

Abnormal uterine bleeding six weeks after surgical termination of a second trimester pregnancy due to retained intra-uterine fetal bone

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ABSTRACT

Introduction: Retained intra-uterine fetal bone is a known complication following surgical termination of a second trimester pregnancy. It is most commonly detected on investigation for acute pelvic pain or secondary infertility and can manifest up to 15 years after surgery. We describe a presentation of abnormal uterine bleeding only six weeks after surgical abortion of second trimester pregnancy. This is both a rare presentation of retained fetal bone and the earliest documented case following surgery. **Case Report:** A healthy nulliparous 18-year-old female presented with painful per vaginal bleeding six weeks after surgical termination of a second trimester pregnancy. She had no past medical history or gynecological infection. A single linear echogenic endometrial focus was identified on trans-vaginal ultrasound. A diagnosis of retained intra-uterine fetal bone was confirmed after hysteroscopic resection. The patient was asymptomatic with regular menses at three month clinic follow-up. **Conclusion:** Intra-uterine fetal bone should be considered in all females with echogenic intra-uterine material on trans-vaginal ultrasound following surgical abortion regardless of the interval between

termination and symptom onset. It is a readily treatable cause of abnormal uterine bleeding with either hysteroscopic resection or dilatation and curettage with trans-abdominal ultrasound guidance.

Keywords: Curettage, Dilatation, Hysteroscopy, Pregnancy, Uterine hemorrhage

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INTRODUCTION

Retained intra-uterine fetal bone is a known complication of surgical termination of a second trimester pregnancy with dilatation and curettage (DC) [1]. Its etiology however is unknown. Although endochondral ossification commences at 12 weeks gestation osseous metaplasia of the endometrium in response to tissue destruction and inflammation associated with DC is a leading hypothesis [2, 3]. Chronic endometritis secondary to retained products of conception or DC is another suggested metaplastic trigger [4]. Fetal bone is easily identified as an intensely echogenic endometrial focus on trans-vaginal ultrasound. It can however be difficult to differentiate from an intra-uterine foreign body by

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its sonographic appearance alone. Direct hysteroscopic visualization and resection is subsequently considered the gold standard treatment. DC using trans-abdominal sonographic guidance is an emerging therapeutic modality [5]. We present the case of retained intra-uterine fetal bone in an 18-year-old female six weeks after surgical termination of a second trimester pregnancy leading to abnormal uterine bleeding (AUB). This is a unique presentation as it is traditionally detected on investigation for acute pelvic pain or dysmenorrhea [6]. It has also been attributed to secondary infertility up to 15 years after surgery [1]. It is also the earliest reported case following abortion.

CASE REPORT

A nulliparous 18-year-old female presented with a one-week history of painful per vaginal bleeding following surgical termination of a pregnancy of 16 weeks gestation six weeks prior. She had no significant medical history and previous pelvic inflammatory disease (PID) or intra-uterine contraceptive device (IUCD) insertion. The termination surgery was uncomplicated and the patient's menses returned post-operatively. On presentation, she was soaking through three sanitary pads a day but was systemically well. Physical examination revealed mild supra-pubic abdominal tenderness to palpation. The uterus was normal in size and position on pelvic examination. A small volume of clotted intra-vaginal blood and haemoserous discharge from the external cervical os was identified on speculum examination. No active hemorrhage however was identified. The patient's hemoglobin and β -hCG were normal. Trans-vaginal ultrasound demonstrated a single echogenic endometrial focus within the superior left uterine fundus demonstrating faint acoustic shadowing (Figure 1). The remainder of the endometrium was thin with normal vascularity (Figure 2). The appearance was considered atypical for retained products of conception and the possibility of an intra-uterine foreign body was raised. Hysteroscopy demonstrated irregular endometrium at the anterosuperior left fundal wall containing a single abnormal tissue fragment. The fragment was resected and histopathological analysis revealed necrotic fetal bone and decidual tissue surrounded by chronic inflamed benign endometrium. The patient was discharged three days after the procedure. At clinic follow-up at three months the patient was asymptomatic and had regular menses. The patient provided written informed consent for publication of her information and images.

DISCUSSION

Retained intra-uterine fetal bone is a rare but recognized complication of surgical termination or miscarriage of a second trimester pregnancy. Cases

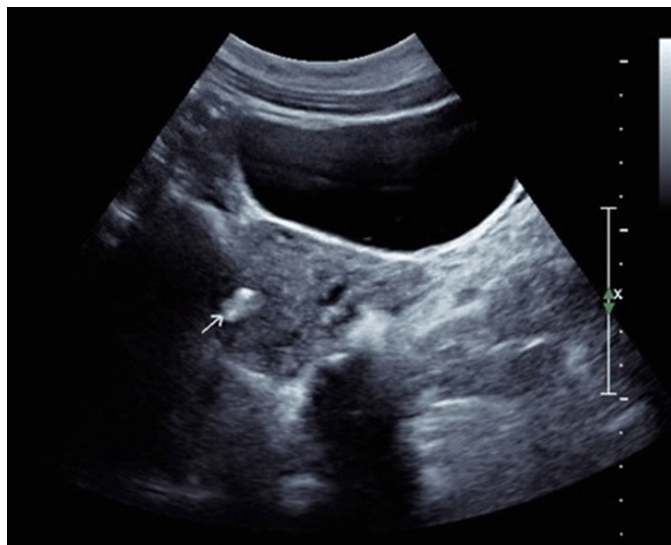


Figure 1: Trans-vaginal ultrasound showed a single echogenic focus within the endometrium of the superior left uterine fundus (white arrow). It had a lobulated morphology and demonstrated faint posterior acoustic shadowing.



Figure 2: The remainder of the endometrium had a normal sonographic appearance and maximal thickness (7 mm) (white cross callipers).

have been reported between eight weeks to 15 years after abortion [1]. To our knowledge this is the earliest reported case six weeks after surgical termination. The presentation of retained fetal bone is varied. Most females are asymptomatic and detection is made during investigation for secondary infertility. Acute complaints include pelvic pain, dysmenorrhea, PID, dyspareunia and spontaneous expulsion of bone fragments in the menses [6]. AUB however is a rare presentation with only three described cases [7–9].

The etiology of retained fetal bone is unknown. Endochondral ossification commences at 12 weeks gestation. Most reported cases subsequently involve females who have had a pregnancy terminated between

10 and 26 weeks gestation. An alternative hypothesis relates to osseous metaplasia of the endometrium and endocervix. Metaplasia of mature endometrial stromal cells into osteoblasts is proposed to occur in response to tissue destruction or acute inflammation associated with curettage [2, 3]. Another suggested metaplastic trigger is post-abortive chronic endometritis [4]. This phenomenon is suspected to occur following first trimester abortion before fetal endochondral ossification. Less well-described etiologies include heteroplasia of multipotential stromal cells into osseous tissue and metabolic disorders such as hypercalcemia, hypervitaminosis D and hyperphosphatemia [10, 11].

The mechanism of AUB associated with retained fetal bone is also unclear. Chronic endometritis secondary to retained bone fragments has been proposed [7]. Increased levels of menstrual fluid prostaglandin E and prostacycline have been described in females with retained bone [12]. This is suggested to trigger AUB through vasodilatation and myometrial relaxation. Resection of intra-uterine bone leads to reduction in menstrual volume and prostaglandin 2 α by 15%. Total menstrual fluid prostaglandin levels also decrease by 50% [12]. This biochemical response is associated with complete symptom relief in all described cases of AUB following surgical resection. Prostaglandin hypersecretion is also the proposed mechanism of secondary infertility by mimicking intra-uterine synechia or an IUCD and impairing implantation of the blastocyst and sperm mobility [13].

Trans-vaginal ultrasound has superseded hysterosalpingogram in the diagnosis of retained fetal bone. Endometrial bone has an intensely echogenic sonographic appearance causing posterior acoustic shadowing. Differential diagnoses include calcified submucous fibroids, mixed mullerian mesenchymal tumour, endometrial tuberculosis and IUCD [14]. Cases of retained fetal bone have been described up to 15 years after termination [1]. It should therefore be considered in all females with echogenic intra-uterine material on trans-vaginal ultrasound after surgical abortion regardless of the time interval between surgery and symptom onset. Some centers perform routine follow-up ultrasound after pregnancies surgically terminated after 12 weeks to exclude retained bone and confirm completion of the procedure [15].

Hysteroscopy is considered the gold standard treatment and leads to complete symptom resolution. Improved conception rates have also been widely reported in cases of secondary infertility treated with hysteroscopic resection [16, 17]. Direct visualization of endometrial bone fragments can be difficult due to endometrial overgrowth. Myometrial contractions can also embed fragments into the endometrial-myometrial junction [5]. Pre-medication with gonadotropin-releasing hormone prior to hysteroscopy has been suggested to improve visualization in these cases [9]. Another management strategy is DC performed under intra-operative

abdominal ultrasound guidance [5]. This is suggested to improve localization and ensure resection of all bone fragments in a single surgery. Blind DC has historically been considered too diagnostically inaccurate and carries risk of uterine perforation in cases of severe associated chronic endometritis [5, 15]. Vigorous curettage can also lead to synechia formation [14].

CONCLUSION

Abnormal uterine bleeding is a rare but important consequence of retained intra-uterine fetal bone following termination of a second trimester pregnancy. This case highlights its presentation as early as six weeks after termination. It is diagnosed as an intensely echogenic endometrial focus on transvaginal ultrasound. Complete symptom resolution is achieved with hysteroscopic resection or DC with trans-abdominal ultrasound guidance.

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Author Contributions

Andrew Imrie – Substantial contributions to conception and design, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Jas Gill – Substantial contributions to conception and design, Drafting the article, Final approval of the version to be published

Guarantor of Submission

The corresponding author is the guarantor of submission.

Source of Support

None.

Consent Statement

Written informed consent was obtained from the patient for publication of this case report.

Conflict of Interest

Authors declare no conflict of interest.

Data Availability

All relevant data are within the paper and its Supporting Information files.

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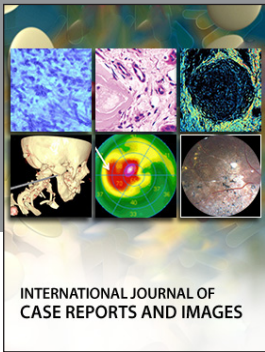
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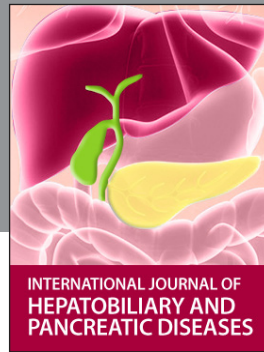
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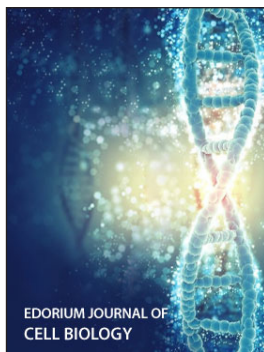
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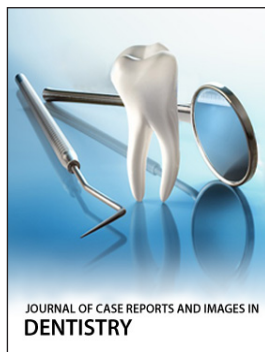
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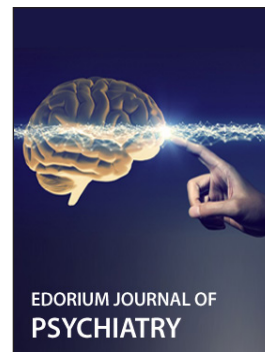
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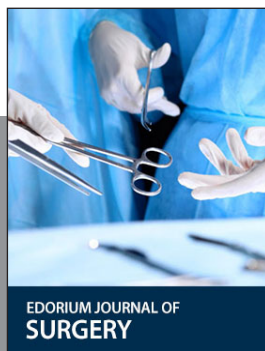
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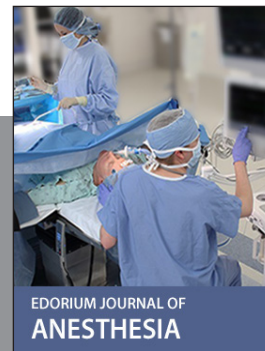
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