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Original Research Article

Combined conservative management and percutaneous peritoneal drainage as damage control approach in high-risk patients with perforated peptic ulcers

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ABSTRACT

Background: High risk patients with perforated peptic ulcer, where both the surgeon and anaesthetist are hesitant to operate, were managed by combined conservative management and bilateral percutaneous peritoneal drainage under local anaesthesia as a damage control approach; followed by either definitive surgery or omental patch closure. Here we study the management outcome in terms of morbidity & mortality of such patients.

Materials and Methods: A prospective study of 60 patients presenting to VSSIMSAR, Burla was done between Feb 2018 and Jan 2020. Study population includes patients with perforated peptic ulcer confirmed by pneumo-peritoneum in X-ray and bilious peritoneal tap; with high peri-operative risk (PULP score 8-18). They were managed by combined conservative management and bilateral percutaneous peritoneal drainage under local anaesthesia. The outcome in terms of improved general condition and definitive/ omental patch closure, morbidity and mortality rates were noted.

Result: After risk stratification according to PULP score, total number of high-riskcases (PULP score >8) were 60 (male-39, female-21); Majority of them were elderly (90%). Most common complication was ARDS (28.3%). Maximum number of patients (75%) were improved by the damage control approach without significant complications and offered exploratory laparotomy & needful. Localised abscess were observed in around 13.33% patients; which were managed by image guided aspiration under antibiotic coverage. The overall mortality rate was 11.67%.

Conclusion: Combined conservative management and percutaneous peritoneal drainage as damage control, which can be done in resource limited centre; followed by either definitive surgery or omental patch closure is associated with reduced mortality.

1. Introduction

Perforated peptic ulcer is a common surgical emergency associated with high morbidity and mortality. Previously, most patients were middle aged, with a male to female ratio of 2:1. Currently it has been more commonly found in elderly females.[1] Perforation in proximal gastrointestinal tract is more common in developing nations like India as compare to the western world where perforation is more common in distal bowel.[2–4] The recommended treatment is adequate resuscitation followed by early laparotomy, thorough peritoneal lavage & primary repair of perforation; followed by administration of gastric anti- secretory agents & H.pylori eradication.[1,5] In case of gastric ulcers, the ulcer margin is excised for histopathological study to rule out malignancy. Other treatment options recommended are:

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primary peritoneal drainage (PPD), laparoscopic sanitation; Taylor's conservative method, laparostomy and planned re-laparotomies.[6–8] In carefully selected patients with acute perforation and stable haemodynamic, in absence of florid sepsis, conservative management proposed by Taylor regimen is found to be effective.[9,10] However in patients with delayed presentation and those with sepsis or other contributory factors, the prognosis is not favourable. Especially the surgical and anaesthetic stress often becomes counterproductive in absence of adequatepost-operative ICU support. Most of the healthcare centre in our country are over burdened with relative scarcity of ICU support, and our institute being a tertiary care hospital is not different. In such patients, conservative management along with bilateral percutaneous peritoneal drainage under local anaesthesia have been tried as damage control approach to control the contamination and sepsis.[11–14] Although primary peritoneal drainage under local anaesthesia has long been established as definitive approach of management in infants with necrotizing enterocolitis associated peritonitis ,but its use in adults is still under debate and yet to be clarified.[12,15] Here we have adopted this approach along with combined conservative management for such high risk patients.Our work aimed to study the management outcome in terms of morbidity and mortality in these cases.

2. Materials and Methods

A prospective observational study of 60 patients presenting to VSS institute of medical sciences and research (VSSIMSAR), Burla was done between february 2018 and january 2020. Study population includes patients with perforated peptic ulcer confirmed by pneumo-peritoneum in X-ray and bilious peritoneal tap, with high risk (PULP score 8-18).[16–18]

Table 1: The Peptic Ulcer Perforation (PULP) score.[16]

Variables	Score
Age> 65 Years	3
Comorbid active malignacny & aids	1
Comorbid liver cirrhosis	2
Concomitant steroid	1
#Shock at admission	1
Time of perforation >24 HOURS	1
Serum creatinine>130MMOL/L	2
*ASA Score 2	1
ASA Score 3	3
ASA Score 4	5
ASA Score 5	7
	Max=18

#Shock means systolic blood pressure <100mmhg and Heart rate >100/min

*Consider only one ASA score, ASA=American Society of Anaesthesiologists

2.1. Exclusion criteria

1. Traumatic bowel injury.
2. Hollow viscus perforation other than peptic ulcer perforation

2.2. Conservative management[9]

All patients were subjected to initial resuscitation and peri-procedural conservative management comprising of Nasogastric aspiration & intermittent suction, Intravenous fluids, empiric antibiotics (Injection ceftriaxone 1 gm IV 12 hourly & Injection Metronidazole 500mg IV 8hourly); Injection Pantoprazole 40mg IV OD; Injection Tramadol 100mg IM SOS; Per-urethral catheterisation and hourly urine output monitoring; Repeated clinical exam & Regular biochemical assessment.

Optional measures -supplemental oxygen, vasopressors, mechanical ventilation.

2.3. Percutaneous procedure[11–14]

Around 3 cm incisions were given on both flanks, the muscles were spitted. The peritoneum was breeched under vision and placement of PVC corrugated drains (On right side towards Morrison's pouch & on left side towards pelvis). The peritoneal fluid containing gastric and duodenal contents with or without pus were drained. After procedure patients were closely observed, especially the pulse, blood pressure, temperature, respiratory rate, drain output, urine output, hemogram and biochemical assessments. Treatment of associated diseases continued in consultation with respective departments. The post-operative complications and need of additional procedures and the unfortunate deaths were noted.

The end point of this study were

1. Improved general condition & second look laparotomy and primary repair/definitive surgery.
2. Localised abscess formation needing USG guided aspiration or laparotomy.
3. Death of the patient.

Study was initiated after due approval of Institutional ethical committee (VIREC).

3. Results

After risk stratification according to PULP score, total number of high-risk cases (PULP score >8) were 60 (male-39, female-21). Majority of high-risk patients were elderly, 54 out of 60 (90%). The highest score in our study was 15 out of 18.

All the patients were managed by combined conservative and percutaneous peritoneal drainage. The complications, need of ICU care and mortality were recorded.

Table 2: Pulp score observed in study population

Variables	Score	No. of patients (n=60)
Age >65 years	3	54
Comorbid active malignancy & AIDS	1	0
Comorbid liver cirrhosis	2	2
Concomitant steroid	1	12
shock at admission	1	18
Time of perforation >24 hours	1	36
Serum creatinine >130mmol/l	2	50
ASA score 2	1	6
ASA score 3	3	12
ASA score 4	5	25
ASA score 5	7	17
	Maximum score=18	

Most common complication was ARDS (28.3%), followed by paralytic ileus, persistent fever, diarrhoea and localised abscess.

In this study, 21 patients out of 60, required ICU care. The indication for ICU admission was ARDS not responding to non-invasive ventilation, Persistent severe shock, and progressive renal failure. Out of these 21 patients 17 required mechanical ventilation, 19 required vasopressors support and only 2 patients were put on haemodialysis. Fourteen patients survived and transferred to ward, whereas 7 patients succumbed to death. The cause of death was septic shock & multi organ failure in 4, ARDS & respiratory failure in 2, and progressive renal failure in 1patient.

Table 3: Distribution of complications observed among the patients

Complications	Number	Percentage
ARDS	17	28.33
Localised abscess	8	13.33
Persistent fever	10	16.67
Paralytic ileus	14	23.33
Diarrhoea	9	15.00

Table 4: Distribution of management of patients in ICU

		Number	Percentage
ICU admission		21	35.00
Mechanical ventilation (n=21)		17	80.95
Vasopressors (n=21)		19	90.48
Haemodialysis (n=21)		2	9.53
ICU care Outcome (n=21)	Survived	14	66.67
	Dead	7	33.33

Table 5: Final outcome

Final Outcome	Further management	Number	Percentage
Improvement in general condition	Exploratory laparotomy + either primary closure or definitive surgery	45	75.00%
Localised Abscess	Image guided aspiration	8	13.33%
Death	-	7	11.67%

Maximum number of patients (75%) was improved by the damage control approach without significant complications and offered exploratory laparotomy & needful. Localised abscess inside peritoneal spaces such as pelvis, bilateral sub diaphragmatic and Right iliac fossa were observed in around 13% patients; which were managed by image guided aspiration under antibiotic coverage. The overall mortality rate was 11.67%.

4. Discussion

The wide spread use of anti secretory agents and H. Pylori eradication therapy has brought down the need of elective surgery for peptic ulcers; However, the incidence of perforated peptic ulcer has changed a little and still remains a common surgical emergency associated with high morbidity and mortality especially in patients with co-morbidity, delayed presentation, shock at admission and advanced age[1].A retrospective study reported that the high-risk patients, who underwent surgical management for perforated duodenal ulcer, had a overall mortality rate of 18.2%, but much higher 41.8% among elderly.[19]

In the high-risk patients with perforated peptic ulcer, peritoneal septic contents should be drained by least invasive manoeuver.[5,8,13] Rahman et al managed such patients by putting intra-abdominal drain in adjunct to conservative management and reported a reduced mortality rate of 4.5% only.[12] By similar technique Saber et al reported the overall mortality of 20.8% and morbidity in terms of localised abscess in 12.5% & wound infection in 8.3% patients.[13] Oida T et al concluded that combination of percutaneous intraperitoneal drain is effective as initial conservative therapy.[14]

In our study after risk stratification according to PULP score, total number of high-riskcases (PULP score >8) were 60 (male-39, female-21); Majority of them were elderly 54 out of 60 (90%). Most common complication was ARDS, found in 17patients (28.3%). Maximum number of patients 45 out of 60 (75%) were improved by the damage control approach without significant complications and offered exploratory laparotomy & needful. Localised abscess were observed in around 13.33% patients; which were managed

by image guided aspiration under antibiotic coverage. Other minor complications were managed conservatively. The overall mortality rate was 11.67% which is better than operative management and conservative management alone.[12–14,19]

5. Conclusion

In high-risk patients with perforated peptic ulcer, Surgeon should consider combined conservative management and percutaneous peritoneal drainage as damage control approach, followed by Either definitive surgery or omental patch closure. This can be done in a resource poor set up, which is an added advantage apart from reduced mortality rate. We suggest larger randomised control trials should be carried out to validate our study.

6. Abbreviations used

ICU is intensive care unit, IV means intravenous, IM means intramuscular, ARDS means acute respiratory distress syndrome, PULP score means peptic ulcer perforation score.

7. Conflict of Interest

None.

8. Conflict of Interest

None.

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