



Transanal garden pipe water jet leading to sigmoid perforation due to a dangerous practical joke

General Surgery

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ABSTRACT

A case of trans-anal Garden pipe high pressure water jet injury as a result of practical joke, that is, playful insufflation of high pressure water jet through the anal orifice resulting in sigmoid perforation is reported. The patient presented to emergency department 12 hours later with complains of severe pain abdomen and abdominal distention following insufflation of high pressure water jet through the anus. On examination, he had signs suggestive of perforation peritonitis and x-ray of abdomen showed gas under domes of diaphragm. In emergency exploratory laparotomy was performed which revealed a 2.5cms perforation in the sigmoid colon. Repair of perforation was done in two layers and a proximal protective loop sigmoid colostomy was made. Reversal of colostomy was done after 8 weeks. Patient when last seen at 6 months follow up was perfectly well.

KEYWORDS:

Sigmoid perforation, injury, rectum, water jet.

Introduction:-

Trans-anal recto-sigmoid injuries may be caused by introduction of a foreign body per-rectally, sexual assault, iatrogenically during colonoscopy or during cleansing enema and rarely by barotrauma by compressed air jet through the anus. Early diagnosis and aggressive treatment results in good prognosis, regardless of patient's age and previous medical condition¹.

Now a days every household make use of high pressure water jet that can cause injuries in various ways, because of supply of water from municipal water works department is not having sufficient pressure to be carried to heights of 2nd floor. Forceful or playful insufflation of high pressure water through the anal orifice had been seen to cause potentially fatal injuries to the intestines leading to colonic perforation. These injuries usually happen as a practical joke, that is, playful insufflation of pressurized jet by a garden pipe through the anal orifice, or accidentally.

We encountered a similar case which needed emergent surgical intervention.

Case report:-

A 84 year old man presented to emergency department twelve hours after being injured while using a garden pipe water jet for cleansing his bowel (photo1). His past medical history was unremarkable. On presentation, he was hemodynamically stable (BP 128/80, heart rate 84/min., respiratory rate 18/min., oxygen saturation 100% on 3L nasal cannula). Physical examination was unremarkable with the exception of his abdominal examination, revealing generalized tenderness all over abdomen and deep tenderness in sigmoid colon region. X-ray abdomen (upright) showed gas under both domes of diaphragm.

Patient was resuscitated and treatment started and taken emergently to the operating room for an exploratory laparotomy within 3 hours period. At operation large amount of feculent fluid was evacuated from the abdominal cavity. The entire abdomen was explored, and a perforation of size of 3 cms placed on anterior tinea of distal sigmoid colon was identified (photo2) and repaired in two layers and a protective proximal loop sigmoid colostomy was made.

The patient had an uneventful post operative course, and was discharged on post operative day six after return of bowel function. Reversal of colostomy was done after 8 weeks period. Patient was well when last seen at 6 months after closure of colostomy.

Discussion:-

Trans-anal pressurized water jet injuries of the intestine are not common. Mansab *et al*² reported ten cases of colorectal injuries due to compressed air directed to the anus while playing practical jokes at work place from 2006 to 2008. Perforations occurred at the anterior wall of the rectum in two cases, sigmoid colon in two cases, recto sigmoid junction in three and three in the descending colon.

Most of the injuries occur in the region of junction of rectum and sigmoid colon and proximally. The anal canal and rectum usually escape injury whereas sigmoid colon and the descending colon suffer maximum damage. High-pressure air jet through the anal orifice passes unhindered through the rectum and the first hindrance to the air is the junction between sigmoid and descending colon.

The phenomenon of high pressure air jet colon injury is similar to hydrostatic injury sustained during a high speed fall from personal water craft such as jet skis, seadoos, and wave-runners in which either the high powered jet of water strikes the perineum or the perineum strikes the water forcing column of water into the colon. External pneumatic insufflation of the colon through the anus depends on the air pressure, air flow velocity, anal resting pressure and the distance between the source and anus. Under normal condition, normal resting anal pressure can prevent the insufflation of the colon from a direct external source with low air pressure³.

The anatomy of the distal colon with the firm lateral support of the rectum makes the first part of the colon to be struck by a column of pressure from external source and the bending of the sigmoid pose the recto sigmoid to rupture in pressure related colon barotraumas. In Luning *et al*⁴ review of 30,366 endoscopic colonic procedures, 74% of perforation (26/35) occurred in the sigmoid colon which is related to anatomical bending of sigmoid causing a closed loop obstruction while other report ascribed it to as mechanical in nature⁵. In our case also distal sigmoid was having a perforation on anterior tinea.

Injuries from a high- pressure water jet can be classified as direct injury, secondary injury and chemical injuries depending on the compound. Injury degree of the direct contact area is determined by the pressure over areal⁶. In our case direct injury due to pressure of water jet led to perforation of distal sigmoid colon and since water jet was chemically inert, hence, no chemical damage was observed.

For traumatic large colon perforation primary repair or resection and anastomosis with or without diversion is now the preferred method of treatment except in conditions such as patient in shock, extensive faecal contamination, multiple associated injuries, significant blood loss and blood transfusions, prolonged delays from injury to operation, distracting colon injury and left colon injury¹. In our patient primary repair of sigmoid perforation was done with protective diverting colostomy. Colostomy closure was done after eight weeks.

Conclusion:

With the increased use of high-pressure water jets across many industries, there is a corresponding increase in the incidence of such injuries. There is a need for physicians to recognize the dangers of high-pressure water jet injuries in clinically stable patients with small entry wounds, because the underlying tissue damage can be life threatening. All high pressure water jet injuries should be treated as medical and surgical emergencies, evaluating patients for high-velocity penetrating injury, blast injury, chemical irritation, and infection.



Photo 1: shows garden pipe



Photo 2: Shows 3 cm perforation on anterior tinea of sigmoid colon (white arrow)

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