

ISSN : 2309-3234

TMSS MEDICAL COLLEGE JOURNAL

Volume 07, No. 02, July 2016

TMSS Medical College Journal
July 2016



An Official Publication of TMSS Medical College, Bogra



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TMSS Medical College, Bogra**

TMSS Medical College Journal

Vol. 7, No. 2, July 2016

An Official Publication of TMSS Medical College, Bogra, Bangladesh

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Printed by

TMSS Printing Press
Bogra, Bangladesh
e-mail: tmsspriotingpress@gmail.com

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Perforated peptic ulcer: How to improve outcome?

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Abstract

Introduction: Despite the introduction of histamine H₂-receptor antagonists, proton-pump inhibitors and the discovery of *Helicobacter pylori*, both the incidence of emergency surgery for perforated peptic ulcer and the mortality rate for patients undergoing surgery for peptic ulcer objective perforation have increased^{1/} To improve the outcome of patients with PPU disease, A care protocol was applied causing significant reduction of the mortality rate from 27% to 17.1%¹.

Methods: This is a hospital based interventional randomized control trial of patients with surgically treated PPU disease over a period of two years. Two series of patients group P (n=100) treated by perioperative care protocol and group C treated by hospital guided conventional operative management .

Results: In group C patients underwent conventional operative management where operative mortality was 17% in comparison to group P Where patients were treated by care protocol and mortality rate was 7%.

Conclusion: Mortality rate was reduced up to more than half after implementation of this care protocol compared to conventional treatment among the patients with PPU disease.

Introduction

To improve the outcome of perforated peptic ulcer patients, it is necessary to investigate the reasons behind its high mortality rate¹. Now-a days after the introduction of H₂ blockers and many PPI therapies, availability of endoscopes services has reduced successfully the surgical problems of duodenal ulcer disease, but perforation is still prevailing both in developed and developing world². This increase has occurred despite improvements in perioperative treatment and monitoring. In this study we evaluate the existing evidence in order to identify significant risk factors with an emphasis on risks that are preventable¹. The outcomes of perforations have remained fairly unchanged. Even in recent reports, the mortality from perforated peptic ulcer (PPU) remains up to 27 % and complications are reported in 20–50 % of the patients. The operative mortality remains significantly high despite the improvement over the last several decades brought about by the advancements in surgical techniques, anesthesia, critical care, a better understanding of the pathophysiology of the disease and the wide availability of antibiotics.

To improve the outcome of patients with PPU, evidence based¹³⁻¹⁵ perioperative care protocol is applied in various hospital in Denmark with significant reduction of the mortality rate from 27% to 17.1%.

Recently, fast-track surgery and perioperative care protocols have gained popularity¹⁵. Quality of care for the management of PPU has been improved with documented reduction in morbidity and mortality rates among surgical patients¹⁴.

This care protocol which is evidence-based applied before, during and after surgery were implemented for all patients with suspected perforated peptic ulcer disease. This protocol was implemented by the author with the help of professors, consultants, registrars, assistant registrars, trainee doctors, anesthesiologists, cardiologists, nurses of different divisions.

Materials and Methods

A hospital based interventional randomized control trial over a period of two years starts from January 2012 to December 2014, 200 patients with features of PPU disease admitted in Surgical units of Rajshahi Medical College Hospital was enrolled as a cases and control.

Studies were approved by IRB of Rajshahi Medical College for ethical clearance. The interventions were the currently used care protocol based treatments. Total 200 consecutive patients admitted in the hospital were divided into group-P intervention group and group-C control group. Mortality rate in the intervention group was compared with the concurrent

hospital controls group. perforation due to malignant and traumatic can patients who was managed conservatively where excellent from the study

Intervention of care protocol:

1. Basic and well established diagnostic and treatment principles.
2. Evaluation and risk stratification by consultant in charge of the surgical unit.
3. Minimization of surgical delay.
4. Early use of broad spectrum empirical antibiotics.
5. Standard blood tests (serum electrolytes, serum creatinine, random blood sugar, blood for grouping and Rh factor) and ECG.
6. Respiratory and circulatory stabilization.
7. Relevant antiulcer therapy.
8. Focus on administration of nutrients and fluid after surgery.
9. Appropriate analgesia.
10. Early mobilization.
11. Prevention of atelectasis and other postoperative complications.
12. Frequent and sufficient monitoring of vital parameters.

Results

The study population comprised 200 patients were divided into group-P, the intervention group and group-C, the control group. Group-P patients were treated according to the set protocol and group-C patients were managed by existing hospital protocol.

The findings of study obtained from data analysis has presented below.

Table 1: Presenting complaint with duration (days)

Time gap between symptoms appear & arrival in Hospital			P value
	Case 100	Control 100	
Day 1	27	31	0.484
Day 2	34	40	
Day 3	29	23	
More than 3 Days	10	6	
Total	100	100	

$\chi^2=2.468$ df=3 p-value=0.484

Chi square value: 2.468 with 3 df. P-value is 0.484 which is not statistically significant.

Table-01 shows Presenting complaints with duration (days) distribution between the Case and the Control group which was identical. This table also shows that delayed presentation (after one day) were very high 73 & 69% (cases and controls).

Table 2: Pre-operative Goal directed fluid therapy (Cases) n=100

Preoperative Goal Directive fluid therapy	Status	
	Case 100	Control 100
yes	100	100 not done
total	100	100 not done

This table shows that all the cases were given Goal directed fluid therapy for correction of dehydration pre-operatively.

Table 3: Pulmonary complication (Atelectasis, Pneumonia) Cases & Controls n=200

Pulmonary complication	Status		P value
	Case 100	Control 100	
Present	03	18	0.029
Absent	97	82	
Total	100	100	

$\chi^2=11.971$ df=1 p-value=0.029

Chi square value: 11.971 with 1 df. P-value is 0.029 which was highly statistically significant.

Table-03 shows Pulmonary complication (Atelectasis, Pneumonia) between the case and the control group. 18% of controls suffers pulmonary complication where 3% were found in cases. The control group suffered significant more in pulmonary complication than control group (p=0.029).

Table 4: Postoperative sepsis screening (Cases & Controls) n=200

Postoperative sepsis screening	Status		P value
	Case 100	Control 100	
sepsis	7	16	0.037
Without sepsis	93	84	
total	100	100	

$\chi^2=3.979$ f=1 p-value=0.037

Chi square value: 3.979 with 1 df. P-value is 0.037 which is highly statistically significant.

Table-04 shows post-operative sepsis screening between the case and the control group. About twice (16) of sepsis occur in controls group in complication to case group which is significant high (p=0.037).

Table-5: Post-operative wound infection (Cases & Controls) n=200

Post-operative wound	Status		P value
	Case 100	Control 100	
Wound infection	13	35	0.017
Without wound infection	87	65	
Total	100	100	

$\chi^2=13.268$ df=1 p-value=0.000

Chi square value: 13.268 with 1 df. P-value is 0.017 Would infection highly was significant move in control group than can group (p=0.017).

Table 6: Postoperative outcome (Cases & Controls) n=200

Status	Postoperative outcome					total	P value
	Death	Wound infection	Pulmonary complications (Atelectasis, Pneumonia)	Sepsis	Normal		
Case	7	13	3	7	70	100	0.000
Control	17	35	18	16	14	100	
Total	24	48	21	23	84	100	

$\chi^2=65.819$ df=4 p-value = 0.000

Chi square value: 65.819 with 4 df. P-value is 0.000. The case group had less death (7% vs 17%) would intention pulmonary complication. Sepsis (7% vs 16%) than control group (p= 0.001 3% vs 18%)

Discussion

The mortality rate and the extent of postoperative complications are fairly high but the reasons for this have not been thoroughly explained, even though a number of risk factors have been identified¹. Some of these risk factors can be explained by the septic state of the patient on admission. In order to improve the outcome of patients with peptic ulcer perforation, sepsis needs to be factored into the existing knowledge and treatment¹. In addition to advanced age, other risk factors for perioperative mortality are shock, delayed presentation, and significant peritoneal contamination¹. In a prospective study, Boey and Wong found that shock (systolic blood pressure <100 mmHg), coexistent medical problems, and delayed presentation are independent risk factors for perioperative mortality¹¹. Ever since the first

successful surgical management of perforated peptic ulcer was described in 1892, non-operative management fall out of favor owing to its associated high morbidity and mortality⁸. However, which is the best surgical procedure is still debatable. Options range from damage control without addressing the main pathology to definitive management of the peptic ulcer disease². The operative mortality remains significantly high despite the improvement over the last several decades brought about by the advancements in surgical techniques, anesthesia, critical care, a better understanding of the patho physiology of the disease, and the wide availability of antibiotics⁶.

Perforation peritonitis is a frequently encountered surgical emergency in tropical countries like Bangladesh⁷. Disparity of mortality rate between case & control were probably due to the implementation of intervention through the care protocol. Mortality rate of 17% which was dropped to 7% after introduction of intervention of care protocol. Most of the patients presented to the hospital were late 142 (71%) after 24 hours with well establish generalized peritonitis¹.

In my study, the major cause of postoperative morbidity were respiratory complications (18%) e.g. pneumonia, atelectasis, pleural effusion or ARDS, wound infection (35%), septicemia (16%) which were preventable if were detected early and aggressively treated. Gross contamination of peritoneal cavity, septicemia and wound infection were seen in control group due to the fact that majority of our patients were operated by trainee doctors like assistant registrar, indoor medical officer who were still in the learning curve.

A core element of the care protocol was the use of diagnostic procedures and treatment principle which was evidence based including screening for sepsis, initial circulatory and respiratory stabilization, early use of broad-spectrum empirical antibiotics, admission to a high-dependency unit, early goal-directed fluid therapy and thorough invasive monitoring of vital parameters⁵. As a result of the structured and frequent screening for sepsis, more patients were probably diagnosed with sepsis and treated accordingly. However, the decreased

number of patients with respiratory complications 3% compared to the 28% in control group which could also be explained by the fluid therapy (goal-directed fluid therapy).

Based on these results, the authors recommend implementing a perioperative care protocol in patients treated surgically for PPU. However, it is not possible from the present findings to determine which elements of the trial protocol resulted in the improved outcome. To answer this clinical question, the elements of the trial protocol would have to be examined individually in randomized clinical trials

Conclusion

Pulmonary complication like atelectasis pneumonia postoperative sepsis wound infection and death was significantly less in patients who were treated perioperative care protocol than there who were treated by traditional management protocol. However, it is not possible from the present findings to determine which elements of the trial protocol resulted in the improved outcome. To answer this clinical question, the elements of the trial protocol would have to be examined individually in randomized clinical trials.

References

1. Moller MH, Adamsen S, Wojdemann M, Moller AM. Perforated peptic ulcer: how to improve outcome? *Scand J Gastroenterol* 2009; 44: 15-22
2. MM Rahman Past, Present And Future Of Peptic Ulcer Perforation.
3. Irvin TT. Mortality and perforated peptic ulcer: a case for risk stratification in elder patients. *Br J Surg* 1989; 76: 215-218.
4. Blomgren LG. Perforated peptic ulcer: long-term result after simple closure in the elderly. *World J Surg* 1997; 21: 412-414.
5. Thomsen RW, Riis A, Christensen S, norgaard M, Sorensen HT. Diabetes and 30-day mortality from peptic ulcer bleeding and perforation: a Danish population-based cohort study. *Diabetes Care* 2006; 29: 805-810.
6. Moller M.H. Adamsen, S. Thomsen, R.W. Moller A.M and on behalf of the Peptic Ulcer Perforation (PULP) trial group (2011), Multi-centre trial of a perioperative protocol to reduce mortality in patients with peptic ulcer perforation. *Br. J Surg*, 98:802-810.
7. Hermansson M, Stael von Holstein C, Zilling T. Surgical approach and prognostic factors after peptic ulcer perforation. *Eur J Surg* 1999; 165: 566-572.
8. Moller MH, Adamsen S, Thomsen RW AM. Preoperative prognostic factors for mortality in peptic ulcer perforation- a systemic review. *Scand J Gastroenterol* 2010; 45: 785-805
9. M. Mizanur Rahman- M. Saiful Islam- Sabrina Flora- S. Fariduddin Akhter- Shahid Hos-sain- Fazlul Karim. Mortality in Perforated Peptic Ulcer Patients After Selective Management of Stratified Poor Risk Cases. *World Journal of Surgery* December 2007, Volume 31, Issue 12, pp 2341-2344.
10. Egberts JH, Summa B, Schulz U, Schafmayer C, Hinz S, Tepel J. Impact of preoperative physiological risk profile on postoperative morbidity and mortality after emergency operation of complicated peptic ulcer disease. *World J Surg* 2007; 31: 1449-1457.
11. Koc M, Yoldas O, Kilic YA, Gocmen E, Ertan T, Dizen H et al. Comparison and validation of scoring systems in a cohort of patients treated for perforated peptic ulcer. *Engen-becks Arch Surg* 2007; 392: 581-585.
12. BoeyJ, Wong J, Ong GB. Bacteria and septic complication in patients with perforated duodenal ulcers. *Am J Surg* 1982; 143: 635-639.
13. Fong IW. Septic complications of perforated peptic ulcer. *Can J Surg* 1983; 26: 370-372.
14. Kehlet H, Wilmore DW. Evidence-based surgical care and the evolution of fast-track surgery. *Ann Surg* 2008; 248: 189-198.
15. Kehlet H. Fast-track colorectal surgery. *Lancet* 2008; 371: 791-793.
16. Wilmore DW, Kehlet H. Management of patients in fast track surgery. *BMJ* 2001; 322 : 473-476.