Original Article (APMC – 456) DOI: 10.29054/APMC/19.456

Outcome of Duodenal Ulcer Perforation After Graham Omental Patch Repair

Sanam Karim Unar, Ahmed Ali Danish, Amjad Ali Bhurt, Abdul Aziz Laghari

ABSTRACT

Objective: To determine the outcome of Graham Omental patch repair in duodenal ulcer perforation at Liaquat medical University Hospital Hyderabad. **Settings:** This study was conducted in the Department of General Surgery at Liaquat University of Medical and health science. **Study design:** Descriptive, case series. **Duration:** One year, from August 2016 to July 2017. **Methodology:** All cases with diagnosis of perforated duodenal ulcer within 48 hours, aged between 15 to 60 years and either of gender were included. Complete clinical examination including ultrasound of abdomen, abdominal and chest erect X-ray exhibiting air under the diaphragm were done. All the cases according to the clinical conditions were resuscitated and operated in the emergency. Outcome of Graham omental patch repair was documented in terms of complications and mortality. All the data was entered on predesigned proforma. **Results:** Total 195 patients were selected; their mean age was 43.11±03.36 years. Males were in majority 60.0%. 23.1% cases were smokers, hypertensive 8.2%, diabetes 5.1% and obese patients were 3.6%. According to the outcome wound infection was developed among 6.2% cases, chest infections 3.6% cases, Intra-abdominal abscesses 4.1% cases, renal failure occurred among 3.1% cases and post-operative leak found in 3.6% of the cases, while 3.1% patients were reopened and mortality rate was observed 5.1%. Factors like old age, diabetes, hypertension, obesity and smoking were significantly associated with poor outcome and mortality, p-value 0.001. **Conclusion:** It was concluded that Omental patch repair is simple to perform and yet remains reliable for the closure of much large perforations. Patch closure only is sufficient in case of duodenal perforations considering the low complication rate. Co-morbidities had significant effects on outcome. **Keywords:** Duodenal ulcer perforation, Graham Omental patch, outcome

Corresponding Author
Submitted for Publication: 11-01-2018 *Accepted for Publication: 09-07-2018*
DR. SANAM KARIM UNAR, Women Medical Officer, General Surgery, Liaquat University of Medical and Health Sciences, Hyderabad-Pakistan
Contact / Email: +92 332-2179780, drsanamkarim@yahoo.com
Citation: Unar SK, Danish AA, Bhurt AA, Laghari AA. Outcome of Duodenal Ulcer Perforation After Graham Omental Patch Repair. APMC 2019;13(1):14-7.

INTRODUCTION

Perforated duodenal ulcer is frequent surgical emergency challenged via general surgeons. Patients usually present with signs of peritonitis. Perforations of duodenal ulcers are the commonest in the practice of surgery and do occur as the complication of peptic ulcer disease (PUD), abuse of non-steroidal anti-inflammatory drugs (NSAID) and gastric cancer.[1,2] The present peak life stage for duodenal ulcer perforation ranges between 40 and 60 years.[3] The prevalence of duodenal perforations is seven to ten cases per 1 million adults yearly.[4] The site of perforation generally involves the duodenal anterior wall (60%), even though it might take place antral (20%) and gastric ulcers of lesser-curvature (20%).[5] Duodenal ulcer (DU) is a major lesion among western nations, while gastric ulcers are further common among oriental nations. Around just 10% of young people are infected with H pylori, and this part of infection elevates progressively with age. Ulcers of duodenum result in substantial morbidity, mainly associated to pain as well as admission to Hospital for complication for instance ulcer hemorrhage, obstruction, peritonitis and perforation.[6] Over the past many years, a growing prevalence of ulcers of duodenum among females and a declining prevalence among men have been noted, particularly among males of younger age, among whom the incidence of H pylori is declining. In the past, it was thought that duodenal ulcers (DU) are further frequent among males contrasted to females. Though at present, the incidence is possibly equal among females and males. Mortality due to duodenal ulcer perforation depends upon the existence or non-existence of risk factors. Majority of studies reported around 10% global mortality. In the underdeveloped nations, the high mortality and morbidity noted by cases of perforated duodenal ulcer (DU) is possibly because of delayed presentation. Early repair of perforated duodenal ulcer is recommended safe with minimal complications and with no mortality.[7] The optimal surgical treatment for perforated duodenal ulcer has been the choice of surgeons. Simple repair with Omental Patch has most frequently been performed since it has been successfully performed via Graham during 1937.[8] Perforated duodenal ulcers (DU) are the frequent surgical emergency, however literature has no exact definition, prevalence, complications and management of large perforations of DU.[9] The purpose of this study was to determine the outcome of Omental Patch in duodenal ulcers' perforation. If technique exhibits better outcomes, it's adaptation will be suggested in future for superior administration and outcome.

METHODOLOGY

Study Design: Descriptive, case series study

Settings: General Surgery Department at Liaquat University hospital, Hyderabad-Pakistan.

Duration: One year, from August 2016 to July 2017.

Methods: All cases with diagnosis of perforated duodenal ulcer within 48 hours, age between 15 to 60 years and either of gender were included. Patients those were unfit for general anesthesia and disagree to take part in this study were excluded. All patients having co-morbidities like: diabetes, hypertension, obesity and smoking for more than two years were selected. A written approval was taken from every participant and their attendants after explaining all the risks regarding surgery. Complete clinical examination including ultrasound of abdomen, chest and erect abdominal X-ray exhibited air under the diaphragm were done. A detailed medical history and base line equitable investigations in all patients were done. All the cases according to the clinical conditions of the patients were resuscitated and operated in the emergency. Outcome of Graham Omental patch repair was documented in terms of complications including wound infection, post-operative Leak, chest infections, intra-abdominal abscesses, renal failure, disseminated intravascular coagulation (DIC) and Jaundice and mortality.

Data Analysis: All the data was analyzed by SPSS 16.0. The quantitative variables like age and duration of duodenal ulcer were exhibited as mean ± S.D. Simple frequencies and percentages were calculated for the gender, co morbidities and mortality. Stratification with respect to comorbidities with outcome was done. Chi square test was applied by taking P-value of ≤0.05 as significant.

RESULTS

Total 195 patients studied, their mean age was 43.11±03.36 years. Males were in majority 60.0%, while females were 40.0%. Mean time of duodenal ulcer was 36.43±07.65 hours. 60% patients were without comorbidity and 40% were with comorbidities, particularly as 23.1% smokers, hypertensive 8.2%, diabetic 5.1% and obese were 3.6%. Table 1.

Table 1: Demographic data of the patients (n=195)

	Variables	Frequency	Percent
Age groups	15-30	54	60.0%
	31-45	91	40.0%
	46-60	50	100.0%
Gender	Male	117	60.0%
	Female	078	40.0%
Co-morbidities	Diabetes	10	5.1%
	Hypertension	16	8.2%
	Obesity	07	3.6%
	Smoking	45	23.1%
	No co-morbidity	117	60.0%
Total		195	195

Mean age (Mean+SD) 43.11+03.36 years

Duration of duodenal ulcer (Mean+SD) 36.43+07.65 hours

According to the outcome 71.3% patients were normal and remaining were found with complications such as wound infection, Chest infections, Intra-abdominal abscesses, re-open, Renal failure and Post-operative Leak were found in patients with percentage of 6.2%, 3.6%. 4.1%, 3.1%, 3.1% and 3.6% respectively, while 5.1% cases were died. Table 2.

Table 2: Patient's distribution according to outcome (n=195)

Complications	Frequency	Percent
Normal	139	71.3%
Wound infection	12	6.2%
Chest infections	09	3.6%
Intra-abdominal abscesses	08	4.1%
Re open	06	3.1%
Renal failure	06	3.1%
Post-operative Leak	07	3.6%
Mortality	10	5.1%
Total	195	100%

In this study normal patients were significantly associated with age group of 31-45 years, while complications and death were significantly associated with old age and longtime of duodenal ulcer. No significant difference was observed in outcome according to gender. Co-morbidities diabetes, hypertension, obesity and smoking were significantly associated with poor outcome and mortality p-value 0.001. Table 3.

Table 3: Patient's outcome according to comorbidities n=78

Outcome	Comorbidities					Total	P-value
	DM*	HTN**	Obesity	Smoking	no-co***		
Normal	2	4	2	14	117	139	0.001
Wound infection	3	2	1	6	0	12	
Chest infections	0	3	1	5	0	9	
Intra-abdominal abscesses	2	3	1	2	0	8	
Re open	1	1	0	2	0	4	
Renal failure	0	1	0	5	0	6	
Post-operative Leak	1	1	1	4	0	7	
Death	1	1	1	7	0	10	
Total	10	16	7	45	117	195	

DM*= Diabetes mellitus, HTN**= Hypertension, No-co***= No-comorbidities

DISCUSSION

Perforated duodenal ulcer is a frequent surgical emergency in our region. It is more common in males than females.[10] In current study; males were in majority 60.0%; however, females were 40.0%. Similarly, Etonyeaku AC et al,[1] reported that perforated duodenal ulcer was 5-times further frequent among males contrasted to females. Magsi AM et al[11] also found comparable findings regarding gender distribution. In another

study also found comparable findings regarding gender distribution as; female to male ratio of 1:8, reported by Bin-Taleb et al.[12] The magnitude of male dominance could probably be justified by the reality that males were more aggressive and thus predisposed to risky behavior more than females, leading to gastroduodenal perforation; and high prevalence of male gender may also be because in our society male were more smokers as compared to female.

In this study; it seems to be a disease of middle and young age groups, as patients' mean age was 43.11±03.36 years. Similarly, Etonyeaku AC et al[1] observed that the young and middle age groups were commonest and mean age was 39.7 years. However, Ohene- Yeboah[13] documented 64.8 years of mean age. Bin-Taleb et al[12] found that an overall mean age of 39.08 years.

In our study; duration of duodenal ulcer noted by time of onset, sign and symptoms and prolonged duration of it showed significantly adverse effects on outcome. An acute ulcer, if expressed as an ulcer with a dyspepsia history duration <3 months, was deemed less possibly to carry such adverse longstanding effects.[14] While, Boey et al[15] documented that around 1/3rd of the acute ulcer cases, as previously defined, had undergone major late morbidity because of peptic ulcer (PU) following surgical closure of a perforated ulcer.

In this study; after graham omental patch repair; 28.7% patients were observed with complications as: wound infection, Chest infections, Intra-abdominal abscesses, re-open, Renal failure and Post-operative Leak with percentages of 6.2%, 3.6%. 4.1%, 3.1%, 3.1% and 3.6% respectively, while 5.1% had died. Similarly, Etonyeaku AC et al1 reported that post-operative complications as: intra-abdominal abscess collection among 4(8.9%) cases, surgical site wound infection among 8(17.8%), and adult respiratory distress syndrome among 4(8.9%), adhesive bowel obstruction among (2.2%), failed primary repair among other (2.2%) cases and (13.3% of mortality rate).

In this study; factors like old age, diabetes, hypertension, obesity and smoking were significantly associated with poor outcome and mortality, p-value 0.001. Consistently; factors like preoperative shock, progressing age, co-disease, perforation size, delay in operation and presentation, have been reported via different authors as mortality risk factors in a situation of this type.[10,16] On the other hand, Etonyeaku AC et al1 reported that the correlation of perforation duration prior to surgical procedure with post-operative complication(s) for instance wound infections were as well statistically significant (P>0.05), and suggested that wound infection prevalence was not dependent upon delay in surgical procedure. In many other studies a strong association was found between cigarette smoking and prevalence of duodenal ulcer perforation (smoking is known to adversely effects on mucosal aggressive and protection factors).[17] In our study; 60% patients were without comorbidity and 40% were with comorbidities as: 23.1% smokers, followed by hypertensive 8.2%, diabetic 5.1% and obese were 3.6% and these comorbidities were significantly associated to poor outcome. Fathalah TA et al[18] also reported that Smoking, age, sex, NSAIDs intake, and stress contributed significantly as risk factors for incidence in ulcers of duodenum perforation and had also significant effect on treatment outcome.

CONCLUSION

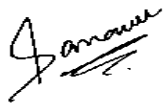
It was concluded that duodenal ulcer perforation mostly occurred among males and middle age. Omental patch repair is simple to perform and yet reliable for closure of much large perforations. Only Patch closure is sufficient for duodenal perforations considering low complications rate.

REFERENCES

1. Etonyeaku AC, Agbakwuru EA, Akinkuolie AA, Omotola CA, Talabi AO, Onyia CU, Kolawole OA, Aladesuru OA. A review of the management of perforated duodenal ulcers at a tertiary hospital in south western Nigeria. Afr Health Sci. 2013;13(4):907-13.
2. Chalya. Clinical profile and outcome of surgical treatment of perforated peptic ulcers in North-western Tanzania: a tertiary hospital experience. WJES 2011;6(31):1-10.
3. Lagoo S, Ross L, Mc Mahon RL. The sixth decision regarding perforated duodenal ulcer. JSLS. 2002;6(4):329-68.
4. Bekele A, Zemenfes D, Kassa S, Deneke A, Taye M, Wondimu S. Patterns and Seasonal Variations of Perforated Peptic Ulcer Disease: Experience from Ethiopia. Annals of Afri Surg. 2017;14(2);86-91.
5. Sorin C, Damien D. Peptic Perforation of the 4th Duodenal Segment: Case Report. 2015;11;421-4.
6. Van Kerkhoven LA, van Rijswijck SJ, van Rossum LG. Open-access upper gastrointestinal endoscopy a decade after the introduction of proton pump inhibitors and helicobacter pylori eradication: a shift in endoscopic findings. Digestion. 2007;75(4):227-31.
7. Gad KH, Mostafa NN, Adel NA. Effectiveness of Laparoscopic Management of Perforated Duodenal Ulcer with Eradication of Helicobacter Pylori in Properly Selected Patients. J Am Sci. 2013;9(7):200-6.
8. Bell GD, Powell KU. Eradication of helicobacter pylori and its effect in peptic ulcer disease. Scand J Gastroenterol. 1993;196(15):7–11.
9. Gupta S, Kaushik R, Sharma R, Ashok Attri. The management of large perforations of duodenal ulcers. BMC Surg. 2005;5(15):151-5.
10. Søreide K, Thorsen K, Harrison EM, Bingener J, Møller MH, Ohene-Yeboah M, Søreide JA. Perforated peptic ulcer. The Lancet. 2015;386(10000):1288-98.
11. Magsi AM, Iqbal M, Malik M, Parveen S. Silent Peptic Ulcer Disease Perforation. J Sur Pak (International). 2017;22(2):67-72.
12. Bin-Taleb AK, Razzaq RA, Al-Kathiri ZO. Management of perforated peptic ulcer in patients at a teaching hospital. Saudi Med J. 2008;29(2):245-50.
13. Ohene-Yeboah M, Togbe B. Perforated gastric and duodenal ulcers in an urban African population. West Afr J Med. 2006;25(3): 205-11.
14. Taylor H Peptic ulcer perforation treated without operation. Lancet. 2010;2441- 4.
15. Boey J, Lee NW, Wong J, Ong GB. Perforations in acute duodenal ulcers. Surg Gynecol Obstet. 2012;15(5)193- 6.

16. Rajesh V, Sarathchandra S, Smile SR: Risk factors predicting operative mortality in perforated peptic ulcer disease. Tropical Gastroenterol. 2003,24:148-50.
17. Li LF, Chan RL, Lu L, Shen J, Zhang L, Wu WK, Wang L, Hu T, Li MX, Cho CH. Cigarette smoking and gastrointestinal diseases: the causal relationship and underlying molecular mechanisms. International journal of molecular medicine. 2014;34(2):372-80.
18. Fathalah TA, Mahmood MA. Risk factor for perforated duodenal ulcer in sulaemania city. Zanco J Med Sci. 2010;14(3):1-6.

AUTHORSHIP AND CONTRIBUTION DECLARATION

AUTHORS	Contribution to The Paper	Signatures
Dr. Sanam Karim Unar Women Medical Officer, General Surgery Liaquat University of Medical and Health Sciences, Hyderabad-Pakistan	Conduct the study as principle author	
Dr. Ahmed Ali Danish Medical Officer, General Surgery Liaquat University of Medical and Health Sciences, Hyderabad-Pakistan	Contribution in data collection and manuscript writing	
Dr. Amjad Ali Bhurt Medical Officer, General Surgery Liaquat University of Medical and Health Sciences, Hyderabad-Pakistan	Contribution in data analysis and manuscript writing	
Dr. Abdul Aziz Laghari Professor of General Surgery Liaquat University of Medical and Health Sciences, Hyderabad-Pakistan	Contribution in guideline for study conduct