

Ano-Rectal Trauma in Children

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● Ano-rectal trauma is associated with significant physical and emotional morbidity. Except for an occasional straddle injury, child abuse or deviate sexual activity account for most rectal injuries in children. Because the perineum is the source of excretions, it is frequently the target of the emotionally disturbed parent or caretaker, particularly during the toilet training period. During 1979 and 1980, 617 patients were treated for possible rape at our city-county hospital. One hundred and forty-seven (23.8%) were less than 16 yr old. One third alleged anal trauma. Eleven had significant perineal injuries and 4 were taken to the operating room for repair of rectal injuries. A 15-yr-old female sustained a 1-cm rectovaginal tear. A 10-yr-old female sustained a vaginal laceration with a tear through the external anal sphincter. A 5-mo-old male sustained a deep perineal laceration extending into the peritoneal cavity with disruption of the levator mechanism and severe ano-rectal tears. A 7-yr-old female had a 1-cm anterior ano-rectal tear. Cases are presented from our hospital files to illustrate the spectrum of rectal injuries and their treatment. Injuries have varied from simple anal laceration and perineal contusions to destruction of the rectum and formation of a recto-vesical fistula with a coat hanger. Similarly, treatment has varied from local wound care to diverting colostomy and secondary rectal reconstruction with an endorectal pull-through procedure. The pediatric surgeon must be prepared to handle the results of such acts of abuse and to aid in prevention by reporting possible abuse victims before they or their siblings present with other serious injuries.

INDEX WORDS: Ano-rectal trauma; child abuse.

ALTHOUGH TRAUMA is the leading cause of mortality and morbidity in children, injury to the anus and rectum is uncommon. A majority of adult victims sustain noniatrogenic ano-rectal injury by penetrating trauma such as by gunshot wound, 110 of 155 cases in a literature survey,¹⁻⁵ but penetrating wounds to the trunk are rare in children.

We have noted over the past year several cases of severe injury to the perineum, anus, or rectum occurring in the pediatric age group. While the causes and treatment of adult ano-rectal injury have been documented,¹⁻⁵ no such discussion exists referring to children exclusively.

MATERIALS AND METHODS

Clinical Material

A survey of emergency room visits over 2 recent years revealed 617 cases of alleged sexual abuse among all ages. Of this group, 147 (23.8%) involved children 15 yr of age or less (Fig. 1). While approximately one-third of these children alleged that anal trauma had occurred, 11 actually required treatment for their injuries. Two other nonsexually abused victims were injured by the insertion of sharp objects into the rectum.

Other injuries included a penetrating wound from gunshot, a laceration from a swallowed foreign body, and a straddle injury causing blunt trauma to the anus and perineum.

These 16 cases in which children under the age of 16 sustained noniatrogenic ano-rectal injuries were reviewed for this study (Table 1). The children were treated at either the Ben Taub General Hospital or the Texas Children's Hospital, both of Houston, Tex., during 1979 or 1980. There were 10 males and 6 females.

Evaluation

The history was taken and the physical examination performed. The examination of those children suspected of having been sexually abused included examination of the genitalia with the obtaining of legal evidence, similar to the manner described by Schiff.⁶ Mild sedation and analgesia were sometimes necessary. Proctoscopy was performed on these patients in whom injury was suspected to have occurred above the anal verge.

Digital and proctoscopic examinations were also performed in those patients who presented with a history of rectal bleeding. Abdominal films were utilized to demonstrate intraperitoneal air or to locate the bullet following gunshot wounds. Barium enema was felt to be unwarranted and dangerous in the acutely injured, but was used later to define the extent of injury for possible reconstruction or colostomy closure.

Laparotomy was performed as the definitive examination to exclude intraperitoneal injury once this was suspected or when colostomy was required.

The injuries were graded on the basis of severity. Grade I trauma consisted of a less than full thickness injury to the anal or rectal mucosa. Grade II injuries were full thickness

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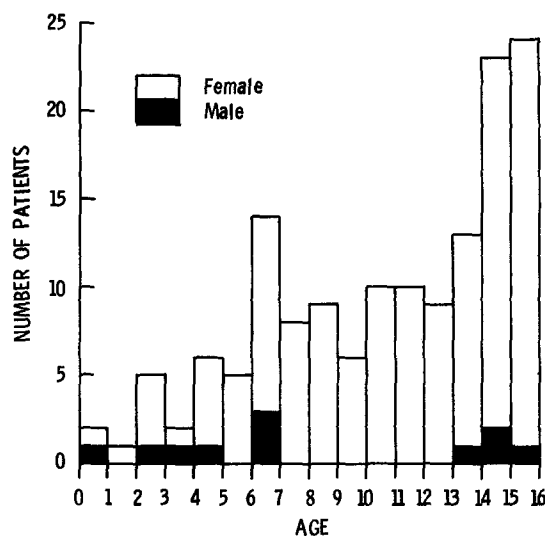


Fig. 1. Ages and sex of 147 cases of suspected sexual abuse in children 15 yr of age or less seen at Ben Taub General Hospital during 1979 and 1980.

defects below the level of the internal sphincter including or not including the external sphincter. Grade III injuries were full thickness and proximal to the internal sphincter but without violation of the peritoneal cavity. Grade IV included those rectal injuries with penetration of the peritoneal cavity but without other intraperitoneal damage. Grade V injuries were the same as grade IV, but with associated trauma to internal organs. A summary of each case is shown in Table 1.

Treatment

The treatment used in the management of each grade of injury ranged from conservative measures (grade I), to limited and more extensive surgery (grades II–V).

Mucosal or superficial anal injuries resolved with conservative treatment. Full thickness injuries below the internal sphincter healed without complication following primary repair. Due to possible perirectal or retroperitoneal infection and spasm of the internal sphincter, injury at this level (grade III) was protected by a colostomy and drained. Intraabdominal perforation was then searched for and excluded; if present (grade IV), closure and protection of the repair with colostomy was performed. Associated internal injuries (grade V) were repaired as encountered.

CASE REPORTS

(Case Numbers Refer to Table 1)

Case 5

A 14-yr-old boy presented to the emergency center complaining of rectal bleeding. He had swallowed a fish bone 2 days previously. The abdominal exam was unremarkable, however a hard thin object and fresh blood were found on rectal exam.

A 0.5 × 4.0 cm fish bone was recovered from the rectum through the proctoscope. A small mucosal laceration was noted. The patient was hospitalized and remained asymptomatic until discharged 24 hr later. An examination the following week was normal.

Comment. The vast majority of ingested objects pass through the gastrointestinal tract without incident while others, if they safely traverse the proximal tract, may rarely lodge within the rectum and require removal.⁷

The great majority of foreign objects introduced into the rectum from below, including ends of broken thermometers, may be expected to pass spontaneously.

Case 10

An 8-yr-old girl presented to the emergency center after having fallen astraddle a baton. Examination revealed a long recto-vaginal tear involving the distal centimeter of rectal mucosa and extending through the anal sphincter and across

Table 1. Sixteen Cases of Pediatric Ano-Rectal Injury During 1979–1980

Case	Age	Sex	Grade of Injury	Etiology	Description of Injury
1	2 yr	F	I	Sexual abuse	Posterior rectal fissure
2	3 yr	M	I	Sexual abuse	Multiple anal fissures
3	4 yr	M	I	Sexual abuse	Multiple anal fissures
4	13 yr	M	I	Sexual abuse	Perianal erythema, pain
5	14 yr	M	I	Swallowed foreign body	Laceration of rectal mucosa
6	14 yr	M	I	Sexual abuse	Multiple anal lacerations
7	14 yr	M	I	Sexual abuse	Anal tear
8	15 yr	F	I	Sexual abuse	Perianal erythema and edema, proctalgia
9	7 yr	F	II	Sexual abuse	1-cm anterior ano-rectal tear
10	8 yr	F	II	Straddle injury	Recto-vaginal tear
11	10 yr	F	II	Sexual abuse	Vaginal laceration, tear through external anal sphincter
12	15 yr	F	II	Sexual abuse	Recto-vaginal tear
13	15 mo	M	III	Rectal perforation	Extra-peritoneal perforation
14	14 yr	M	III	Gunshot wound	Extra-peritoneal perforation
15	5 mo	M	IV	Sexual abuse	Ano-rectal lacerations, edema, erythema. Perineal laceration extending into peritoneal cavity
16	3 yr	M	V	Rectal perforation	Perforation of rectosigmoid, severe scarring of rectum, perforation of bladder with rectourinary fistula

the perineum into the distal posterior vagina. She was taken to the operating room where the injury was closed primarily in layers. She was discharged the following day on Sitz baths and stool softeners. Her wound healed without complications.

Comment. Blunt force to the perineum often injures the anus and may injure the rectum. In addition to straddle-type injuries, many reports exist of rectal trauma of an impalement type in which injury is sustained during a fall from a high place onto a vertically-oriented object such as a vacuum cleaner handle or a picket fence.⁸

Straddle injuries generally damage the perineum, anus, and most distal rectum as in this grade II injury while the impalement type may result in extensive rectal and intraabdominal disruption.

Case 14

A 14-yr-old boy was brought to emergency center 5 hr following a gunshot wound to the anterolateral aspect of the upper right thigh. The vital signs were stable and the abdomen was soft and nontender. Fresh blood was apparent on digital examination of the rectum. A perforation 11 centimeters above the anal verge was seen on proctoscopic exam. The small caliber bullet was located radiographically in the left iliac fossa. At laparotomy, no intraabdominal injuries were found. A diverting sigmoid colostomy was constructed and soft presacral drains were placed through a posterior perineal incision outside of the external sphincter. Following a 3-day period of presacral drainage, the drains were advanced and removed. A followup barium enema after 6 wk revealed a normal rectum and the colostomy was closed.

Comment. Due to its protected location, the rectum is rarely injured by gunshot, nevertheless, such injury must be actively excluded to avoid overlooking potentially lethal damage. Generally, digital examination or, if that is equivocal, proctoscopy, will resolve the question. Estimation of bullet trajectories may be notoriously misleading.

Case 15

A 5-mo-old male infant was brought to the emergency center by his unmarried parents. His father stated that the child's perineum had split open spontaneously during a brief maternal absence. Extensive ecchymoses and some abrasions were found over the face, the back, and the buttocks. Four full thickness lacerations radiated out from the anus nearly to the scrotum and extended inward through the perineal body to communicate with the peritoneal cavity through the rectovesical fossa. The anus and distal rectal mucosa were very edematous and erythematous but the rectal wall was intact. The hematocrit was 14.5 and the hemoglobin 4.1. Following blood transfusion and stabilization, it was apparent that the wound could not be kept free from fecal contamination and a diverting sigmoid loop colostomy was performed. The wound was packed open and the dressings changed frequently. The colostomy was closed 6 wk later and following an episode of small bowel obstruction, recovery proceeded uneventfully. The child was discharged after 67 days of hospitalization to a

foster home and is at present healthy but lacking sphincter tone. A reconstructive procedure is planned to attempt restoration of continence.

Comment. Although boys' rectum are commonly injured when sexually attacked, the severity of this incident is extreme. Sexual abuse, in addition to the trauma it causes, can also inflict the child with anorectal diseases including gonorrhea, syphilis, herpes, and other viral, bacterial, or parasitic infections.

Case 16

A 4½-yr-old boy was brought to us by his father and step-mother for closure of a colostomy. At age 3 the child's natural mother had perforated his rectosigmoid junction with a coat hanger necessitating resection of the sigmoid colon with primary reanastomosis. The boy did well for 5 mo until a rectovesical fistula was discovered requiring a descending loop colostomy for diversion. The child did well following this procedure. The family then moved to the Houston area at which time the child was evaluated for correction.

Barium enema and stress cystogram revealed a rectourethral and, probably, a rectovesical fistula. The rectum was severely scarred and stenotic. At surgery the fistula was repaired and the rectal mucosa and submucosa were resected, together with the portion of the descending colon distal to the colostomy. A Soave type of endorectal pull-through was then performed utilizing that portion of the descending colon proximal to the colostomy. Recovery was rapid and complete, and he is now continent of stool and urine.

Comment. In addition to this grade V injury, a grade III injury of similar etiology was sustained by a 15-mo-old boy.

The endorectal pull-through was helpful in placing normal bowel serosa adjacent to the urinary fistula and in preserving the child's sphincter mechanism despite marked distortion by scar tissue.

DISCUSSION

A system for grading ano-rectal injuries by severity has been helpful for developing a treatment protocol for such injuries. There were no deaths in this series although 4 of the 16 children had significant morbidity. Conservative (non-operative) treatment was sufficient for half of the patients seen while the other half required surgery.

Child abuse was the most common cause of ano-rectal injury in our series accounting for 13 of the 16 total cases. From this we conclude that children sustain ano-rectal trauma in a very different fashion than do adults in whom gunshot wounds cause the majority of such injuries.

Nearly one quarter of all sexually abused individuals were less than 16 yr old. A similar recent study at another urban trauma center revealed a similar incidence of 24%,⁹ although

figures as high as 83% are quoted.¹⁰ Considerably fewer childhood sexual assaults are likely to be reported than the 40%–50% estimated for adults.¹¹ These figures indicate that the sexual abuse of children is occurring at a previously unrecognized high rate. Those who examine children regularly must be particularly aware of this fact.

Males comprised 7.5% of the sexually abused children. Other authors have reported 11% to 16% of all children with such presentation are male.^{10,12} These figures probably reflect local ethnic and other socioeconomic differences. Fewer cases of such abuse involving young male victims are reported because of fear or embarrassment. Males were more likely victims at young ages while the incidence among females increased with age.

Only 3.7% of the female victims had sustained significant ano-rectal injury compared to 54.5% of the males. This high rate of injury was consis-

tent with another series wherein 6 of 14 males 15 yr of age and less (42.8%) sustained anal or perianal trauma during assault.¹²

When ano-rectal damage is seen in the absence of obvious etiology, child abuse should be suspected. Conversely, the anus and rectum must be examined when otherwise abused children or those with questionable or unexplained symptoms are encountered to eliminate the danger of overlooking such injuries. The evaluation of injured patients, especially those who have been abused, must be humane but thorough. Particularly treacherous are the outwardly invisible rectal perforations caused in this series by the two young victims' mothers.

The management of ano-rectal trauma in children requires not only the proper application of emergency surgical technique, but an ability to perform reconstructive procedures in severely injured patients to minimize what otherwise can be substantial social and physical morbidity.

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