



Rafaela de Araújo Molteni, Fábio Henrique de Carvalho,  
Janaina de Oliveira Poy, April Anne Grant, and Rishi Rattan

## 30.1 Introduction

Rectal injuries are less frequent than colon injuries and management has dramatically evolved over the last half century. A recent review done by the American Association for the Surgery of Trauma (AAST) was published in 2018, and describes well the evolution of management.

It is now accepted that intraperitoneal rectal injuries should be treated as abdominal colonic injuries. Therefore, this is discussed in the chapter on colonic injuries.

We will focus on extraperitoneal rectal injuries. The extraperitoneal rectum is surrounded and protected by the bony pelvis. It lies in close proximity to many of the structures of the genitourinary tract, which can make repair difficult. Associated lesions are common and should always be searched for based on the trauma mechanism. Historically, rectal injuries were managed with the “4 D’s”: *diversion*, *pre-sacral drainage*, *direct repair*, and *distal washout* [1]. However, this is evolving and lack of benefit, and even harm, has been documented with routine pre-sacral drainage and distal washout; therefore, routine drainage and distal rectal washout are no longer recommended [2, 3]. Diversion has proven to be the most beneficial approach

---

R. de Araújo Molteni · F. H. de Carvalho  
Department of Surgery, Hospital do Trabalhador Trauma Center,  
Federal University of Parana, Curitiba, Brazil

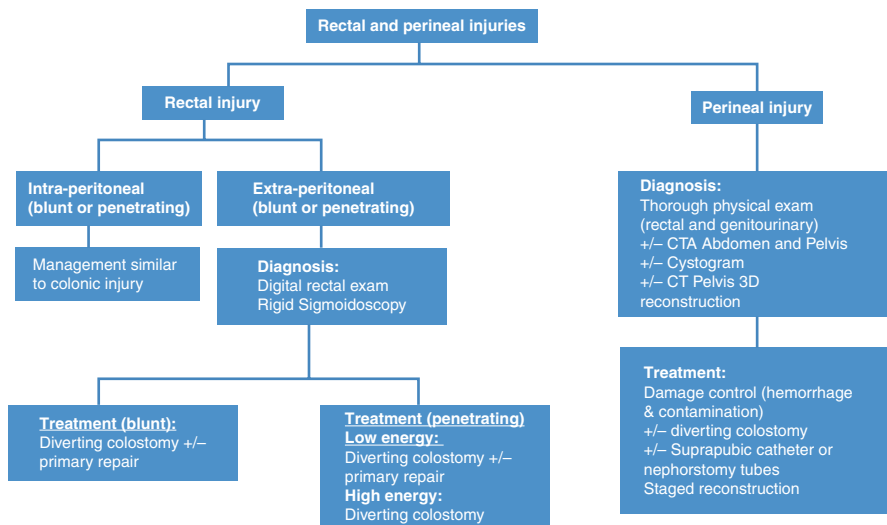
J. de Oliveira Poy  
Faculdade de Ciências Médicas de Santos, Santos, São Paulo, Brazil

A. A. Grant  
Ryder Trauma Center – Jackson Health System, Miller School of Medicine, University of  
Miami, Miami, FL, USA

R. Rattan (✉)  
Division of Trauma Surgery & Critical Care, DeWitt Daughtry Family Department of  
Surgery, Miller School of Medicine, University of Miami, Miami, FL, USA  
e-mail: [rrattan@miami.edu](mailto:rrattan@miami.edu)

in the management of these lesions. Direct repair has not been shown to be beneficial, but no harm has been demonstrated either, so additional study is warranted to see which patient population would most benefit from direct repair [3].

Complex perineal lesions continue to represent a challenge and their treatment requires multidisciplinary support. These lesions frequently result from high-energy trauma and have high morbidity and mortality rates. Damage control surgery for hemorrhage and contamination is the first priority with staged procedures for reconstruction after patient stabilization.



## 30.2 Conclusion

- (1) The diagnosis of rectal injury can be difficult and requires a high index of suspicion particularly for blunt mechanism. More important than the distinction of mechanism (blunt or penetrating) is the location of the rectal injury. Intra-peritoneal injuries are treated as colonic injuries regardless of mechanism. Extraperitoneal injuries require additional thought and different management.
- (2) The presence of blood during the digital rectal exam is an important sign. Rigid sigmoidoscopy, followed by CT abdomen and pelvis were the most common diagnostic modalities utilized across a recent multicenter study [3]. Diagnostic choice depends on the stability of the victim and resource availability.
- (3) If an extraperitoneal injury is identified, the standard of care is to perform a diverting colostomy [3] regardless of mechanism (blunt or penetrating). While some reports of primary repair without diverting colostomy can be found in the literature, evidence does not currently support this shift in the management of these injuries [4, 5]. Extensive dissection to search a lesion is discouraged due to enlarging of the dead space, increasing the risk of bleeding and causing nerve damage. As stated above, neither pre-sacral drainage nor the irrigation of the

distal rectal stump is recommended [2, 3]. Associated injuries are frequent and should be treated accordingly with appropriate specialty consultation.

- (4) Simple perineal injuries to soft tissue associated with low-energy mechanism can be repaired primarily. Complex perineal trauma comprises injuries that often include injuries to the soft tissue, genitourinary tract, rectum, vascular system, and bony pelvis. A high index of suspicion for injury and rapid diagnosis of injury to any of these structures is paramount. Diagnostic modalities utilized will depend upon the index of suspicion of injury and thorough evaluations of the rectum, genitourinary tract, vascular system, and bony pelvis. In a stable patient, the most common initial imaging at a large trauma center is a CT Angio of the abdomen and pelvis followed by a CT cystogram. Appropriate consults are placed, as injuries are identified and may include orthopedic surgery for pelvic fractures, interventional radiology if extravasation from pelvic fractures is identified, urology, gynecology, colorectal surgery, and eventually, plastic surgery.
- (5) The ability to perform definitive repair depends on several factors including patient stability, degree of contamination, and availability of specialists. Typically, complex perineal injuries require multiple staged procedures. In an unstable patient, damage control surgery is performed with control of hemorrhage and contamination being the chief goals. Procedures that are needed may include ligation of bleeding vessels, debridement of devitalized tissue, possible revascularization, and diversion of the GI and GU tract as needed (ostomy and/or suprapubic urinary catheter or nephrostomy tubes). Serial washouts of the wound are often necessary and staged reconstruction occurs over the next several days to weeks as the patient stabilizes. Treatment is most often multidisciplinary and may require the skills of urology, colorectal surgery, gynecology, vascular surgery, or plastic surgery for reconstruction. The trauma surgeon's role is immediate damage control and overseeing the complex repair of these severe multi-trauma injuries.

---

## References

1. Lavenson GS, Cohen A. Management of rectal injuries. *Am J Surg.* 1971;122:226–30.
2. Bosarge PL, Como JJ, Fox N, Falck-Ytter Y, Hunt ER, Dorion HA, Patel NJ, Rushing A, Raff LA, McDonald AA, Robinson BRH, McGwin G, Bonzalez RP. Management of penetrating extraperitoneal rectal injuries: an Eastern Association for the Surgery of Trauma practice management guidelines. *J Trauma.* 2016;80:546–51.
3. Brown CVR, Teixeira PG, Furay E, Sharpe JP, Musonza T, Holcomb J, Bui E, Bruns B, Hopper A, Truitt MS, Burlew CC, Schellenberg M, Sava J, VanHorn J, Eastridge B, Cross A, Vasak R, Vercruyse G, Curtis EE, Haan J, Coimbra R, Bohan P, Gale S, Bendix PG. Contemporary management of rectal injuries at Level I trauma centers: the results of the American Association for the Surgery of Trauma multi-institutional study. *J Trauma.* 2018;84(2):225–33.
4. Gonzalez RP, Phelan H III, Hassan M, Ellis CN, Rodning CV. Is fecal diversion necessary for nondestructive penetrating extraperitoneal rectal lesions? *J Trauma.* 2006;61:815–9.
5. Levine JH, Long WE, Pruitt C, Mazuski JE, Shapiro MJ, Durham RM. Management of selected rectal injuries by primary repair. *Am J Surg.* 1996;172:575–9.