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**Research Article**

# Percutaneous drain for high risk cases of perforative peritonitis

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## ABSTRACT

**Background:** Perforative peritonitis is most common general surgery emergency encountered. It is also associated with high operative mortality and morbidity. Most cases present late on second and third day with severe peritonitis and hemodynamic instability. Resulting in hypotension and circulatory shock due to septicaemia and third space fluid loss. In these patients conventional immediate laparotomy and perforation closure was associated with high mortality. Henceforth we managed those high risk patients with percutaneous drain and conservative Taylor's regimen was followed.
**Methods:** Aim of this study was to analyse series of high risk perforation cases managed with percutaneous drain under local anesthesia for whom conventional surgery of immediate laparotomy were associated with high mortality rates. Those conservatively managed patients were serially monitored and put on Taylor's regimen previously used for sealed early perforation.
**Results:** Retrospectively 9 cases of high risk perforative peritonitis managed with percutaneous drain were studied and we found that mortality rate was 22% compared to more than 60% in cases taken up for immediate laparotomy.
**Conclusions:** High risk patients for whom conventional surgery is associated with increased mortality, percutaneous drain under local anaesthesia and improving the hemodynamic status by non-operative Taylor's regimen seems to be associated with decreased mortality and morbidity.

**Keywords:** Perforative peritonitis, Percutaneous drain, High mortality rate, Conservative management

## INTRODUCTION

Hollow viscous perforation is one of the life threatening emergency in surgery. Despite advances in treatment mortality remains 30-50% even worse for patients presenting in late stages with severe peritonitis and associated co morbid conditions.[1,2] Standard treatment guideline is to do immediate laparotomy and perforation closure which was associated with high risk of increased mortality.[3,4] Here we managed high risk cases of perforative peritonitis with high mortality rate stratified by Boey's score conservatively by Taylor's method and percutaneous drain.[4,5]

Purpose of this work is to present the efficacy of percutaneous drain in high risk cases, for which surgery is associated with higher mortality. Case series analysis was carried out in Chengalpattu medical college.

## METHODS

Retrospective case series analysis was carried out at Chengalpattu medical college, Tamil Nadu, India.[9] High risk cases of perforative peritonitis were managed with percutaneous drain and Taylor's conservative management.

***High risk identification***

Patients presenting with perforative peritonitis and have 20% increased mortality among other case are considered extremely high risk.[6]

***Pre-operative diagnosis***

Patients presenting with obvious signs and symptoms of peritonitis. Pneumoperitoneum on erect abdominal X-ray. Routine blood investigation for renal and liver function, complete blood count, bleeding time and clotting time.

***Pre-operative risk stratification***

Boey's score was used to stratify high risk cases for perforated duodenal and gastric ulcer. Score considered three parameters,

- Preoperative blood pressure <100 mm/hg
- Delayed presentation >24 hours
- Major medical co morbid illness.[7]

Patients were given one point for each parameter, additional point for co morbid condition. Following medical conditions were considered high risk.[8]

- Patients on cardiac drugs/known ischemic heart disease.
- Smoker with interstitial lung disease like COPD
- Alcoholic/known chronic liver disease.

***Non operative management***

Taylor's method consisting of intravenous fluids, nil per oral, nasogatric aspiraton done by large Ryle's tube placed in greater curvature and output measured.[9] Patient catheterised and output chart maintained. Empirical antibiotic and anti-secretory drugs given. Repeated physical examinations and vitals were monitored, Ultrasound were taken after few days for residual collection.[9,10]

***Percutaneous drain technique***

Under local anaesthesia 1 cm skin incision made in the flanks, abdominal muscles split in their direction. Peritoneum entered under guidance of index finger and swiped in all direction to release adhesions. Two large bore 28 French gauge tube inserted and fixed. Tube was connected to measurable bag and output chart maintained. One tube placed downward to pelvis and other facing upward in Morrison's pouch.

***Outcome measure***

Main rationale behind this management is to measure mortality rates compared to conventional management. Patients were monitored and those hemodynamically stabilized with high drain output were taken up for surgery.

## RESULTS

Of the 9 patients taken up for this study, 8 were male, 1 female, mean age of them were 65. Comorbid condition was present in 6 of them. Boey's score was above two or above for all of them (Table 1). Distribution of comorbid condition two were smokers with COPD interstitial lung disease, three were known ischemic heart disease patient on aspirin, alcoholic liver disease were present in one (Table 2).

**Table 1: Scoring method used in our study to stratify patients as high risk.**

| Boey's score | BP <100 mm hg | >24 hours | Co morbidity | No. of cases |
|---|---|---|---|---|
| 2 | + | + | - | 3 |
| 3 | + | + | + | 6 |

**Table 2: Distribution of co morbid condition in our patients.**

| Co morbid conditions | Numbers of patients |
|---|---|
| Chronic obstructive pulmonary disease | 2 |
| Known ischaemic heart disease on aspirin | 3 |
| Alcoholic liver disease | 1 |

***Postoperative mortality***

Overall mortality was 20%. Two of the nine patients died, both of them didn't improve hemodynamically went in shock and multiple organ failure. Three patients were taken up for laparotomy due to continuous drain and improved hemodynamic status, rest of them improved and drain were removed after seven days after doing ultrasound abdomen to check for residual collection and return of bowel motility.

## DISCUSSION

Even though treatment of acid peptic disease and gastritis has been revolutionised by proton pump inhibitor and anti-helicobacter pylori regimen. The number of patients presenting in emergency with hollow viscous perforation had not been reduced, reason can be ascertained to high abuse of NSAIDs and alcohol.[3] Mortality rates of older patients with co morbid condition and presenting in septic shock has been high. Interestingly while trying to trace the reason for high mortality and perioperative morbidity; it is found that sepsis is the prime factor.[7] Hence primary motive is to drain the pus, improve the hemodynamic status and lower the risk of operative mortality.

For patients with Boey's score of 2 or 3, presenting late with hemodynamic collapse, conventional surgery is associated with high perioperative mortality. Hence pus has to be drained by least minimally invasive procedure. This was accomplished by inserting a peritoneal drain percutaneously under local anesthesia and were managed by Taylor's protocol of conservative management of perforative peritonitis.

Regarding the scoring index used in our study, all patients selected were high risk cases according to preoperative risk stratification. The overall mortality rate was 2 out of 9 patients (20.8%), with only two post procedural deaths that is comparatively less than the conventional surgery with the same high risk groups.[11] Lot of other studies on postoperative mortality in high risk cases managed with conventional surgery had higher mortality rates with 87% accuracy.[5]

Three patients (30%) were taken up for laparotomy and perforation closure. All had continuous drain due to unsealed perforation and were hemodynamically stable[5] and this conversion rate was in concordance with literature. Other studies reported 11 to 15% conversion rate.[12,13] Retrospectively analysing the records and literature mortality rate were less and comparable with patients taken up for laparotomy and perforation closure. Therefore good resuscitation, improving ASA grade, reviewing from shock and reserving definite surgery for procedure failure patients is needed to improve overall mortality in high risk cases.[9]

## CONCLUSION

In patients with perforated peptic ulcer in high risk we can certainly manage them with non-operative regimens and serial monitoring until they are hemodynamically stable. Percutaneous peritoneal drain under local anesthesia for high risk patients is more effective combined with Taylor's management than the conventional surgery which is associated with high mortality.

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