A 29 year old male was seen three weeks after being struck with three one to two centimeter sized casing fragments blown back from the breech of an incompletely closed 50mm machine gun. One fragment had entered his upper thigh and two entered the abdomen above the pelvis. Initially treated at a military aid station, he came to the clinic complaining of urinary urgency. The patient had a tiny draining wound on the left medial thigh and two healed wounds, approximately a centimeter each, on the abdomen. He reported no pain, fever, urinary difficulty or bleeding. A CT scan was ordered to determine the location of the fragments. One lay to the left of the midline deep in the pelvis and the other in the right lower quadrant.

**WHAT HAPPENED NEXT**

A two-week follow-up, the patient developed profuse, watery diarrhea. Fluid cultures were positive for G. duodenalis, with improvement after a course of metronidazole. CT showed the right fragment lying immediately beneath the cecum with no evidence of intrusion to the wall. The left fragment was on the pelvic wall, well away from the ureter or other structures. Subsequently:

- He returned to the clinic complaining of sporadic diarrhea and intermittent left lower quadrant discomfort that worsened with exercise.
- A CT and water contrast enema revealed that the left fragment was unchanged, however the right fragment was absent.
- There was no cecal deformity or evidence of intussusception or abscess.
- The patient's symptoms resolved with no further medical intervention.

**THE KEY TO DIAGNOSIS**

While it is impossible to prove this case, the evidence suggests that the absorption and passage through the bowel is the most reasonable explanation for the disappearance of the fragment. In 1992, it was demonstrated that metallic copper produces a significant inflammatory reaction in living tissue. The occurrence of copper-containing bodies eroding into critical structures has been previously suggested by case reports and anecdotal examples of objects migrating through the lungs, bronchi and bladder. No suggestion of erosion and migration into bowel has ever appeared in the literature.

If a foreign body is specifically noted to be a bullet of military origin, it may be assumed to contain significant copper content. For the last 100 years, most military ammunition has been jacketed with some form of gilding metal—with a majority of the alloy being copper.

Given the known reaction of tissue exposure to copper and its behavior elsewhere, it should be considered to explain the patient's symptoms.

**DISCUSSION**

This presentation is the first documented instance of a copper-containing object migrating in the GI tract. Even though current laboratory models suggest no risk, this case demonstrates that the presence of a copper-containing foreign body in a location of potential harm may require consideration for removal due to the potential consequences of leaving copper fragments in the body.

**REFERENCES**

- Sommerhalder, MD
- Richard Wigle, MD
- Wayne Zhang, MD FACS
- Anil Nanda, MD MPH
- Neville B. Desai, MD, FACP

**Presentations**

- David Ballard, Medical Student; Ryan Brown, Medical Student; Alleeza Hamidian Johnson, MD, Surgery Resident; Ronula Vee, MD, Associate Professor of Radiology; Chaitanya Ajuve, MD, Assistant Professor of Radiology; and Horacio D’Agostino, MD, Professor and Chairman of Radiology. "Initial and salvage paired drainage catheter insertion for effective evaluation of complex abdominal fluid collections: Indications, results, and complications," Society of Interventional Radiology Annual Scientific Meeting, Atlanta, GA

- Andrea K. Balthazar, Navdeep Samra, MD, Richard Wigle, MD

- Medical Student & Department of Surgery/Division of Trauma

- AGR with GI Problems

By Andrea K. Balthazar, Navdeep Samra, MD, Richard Wigle, MD

- The Curious Case of a Copper Object Migrating in the GI Tract

- A 29 year old male was seen three weeks after being struck with three one to two centimeter sized casing fragments blown back from the breech of an incompletely closed 50mm machine gun. One fragment had entered his upper thigh and two entered the abdomen above the pelvis. Initially treated at a military aid station, he came to the clinic complaining of urinary urgency. The patient had a tiny draining wound on the left medial thigh and two healed wounds, approximately a centimeter each, on the abdomen. He reported no pain, fever, urinary difficulty or bleeding. A CT scan was ordered to determine the location of the fragments. One lay to the left of the midline deep in the pelvis and the other in the right lower quadrant.

- **WHAT HAPPENED NEXT**

  - A two-week follow-up, the patient developed profuse, watery diarrhea. Fluid cultures were positive for G. duodenalis, with improvement after a course of metronidazole. CT showed the right fragment lying immediately beneath the cecum with no evidence of intrusion to the wall. The left fragment was on the pelvic wall, well away from the ureter or other structures. Subsequently:
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  While it is impossible to prove this case, the evidence suggests that the absorption and passage through the bowel is the most reasonable explanation for the disappearance of the fragment. In 1992, it was demonstrated that metallic copper produces a significant inflammatory reaction in living tissue. The occurrence of copper-containing bodies eroding into critical structures has been previously suggested by case reports and anecdotal examples of objects migrating through the lungs, bronchi and bladder. No suggestion of erosion and migration into bowel has ever appeared in the literature.

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  This presentation is the first documented instance of a copper-containing object migrating in the GI tract. Even though current laboratory models suggest no risk, this case demonstrates that the presence of a copper-containing foreign body in a location of potential harm may require consideration for removal due to the potential consequences of leaving copper fragments in the body.

- **REFERENCES**

  - Sommerhalder, MD
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- **Presentations**

  - David Ballard, Medical Student; Ryan Brown, Medical Student; Alleeza Hamidian Johnson, MD, Surgery Resident; Ronula Vee, MD, Associate Professor of Radiology; Chaitanya Ajuve, MD, Assistant Professor of Radiology; and Horacio D’Agostino, MD, Professor and Chairman of Radiology. "Initial and salvage paired drainage catheter insertion for effective evaluation of complex abdominal fluid collections: Indications, results, and complications," Society of Interventional Radiology Annual Scientific Meeting, Atlanta, GA

- **AGR with GI Problems**

- By Andrea K. Balthazar, Navdeep Samra, MD, Richard Wigle, MD

- Medical Student & Department of Surgery/Division of Trauma
**Informative Title**

The Respiratory Care Program in the School of Allied Health Professions is among a select few programs recognized by the Accreditation Commission for Respiratory Care (CoARC) to receive the Distinguished KRT Credentialing Success Award. The award is given to programs that meet high standards for outcomes, program accreditation, credentialing success and job placement. It will be presented in July at the American Association for Respiratory Care Summer Forum.

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**Conference Article**

**Authors:** John C. Former, Shawna Ruple, MD, ... and Bioimpedance-Measured Fluid Spaces in Hyperfibrinemic Patients, *Hypertension* 2015

**Abstract:** We performed a cross-sectional study of 182 patients with end-stage renal disease to evaluate the relationship between Bioimpedance Analysis (BIA) and traditional fluid status measures. A total of 38 patients were included in the final analysis: 20 patients who received a kidney transplant and 18 patients who continued on透析 therapy. The association between measured fluid status and BIA was determined using Pearson's correlation coefficient. The results showed a strong correlation between Bioimpedance and traditional fluid status measures, indicating its potential use in monitoring fluid status in patients with end-stage renal disease.

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**Medical School Article**

**Title:** A Comprehensive Review of Urology

**Authors:** Benjamin Li, MD FACS; Tze-Woei Tan, MD FACS; Horacio D’Agostino, MD; ... and Bethehem Weinberger, MD, Co-chairs.

**Abstract:** This comprehensive review of urology covers a wide range of topics, including urologic oncology, urologic imaging, and urologic surgery. It provides an up-to-date overview of the latest research and developments in the field, making it an essential resource for practicing urologists and medical students alike.

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**Presentation Article**

**Title:** The Young at Heart: Community Health Education Network

**Authors:** Jodie Gwin, MD; Xin Gu, MD; ... and Bioimpedance-Measured Fluid Spaces in Hyperfibrinemic Patients, *Hypertension* 2015

**Abstract:** This presentation explores the unique challenges faced by older adults in the community and the importance of early detection and intervention. It discusses the role of community health education networks in providing resources and support to older adults, as well as the significance of early detection and intervention in the management of chronic diseases.

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**Poster Article**

**Title:** Accurately Measured Fluid Spaces in Hyperfibrinemic Patients

**Authors:** Arnold Kambo, MD; Horacio D’Agostino, MD; ... and Bioimpedance-Measured Fluid Spaces in Hyperfibrinemic Patients, *Hypertension* 2015

**Abstract:** In this study, we evaluated the accuracy of Bioimpedance Analysis (BIA) in measuring fluid spaces in hyperfibrinemic patients. A total of 20 patients with end-stage renal disease were included in the analysis, and the results showed a strong correlation between BIA and traditional fluid status measures, indicating its potential use in monitoring fluid status in this population.

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**Conference Calendar**

**Event:** 14th Annual Intensive Review of Internal Medicine

**Location:** Shreveport Convention Center

**Dates:** May 13-16

**Description:** This intensive review of internal medicine is designed for internal medicine residents and fellows, and includes lectures, workshops, and hands-on stations to help participants prepare for the internal medicine board examination.

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**Conference Calendar**

**Event:** 4th Annual Ultrasound in Anesthesiology & Pain Medicine

**Location:** The Shreveport Convention Center

**Dates:** June 24

**Description:** This conference focuses on the latest developments in ultrasound imaging for anesthesiology and pain medicine. It includes lectures, workshops, and hands-on stations to help participants improve their skills in ultrasound imaging.

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**Conference Calendar**

**Event:** 24th Annual Scientific Meeting, American Urological Association

**Location:** The Shreveport Convention Center

**Dates:** April 30 - May 3

**Description:** This annual meeting of the American Urological Association includes lectures, workshops, and hands-on stations on the latest developments in urology. It is a great opportunity for urologists, residents, fellows, and medical students to learn from experts in the field.

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**Conference Calendar**

**Event:** 14th Annual Intensive Review of Internal Medicine

**Location:** Shreveport Convention Center

**Dates:** September 15-17

**Description:** This intensive review of internal medicine is designed for internal medicine residents and fellows, and includes lectures, workshops, and hands-on stations to help participants prepare for the internal medicine board examination.

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**Conference Calendar**

**Event:** 4th Annual Ultrasound in Anesthesiology & Pain Medicine

**Location:** The Shreveport Convention Center

**Dates:** September 25-28

**Description:** This conference focuses on the latest developments in ultrasound imaging for anesthesiology and pain medicine. It includes lectures, workshops, and hands-on stations to help participants improve their skills in ultrasound imaging.

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**Conference Calendar**

**Event:** 24th Annual Scientific Meeting, American Urological Association

**Location:** The Shreveport Convention Center

**Dates:** October 17-21

**Description:** This annual meeting of the American Urological Association includes lectures, workshops, and hands-on stations on the latest developments in urology. It is a great opportunity for urologists, residents, fellows, and medical students to learn from experts in the field.