International Journal Dental and Medical Sciences Research (IJDMSR)
ISSN: 2393-073X Volume 2, Issue 6 (June- 2018), PP 19-24
www.ijdmsr.com

Pancreas preserving resections for Duodenal GIST.

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ABSTRACT:-Gastrointestinal stromal tumors(GISTs)are rare tumors of gastrointestinal system with most common location being the stomach followed by small intestine. Duodenal GISTs are rare and account for less than 5 % OF GISTs with most in the second and third parts of the duodenum. Their location in the duodenum, size and vicinity to structures like pancreas must be taken into account when tailoring minimally morbid surgical approaches to achieve R0 resection with maintenance of intestinal continuity. Pancreaticoduodenetomy is associated with high morbidity and procedures by which an RO resection is achievable without recourse to Pancreaticoduodenectomy would be ideal. We describe a series of six cases of duodenal Gist, which were managed by duodenal resections alone without recourse to Pancreaticoduodenectomy

I. INTRODUCTION

GISTs are rare tumours in the duodenum and most present as exophytic growth. This anatomical feature has made local resection with negative tumour margin, an attractive option in contrast to pancreatic resection which is associated with significant morbidity and mortality. This article retrospectively reviews a series of such cases which were operated with minimal morbidity and mortality .It shows that local resection of Duodenal GIST is feasible in selected sub group of patients with minimal morbidity without recourse to Pancreaticoduodenectomy.

II. MATERIAL AND METHODS

This is a retrospective study from prospectively maintained database from 2013-2017 and six cases of histologically proven Duodenal GIST who had undergone local resection are included. Factors analyzed are Patient demographics, clinical presentation, signs, imaging, and laboratory reports, operative findings, Pathology, postoperative courses, and patient outcomes are analyzed. Follow-up was obtained from outpatient records and telephonic interviews.

Study Duration:2013-2017

III. RESULT

The six patients had mean age of presentation of 44.8 yrs (range-22-55yrs) with increased female incidence (male-2, female-4). All patients were symptomatic with the most common mode of presentation being abdominal pain (100%) with loss of weight and appetite in four (66.7%). None of the patients presented with hemodynamic instability and history of recent onset melena was present in two patients (33%). On clinical examination, two patients had palpable mass in right hypochondrium. Lab investigations showed four of the patients (66.7 %) had anemia, with a median hemoglobin level of 8 g/dL (range, 6-10 g/dL) and other parameters were essentially normal. Ultrasonography in most patients was suggestive of eccentric hypo echoic mass and contrast enhanced Computed tomography revealed well-defined heterogeneous mass in duodenum with no evidence of metastasis. (fig1)MRI abdomen was suggestive of GIST in one case .(fig2)

The location of tumor was second part of the duodenum (D2) in 4patients (66.3%) and D3 in two patient(33.3%).On imaging the mean size of the tumor was 8.08cm (range -3-15 cm) with tumors in the D2 significantly smaller (mean-4.6 cm , range-3-7 cm) than those in the D3.(mean-15 cm).

OGDpicked up lesion in lateral wall of duodenum in one patient (16.67%)(fig3) and all patients with D3 involvement had normal OGD scopyupto D2.Endoscopic biopsy was negative in all cases. Endoscopic ultrasound could not be done due to lack of availability.
Two of the four patients with D2 involvement underwent local resection of the pedunculated mass using linear stapler(fig4) with no apparent compromise of the duodenal lumen and two with primary hand sewn closure.(fig5) Two patients with D 3 involvement underwent local duodenal resection and reconstruction

involving duodenojejunostomy .Out of these two patients one had stapled resection of the D3. The other patient intraoperatively had local invasion of the transverse mesocolon and colon and underwent en bloc resection with involved transverse colon with end transverse colostomy. Frozen section of the involved transverse colon was negative. Histopathological examination revealed tumor free margins in all including the patient with enbloctranverse colectomy.

IHC revealed c-kit+, CD 34+ status in all patients. Two were positive for SMA antigen. Five of the six patients (83.33%) had high-grade tumor due to large size and mitotic rate. All patients were planned to be treated with adjuvant imatinib for a minimum of 3 years. All are on regular follow up (1 year-7 years) with no recurrence.

Fig1. CECT showing eccentric heterogeneous enhancing lesion from the lateral wall of D2 suggestive of GIST

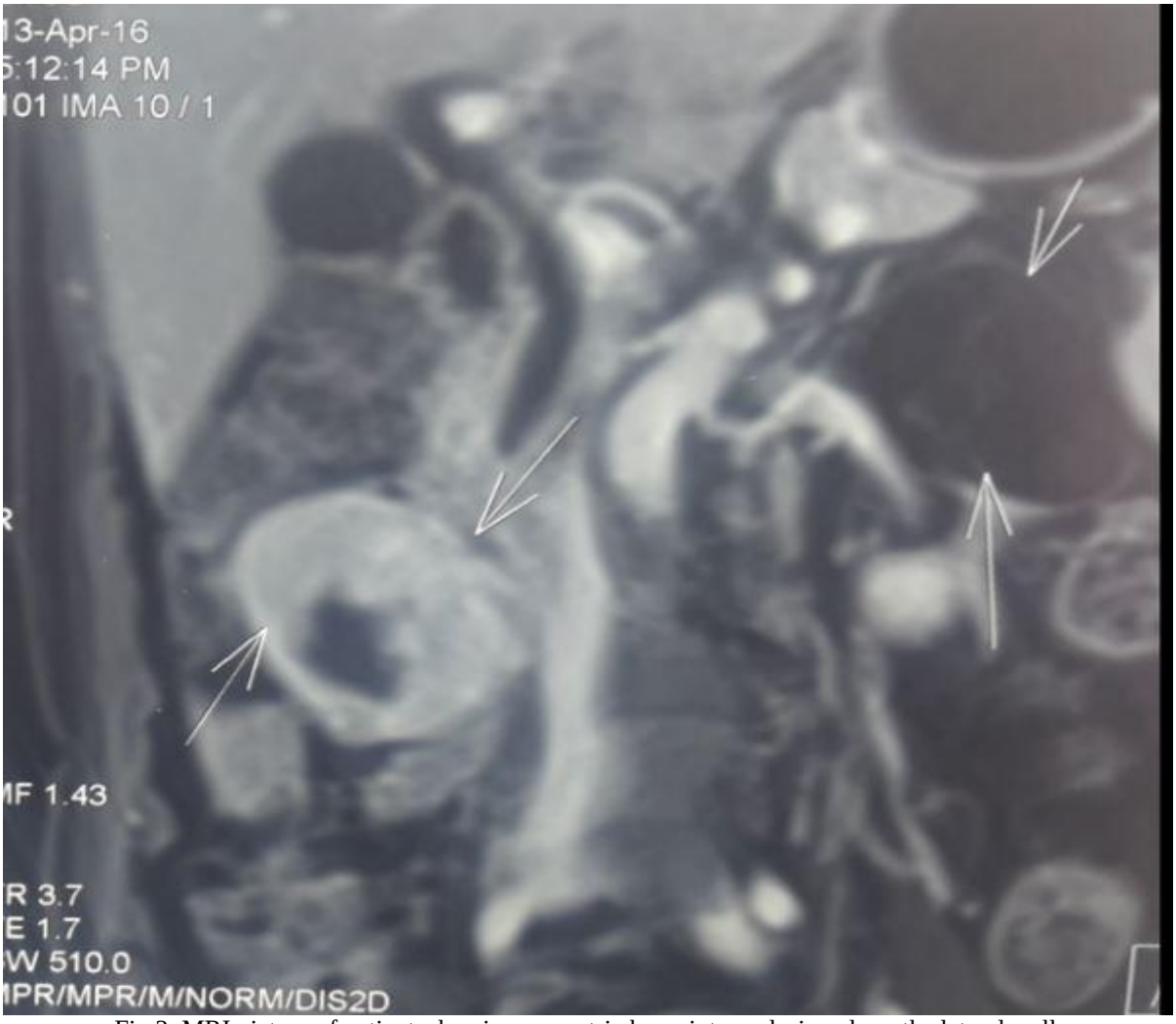

Fig 2. MRI picture of patient showing eccentric hyperintense lesion along the lateral wall.

Fig 3.Endoscopic picture showing lesion in the lateral wall suggestive of GIST.

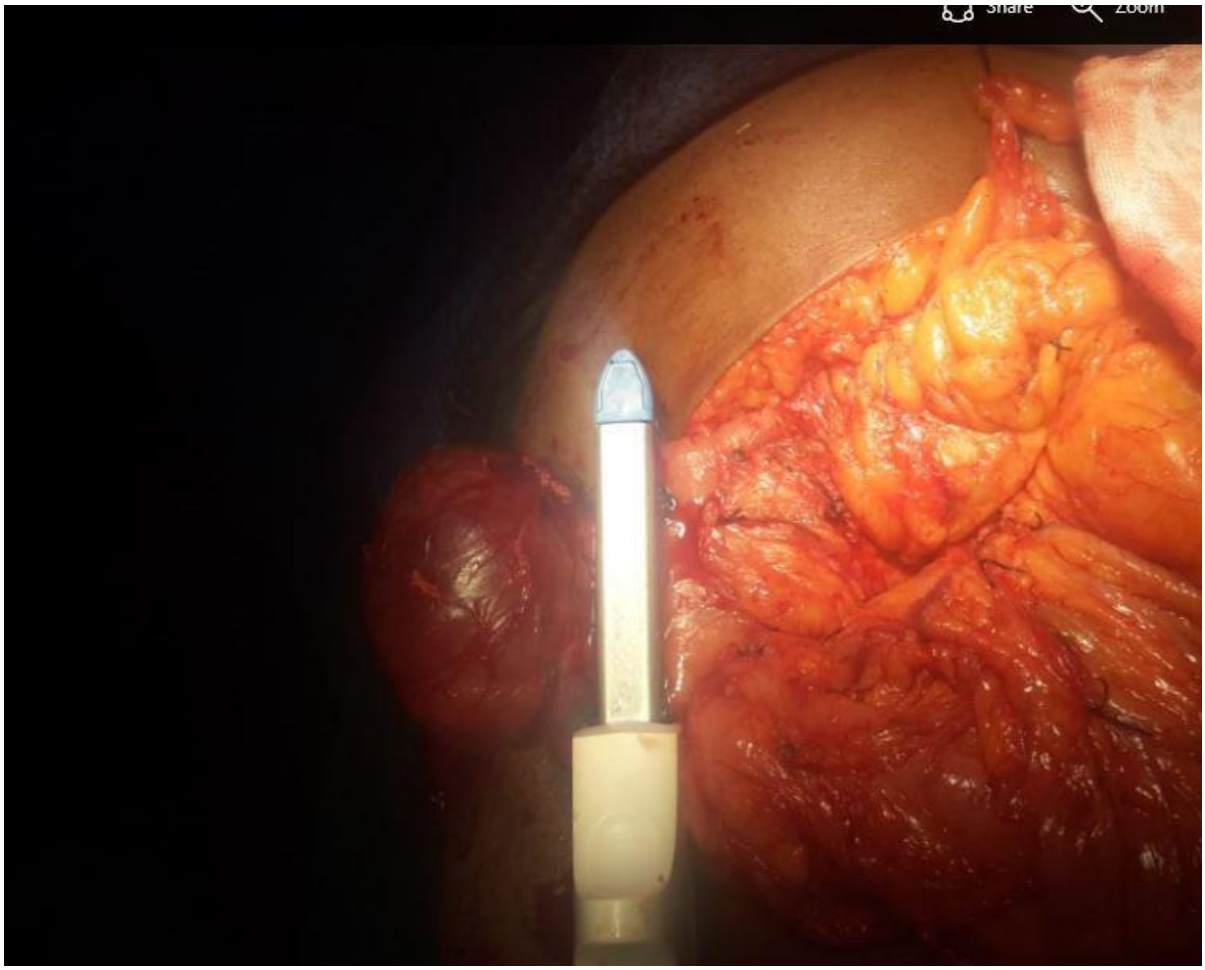

Fig 4. Intraoperative picture showing duodenal transection of GIST along lateral wall with stapler

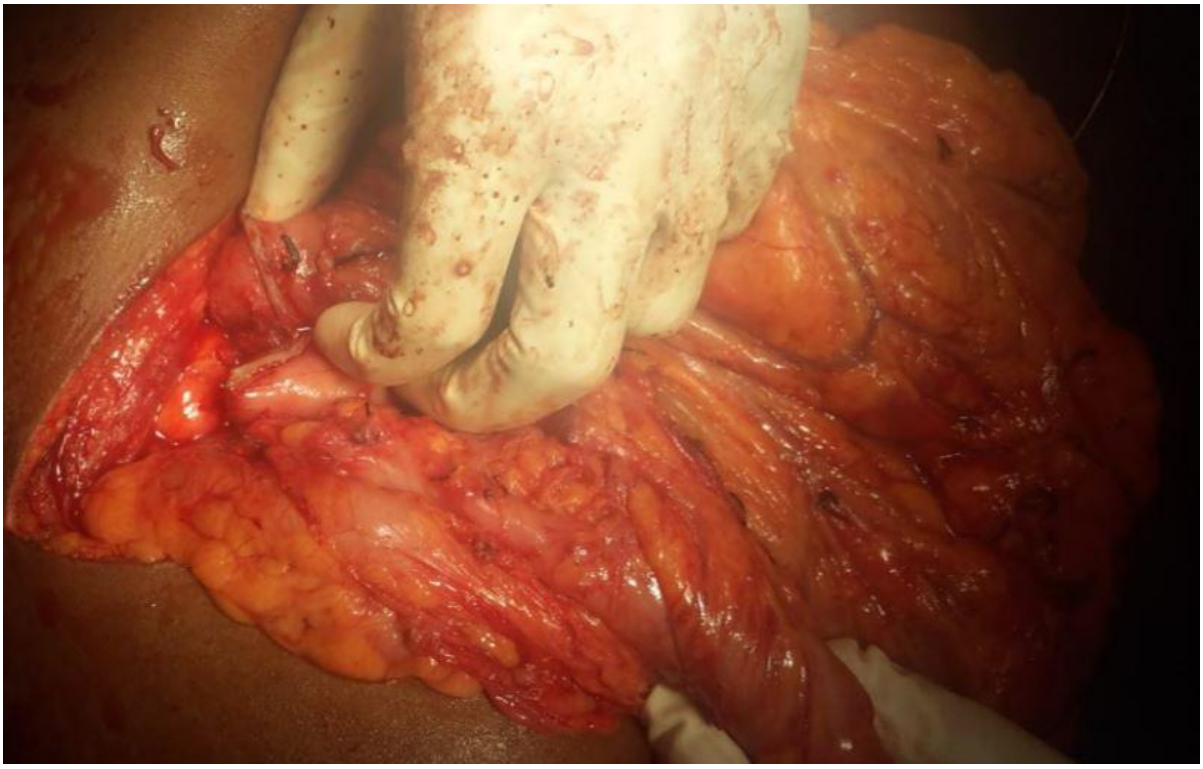

Fig 5. Post stapler transection, duodenal continuity is maintained

Table /Annexure

	AGE	SEX	PRESENT	OGD	HB	SIZE(cm)	SX	MARKERS	RISK	Follow up(yr
1	40	F	AP,LOW,LOA	D2-3CM	10	3	LR	CKIT+,CD34+,sma+	<1/50	7
2	54	M	M,AP,LOW,LOA	D2-4CM	10	4	LR	CKIT+,CD34+	HG	3
3	50	F	AP,	D3-15*10	6	15	ST -D3	CKIT+,CD34+	HG	3
4	48	M	AP,M	D3-15*10	8	15	DJ+COLOSTOMY	CKIT+,CD34+	HG	3
5	55	F	AP,LOW,LOA	D2-7	6	7	LR	CKIT+,CD34+sma+	HG	2
6	22	F	AP,LOW,LOA	D2-4.5	8	4.5	LR	CKIT+,CD34+	HG	1
			AP-Abdominal pain				LR-Localresection		HG-high grade>5/50	
			M-Malena				DJ-Duodenojejunostomy			
			LOA-loss of appetite				ST-stapled resection of D3			
			LOW-loss of weight							

IV. DISCUSSION

Primary duodenal neoplasms are rare withDuodenal GIST being rarer still accounting for only 5% of all surgically resected GISTs and 30% of all duodenal malignancies.[1,2]Most duodenal GISTs are seen in the second and third parts of the duodenum and usually present with melena accompanied by chronic anemia. Hematemesis and acute massive bleeding are rare .

Though radiologic examinations, including ultrasound, computed tomography, and magnetic resonance imaging, play an important role in duodenal GIST detection and localization, most are plagued by low specificity .Computed tomography usually shows isodense or hypodense round or oval mass with a clear boundary . As biopsy may be inconclusive in most cases, Endoscopic ultrasound-guided fine-needle aspiration cytology is being increasingly used in the definitive diagnosis of the disease with immunocytochemistry. [3]Although the procedure would carry the theoretical risk for peritoneal seeding of tumor cells by way of the needle tract or tumor rupture, an accurate preoperative histological diagnosis of GIST would obviate the need for Pancreaticoduodenectomy.

Duodenal GISTsdiffer from Adenocarcinoma in basic pathology that it grows eccentrically outward with minimal sub mucosal and lymph node involvement. This makes them amenable to variety of local resection techniques, which enables pancreaticoduodenal preservation. This obviates the need of a Pancreaticoduodenectomy, which is usually needed for duodenal adenocarcinoma. Extensive Lymphadenectomy is also unnecessary. Therefore, unless they are in close proximity to the pancreas, ampulla of Vater, or distal common bile duct, limited resection alone would suffice. Local resections enable the patients to maintain GI continuity and to have excellent postoperative recovery with limited restriction in GI QOL.They are able to restart their preop dietary intake with minimal modifications which is not possible in Pancreaticoduodenectomy and avoid complications of Pancreaticoduodenectomy including pancreatic leak.

Recent studies(4,5,6)have concluded that the type of operation,whether it is local resection or pancreaticoduodenectomy, is not correlated with disease-free survival, operative risk, or tumor recurrence, provided negative margins are obtained.Complete resection with negative margins, is the most important tenet of treatment as in all our cases . Therefore, intraoperative frozen section is strongly recommended for doubtful margins when planning limited resection.

In one study comparing local duodenal resections and pancreatoduodenectomy, the rate of postoperative complications in patients who undergo limited resection was significantly lower than in those who undergo Pancreaticoduodenectomy (15.4% vs. 88.9%, P <.002)(3).It is known that even tumours close to the ampulla can be spared a Pancreaticoduodenectomy if an anastomosis can be made below the ampulla.(7)

Though Fletcher established a risk stratification based on tumour size and mitotic rate, even in patients with low risk and complete R0 , recurrence can occur and surveillance is needed on a long term basis to detect recurrence.[8][9]The role of imatinib in the neoadjuvant setting for duodenal GIST is difficult due to difficulty in obtaining a positive biopsy. Adjuvant imatinib canbe given similar to GISTs elsewhere[9]

V. CONCLUSION

Duodenal GISTs are rare tumors and can be treated by a variety of limited resection techniques, which avoids highly morbid pancreatic transection. Our series shows that it is possible to achieve oncologically acceptable margins and adequate reconstruction to maintain intestinal continuity. Frozen section might aid in intraoperative decision for extent of the resection. The oncological outcomeof these patients is further augmented by excellent adjuvant therapy available now.

Conflict of interest:nil
Acknowledgements:nil

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