

## IMAGES IN EMERGENCY MEDICINE

## Imaging

# Point-of-care ultrasound evaluation of a young male with flank pain

Jonathan Hill MD | Gabriel Cabrera MD | Eric J. Kalivoda MD

Department of Emergency Medicine, HCA Healthcare/USF Morsani College of Medicine GME/Brandon Regional Hospital Brandon, Brandon, Florida, USA

**Correspondence**

Eric J. Kalivoda, MD, Department of Emergency Medicine, Brandon Regional Hospital, 119 Oakfield Drive, Brandon, FL 33511, USA.

Email: [eric.j.kalivoda@gmail.com](mailto:eric.j.kalivoda@gmail.com)**Informed consent:** Informed consent was obtained from the patient.

## CASE PRESENTATION

A 32-year-old male status post laparoscopic appendectomy 2 weeks prior presented to the emergency department with chief complaint of right-sided flank pain over the past 1 day. He denied any other associated symptoms. Vital signs were unremarkable. Physical examination revealed tenderness of the right flank and right lower abdominal quadrant. However, the abdomen was without rebound, guarding, or peritoneal signs. Renal point-of-care ultrasound (POCUS) was performed at the bedside to evaluate for a possible obstructive urinary process; POCUS demonstrated moderate hydronephrosis of the right kidney (Figure 1A and 1B). Focused abdominal POCUS then was performed to evaluate for possible postoperative complications; POCUS demonstrated a large anechoic fluid collection within the right lower abdomen, most suggestive of an intraabdominal hematoma (Figure 1C and 1D). General surgery was immediately consulted due to the abnormal POCUS findings. Computed tomography (CT) of the abdomen/pelvis confirmed a 12.6 × 10.9 × 9.3 cm fluid collection located in the right lower abdomen consistent with a postoperative hematoma, with resultant compression of the right ureter causing moderate hydronephrosis of the right kidney (Figure 2). The patient was subsequently brought to the interventional radiology suite for CT-guided hematoma aspiration and surgical drain placement.

## DIAGNOSIS

### Obstructive uropathy to post-appendectomy complication of an intraabdominal hematoma

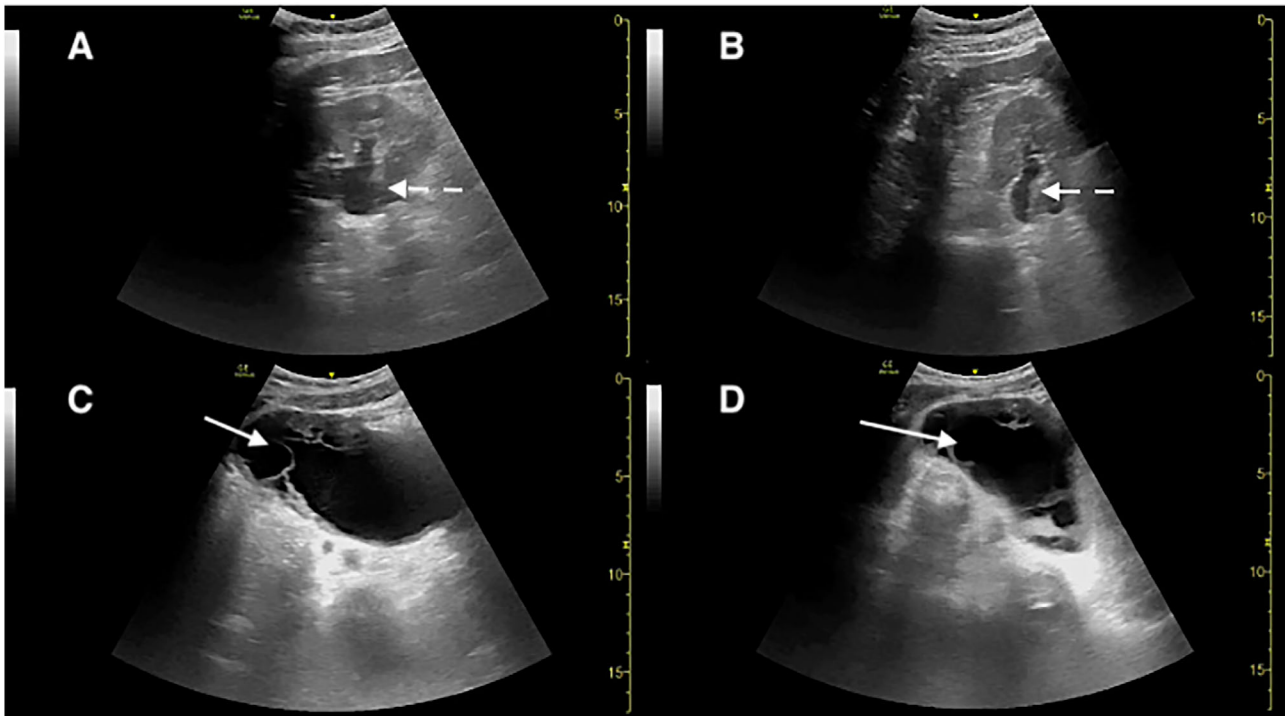
Obstructive uropathy secondary to post-appendectomy complication of an intraabdominal hematoma.

## DISCUSSION

Appendectomy is one of the most common abdominal surgical procedures performed in the United States and worldwide.<sup>1,2</sup> Post-appendectomy complications include surgical site infections, intraabdominal abscesses, ileus, bowel obstructions, adhesions, postoperative bleeding/hematomas, and urinary tract infections.<sup>2-4</sup> Rapid diagnosis of postoperative complications is a critical yet challenging task for the emergency physician. POCUS is an invaluable non-invasive imaging modality available to the emergency physician in the bedside evaluation of a multitude of abdominal emergencies.<sup>5</sup> To the best of our knowledge, this is the first case describing emergency physician-performed POCUS that identified a rare post-appendectomy complication of obstructive uropathy secondary to an intraabdominal hematoma. Most important, POCUS led to a timely diagnosis in this

This is an open access article under the terms of the [Creative Commons Attribution-NonCommercial-NoDerivs](https://creativecommons.org/licenses/by-nc-nd/4.0/) License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

© 2021 The Authors. *JACEP Open* published by Wiley Periodicals LLC on behalf of American College of Emergency Physicians



**FIGURE 1** Point-of-care ultrasound (POCUS) demonstrating hydronephrosis (dotted arrow) of the right kidney in longitudinal (A) and transverse (B) planes. POCUS demonstrating a large intraabdominal hematoma (solid arrow) of the right lower abdomen in transverse (C) and sagittal planes (D)



**FIGURE 2** Computed tomography of the abdomen/pelvis demonstrating a large postoperative intraabdominal hematoma of the right lower abdomen (solid arrow) in axial (A), coronal (B), and sagittal (C) planes that caused hydronephrosis of the right kidney (dotted arrow)

case, which prompted expeditious surgical consultation and further evaluation with gold-standard CT imaging. This report illustrates the promising role and clinical impact of POCUS as a first-line diagnostic choice in the initial ED assessment of patients with potential postoperative complications.

## DISCLOSURE STATEMENT

The authors have nothing to disclose.

## DISCLAIMER

This research was supported in part by HCA Healthcare and/or an HCA Healthcare affiliated entity. The views expressed in this publication represent those of the author(s) and do not necessarily represent the official views of HCA Healthcare or any of its affiliated entities.

## REFERENCES

1. Dahdaleh FS, Heidt D, Turaga KK. Chapter 30: The Appendix. In: Brunicaudi FC, Andersen DK, Billiar TR, Dunn DL, Kao LS, Hunter JG,

- Matthews JB, Pollock RE, eds. *Schwartz's Principles of Surgery*. 11th ed. New York, NY: McGraw-Hill Education; 2019, 1331–1344.
- Masoomi H, Nguyen NT, Dolich MO, et al. Laparoscopic appendectomy trends and outcomes in the United States: data from the Nationwide Inpatient Sample (NIS), 2004–2011. *Am Surg*. 2014;80(10):1074-1077.
  - Jaschinski T, Mosch CG, Eikermann M, et al. Laparoscopic versus open surgery for suspected appendicitis. *Cochrane Database Syst Rev*. 2018;11(11):CD001546.
  - Poprom N, Wilasrusmee C, Attia J, et al. Comparison of postoperative complications between open and laparoscopic appendectomy: an umbrella review of systematic reviews and meta-analyses. *J Trauma Acute Care Surg*. 2020;89(4):813-820.
  - Lewis RE, Pearl M, Nomura JT, et al. CORD-AEUS: consensus document for the emergency ultrasound milestone project. *Acad Emerg Med*. 2013;20(7):740-745.

**How to cite this article:** Hill J, Cabrera G, Kalivoda EJ. Point-of-Care Ultrasound Evaluation of a Young Male with Flank Pain. *JACEP Open*. 2021;2:e12473. <https://doi.org/10.1002/emp2.12473>.