

Surgically Treated Duodenal Ulcer Complications

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Abstract:

A cross sectional study, based on collection of 159 patients (150 male, 9 female) age range between 10-90 years with median age of 32 years, admitted to Tikrit teaching hospital and underwent emergency surgery for d.u complication over the last 10 years (Oct.1993 to Oct.2002). In this study each complication was analyzed according to its frequency, its relation to the timing of the management, and its relation to the progress in medical management. The study showed that there is declining in the occurrence of d.u disease complications, [at 1993 they received 29 cases (18.2%) VS 2002 in which (8) case only 5%]. Regarding history of du; 99 patient (62%) gave positive history of d.u. disease, while the rest of patients 60 (38%) denied any previous disease. Incidence of complication after emergency surgery was 25 case (15.7%); this is in form of simple wound infection, abdominal abscess, and respiratory c.v. complications. These operations followed by death 5 cases (31%) and the cause of this mortality were mainly septicemia and respiratory &c. v. complications, renal failure. Medical treatment does not prevent complication also we found that there is no special seasonal variation in spite of Perforation which occur more in winter months. 31-40 years-age group, male patients are more susceptible for complications, morbidity and mortality increased by age and delay in the management.

Introduction:

The pathogenesis of peptic ulceration in the upper gut continues to be debated, but the central issue that links all theories is acid. All other hypotheses aside, acid must be present for nonmalignant ulceration of the upper gut to occur. The degree of acid secretion varies with the Disease State, ranging from the extreme hyperacidity of Zollinger-Ellison syndrome to the hypoacidity present with type I and IV gastric ulcers still, the cornerstone of therapy for most routine d.u. is the diminution of acid, common sites for peptic ulcers are the first part of the duodenum and the lesser curve of the stomach, but they also occur on the stoma following gastric surgery, the esophagus and even in a Meckel's diverticulum, which contains ectopic gastric epithelium. In general, the ulcer occurs at a junction between different types of epithelia, the ulcer occurring in epithelium least resistant to acid attack (1). The history of the management of D.U. has paralleled to the understanding of the physiology and pathophysiology of acid secretion and gastric emptying in peptic ulceration. In 1881 Billroth did his first partial gastric resection in Vienna and it was initial management for complications of peptic ulcer disease (2).

Later on gastrojejunostomy have been done that will shift gastric secretion pathway away from the duodenum leading to healing of the ulcer but it has recurrent rate up to 50% so it was abundant.

The modern management of peptic ulcer disease, based on the understanding of the vagal drive for acid secretion, begun by Dragstedt, with his description of vagotomy and its use in peptic ulcer disease.

Aim of the study :TO CLARIFY:

1. Most common type of peptic ulcer complication.
2. Change pattern of complication over long period of time 'with the progress in medical management.
3. Understanding morbidity & mortality of each complication to minimize the postoperative outcome.

Objectives:

1. frequency of the complications over last 10 years.
2. Age & Sex of patients and its relation to complication, mortality & morbidity.
3. Type of surgery which performed for each complication.

Patients and methods:

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This cross sectional study based on sample of 159 patients (150 male and 9 female); age ranged between 10 to 90 years all were admitted with clinical and radiological diagnosis of D.U complication to emergency unit in Tikrit teaching hospital from Oct.1993 to Oct. 2002. Careful history and clinical examination were carried out; immediate resuscitation performed with insertion of nasogastric tube and send for CXR and immediate preparation for urgent surgery was done. All patients under went surgery through mid line incision, those with perforated d.u treated by simple closure with mental patch only 5 of patients treated by vagotomy+drainage procedure. While those with bleeding (27) patients treated by duodotomy and direct control of bleeding vessel. Pyloric stenosis patients (34), all of them treated by vagotomy +gastro-enterostomy. Postoperatively all patients kept in semi sitting position, Nasogastric tube aspiration, I.V fluid parenteral antibiotic, parenteral H2 receptor blocker, chest physiotherapy and adequate analgesia. The statistical analysis of all collected data were performed using chi square test with the $p < 0.05$ as The level of significance.

Results:

The study shows that total no. Of complication declining as we notice that in 1993 there is 29 case (18.2%) while in 2002 there are only 8 cases (5%).

Patients younger than 50 years old have mortality of (0%) and morbidity (11.6%). While patients older than 50 years old have mortality of (38.4%), morbidity (61.5%).

Mean age of occurrence of D.U. complication is 32 years old, maximum age interval was in (31-40) years D.U complication in old ages is less than young age but when it occurs, it carry high degree of mortality and morbidity (table 9,10).

D.U complication occur in young age group female but its occurrence in comparison to male is very low, 9(5.6%) cases in female, while 150(94.3%) cases in male. (Table 1,2).

From 98 cases of perforated D.U only 5 cases undergo definitive surgery, while 93 cases treated by simple closure with reinforcement by omental patch, 4 of them died (4.3%), while 18 cases (19.3%) had

complication. Obstruction 39 cases operated by vagotomy+drainage procedure, 6 of them have complication. Bleeding 27 cases control of bleeding was performed, 1 case died and 1 have complication (table 3). 99 (62.3%) of cases had +ve history of P.U, 55 cases with Perforation, 23 cases with stenosis and only 21 cases suffer from bleeding. Sixty (37.7%) cases had no history of D.U 43 of them develop perforation, 12 develop stenosis, only 6 had bleeding. there is strong relationship between patient with +ve & -ve history of D.U in regard to obstruction & bleeding while there is no significant difference in regard to perforation.

Hypertension, pulmonary diseases, liver cirrhosis, M.I; and renal diseases (risk factor for morbidity & mortality) accordingly we divide our patients into two groups:

1-patients with one or more of the above diseases, they were 29 patients 5 of them died (17.2%) & 15 (51.7%) develop complications.

2. patients without concomitant medical diseases they were 130 cases, no deaths reported only 10 cases develop complication. patients with early presentation (before 24 hr) had no mortality

127 cases while those with late presentation (after 24hr) had 5 cases died. (Table 6)

Most of cases with perforation was presented at winter (Jan, des) while those with bleeding mostly at summer (Jul, Aug) and those with obstruction had not affected by season variation (Table 8).

Total number of deaths occurs in-patients over 50 years old (Table 9), total no. of complication were 25 cases 8 of them (61.5%) was over 50 years old , only 17 cases (11.6%) were under 50 years. Regarding sex of patients, it has no significant influence affecting mortality & morbidity, but the disease was not common in females.

Discussion:

In this study we found that 8.1% of D.U complication were seen above age of 50, Toffgaard et, al found that up to 20% are aged >60 years (11) while Tsai-cj. et al found that it was a close relationship among duodenal ulcer, chronic active gastritis & H.pylori is presents in children and adolescent (12). In our study, incidence of children and adolescent was the same. Regarding sex distribution; in this study

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94.3% were male, 5.7% were female, male to female ratio was 17:1, other study showed that the ratio of perforation previously among middle age female with a ratio 2:1 (13). While study done by Malu; which showed that male to female ratio was 3:1, in other study they found the ratio was 8:1 (14). This result needs further study to reveal cause of this difference.

Regarding operative treatment of the major complication i.e. perforation; our study shows that 95% of cases treated by simple omental patch, while only 5% treated by Definitive treatment, that fulfilled the following criteria:

1. Anaesthetic & surgical facilities are ideal.
2. The surgeon is experienced in carrying out definitive ulcer surgery.
3. The patient general condition is such that the Extra time needed for definitive surgery does not impose an unacceptable additional risk.
4. Purulent peritonitis is not present. (15).

This in comparison to previous study done by Wara he states that simple closure of perforation should be preferred in the setting of ongoing shock, Delayed presentation or association with other disease and more contamination; in the absence of such a factor addition of Definite ulcer procedure (PCV) is Superior to simple patch procedure. (16) & this result in comparison to what is found by Hay.. et al he records up to 35% of cases treated by immediate definitive Surgery (HSV) with Omental patch closure or T.V with Drainage & Can be safely attempted if governed by certain criteria with out any Increase in the Mortality (17).

Let us see what is found by Jordan .. et al he found that (HSV) is associated with few postoperative sequelae & it preferable Definitive procedure in patient with ulcer complication (18), In the other hand Ng-CK.. et al advised that immediate acid reducing Surgery in the presence of generalized peritonitis is unnecessary (19). What about treatment of bleeding? Our study showed that all cases (27) were treated by operative controlling of the bleeding only & this is the same idea who Jamieson. et al records it. He records that the minimum surgery that stops the bleeding is probably

optimal and later on pharmacological treatment is appropriate (1). This is in comparison to what James. Et al records that most surgeon would perform definite ulcer surgery either. T.V or H.S.V. if the general condition of the patient permits. (2). Regarding pyloric obstruction. Our study shows that all cases treated by T.V and gastro-enterostomy. This in comparison to Thomas. et al who records that in some cases of acute D.U there will be oedema spasm to the pylorus this will lead to repeated attack of vomiting. In this situation the treatment is medical (conservative) (7), while Haile T. Debase prefer to use HSV with gastro enterostomy if duodenum appear unsafe for transaction although others prefer to use antrectomy and vagotomy. (20) In our study gastric outlet obstruction is more than bleeding (21% vs 17%) while Graham. et al found that gastric outlet obstruction is least frequent form of ulcer complication (21)? This variation could be refers to that all cases of bleeding who admitted to our surgical ward needs surgery while those in the medical wards most of them treated conservatively which not included in our study. In this study the mortality was (3.1%) among all patients underwent surgery in comparison to other studies Hamby. et al 18%, Kum.ck ET al 2.3% (22,23). Morbidity in this study reach up to (15%) of all patients that operated upon, their complication ranging from simple wound infection to abdominal abscess and respiratory and CVs complication. In comparison to study by Duvart he finds morbidity reach 9% (9), while in study carried by Hewitt-P.M on 134 patient in 1993 showed that mortality reached up to 51% (24). Regarding history of D.U 62% of our patients have +ve history and in spite of improvement in medical management of P.U diseases, the incidence of potentially life threatening ulcer complication has not declined. (25).

We conclude from this study that:

1. P.U complication is more in (31-40) age group.
2. male more prone to develop complication than female, male to female ratio 17:1.
3. Medical treatment does not prevent complication.
4. Delay treatment >24 hr. increase morbidity and mortality.

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5. Mortality and morbidity is less in young age group.
6. D.U complication is declining over years.

This study recommended with the following points:

1. Early treatment to prevents mortality and morbidity.
2. High risk patients (old age, medical problems, and delayed presentation) should be treated with special precaution.
3. Definitive treatment is preferable if there is good criteria for surgery (young age, expert surgeon, and good facilities).
4. We recommend minimal invasive surgery since it will end with best results.

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Table 1: Age and sex distribution for the last 10 years for total frequency of complication

Table 2: Complication in relation to age and sex distribution

Age	Perforation	M	F	Bleeding	M	F	Stenosis	M	F	Total
1 - 10	4	3	1	1	1	0	0			5
11 - 20	4	4	0	0			0			4
21 - 30	38	34	4	9	9	0	8	7	1	55
31 - 40	42	42	0	12	12	0	13	13	0	67
41 - 50	0			5	3	2	10	9	1	15
51 - 60	5	5	0	0			2	2	0	7
61 - 70	2	2	0	0			1	1	0	3
> 70	3	3	0	0			0			3
Total	98			27			34			159

Table 3: Type of surgery in relation to morbidity and mortality

AGE	1993		1994		1995		1996		1997		1998		1999		2000		2001		2002		TOTAL
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F			
1-10		1			1				1		2										5
11-20					1				3												4
21-30	1	1	7	2	8	1	7	1	2				6				4		2		55
31-40	8		13		4		10		8		9		3		5		3		4		67
41-50	5			1	3		1	2					2						1		15
51-60					1				3		3										7
61-70															3						3
>70															1		1		1		3
Total	29		22		20		21		17		14		11		9		8		8		159

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Disease	Type of surgery	NO.of patient	Death %	No. complication
Perforation	Simple closure	93	4(4.3%)	18(19.3%)
Perforation	Definite surgery	5	0	0
Obstruction	Vagotomy&Drainage operati	34	0	6(17.6%)
Bleeding	Control of bleeding	27	1(3.7%)	1(3.7%)
Total		159	5(3.1%)	25(15.7%)

Table 4:History of peptic ulcer in relation to present complication

	Perforation(%)	Stenosis(%)	Bleeding(%)	
+ve history of p.u	55(55.5%)	23(23.2%)	21 (21.2%)	99
-ve history of p.u	43(71.6%)	11(18.3%)	6 (10%)	60
Total	98	34	27	159

Table 5:Complication,mortality,morbidity in relation to concurrent medical disease.

Medical disease	D.U complication	Morbidity(%)	Mortality(%)
Present	29	15(51.7%)	5(17.2%)
Absent	130	10(7.6%)	0
Total	159	25(15.7%)	5(3.1%)

Table 6. Relation of time of presentation with morbidity and mortality

Time	NO. of patients	NO. of death(%)	NO.of complication(%)
<24 hr.	127	0	7(5.5%)
>24 hr.	32	5(15.5%)	18 (56%)
Total	159	5(3.1%)	25(15%)

Table 7. Incidence variation in complication for the last 10 years.

Year	Perforation	Bleeding	Pyloric stenosis	Total
1993	13	5	11	29
1994	15	4	3	22
1995	13	2	5	20
1996	12	1	8	21
1997	9	5	3	17
1998	11	3	0	14
1999	8	2	1	11
2000	4	3	2	9
2001	6	1	1	8
2002	7	1	0	8
Total	98	27	34	159

Table 8. Seasonal variation in relation to the type of each complication.

Month	Perforation	Bleeding	Stenosis	Total
Jan.	28	0	3	31
Feb.	10	1	2	13
Mar.	6	1	2	9
Apr.	3	1	5	9
May	2	1	3	6

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Jn.	3	2	4	9
Ju	1	8	2	11
Aug.	2	7	4	13
Sep.	4	2	2	8
Oct.	6	1	3	10
Nov.	11	3	2	16
Dec.	22	0	2	24
Total	98	27	34	159

Table9. Mortality in relation to the age

Age	No. of patients(%)	No. of deaths(%)
<50 years	146(91.8%)	0
>50years	13(8.1%)	5(38.4%)
Total	159	5

Table 10. Morbidity in relation to the age

Age	No. of patients	No. of complication
<50	146(91.8%)	17(11.6%)
>50	13(8.1%)	8(61.5%)
Total	159	25