

# Outcome of Percutaneous Peritoneal Drainage in High Risk Perforated Peritonitis

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## ABSTRACT

**Study Design:** Prospective study

**Place and Duration:** The study is conducted at Surgical A ward Mardan Medical Complex, Mardan and Surgery department of Ahmed Hospital, Bagh Azad Kashmir during the period from June to November 2021.

**Methods:** There were 85 patients of both genders with ages 22-80 years included. Patients were included into the study after obtaining written permission from all participants. All the patients had high perforation peritonitis treated with percutaneous peritoneal drainage with local anesthesia. Post-operative success rate, mortality and complications among all cases were recorded. SPSS 22.0 version was used to analyze complete data.

**Results:** Among 85 cases, 54 (63.5%) were males and 31 (36.5%) patients were females with mean age 51.7±8.71 years. COPD was mostly found among 29 (34.1%) cases, followed by ischaemic heart disease in 20 (23.5%) cases, congestive heart failure in 14 (16.5%) cases, cerebrovascular stroke 12 (14.1%) and 10 (11.8%) patients had comorbidity of steroid use. After drainage, improvement observed in urine output and in blood pressure. Post-operative effectiveness was found among 70 (82.4%) cases and 15 (17.55) patients died. In Post-operative, we found that the surgical site infection (SSI) was the most common symptom followed by chest infection.

**Conclusion:** According to our findings and experience, the use of percutaneous peritoneal drainage under local anaesthesia in patients who have been reported late or are critically ill improves their general condition and allows them to be better prepared to undergo further surgery, which could ultimately save their lives.

**Keywords:** Percutaneous Peritoneal Drainage, Perforated Peritonitis, Mortality, Complications

## INTRODUCTION

Illness that affects just the peritoneum and peritoneal cavity is known as peritonitis. [1] A primary peritonitis is caused by a bacterial or fungal infection in the absence of gastrointestinal (GI) tract perforation, while a secondary peritonitis is caused by GI tract rupture. The most frequent and most dangerous general surgical emergency is peritonitis, which may be life-threatening. Proximal gastrointestinal tract perforations are six times more frequent than distal gastrointestinal tract perforations in underdeveloped nations. [2-4] The gold standard technique for perforation peritonitis is exploratory laparotomy; yet when a patient's condition has not improved and all resuscitative procedures have been exhausted, emergency laparotomy under general anaesthesia should not be performed. [5] These include Taylor's cautious technique and primary peritoneal drainage (PPD) as alternatives to urgent laparotomy. Patients with intestinal perforations are common in emergency rooms around the country. Even within a single nation, such as India, the reasons for perforation and its etiological components vary greatly. Ethical considerations vary from region to region in the United States, and this is true even in the United States of America.

While peptic ulcer therapy has improved dramatically over the last two decades, emergency surgery for perforated gastroduodenal ulcers has actually risen. A rise in the use of aspirin and/or nonsteroidal anti-inflammatory medicines (NSAIDs), particularly among older adults, may be to blame.[7] A simple closure or an emergency final procedure are the acknowledged treatment choices for people who have a perforated peptic ulcer. In the case of a perforated acute peptic ulcer, conservative therapy was suggested [7,8].For patients with perforated gastroduodenal ulcers who are in otherwise healthy condition, the Taylor procedure is worth revisiting.[7]

For patients who are too unwell to have surgery or in cases where urgent surgery is not possible, this procedure is now used only as an option. [9,10] In this study, we combine nonoperative conservative therapy with percutaneous peritoneal drainage in elderly patients with a perforated duodenal ulcer who are at high risk. However, the use of PPD under LA in adults with necrotizing

enterocolitis-associated peritonitis is still being debated and no clear solution has been provided.[11,12] PPD under LA in severely sick patients with widespread peritonitis is seldom mentioned in surgical literature as an alternative to urgent laparotomy.

It was thus decided to conduct the research with the goal of evaluating the effectiveness and benefit, if any, of performing major abdominal surgery under general anaesthesia while using percutaneous peritoneal drainage in critically sick patients. Evaluations were also conducted to see whether this method delivers a long-term cure, or only a short-term alternative to source management and patient optimization for final surgery.

## MATERIAL AND METHODS

This prospective study was conducted at Surgical A ward Mardan Medical Complex Mardan and Surgery department of Ahmed Hospital, Bagh Azad Kashmir during the period from June to November, 2021 and had a total of 85 patients. Patients were included into the study after obtaining written permission from all participants. Patients with stable hematocrits, unstable hematocrits that improved after six hours of resuscitation, and patients with cancer, cirrhosis, renal involvement, and prior surgery were excluded.

In conjunction with conservative measures, percutaneous peritoneal drainage was performed under local anesthesia through a 2-2.5cm long skin incision in either flank. Site and type of incision was dependent on clinical suspicion and ultrasonography report of collection and history of any previous surgery. The external oblique aponeurosis, internal oblique, and transverses abdominis were split under vision with the help of artery forceps. Upon entering the peritoneal cavity, the index finger was swiped in all direction to allow protection and good drainage. Two wide bored intra-abdominal tube drains of 28/32F were placed in either flanks through these incisions. One drain was kept towards the pelvic cavity and the other in upward direction. Pus/fluid/bile was evacuated and collected for culture and sensitivity. Patients who could be clinically optimized after PPD, and who continued pouring excess fluid through drains were subjected to standard laparotomy for definitive surgical procedure.

Regular vitals monitoring and physiological maintenance of patient's health were done. The nasogastric tube to decompress the stomach and a Foley's catheter to monitor urine output remained in situ in post-operative period for a desired period of time. Intravenous fluids and broadspectrum antibiotics were continued till culture sensitivity of the fluid was available and specific antibiotics started thereafter. In selected cases, insertion of a central venous line was done for accurate fluid resuscitation and monitoring. Everyday drain output was monitored and contents noted. Abdominal-pelvic ultrasonography was performed after 12 hours, 24 hours and 36 hours to see the quantum of fluid in the peritoneal cavity. For patients on NPO for more than 3 days total parenteral nutrition (TPN) was started. RFT including serum electrolytes and CBC was regularly monitored. SPSS 22.0 version was used to analyze complete data.

**RESULTS**

Among 85 cases, 54 (63.5%) were males and 31 (36.5%) patients were females with mean age 51.7±8.71 years. The mean BMI of the patients was 25.6±5.55 kg/m<sup>2</sup>.(table 1)

Table 1: Demographics detailed of enrolled cases

Variables	Frequency	Percentage
<b>Gender</b>		
Male	54	63.5
Female	31	36.5
Mean age (years)	51.7±8.71	
Mean BMI (kg/m <sup>2</sup> )	25.6±5.55	

COPD was mostly found among 29 (34.1%) cases, followed by ischaemic heart disease in 20 (23.5%) cases, congestive heart failure in 14 (16.5%) cases, cerebrovascular stroke 12 (14.1%) and 10 (11.8%) patients had comorbidity of steroid use.(fig 1)

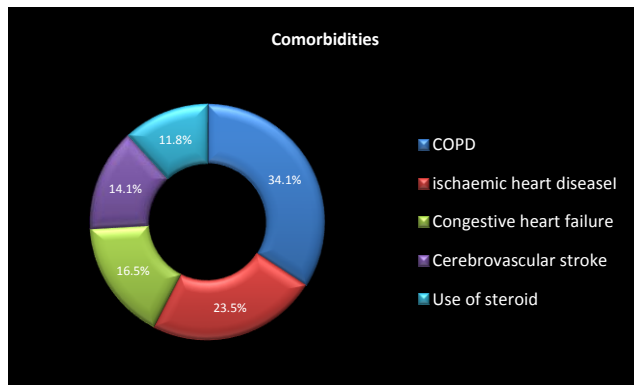


Figure 1: Comorbidities among enrolled cases

After drainage, improvement observed in urine output and in blood pressure.(table 2)

Table 2: Comparison of laboratory findings pre and post surgery

Variables	Pre-Operative	Post-Operative
Urine output (ml)	123	347
Blood pressure (mmHg)	70/45	114/77
Respiratory rate (min)	25	21
Pulse (min)	144	118
Temperature (°F)	104	101
SPO2 (%)	91	96

Most of the patients 50 (58.8%) had fluid drained 1000 ml in first 24-48hours of drainage.(table 30)

Table 3: Presentation of fluid drained among cases

Fluid Drained	Pre-Operative	Post-Operative
1000 ml	50	58.8
500-1000 ml	23	27.1
<500ml	11	12.9

Post-operative effectiveness was found among 70 (82.4%) cases and 15 (17.5%) patients died.(tabl 4)

Table 4: Post-operative mortality among enrolled cases

Variables	Frequency	Percentage
<b>Mortality</b>		
Yes	15	17.5
No	70	82.5

Post-operative, we found that the surgical site infection (SSI) was the most common symptom followed by chest infection.(fig 2)

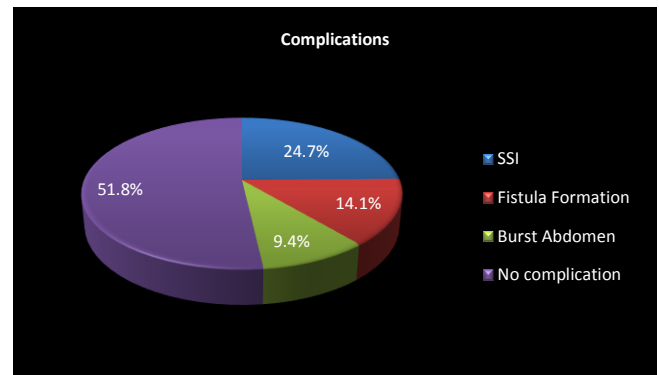


Figure 2: Association of complications after surgery

**DISCUSSION**

With abdominal sepsis, surgical intervention is the only way to end the infection and prevent it from spreading further.[13] Even today, many of the basic methods of treating peritonitis, such as removing the bacterial centre and removing necrotic tissue, remain the same. It's not always feasible to achieve this aim in a single procedure. [14] One reason to look for prognostic indicators peculiar to the elderly is their increased death rate, which has been blamed on comorbid disorders. [15]

In current study 85 patients were presented. Among 85 cases, 54 (63.5%) were males and 31 (36.5%) patients were females with mean age 51.7±8.71 years. The mean BMI of the patients was 25.6±5.55 kg/m<sup>2</sup>. These were comparable to the previous findings.[16] COPD was mostly found among 29 (34.1%) cases, followed by ischaemic heart disease in 20 (23.5%) cases, congestive heart failure in 14 (16.5%) cases, cerebrovascular stroke 12 (14.1%) and 10 (11.8%) patients had comorbidity of steroid use.[17] After drainage, improvement observed in urine output and in blood pressure. Most of the patients 50 (58.8%) had fluid drained 1000 ml in first 24-48hours of drainage.[17] If sepsis-inducing peritoneal collection is drained away, the patient's condition should improve, and this was the basis for the use of primary peritoneal drainage.[18] Many studies have shown that primary peritoneal drainage (PPD) is critical in the treatment of neonatal necrotizing enterocolitis (NEC). One of the pioneering studies in this area was done by Saber A et al[17]. and Baloch et al[19]., who recommended the use of 18-21 PPD in adults, particularly critically-ill patients, when anaesthesia was hazardous.

Post-operative effectiveness was found among 70 (82.4%) cases and 15 (17.5%) patients died. In patients at high risk of peptic ulcer rupture, an intra-abdominal drain may be inserted and maintained by conservative therapy, resulting in just 4.5 percent fatalities and 87.8 percent of patients achieving satisfactory outcomes. [20] Retrospective analysis of high-risk patients who had surgery for a perforated duodenal ulcer revealed an overall death rate of 18.92 percent, but a mortality rate of 41.8% in the elderly patients. [21] According to the results of Jhobta RS and his colleagues, 10% of their patients died overall, and similarly Pascal et al reported 30% of their patients died in their research. [22-24] NEC in early and preterm infants has been widely documented in

many research. peritoneal drainage is an important part of the treatment. The utility of pre peritoneal drainage under LA in babies with necrotizing enterocolitis and perforation has been established, but the evidence for its effectiveness in adults is mixed.[25]

If sepsis-inducing peritoneal collection is drained away, the patient's condition should improve, and this was the basis for the use of primary peritoneal drainage. Many studies have shown that primary peritoneal drainage (PPD) is critical in the treatment of neonatal necrotizing enterocolitis (NEC). [26] Although PPD has been advocated, surgeons have just lately begun testing it in severely sick patients for whom anaesthesia is harmful.

## CONCLUSION

According to our findings and experience, the use of percutaneous peritoneal drainage under local anaesthesia in patients who have been reported late or are critically ill improves their general condition and allows them to be better prepared to undergo further surgery, which could ultimately save their lives.

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