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(CASE REPORT)



## Intestinal perforation caused by Bogota bag: Case report

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### Abstract

Intestinal perforation is generally characterized by the presence of any rupture or perforation of the intestine. As the gastrointestinal tract (GIT) is a major route for food, it can be damaged by internal causes or external causes. However improper use of Bogota Bag can lead to intestinal Perforation, then patients have gastrointestinal symptoms and complications that are associated with the high morbidity rate and mortality rate.

**Keywords:** Bogota bag; Intestinal perforation; Gastrointestinal tract (GIT); Laparotomy; Diamond-shaped holes

### 1 Introduction

Intestinal perforation is defined as the bowel's rupture or loss of continuity of the bowel wall [1]. It may present in the stomach, small intestine, and large intestine. This type of divesting complication has multiple causes, such as trauma (knife wound, gun shoot, eating sharp object), intestinal inflammation, infection malignancy, and bowel obstruction (volvulus, colon cancer, or diverticulitis, stomach ulcers, ischemic bowel)[1-3]. It also seems that medical procedures can also cause intestinal perforation which is involving as colonoscopy and endoscopy [4, 5]. Among them, the most common infectious cause is appendicitis and diverticulitis, appendicitis can be considered for any age of life however diverticulitis is mainly considered for middle and old-age patients [6, 7].

Initially, the signs and symptoms of intestinal perforation in the patients, having onset pain, tenderness (rigid rebound tenderness), intensified by movement associated with nausea vomiting, and hematemesis, later signs and symptoms include fever, tachycardia, tachypnea, etc.[7].

It can be diagnosed by signs and symptoms and also from diagnostic tests as mentioned in table 1, proper history, and physical examination.

Intestinal perforation can have many complications such as internal bleeding and sepsis.it also leads to abdominal abscesses or permanent bowel damage. It may even cause part of the bowel to die [4].

Once the patient is diagnosed with intestinal perforation surgeon starts conservative treatment to the patient (broad-spectrum antibiotic) and frequently abdominal examination also with interventional radiology guided of fluid collection

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[4]. However, if there is a failure of conservative management with the persistence of symptoms and or development of sepsis necessitates surgical intervention [4].

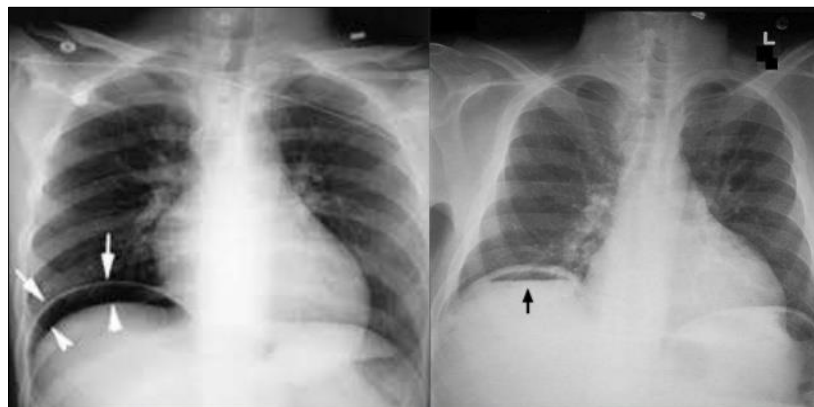
Bogota bag is the plastic genitourinary bag that is used for the temporary closure of abdominal wounds in case of abdominal compartment syndrome [8, 9]. It is sewn to the skin or fascia of the anterior abdominal wall [9].

The temporary closure of the abdomen by the Bogota bag helps decrease the intra-abdominal pressure and lets the walls of the wound closer to each other [8, 9].

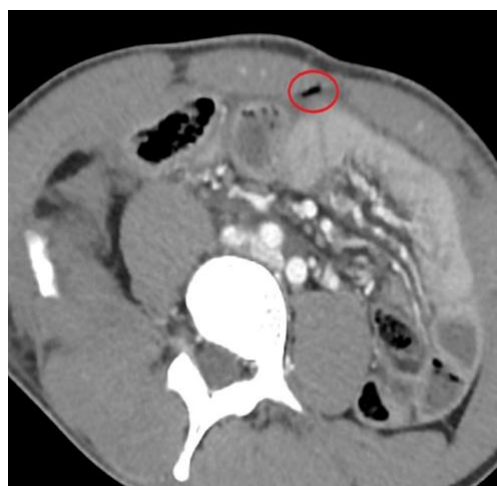
In our case, we have made diamond-shaped holes on the Bogota bag.

**Table 1** Presentation of intestinal perforation in X-ray, CT scan, and USG

Diagnostic tests	x-ray	CT scan	USG
Clinical signs	Air Beneath the Diaphragm Visualization of both sides of the bowel wall Visualization of the falciform ligament[10]. Fig 1	Bubbles of pneumoperitoneum toward a region of bowel Localized peritoneal fat stranding or bowel wall thickening Bowel wall discontinuity [11]. Fig 2	Although not a primary modality for evaluating pneumoperitoneum, free gas can be detected on ultrasound when gas shadowing is present along the peritoneum [12, 13]. Fig 3



**Figure 1** Air under the diaphragm



**Figure 2** Bubbles of pneumoperitoneum toward a region of the bowel

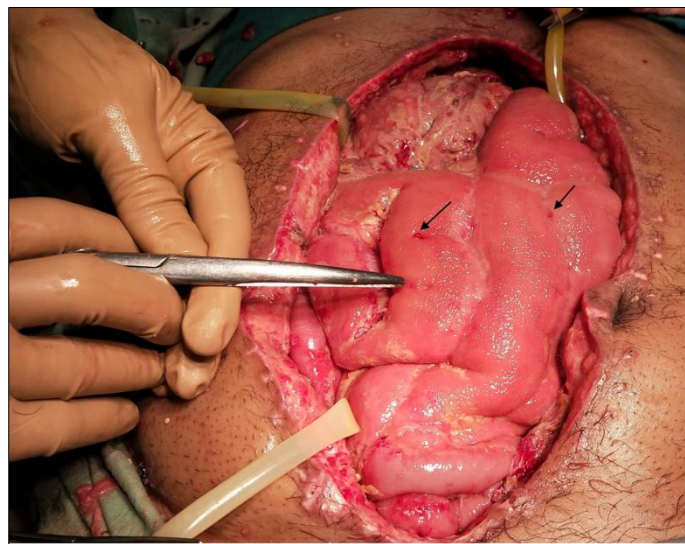


**Figure 3** Free gas can be seen in USG Abdomen

## 2 Case

38 years old male patient came to the hospital having the complaint of Gun shoot wound with an abscess. This is a transfer case from another hospital where he has done two times laparotomy first on 23rd April 2021 and second on 27th April 2021. From history, it's become clear that the shooter fired the victim from a 30meter to 40meter distance. Bullet hits the victim from the back on the left upper quadrant and comes out from the right upper quadrant after causing the perforation of the stomach through and through and damaging the head of the pancreas.

The perforation of the stomach was repaired in the last hospital with laparotomy. The patient was conscious-oriented. Basic medication (Antibiotic, pain killer, and proton pump inhibitor PPI) was given in the emergency department. After COVID-19 clearance patient was admitted to the surgical ward and planned laparotomy urgently on the same day. Laparotomy was done safely and Bogota bag was applied with vac pack dressing. Here we used the single layer of disposable urine bag with the number of diamond shape holes for suction and creating negative pressure, so intra abdomen pressure becomes decreases and abdominal walls come close to each other. After the operation when the patient comes to the surgical HDU set the negative pressure between -10 to-15 low-grade negative pressures at the rate of 20 minutes per hour. On the 11th May, 2021 again laparotomy was the plan. During the procedure lot of hemorrhage, the fluid abscess was seen. Moreover, there was a small square shape of about 3mm perforation in ilium fig. Perforation in the ilium was repaired by using the vicryl 3.0 suture. Laparotomy was successfully done patient was vitally stable.



**Figure 4** The intestinal perforations are seen. Here the perforations are pointed by aero and surgical instruments



**Figure 5** This is an image of the Bogota bag which was used. Here the diamond shapes are pointed by small aero

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### 3 Discussion

Although there are multiple causes of intestinal perforation as we have discussed above. In addition to them, Bogota bag is also can cause perforation in the small intestine. The Bogota Bag was used here having multiple diamond shape holes with a pointed edge. Moreover, due to the increased suction pressure 15 mmHg to 20 mmHg a small bulge can come out from that diamond shape hole which leads to mechanical injury or intestinal perforation.

However, the small intestine (ileum) is the largest and softest part as compared to the stomach and large intestine, therefore, having more chances of perforation.

From other studies, it's clear that intestinal perforation leads to abdominal compartment syndrome similarly during this period patient's blood pressure was persistently high which leads to abdominal hypertension [14].

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### 4 Conclusion

Intestinal perforation can be caused by Bogota bags that have diamond-shaped holes. To get good prognoses diamond shape holes cannot be made on the Bogota Bag. In addition to this in backpack dressing, the negative pressure should be regulated by time and time. Liner-type cutting in Bogota Bag can prevent intestinal damage.

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### Compliance with ethical standards

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#### *Disclosure of conflict of interest*

There is no conflict of interest to disclose.

#### *Statement of informed consent*

Informed consent was obtained from patient included in the study.

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