

Ultrasound in the Diagnosis of Incarcerated Hernia

E Kulstad, L Pittman, P Konicki

Citation

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Abstract

Inguinal hernias are a common entity in emergency departments. The determination of the viability of incarcerated herniated bowel is important prior to attempts at reduction, as reduction of strangulated, dead bowel can have disastrous consequences. We describe a case in which ultrasound was used to help guide treatment of an inguinal hernia.

CASE REPORT

An 84 year-old male with a past medical history of hypertension and non-insulin dependent diabetes mellitus presented with a complaint of suprapubic pain. He described the pain as severe, sharp and constant, starting approximately six hours prior to arrival. He noted that the pain was located in his suprapubic region, with an associated region of discomfort to the right side. He had additional symptoms of severe nausea followed by multiple episodes of non-bilious emesis. He denied any previous occurrence of similar symptoms. His review of systems was negative for fever, chills, changes in bowel habits, or UTI symptoms. On physical exam the patient was noted to be afebrile with stable vital signs. He was in no acute distress but complained of persistent discomfort. His abdomen was soft, non-tender, and active bowel sounds were present; however, a firm, non-mobile, 4 cm mass was palpable in the right inguinal region. Examination of his stool for occult blood was negative. Laboratory analysis revealed a white blood cell count of 6.1 k/ μ L, a hemoglobin of 13.6 g/dL, and a urine analysis showing no nitrites and no leukocyte esterase. A diagnosis of incarcerated inguinal hernia was suspected, with concern for early strangulation. Immediate bedside ED ultrasound of the right groin was performed, demonstrating visible peristaltic motility of the incarcerated segment of bowel and thus confirming viability and lack of strangulation of the intestinal loop (Fig. 1).

Figure 1



Interrogation with color Doppler showed the presence of arterial blood flow (Fig. 2).

Figure 2



With the added assurance that dead or gangrenous bowel would not be introduced into the peritoneum, a bedside reduction of the hernia was successfully undertaken after light sedation with 25 mcg of fentanyl and 1 mg of midazolam. Surgical correction of the abdominal wall defect was planned by the consultant surgeon on an elective basis.

DISCUSSION

Inguinal hernias may be diagnosed by physical exam, plain X-ray, contrast studies, CT scan, or MRI; however, in cases of early small bowel obstruction or early strangulation these methods at times are not diagnostic[1]. The use of ultrasound

enhances diagnostic accuracy and provides a real-time evaluation of bowel viability by demonstrating the presence or absence of bowel motility[1,2,3]. Criteria for strangulation have been described and include the presence of a dilated akinetic loop, the presence of peristaltic activity in dilated small bowel proximal to the loop, and rapid accumulation of peritoneal fluid after the onset of obstruction[1]. The presence of peristaltic activity in herniated bowel has been considered evidence against strangulation[3], providing added safety in performing bedside reduction and avoiding the need for surgical intervention. Although the presence of Doppler flow may provide further evidence against strangulation, studies in this area are limited.

CONCLUSION

The use of emergency physician performed bedside ultrasound can help differentiate strangulated from incarcerated hernias and stratify patients into operative versus non-operative management. Furthermore, ultrasound can be used as a direct visual aid in hernia reduction and to confirm successful reduction.

References

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Author Information

Erik Kulstad, M.D.

Dept. of Emergency Medicine, Advocate Christ Medical Center

Laura Pittman, M.D.

Dept. of Emergency Medicine, Advocate Christ Medical Center

P. John Konicki, D.O., R.D.M.S.

Dept. of Emergency Medicine, Advocate Christ Medical Center