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RESEARCH ARTICLE

GIANT DUODENAL ULCER PERFORATION: OUR EXPERIENCE

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ABSTRACT

Large size perforations and delayed presentations are not uncommon in Indian surgical practice. Unfortunately this condition has remained largely unreported. The actual size of perforation is known definitely only intra-operatively. Therefore, definitive protocols for its management have not been formulated. Here we are presenting our experiences regarding giant duodenal ulcer perforations.

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INTRODUCTION

Being a severe variant of duodenal ulcer perforation, giant duodenal ulcer perforation is very commonly encountered in Indian surgical practice [1]. Giant duodenal ulcer perforations are defined as perforation of size equal to or greater than 2 cm in diameter [2]. Principally any duodenal ulcer perforation that cannot be managed by any conventional method of repair because of the size of perforation and the extent of native tissue loss is to be considered as a special entity and should be managed in a different manner [1]. Various techniques such as omentoplexy [3], omental plugging [2], control tube duodenostomy [1], partial gastrectomy, jejunal-serosal patch, jejunal-pedical graft, proximal gastrojejunostomy [3], or even gastric disconnection [4] have been described in literature. In present series, we are presenting our experiences regarding management of giant duodenal ulcer perforation.

MATERIALS AND METHOD

This case series was conducted in the Department of Surgery, Al-Ameen Medical College and Al-Ameen Surgery Unit, District Hospital, Bijapur, taking into account 51 patients with giant duodenal ulcer perforations found during laprotomy from January 2000 to 2012. The case files of all patients were retrospectively analyzed for patient particulars, intraoperative findings, surgery performed post operative stay, morbidity and mortality. Patients were diagnosed with perforated duodenal ulcer based on history, clinical examination, investigations and intraoperative findings. After preliminary resuscitation and investigations, the patients were taken for emergency surgery. In 18 patients ometoplexy was done. A total of three sutures of vicryl 2-0 were placed onto the normal healthy duodenum on either side of the perforation.

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A pedicled strand of omentum was placed directly onto the perforation and the sutures were tied above this. No attempt was made to close the perforation prior to placing the omentum as a plug. In 16 patients, omental plugging was done. In this procedure, the tip of the inserted nasogastric tube is brought into the peritoneal cavity through the perforation and that tip was sutured with free end of greater omentum by using chromic catgut 1-0. The tube was then withdrawn until 5 to 6 cm length of the omentum got occluded in the perforation. The omentum was then fixed to the site of perforation with 5 to 6 interrupted sutures of 2-0 vicryl taken between omentum and serosa of healthy duodenum. In 13 patients, modification of the control tube duodenostomy, which has been described for duodenal trauma, Triple Tube Duodenostomy was done. Following a peritoneal lavage by laprotomy, Kocherisation of the duodenum is done in an attempt to decrease tension at the site of repair. After freshening of the edges of the perforation, a primary repair is done with 2-0 vicryl single layer in interrupted fashion, keeping the knots outside. In Retrograde duodenostomy, 15 cms of jejunum distal to the duodenaljejunal flexure is identified and a tube is passed through an antimesentric enterotomy in a retrograde fashion into the junction of the second and third part of duodenum. Another Malcots catheter of size 16F is passed through and enterotomy, 5 cm distal to first one in an ante-grade manner into jejunum as feeding jejunostomy. An optional open tube gastrotomy is done. In 4 patients, definitive surgery was done. Through peritoneal lavage was done. On discharge proton pump inhibitors were prescribed for 6 weeks. The gathered data was analyzed on a computer using SPSS version 10.0. Descriptive statistics like frequency, percentage and mean, median, SD (standard deviation) were computed for data presentation. Chi-square test was used to compare frequencies at 95% confidence interval.

RESULT

51 consecutive patients with giant duodenal ulcer perforations in an emergency setting were included in this study over a period of

Summary of Giant Duodenal Ulcer Perforations

	Parameter	Total	Omentopexy	Omental Plugging	Triple Tube Duodenostomy	Definitive Surgery
1	TOTAL CASES	51	18	16	13	4
2	SEX Male	41	14	12	11	4
	Female	10	4	4	2	0
	M:F ratio	4.1:1				
3	AGE DISTRIBUTION					
	41-50	24	3	10	9	2
	51-60	18	6	6	4	2
	>60	9	9	0	0	0
	Mean	52.51	59.9	49.81	48.76	55
	SD	7.59	6.6	3.38	3.96	3.46
4	SIZE OF PERFORATION					
	2-3 cm	44 (86.23%)	17	15	10	2
	> 3 cm	7 (13.73%)	1	1	3	2
5	DURATION OF PERFORATION					
	< 48 hrs	23 (45.09%)	6	7	6	4
	> 48 hrs	28 (54.90%)	12	9	7	0
	Mean	45.80	48.6	48.5	45.2	25.5
	SD	15.56	18.2	16.37	6.6	3
6	ASSOCIATED DISEASES					
	Hypertension	9	4	2	2	1
	DM	3	2	1	0	0
	Arthritis	3	0	1	2	0
	Total	15 (29.41%)	6	4	4	1
7	MEAN OPERATIVE TIME		40-80 min	90-110 min	90-120 min	110-140 min
	Mean		63.4	103.6	112.92	112
	SD		5.4	5.23	5.92	2.32
8	COMPLICATIONS					
	Wound infection	11 (21.57%)	4	3	3	1
	Lung infection	8 (15.69%)	3	3	2	0
	Re-perforation	6 (11.76%)	3	1	1	1
	Pelvic abscess	2 (3.92%)	1	1	0	0
	Total	27 (53%)	11 (61.11%)	8 (50%)	6 (46.15%)	2 (50%)
9	POST OPERATIVE STAY					
	< 15 days	33	10	12	9	2
	15-20 days	10	4	2	2	2
	21-25 days	5	2	1	2	0
	26-30 days	3	2	1	0	0
	Mean	17.21	17.9	16.87	16.85	16.5
	S.D	3.94	4.5	4.22	3.39	1.77
10	MORTALITY					
	Total	4 (7.84%)	2 (11.11%)	1 (6.25%)	1 (7.69%)	0

12 years from 2000 to 2012. Among these patients, 18 patients were managed with omentopexy, 16 with omental plugging, 13 with triple tube duodenostomy and 4 patients with definitive surgery.

DISCUSSION

The advent of medical therapy for duodenal ulcer has remarkably decreased the number of elective surgical procedures. The incidence of perforated duodenal ulcer on the contrary is increasing which has been mainly attributed to the increasing use of non steroidal anti inflammatory drugs (NSAIDs). Factors such as old age, co morbid conditions, shock at presentation, large size of perforations and delay in presentation and treatment have been identified as adverse factors in the management of this condition [5,6]. The overall reported mortality rate varies between 1.32 to nearly 20% in different series [5,6] and recent studies have shown it to be around 10% [6]. The size of perforation in peptic ulcer varies from 3mm to over 3cm in diameter which adversely affect the prognosis. If perforation is less than 5mm in diameter, there is a 6% mortality rate. When it is between 5 and 10 mm, the mortality goes up to 19% and when it is more than 10mm, the mortality rate is about 24% [7] Giant peptic ulcer perforation is a life threatening surgical emergency with high mortality and high rates of leakage [12] Giant peptic perforations are defined as perforations of size equal to or greater than 2 cm in diameter [2]. There is a paucity of data in the literature regarding giant duodenal ulcer management. One of the reasons for this is that giant duodenal ulcers are an uncommon entity [2].

For giant duodenal ulcer perforation available treatment options are omentoplexy [3], omental plug [2], control Tube Drainage [1], partial gastrectomy, jejunal-serosal patch, jejunal pedicle graft, proximal gastrojejunostomy [3] or even gastric disconnection [4] maybe deemed necessary for adequate closure. Here we are presenting our experiences of management of giant duodenal ulcer perforation with omentoplexy, omental plug, triple tube dudenostomy and definitive surgery. Taking into account the various data from literature and comparing it with the present series, a few interesting facts were revealed.

Age

In our study, the highest incidence was seen in the 5th decade of life which is comparable to other studies [2,8,9].

Sex

In our study, there were 41 males and 10 females giving us a male: female ratio of 4.1:1. In other studies, the reported male: female ratio varies between 9: 1 and 7.5: 7 [2,8,10,11].

Size of perforation

In the present study, 44 patients (86.27%) were having size of perforation between 2 – 3 cm and 7 patients (13.73%) were having size of perforations more than 3 cm.

Duration of perforation

In present study, 23 patients (45.09%) had the perforation for less than 48 hours while 28 patients (54.90%) had perforations for more than 48 hours.

Contamination

Out of the 51 patients, 35 patients (68.62%) had severe contamination with more than 1000 mL of purulent fluid in the peritoneal cavity. This finding is also comparable with most of the series. [11] Duration of perforation along with the size of the opening in most cases determine the amount of peritoneal contamination [12].

Associated diseases

Out of 51 patients, 15 patients had associated diseases viz. 9 patients had hypertension, 3 had DM and 3 patients had arthritis. One or more associated diseases was one of the significant factor associated with mortality in patients undergoing surgery [3].

Mean operative time

The operative time for omentopexy ranged from 40 – 80 mins and had a MOT of 63.4 and SD of 5.4. OT for omental plugging was 90-110 mins with a mean of 103.6 mins and SD of 5.23. For triple tube duodenostomy, OT was 90-120 mins with a MOT of 112.92 mins and SD of 5.92. The OT for definitive surgery was 110-140 mins with MOT of 112 mins and SD of 2.32. Omentopexy has the least operative time compared to the other three procedures. According to our study operative time for omental plugging was significantly more($P<0.001$) than operative time for omentoplexy. Operative time for triple tube duodenostomy was significantly more ($P<0.001$) than operative time for omentoplexy. Operative time for triple tube was significantly more than operative time for omentoplugging.

Complications

Overall, there were 27 complications (53%) in this series of 51 patients viz. wound infections in 11 (27.57%) patients, lung infections in 8 (15.69%) patients, re-perforations in 6 (11.76%) patients and pelvic abscesses in 2 (3.92%) patients. Wound infection and respiratory tract infection were the commonest complications. These figures are in agreement with other literature on this matter. Hasting et al reported post operative complications in 86 patients comprising 24%, the commonest of which was wound complications followed by respiratory tract infections. Giant DUP is considered hazardous because of extensive duodenal tissue loss and surrounding inflammation and edema precluding simple closure using an omental patch [13,14], often resulting into post operative leak of gastric outlet obstruction. Leakage after duodenal ulcer repair is not uncommon (2-10%) and Is associated with high mortality (19% to 35%), which increases with delay in re-exploration [15,16,17]. The tendency to leak may further be aggravated by the high intraluminal pressure extrusion of the duodenal mucosa through the closure and auto digestion by the pancreatic enzymes and bile, thereby further compromising an already sick patient [18].

Post operative stay

Mean post operative stay for omentoplexy was 17.9, omental plugging was 16.87, triple tube dudenostomy was 16.85 and definitive surgery was 16.5. The difference in the post operative stay between omentoplexy, omentoplugging and TT was not significant.

Mortality

This study found a mortality rate of 7.84% (4 patients).

Conclusion

Giant duodenal ulcer perforation is a severe life threatening variant of duodenal ulcer perforation. With the treatment options in consideration, none of the procedure is immune to the risk of post surgical leakage. For the exact intensity of re-perforation among all these procedures, more randomized cases should have been studied.

Author contribution

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REFERENCES

1. Lal P, Vindal A. Controlled tube duodenostomy in the management of giant duodenal ulcer perforation-a new technique for a surgically challenging condition. Am J Surg 2009;198:319-323.
2. Jani K, Saxsena AK, Vaghasia R (2006) Omental plugging for large sized duodenal peptic perforation: a prospective randomized study of 100 patients. Southern Med J 99(5):467-471.
3. Gupta S, Kaushik R, Sharma R, Attri A (2005) The management of large perforation of duodenal ulcers. BMC Surg 5:15.
4. Cranford CA, Olson RO, Bradley EL III: Gastric disconnection in the management of perforated giant duodenal ulcer. AM J Surg 1988;155:439-42.
5. Hermansson M, Von Holstein CS, Zilling T. Surgical approach and prognostic factors after peptic ulcer perforation. Eur J Surg 1999;165:566-72.
6. Rajesh V, Sarathchandra S, Smile SR. Risk factors predicting operative mortality in perforated peptic ulcer disease. Trop Gastroenterol 2003;24:148-50.
7. Hennessy E (1969) Perforated peptic ulcer mortality and morbidity in 603 cases. Aust NZ J Surg 38:243.
8. Khalil AR, Yunas M, Jan QA, Nisar W, Imran M (2010) Grahm's omentoplexy in closure of perforated duodenal ulcer J Med Sci 18(2):87-90.
9. Gupta BS, Talukdar RN, Neupane HC (2003) Cases of perforated duodenal ulcer treated in college of medical sciences, Bharatpur over a period of 1 year. Kathmandu Univ Med J 1:166-169.
10. Ahmad W, Qureshi H, Alam AC, Zubair JS (1990) Perforated duodenal ulcer, a long term follow up. J Pak Med Assoc 40:258-259.
11. Taj MH, Muhammad D, Qureshi SA (2007) Outcome of omentoplexy as primary repair in perforated duodenal ulcer. JCPSP 17(12):731-735.
12. Mukhopadhyay M, Banerjee C, Sarkar S, Roy D, Rahman QM (2011) Comparative study between omentopexy and omental plugging in treatment of giant peptic perforation. Ind J Surg 73(5):341-345.
13. Chaudhury A, Bose SM, Gupta NM, Wig JD. Khanna SK. (1991) Giant perforationss of duodenal ulcers. Ind J Gastroenterol 10:14-5.

14. Karanjia ND, Shanahan DJ, Knight MJ (1993) Omental patching of a large perforated duodenal ulcer: a new method. Br J Surg 80:65.
15. Booth RAD, Williams JA. Mortality of duodenal ulcer treated by simple suture. Br J Surg 1971;58:42-4.
16. Griffin GE, Organ Ch Jr. The natural history of perforated duodenal ulcer treated by suture plication. Ann Surg 1976;183:382-5.
17. Baker RJ. Perforated duodenal ulcer. In: Baker RJ, Fischer JE, eds. Master of Surgery. Vol 1. Philadelphia, PA: Lippencott; 2001:4e.
18. Walley BD, Goco I: Duodenal Patch Grafting. Am J Surg 1980, 140:706-8.

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