

# Extra Peritoneal Penetrating Rectal Injury – Prepare for the Worst and Hope for the Best

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## ABSTRACT

A 54-year-old married male was admitted to the emergency department with a retained foreign body per rectum (Philips Head Screwdriver) causing rectal perforation following an apparent act of sexual self-gratification. Surgical management options are discussed. Blunt and penetrating injuries to the anus and rectum are uncommon and surgical experience is scant mainly derived from war related injury. As a consequence, the management of extra peritoneal rectal injuries remains highly controversial. The authors offer a suggestion for safe practice based on our limited experience and literature review.

## CASE REPORT

A 54-year-old married male was admitted to the emergency department with a retained foreign body per rectum (Philips Head Screwdriver) (Figure 1) following an apparent act of sexual self-gratification. There was no associated rectal bleeding. He had no significant medical history.

On admission his temperature was 36.7 pulse 79/ min BP 128/82 and RR 16/ min with an oxygen saturation of 97 percent. Examination of his abdomen was normal and on rectal examination the retained body could not be palpated. Abdominal x-ray demonstrated a retained foreign body (Figure 2). He was admitted for Examination under anesthesia (EUA) +/- laparotomy +/- stoma for removal of foreign body.

At EUA only the handle of the screwdriver was visible on rigid sigmoidoscopy and the retained screwdriver was wedged in the upper rectum and was unable to be removed per rectum. A lower abdominal Pfannenstiel incision was performed, the foreign body was removed (Figure 1) and a sigmoid loop formed with distal rectal washout. The patient was prescribed antibiotics post-operatively.

On day one post-op, the patient was noted to be tender in the lower abdomen and on per rectum examination, a

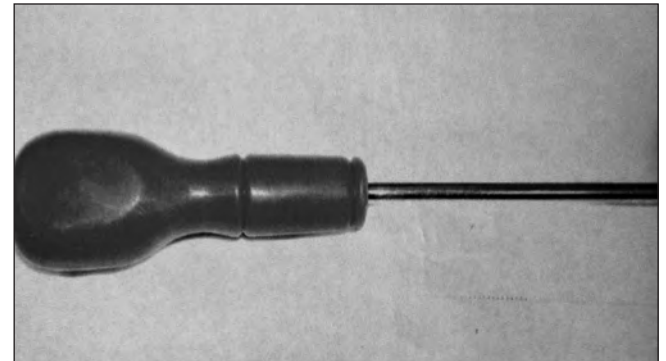


FIGURE 1. Philips Head Screwdriver (with sharp end removed)

boggy swelling was just palpable at the finger-tip posteriorly. Apart from very mild diaphoresis, there were no other signs or positive findings on observation or blood examination suggesting generalized sepsis. CT scan demonstrated retroperitoneal gas which extended up to the iliacs and aorta (Figure 3), which was initially thought to be iatrogenic from air introduced as a result of rigid sigmoidoscopy. However in view of the physical and these CT scan findings, retroperitoneal sepsis could not be excluded and a relook laparotomy was advised.

At laparotomy a healed rectal tear was noted on rigid sigmoidoscopy at approx. 12 cms, retroperitoneal and pre-sacral dissection revealed significant gas, frank pus and infected haematoma which were evacuated and lavaged. No rectal perforation was apparent. However on further abdominal inspection, an incidental bladder dome injury was also noted probably as a result of self-urethral intubation, which was negative for leak on methylene blue dye testing and was managed post-operatively conservatively with prolonged urethral catheterization.

The patient made an otherwise unremarkable recovery and was discharged to follow up for elective reversal of stoma.



FIGURE 2. Plain Abdominal film demonstrating foreign body in rectum

## DISCUSSION

Blunt and penetrating injuries to the anus and rectum are uncommon and surgical experience is scant mainly derived from war related injury.<sup>1</sup> Civilian injuries of the rectum are infrequent and those resulting from self-inflicted sexual acts as in this case are rare. Intraperitoneal rectal injuries can be treated similarly to colonic injuries. However, the management of extra peritoneal rectal injuries remains controversial. Treatment methodology is often chosen based on anecdotal experience. Treatment options include primary repair, resection where greater than fifty percent of the wall is damaged, primary repair if between twenty-five and fifty percent, faecal diversion with a colostomy, pre-sacral drainage, repair of the rectal defect, and distal rectal washout. There is no clear evidence that any particular technique is superior.

Distal rectal washout as a management strategy in rectal injury remains controversial. In 1971 following reports of injuries to US soldiers in Vietnam showing substantial reduction in death and infectious complications from pelvic sepsis,<sup>1</sup> distal rectal washout gained popularity. Proponents of distal rectal washout argue that the presence of stool in a defunctionalized rectum may lead to persistent sepsis. Most modern series have failed to demonstrate any advantage of rectal irrigation, and some surgeons express concern that washout may violate otherwise sterile pre-sacral tissue planes. However, this belief is only justified on small retrospective studies. Ivatury and colleagues examined forty-three patients retrospectively with similar American Trauma Index in penetrating extra rectal trauma and found no difference in pelvic abscess formation between



FIGURE 3. CT Sagittal Section demonstrating pre-sacral retroperitoneal gas extending to the iliacs

those undergoing irrigation and those who did not (4.7% vs. 4.5%, respectively).<sup>2</sup> In another small retrospective trial complication rates where no distal rectal washout was performed complications were low (<15% overall and <10% for septic complications). In both studies the complication rates appear low and therefore may have been under-reported retrospectively.<sup>3</sup> One retrospective study supports distal rectal washout reporting a significant reduction in pelvic sepsis although the overwhelming majority of both cohorts also had diversion colostomy and a pre-sacral drain.<sup>4</sup> In a nine year retrospective audit of forty-seven rectal injuries, there were successful outcomes without washout.<sup>5</sup> In another recent retrospective study with high velocity rectal injuries from Iraq and Afghanistan no benefit was shown for distal rectal washout, although the power of this retrospective study was probably insufficient.<sup>6</sup>

Faecal diversion remains controversial. In destructive rectal injuries (>twenty-five percent of the extra peritoneal wall) primary repair or faecal diversion is advised although it appears that diversion and pre-sacral drainage are more important considerations than primary repair.<sup>5</sup> There is only one small study which suggests that these patients can be managed successfully without a stoma.<sup>7</sup>

Pre-sacral drainage has been well established since World War II. The pre-sacral space can be easily accessed from a perineal approach alone.<sup>8,9</sup> Although studies are split with some showing a benefit and some not, there has not been conclusive evidence of harm with drainage. The only published randomised trial addresses this question. Forty-eight patients were studied and randomised to drainage vs no drainage for extra peritoneal rectal injuries. Cross stratification for both groups was similar using the penetrating abdominal index score. No improvement was found with the use of a pre-sacral drain, although it remains possible that the trial was underpowered as reported complication rates were again low (<10%).<sup>10</sup> In another study which was retrospective, no benefit was shown for pre-sacral drainage, although the power was probably insufficient to draw any firm conclusions.<sup>6</sup> A retrospective study where pre-sacral drainage was used with rectal diversion and where no rectal repair was conducted resulted in lower complication rates (17% vs. 25% with/without rectal diversion) than diversion alone.<sup>11</sup> Although study numbers were low, complication rates in all groups were higher (27%) than other retrospective studies and groups appeared matched. Weight might therefore be placed on this study supporting pre-sacral drainage although there may have been selection bias as the groups were not randomised. Further justification for routine pre-sacral drainage can be found in an audit of forty-seven major rectal injuries where there were no reported deaths using pre-sacral drainage.<sup>5</sup>

## CONCLUSION

The management of extra peritoneal rectal injuries remains controversial. There is little evidence to support one particular management strategy over another in none destructive extra peritoneal rectal injury. In our case the initial use of rectal washout with failure to drain the pre-sacral space may have accounted for post-operative septic complications. Access to the pre-sacral space is a relatively simple procedure using a perineal approach<sup>8,9</sup> and it is probably advisable in all cases of penetrating trauma. Alternatively infection might have been introduced into the pre-sacral space through patient self-intubation during the initial injury. In civil injuries especially where patient history might not be forthcoming, the surgeon should have a low threshold for consideration of CT scanning, laparoscopy or laparotomy to determine the initial extent of injury or post-operative course. We would advise a lower abdominal incision to fully inspect the abdomen in all cases where rectal injury is suspected. This reported case illustrates the risk of missed retroperitoneal rectal injuries in such cases as well as the speed with which sepsis develops with the potential risk for fatal pelvic necrotizing fasciitis. It lends support to consider routine exploration of the rectum and leaving an extra peritoneal pre-sacral drain in such situations. Pre and post-operative clinical hyper vigilance and an aggressive surgical approach to the initial injury is therefore advised in all cases.

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