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CASE REPORT

Incarceration of the appendix complicating a uterine perforation following surgical abortion: CT aspects

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Abstract A 39-year-old patient was evaluated for pelvic pain and infection following a surgical abortion performed via aspiration curettage. A pelvic computed tomography (CT) revealed an invagination of fat in the uterine wall accompanied by an abscess in the rectouterine pouch. Laparoscopic exploration revealed an incarcerated cecal appendix within the myometrium with necrosis of the appendiceal base as the culprit. A posteriori, CT multiplanar reconstruction allowed identification of the incarcerated appendix within the myometrium. To our knowledge, this CT description is the only case described in the literature.

Keywords Induced abortion · X-ray computed tomography scanners · Uterine perforation

Introduction

Uterine perforation as a complication of surgical abortion is rare. Appendiceal incarceration within this perforation has not been described in the literature to our knowledge. We report the case of a uterine perforation with incarcerated cecal appendix resulting from a surgical abortion and confirmed via computed tomography (CT) and exploratory surgery.

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Case report

A 39-year-old patient was hospitalized in the obstetrics–gynecology ward for a surgical abortion via aspiration curettage. Immediately after the procedure, the patient presented with severe pelvic pain. Results of the clinical exam revealed bilateral lower abdominal guarding without signs of shock; the blood pressure was 120/80 mmHg with a heart rate of 78 bpm. The diagnosis of uterine perforation was made. An abdominopelvic CT was performed (Lightspeed VCT 64 GE, Milwaukee, WI, USA) with and without 2 ml/kg iodinated contrast (Ioméron (iomeprol) 300, Bracco–Altana Pharma, Germany). It demonstrated a tubular myometrial defect containing fatty material, free air in the adjacent peritoneum, and effusion in the rectouterine pouch (Fig. 1). An incarceration of epiploic fatty tissue was suspected. The treatment consisted of conservative care with pain control and the patient was discharged with surveillance instructions.

Two days later, the patient presented to urgent care complaining of aggravation of her pelvic pain located in the same area as before. The patient was febrile with laboratory tests consistent with an inflammatory syndrome (C-reactive protein=25 mg/dl and white blood count=10,200/ml). A CT scan was performed under the same parameters and conditions revealed the same fatty invagination in the myometrium and organization of the effusion in the rectouterine pouch (Fig. 2). Laparoscopic exploration was decided upon which confirmed the clinical and radiographic suspicion of uterine perforation as well as revealed the incarcerated cecal appendix within the myometrium. The necrotic base of the appendix had resulted in perforation of the digestive tract

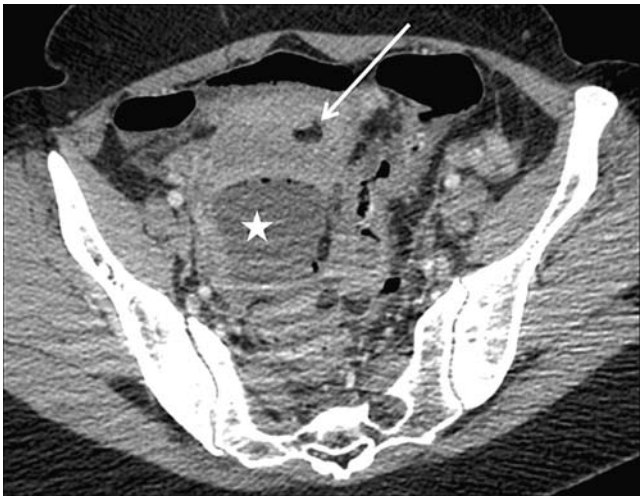

Fig. 1 Pelvic CT with iodinated contrast revealing an intrauterine defect of fatty material (*white arrow*). A rectouterine effusion containing fine bubbles of air is visible (*white star*). Intrauterine incarceration of epiploic fat is suspected

with the resultant abscess within the rectouterine pouch. The appendix was removed and followed by lavage of the peritoneal cavity and rectouterine abscess; all procedures were without complications. A posteriori, reanalysis of the CT scan results with multiplanar reconstruction allowed visualization of the incarcerated appendix within the uterus (Fig. 3). The fatty tissue that had been identified earlier turned out to be from the mesoappendix.

Fig. 2 Sagittal reconstruction of the second pelvic scan with iodinated contrast. The uterine perforation filled with fatty material is better visualized (*white arrows*). The rectouterine effusion has organized into an abscess in the rectouterine pouch (*white star*)

Discussion

Surgical abortions involve minimal morbidity and mortality and are a common procedure with 853,000 cases a year performed in the USA and 200,000 cases a year performed in France. The surgical technique involves dilation of the cervix and aspiration of the uterine contents under strictly sterile conditions. Uterine evacuation via aspiration is sometimes incomplete and is thus followed with curettage. Complications can arise from the anesthesia, such as anaphylaxis, or from the procedure itself: hemorrhage, cervical lesions, infections, or uterine perforations being among the feared possibilities. Of concern is the possibility of an incomplete evacuation leading to uterine bleeding and infections. Retrospective studies reveal that complications due to uterine perforation during the course of surgical abortion are rare, occurring at a rate of 0.009 to 0.03% [1, 2]. It appears, however, that a fair number of uterine perforations pass by undetected as such perforations do not necessarily have a significantly adverse outcome [3]. Factors involved in perforation risk include retroversion of the uterus as well as both the technique and experience of the surgeon [4, 5]. To our knowledge, incarceration of the digestive tract is exceptional and has only been described involving the intestine [6–8]. A single case study in the literature describes via ultrasound the incarceration of the intestine after aspiration curettage [6]; however, no CT

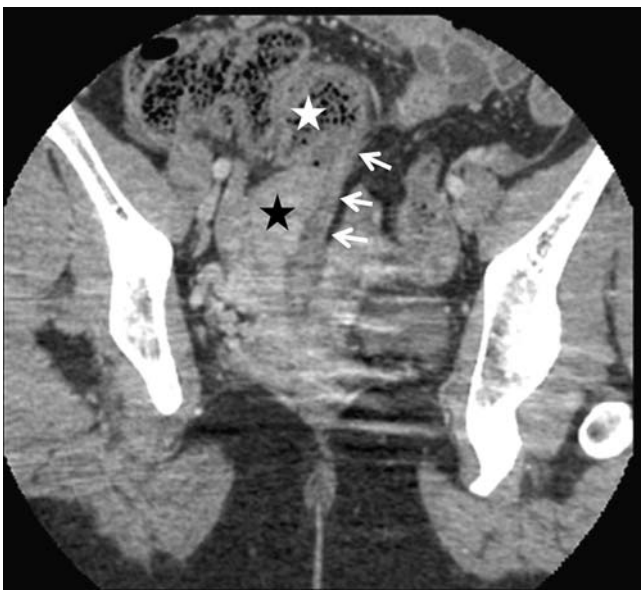

Fig. 3 Oblique coronal reconstruction of the second pelvic scan with iodinated contrast. The cecum is in the pelvis (*white star*) and the incarcerated appendix with its mesentery (*white arrows*) is identified a posteriori within the uterus (*black star*)

description of incarceration of a cecal appendix exists. In our case, the invagination of the fatty mesoappendix within the myometrium was better visualized than the relatively smaller compressed appendix. Exploratory laparoscopy confirmed the incarcerated cecal appendix.

While ultrasound is the imaging technique of choice in acute pelvic pain, it requires a trained operator and a significant pelvic pain can lead to a suboptimal exam [9]. CT may have a place in cases of pelvic pain where the ultrasound is ambiguous or if nongynecological pathology is suspected. It also has a central role in the detection of infectious complications in the context of postpartum pain or after pelvic surgery [9, 10].

CT evaluation in cases of acute pelvic pain following surgical abortion need not be routine; however, it must be performed in cases of unresolving pain or in the presence of hypovolemic shock. It helps in the diagnosis of infectious complications, tubuloovarian abscesses, abscesses in the rectouterine pouch, effusions, and hemorrhage. Uterine perforations can also be diagnosed, with or without involvement of the digestive tract, intestinal lesions, or loops incarcerated within the myometrium. Our case seems to show that, in cases involving the invagination of digestive material within the uterus, the effect of the uterine walls results in poor visibility of the bowel loop. On the other hand, the digestive mesentery is very well visualized due to its fatty nature. This represents a red flag to the surgeon for early intervention.

References

1. Hakim-Elahi E, Towell HM, Burnhill MS (1990) Complications of first-trimester abortion: a report of 170000 cases. Obstet Gynecol 76:129–135
2. Ferris LE, McMain-Klein M, Colodny N, Fellows GF, Lamont J (1996) Factors associated with immediate abortion complications. Can Med Assoc J 154:1677–1685
3. Kaali SG, Szigetvari IA, Bartfai GS (1989) The frequency and management of uterine perforations during first-trimester abortion. Am J Obstet Gynecol 161:406–408
4. Lindell G, Flam F (1995) Management of uterine perforations in connection with legal abortions. Acta Obstet Gynecol Scand 74:373–375
5. Chen LH, Lai SF, Lee WH, Leong KY (1995) Uterine perforation during elective first-trimester abortions: a 13-year review. Singapore Med J 36:63–67
6. Shulman SG, Bell CL, Hampf FE (2006) Uterine perforation and small bowel incarceration: sonographic and surgical findings. Emerg Radiol 13:43–45
7. Leibner EC (1995) Delayed presentation of uterine perforation. Ann Emerg Med 26:643–646
8. Kambiss SM, Hibbert ML, Macedonia C, Potter ME (2000) Uterine perforation resulting in bowel infarction: sharp traumatic bowel and mesenteric injury at the time of pregnancy termination. Mil Med 165:81–82
9. Bennett GL, Slywotzky CM, Giovanniello G (2002) Gynecologic causes of acute pelvic pain: spectrum of CT findings. Radiographics 22:785–801
10. Langer JE, Dinsmore BJ (1992) Computed tomographic evaluation of benign and inflammatory disorders of the female pelvis. Radiol Clin North Am 30:831–842