

A Novel Use of a Schanz Pin–Rectal Foreign Body Extraction: A Case Report

Joshua H Chang¹, Luke Haag¹, Sanjay Mohanty^{2,3}, Roman M Natoli^{1,2,4}

Learning Point of the Article:

In patients presenting with complicated rectal foreign bodies, a threaded rod may allow for less invasive extraction.

Abstract

Introduction: Retained rectal foreign bodies (RFBs) can be difficult to extract, forcing the surgeon to get creative. This is the first case report utilizing orthopedic drilling and joystick manipulation techniques for foreign body extraction.

Case Report: A 63-year-old male presented to the emergency department with a pool ball in his rectum for two days. Extraction attempts under anesthesia both transanally and through a low midline laparotomy were unsuccessful due to the patient's pelvic anatomy. Orthopedic surgery was consulted to see if any manipulation or resection of the pelvis might aid in extraction. Ultimately, a Schanz pin was drilled retrogradely from the rectum into the pool ball and successfully manipulated the pool ball out of the patient.

Conclusion: Techniques such as drilling and joystick manipulation are common in orthopedic surgery but rarely used in other surgical fields. This case presented a novel use of a Schanz pin in RFB extraction. Application of orthopedic surgical technique in a colorectal surgery in this case saved the patient from more invasive interventions such as pubic symphysiotomy or ischial tuberosity resection.

Keywords: Foreign body, laparotomy, rectum, Schanz pin.

Introduction

Rectal foreign bodies (RFBs) are a modern problem with perennial roots, as the earliest documented instance dates back to the 16th century [1]. While there is a paucity of current data outlining the specific incidence of RFBs, a study from the University of Southern California reported seeing a RFB patient in their emergency department at a frequency of once a month [2]. Two additional independent studies demonstrated an overall increase in RFB hospital visits between 2008–2012 and 2010–2019 [3, 4]. RFB patients are typically young and biologically male, with a possible disparity in sexes as high as six to one. There are a variety of documented motivations for the

rectal insertion of objects, with the most common being sexual pleasure (35.8%). Objects rectally inserted in RFB hospital cases vary dramatically, with the most frequent being phallic items such as sexual devices, glass bottles, wooden objects, and food [5]. In some cases, medical devices have been discovered in rectally retained foreign bodies [6].

Management of RFB retention is a serious challenge for clinicians as the size and shape of the retained objects vary widely. Patients often delay treatment or attempt self-extraction, which may result in worsening injuries and further impede treatment. If improperly managed, RFB retention may pose serious complications to the patient, including hemorrhage, bowel

Author's Photo Gallery



Mr. Joshua H Chang



Mr. Luke Haag



Dr. Sanjay Mohanty



Dr. Roman M Natoli

Access this article online

Website:
www.jocr.co.in

DOI:
<https://doi.org/10.13107/jocr.2024.v14.i03.4278>

¹Indiana University School of Medicine, Indianapolis, Indiana, United States,

²Indiana University Health Physicians, Indianapolis, Indiana, United States,

³Department of Surgery, Indiana University School of Medicine, Indianapolis, Indiana, United States,

⁴Department of Orthopedic Surgery, Indiana University School of Medicine, Indianapolis, Indiana, United States.

Address of Correspondence:

Dr. Roman M Natoli,

Indiana University Health Physicians, Indianapolis, Indiana, United States/Department of Orthopedic Surgery, Indiana University School of Medicine, Indianapolis, Indiana, United States.

E-mail: rnatoli@iuhealth.org

Submitted: 21/12/2023; Review: 23/01/2024; Accepted: February 2024; Published: March 2024

DOI: <https://doi.org/10.13107/jocr.2024.v14.i03.4278>

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License <https://creativecommons.org/licenses/by-nc-sa/4.0/>, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms





Figure 1: Pelvic/abdominal radiograph revealing the #14 pool ball lodged deep within the pelvic cavity.

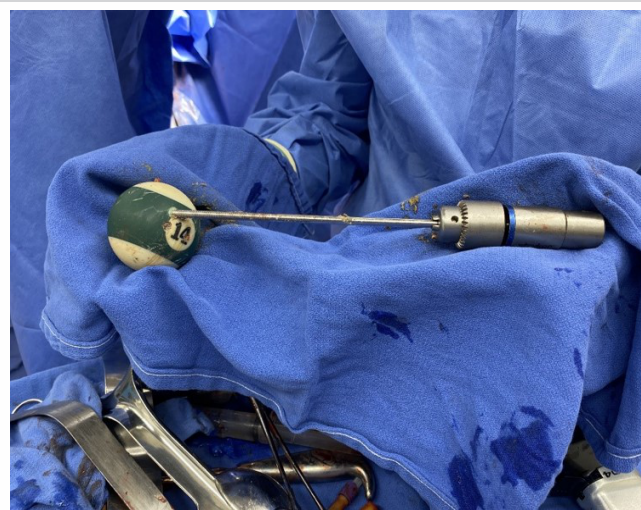


Figure 2: The pool ball immediately following surgical extraction through Schanz pin.

perforation, fistula, acute renal failure, sepsis, and death. A meta-analysis of the currently available literature revealed a total RFB complication rate of 30.4%. The same study revealed that 45.2% of RFB cases require general anesthesia for removal, and 29.0% require sedation [5].

In healthy, stable patients, non-operative methods are attempted before escalating to surgery, but there are times when conventional surgical methods still fail to remove the foreign object [7]. In these challenging cases, surgeons must get creative with their arsenal of tools. This case report was approved by our local IRB, and informed consent was obtained from the patient.

Case Report

A 63-year-old male presented to the emergency department with a pool ball in his rectum. He reported that his girlfriend had inserted a #14 pool ball into his rectum two days prior. On presentation, he had excruciating lower abdominal pain and difficulty with urination and bowel movement. On examination, he was in no acute distress, the abdomen was soft and non-distended, and there were no signs of hemorrhage. Plain pelvic radiography revealed a round, opaque foreign body in the pelvic cavity (Fig. 1). A Foley catheter retrieval of the pool ball was attempted without success, so the patient was moved to the operating room for foreign body extraction.

Under general anesthesia, the patient was placed in a high lithotomy position. The pool ball was palpable distally with a digital rectal examination; however, neither manual removal nor suction with an obstetrics vacuum extractor was successful in retrieving the pool ball transanally. The patient's pelvic outlet

was very narrow, and it became apparent that further attempts to remove the ball through a transanal approach would continue to be unsuccessful; therefore, a low midline laparotomy was made. Unfortunately, the pool ball was found to be lodged in the rectum below the level of the peritoneal reflection, and the ball could not be manipulated to an intraperitoneal position for extraction through sigmoidotomy. Further attempts were made to deliver the ball through the transanal route, but the patient's narrow pelvic outlet restricted movement past the ischial tuberosity. As the pool ball could not be moved either proximally or distally in the rectum, an orthopedic surgeon was consulted to see if any manipulation or resection of the pelvis might aid in the removal of the pool ball. It was determined that a pubic symphysis resection would not be of assistance in ball retrieval, but a partial unilateral resection of the ischial tuberosity may help. Since the patient had not provided informed consent for resection of the ischial tuberosity and was not positioned nor draped for such a procedure, a final transanal extraction attempt was made with a Schanz pin.

A speculum was placed into the rectum so that the #14 pool ball was visible. The ball was held in place through the laparotomy opening, and then a pair of ring forceps was inserted through the speculum to grasp the pool ball. A Schanz pin was then drilled into the pool ball. This rigid anchor allowed for good handling of the pool ball, which was wiggled past the ischial tuberosity and removed from the patient's rectum through the transanal route (Fig. 2).

Post-removal sigmoidoscopy revealed mild mucosal irritation but no perforations. Post-operatively, the orthopedic service recommended weight-bearing as tolerated. The patient's recovery was complicated by ileus and anal fissures, but he

eventually regained bowel function.

Discussion

Transanal extraction of RFBs has a reported success rate of 60–75% [8]. A large variety of extraction techniques have been described: Kocher clamps, various grasping forceps, balloon catheters, suction devices, or downward abdominal pressure are all common methods [7,9–11]. For spherical objects, laparoscopic extraction bags [10] and endoscopic retrieval tools [11] have been used successfully. In one patient with a narrow pelvic outlet, the impacted plastic ball was carefully cut into pieces and then extracted [6].

When conventional methods fail, RFB removal with a Schanz pin is a novel approach to consider in cumbersome cases. In this particular case, the slippery sphere combined with the patient's narrow pelvic outlet resulted in a three-hour-long exercise in frustration before the Schanz pin method was attempted. Although a pair of forceps did not have enough grip on the ball to pull it out, it was enough to prevent the ball from rotating and being pushed deeper while drilling. The ball was palpable on a rectal examination and visible when the speculum was placed. This placement allowed for a successful transanal extraction with the Schanz pin. Bullets have similarly been removed by orthopedists using terminally threaded guidewires [12].

There are risks in using a high-powered rotary tool next to soft mucosal tissue. When drilling into a hard and slippery object, such as a pool ball, uncontrolled slippage of the drill bit could lead to perforations of the rectum. In addition, the higher torque transfer could overpower the clamping force of the forceps, leading to sudden rotation of the foreign body, which could

cause mucosal tearing. Foreign body extraction with a threaded rod is only applicable to a limited set of materials. First, the foreign body material must be drillable. This excludes any objects containing batteries and brittle materials, such as glass. Second, the material should allow for secure anchoring of the rod. In the presented case, the pool ball's hard plastic material was malleable enough to allow thread cutting without cracking and was tough enough to prevent the Schanz pin from stripping out the threads and pulling through. For harder materials, pre-drilling may be required, whereas for softer materials, coarser threads may provide a stronger anchor. This method would not be suitable for thin-walled objects such as bottles or bags.

Conclusion

In the presented case, the patient's unique anatomy, the shape and texture of the pool ball, and the unfortunate depth where the ball was stuck made the ball unrecoverable through conventional methods. However, the rigid plastic material and depth of impaction also allowed for retrieval with a Schanz pin, sparing the patient from more invasive procedures such as a partial unilateral resection of the ischial tuberosity. A threaded rod such as a Schanz pin is a new tool to consider in difficult cases of RFB extraction.

Clinical Message

Surgical retrieval of rectal foreign bodies can be met with complications related to the patient's individual anatomy or the nature of the foreign body. In these difficult emergent situations, using a Schanz pin is a novel approach that may permit safer retrieval of foreign bodies.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given the consent for his/ her images and other clinical information to be reported in the journal. The patient understands that his/ her names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflict of interest: Nil **Source of support:** None

References

1. Gould GM, Pyle WL. *Anomalies and Curiosities of Medicine: Being an Encyclopedic Collection of Rare and Extraordinary Cases, and of the Most Striking Instances of Abnormality in all Branches of Medicine and Surgery, Derived from an Exhaustive Research of Medical Literature from its Origin to the Present Day, Abstracted, classified, Annotated, and Indexed.* Philadelphia, PA: W.B. Saunders; 1897. p. 645-8.
2. Lake JP, Essani R, Petrone P, Kaiser AM, Asensio J, Beart RW Jr. Management of retained colorectal foreign bodies: Predictors of operative intervention. *Dis Colon Rectum* 2004;47:1694-8.
3. Ayantunde AA, Unluer Z. Increasing trend in retained rectal foreign bodies. *World J Gastrointest Surg* 2016;8:679-84.
4. Bhasin S, Williams JG. Rectal foreign body removal: Increasing incidence and cost to the NHS. *Ann R Coll Surg Engl* 2021;103:734-7.
5. Ploner M, Gardetto A, Ploner F, Scharl M, Shoap S, Bäcker



- HC. Foreign rectal body - Systematic review and meta-analysis. *Acta Gastroenterol Belg* 2020;83:61-5.
6. Asmar N, Perrod G, Rahmi G, Cellier C. Hip orthopedic material presenting as an unusual rectal foreign body. *Ann Gastroenterol* 2018;31:751.
7. Athamnah MN, Rabai NA, Al Azzam HS. Rectal foreign body, an impacted plastic ball: A case report and review of literature. *Int J Surg Case Rep* 2021;87:106404.
8. Cologne KG, Ault GT. Rectal foreign bodies: What is the current standard? *Clin Colon Rectal Surg* 2012;25:214-8.
9. Goldberg JE, Steele SR. Rectal foreign bodies. *Surg Clin North Am* 2010;90:173-84, Table of Contents.
10. Chilakamarry S, Klipfel AA. Novel approach to removal of rectal foreign bodies. *Dis Colon Rectum* 2021;64:e368-70.
11. Park YJ, Baek DH, Park EY, Kim GH, Song GA. Unusual rectal foreign body: A golf ball. *Clin Endosc* 2021;54:291-2.
12. Lee GH, Virkus WW, Kapotas JS. Arthroscopically assisted minimally invasive intraarticular bullet extraction: Technique, indications, and results. *J Trauma* 2008;64:512-6.

Conflict of Interest: Nil

Source of Support: Nil

Consent: The authors confirm that informed consent was obtained from the patient for publication of this case report

How to Cite this Article

Chang JH, Haag L, Mohanty S, Natoli RMA Novel Use of a Schanz Pin–Rectal Foreign Body Extraction: A Case Report. *Journal of Orthopaedic Case Reports* 2024 March; 14(3): 35-38.