%	100.0%
		13.6%	18.2%	14.3%
	pyloric antrum	19	0	19
		100.0%	.0%	100.0%
		32.2%	.0%	27.1%
	sigmoid colon	3	0	3
		100.0%	.0%	100.0%
		5.1%	.0%	4.3%
	splenic flexure	1	0	1
		100.0%	.0%	100.0%
		1.7%	.0%	1.4%
	transverse colon	2	0	2
		100.0%	.0%	100.0%
		3.4%	.0%	2.9%
Total		59	11	70
		84.3%	15.7%	100.0%
		100.0%	100.0%	100.0%



V. Discussion:

During recent times, laparoscopy has been replacing open exploration for better surgical staging of tumour.Laparoscopy allows obtaining more data regarding malignant spread of disease in patients withsuspicious abdominal findings.The liver and peritoneum are the most recognised areas for diagnosis of the suspicious metastatic deposits.(7-11)

Laparoscopy was recommended for patients who are having risk factors for metastatic disease like high grade tumors, radiological suspicion of metastasis of primary tumour on CT scanning. ([11,12])

The accuracy of CT scan in assessing either lymph node status or T staging varies and therefore not considered as a reliable predictor of the extent of the disease.[13]

Staging laparoscopy showed lesser complications, shorter hospital stay in patients as compared to those who had a laparotomy.

Burke et al conducted a study in 111 patients of resectable gastric cancer. They identified peritoneal metastasis in 37% of cases and curative surgery was not done.[14]

Among the 40 patients studied by Warshaw et al, who were considered to have localized disease, laparoscopy identified hepatic (n = 6), peritoneal (n = 7) metastases which resulted in a change of therapy in these patients.[15]

Study by Nakagawa *et al*, found that in 29% of patients, peritoneal cytology showed positive for metastasis. These patients had a poorer survival rates when compared to those with negative peritoneal cytology.[16]

In a studydone by Ajani et.al in 39 patients with localized gastric tumours. On laparoscopy, eight were found to have peritoneal disease and five had ascites, which came positive for metastatic disease.[17]

In a study done by Molloy et.al in 244 patients with proximal gastric tumours.

On laparoscopy metastatic disease was found in 92 patients (37.7%), in which hepatic metastases was the most common cause of inoperability in 75(30%) patients.[18]

Study by Cuschieri et al. described the importance of identifying patients with inoperable disease by diagnostic laparoscopy. It was followed by various studies documenting the role of staging laparoscopy in patients with pancreatic cancer.[19]

Malignant tumours of the pancreatic body and tail are known to have more chances for metastases on laparoscopy. And larger tumours are found to have a higher incidence of metastatic disease.[20,21]

For the primary treatment of colorectal cancer, laparoscopy usually not been regularly used, as resection is done if feasible to prevent haemorrhage, complete obstruction, andperforation even in cases with advanced disease. Even, patients having metastases to liver froma colon cancer are considered for curative surgery when thereis no extra hepatic involvement, and if metastasis to liver is found resectable.[22,23]

However,staging laparoscopy can identify patients withextra hepatic involvement of metastatic disease and it can altertreatment plans.

VI. Conclusion:

Diagnostic laparoscopy plays an important role in abdominal malignancies. It is very accurate in detecting peritoneal deposits and hepatic deposits which are not detected on imaging modalities.

Diagnostic laparoscopy, performed before the planned surgical procedure to know the operability is found to be safe and effective.

Laparoscopy is found to be more useful in staging of gastric, pancreatic cancers,when compared to colon cancers.Staging Laparoscopy gives more details about extent of thedisease which changed the course of management in significantnumber of patients.

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