Balloon Extraction of a Retained Rectal Foreign Body Under Fluoroscopy, Case Report and Review

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Abstract: Rectal foreign body impaction in infancy is extremely rare, and the literature does not describe a standard treatment procedure. Extraction by fiberoptic rectosigmoidoscope is advocated as the treatment of choice but is not free of possible complications. It should be also taken into consideration that the type of foreign body has an impact on the timing of treatment. We report a 50-day-old male presenting with a retained broken tip of a mercury thermometer in the rectum. A novel method of diagnostic approach and treatment is discussed.

Key Words: foreign body, rectal, retained, Foley balloon catheter, fluoroscopy, infant

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Unlike foreign body (FB) ingestion, which presents a common pediatric emergency situation, rectal injury or impaction by FB is quite rare. Numerous reports have demonstrated the successful retrieval of upper gastrointestinal foreign bodies, mostly by the help of an endoscope, with a balloon catheter or magnets. Knowledge about treating rectal foreign bodies, however, is very limited in the pediatric age group. Method of diagnosis and appropriate treatment is under dispute. We report a 50-day-old male presenting with retained rectal FB. Removal of the broken tip of a mercury thermometer under fluoroscopy has not been reported in the literature.

CASE

A 50-day-old boy was brought to pediatric emergency department with a history of retained broken tip of a mercury thermometer in the rectum. The mother had observed that the tip of the thermometer was missing after her attempt to obtain rectal body temperature. On admittance, the child was calm without any abdominal tenderness, and there was no blood or sign of rectal injury. A plain abdominal roentgenogram revealed the presence of the object in the pelvis. There was no sign of abdominal-free air (Fig. 1). The patient was treated under conscious sedation. We failed an initial attempt to reach the object by the help of retractors because the FB was beyond sight. There was no appropriate sized rectoscope available, and a novel approach was favored, resembling a similar method exercised in retrieving esophageal foreign bodies. We managed to pass a Foley catheter beyond the FB, which was lying deep in the rectum as demonstrated by the help of fluoroscopy. The balloon was also filled with radioopaque material to obtain a better orientation during the procedure (Fig. 2). The tip of the thermometer was successfully retrieved per rectum in a single trial without causing any injury (Fig. 3). The patient was observed for 24 hours to exclude possible complications and was discharged symptom-free.

DISCUSSION

An unlimited PUBMED search for articles on diagnosis and treatment of retained rectal foreign bodies results in a recent increase in number of case reports with a small number of case series. These publications are mostly on adult patients indicating autoeroticism, concealment, accidental event, assault, attention-seeking behavior, and aid to alleviate constipation.

A detailed search revealed 7 published pediatric cases, all admitted with complaints of rectal injury resulting from taking rectal temperature. Two of the mentioned cases presented with an intravesical or intraspinal migration and another 2 with impaction of the broken thermometer. The presence of an accompanying rectal injury or a migrating FB necessitated surgical treatment in these patients. Fonkalsrud et al. recommended auxiliary rather than rectal temperatures in newborns and infants, whenever suitable.

The diagnosis of a rectal FB is usually easy to confirm with a thorough history and plain abdominal films. Signs and symptoms of overt peritonitis mandate immediate surgical approach either by open or minimal access route. It is a well-known fact that any ingested foreign object that reaches beyond the Treitz ligament may be discharged safely with the help of antegrade peristalsis and propulsion. For this reason, a watchful waiting may seem reasonable in an asymptomatic child without any rectal injury. In the rare instance of the presence of a broken mercury thermometer, however, it is advocated to remove all mercury deposits to prevent local mercury absorption. Slow biological oxidation of elemental mercury is said to produce a soluble form of mercuric salt. This soluble form starts reacting with the sulfhydryl radicals of a large number of enzyme systems and disseminates throughout the circulatory system after absorption from the rectal tissue. According to Mawrage et al., an indication for chelation therapy is exceptional, but they recommend a clinical and biochemical follow-up in patients harboring mercury remains.

A recent case report by Chiu et al. of a 19-year-old male is quite unique in its presentation. He is most probably the eighth pediatric patient in the literature. An incidental diagnosis discloses the presence of a fragmented mercury thermometer lying in the pelvic cavity. The patient has refused any surgical treatment and is under follow-up for 7 years after the initial presentation. He has had no symptoms or signs of acute or chronic mercury poisoning neither before the diagnosis nor during follow-up period. Chiu et al advocate immediate hospitalization and surgical intervention to eliminate the thermometer fragments and mercury deposits.

We do not advocate a digital rectal examination and attempt of transanal extraction of the rectal FB. Although it might seem as an easy and effective approach, it has been reported that...
simple digital examination may at times lead to bradycardia, ectopy, and ventricular arrhythmias. The postulated etiology is reported as 2-fold: increased vagal tone from rectal parasympathetic innervation or increased sympathetic tone from anxiety-stimulated catecholamine release. There is also an increased risk of causing iatrogenic rectal injury and even dislodgement of FB from the rectum into the surrounding spaces.

A fiberoptic rectosigmoidoscoposcopic extraction seems as the best alternative choice. However, the tip of a broken thermometer may be difficult to extract by rectosigmoidoscope because it is brittle, small, and slippery. Accidental shattering of the tip during retraction may pose additional threat from mercury intoxication. Diagnostic and therapeutic instrumentation of the lower gastrointestinal tract might cause minor complications, as mucosal abrasion or superficial tear and although rare, the resultant rectal trauma may lead to bacteremia.

Removal of esophageal FB (radioopaque, smooth, inorganic objects, and mostly coins) with Foley balloon catheter under fluoroscopy is advocated as a successful method, especially during the early admission period of ingestion. Little et al reported 86% success rates in the first, 83% in second, and 50% in the seventh day. There were no major complications. Duration of the fluoroscopy time was an average of 5 minutes, but decreased with experience. Our choice of treatment was similar and resulted in successful removal of the object in a single attempt, under conscious sedation with minimum discomfort. All procedure lasted shorter than 5 minutes. The radiation time was kept to minimum because we obtained short periods of screening intervals during the procedure.

We share Fonkalsrud’s recommendation in taking axillary temperatures regarding the necessity as a common procedure at home and in many pediatric wards. We advocate an initial attempt under conscious sedation to extract a broken mercury thermometer by the help of Foley balloon catheter under fluoroscopy in selected patients. Patients presenting with small, blunt, and slippery retained rectal FB with intact rectum may also benefit from this type of extraction in the emergency department.

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