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Intrauterine Retained Bone Fragments Causing Secondary Infertility: A Case Report

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Abstract

Two cases of retained fetal bones, both after mid-trimester termination of pregnancy by dilatation and evacuation (D&E) of the uterus, presented with secondary infertility. In both these cases, the diagnosis was confirmed by pelvic ultrasonography. The pieces of bones were hysteroscopically removed under general anesthesia. In both these cases, pregnancy occurred within 6 months of removal of the bones. The retention of bones in the endometrial cavity is thought to act as an intrauterine contraceptive device (IUCD). Because of the numerous risks connected with uterine dilatation and evacuation during the second trimester, its usage in modern gynecology should be limited.

Keywords: Foetal bones, Hysteroscopic removal.

Introduction

The most common causes of infertility in developing nations are uterine and fallopian tube issues. Abortion has always been linked to later reproductive matters, most commonly due to infections causing damage to the fallopian tubes or, more infrequently, damage to the endometrial lining causing endometrial adhesions or synechiae. A rare but significant cause of uterine factor of infertility is retained fetal bones from previous mid-trimester D&E. Apart from secondary infertility, included fetal bones may also present with irregular bleeding per vaginum, dysmenorrhoea, dyspareunia, and chronic pelvic pain.

A high index of suspicion regarding retained fetal bones is needed for the diagnosis. However, imaging techniques such as high-resolution pelvic ultrasonography, pelvic X-rays, sonohysterogram, and operative modalities like hysteroscopy makes the diagnosis simple. The treatment is simply the removal of the retained bones, and the success rate in the resumption of average fertility and the resolution of other symptoms is very high.

Case Reports

Case 1

A 40-year-old female presented to Gynaecology OPD of Institute of Kidney Diseases & Research Centre, Ahmedabad, complaining of pain in the lower abdomen and white vaginal discharge for 2 months. She complained of irregular menstrual cycles with spotting per vaginum for 1-2 days every 15-20 days for 3 years. She had one living female child of 20 years. She underwent dilatation and evacuation of 14 weeks fetus before 15 years. She had secondary infertility after the last abortion.

On admission, she was afebrile. Her vital signs were within normal limits. Systemic examination was routine. Speculum and bimanual pelvic study revealed white discharge per vaginum. Transvaginal ultrasonography demonstrated multiple calcific foci, the largest one of 2.1 x 1.2 cm in the endometrial cavity, extending into the myometrium, suggestive of chronic endometritis **(Figure 1)**. Bilateral ovaries were normal.

After routine blood investigations, she was subjected to hysteroscopic evaluation of the uterine cavity.

Figure 1: USG showing calcified mass at the fundus of the uterus

Hysteroscopy revealed one hard calcified bony spicule embedded in the endometrium at the fundus. These were removed using hysteroscopic forceps and submitted for histopathological examination **(Figure 3)**. Endometrial biopsy was taken from 4 walls using a loop resectoscope with monopolar cautery.

Grossly, the specimen was broken, bony in texture, and measured about 2.5 cm x 0.5 cm in dimension. Histology of calcified mass showed bony trabeculae lined by osteoblasts consistent with dystrophic calcification. The space between the trabeculae showed entrapped endometrial stroma **(Figure 4).** The calcium level was 9.2 mg/dl, and the phosphorus level was 3.7 mg/dl. Both groups were within the normal range.

She was on regular follow-up. Six months after the procedure, she conceived and is undergoing her regular ante-natal check-ups in our hospital at 24 weeks gestation.

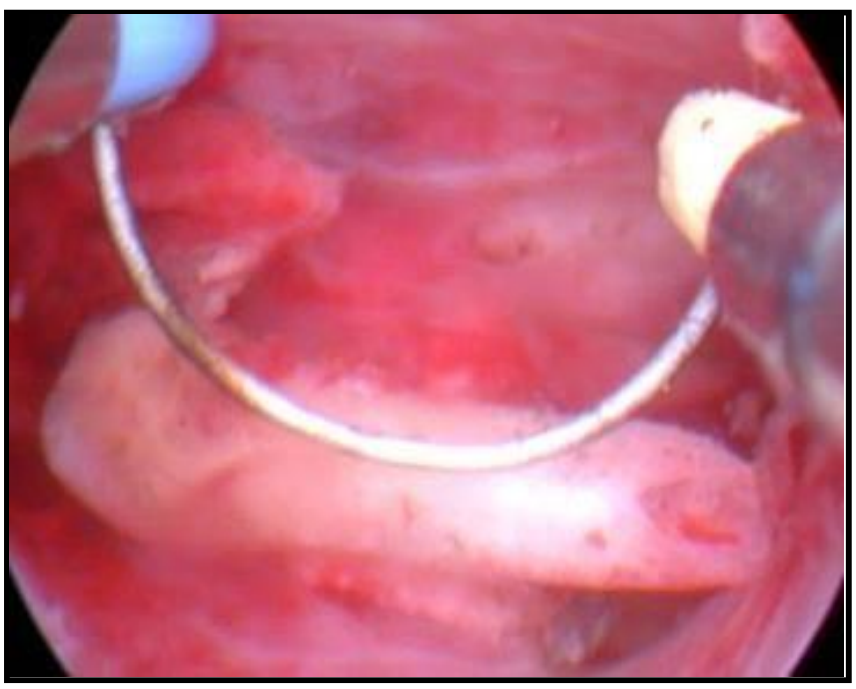

Figure 3: Hysteroscopic picture of the calcified mass (foetal bone) inside the uterine cavity

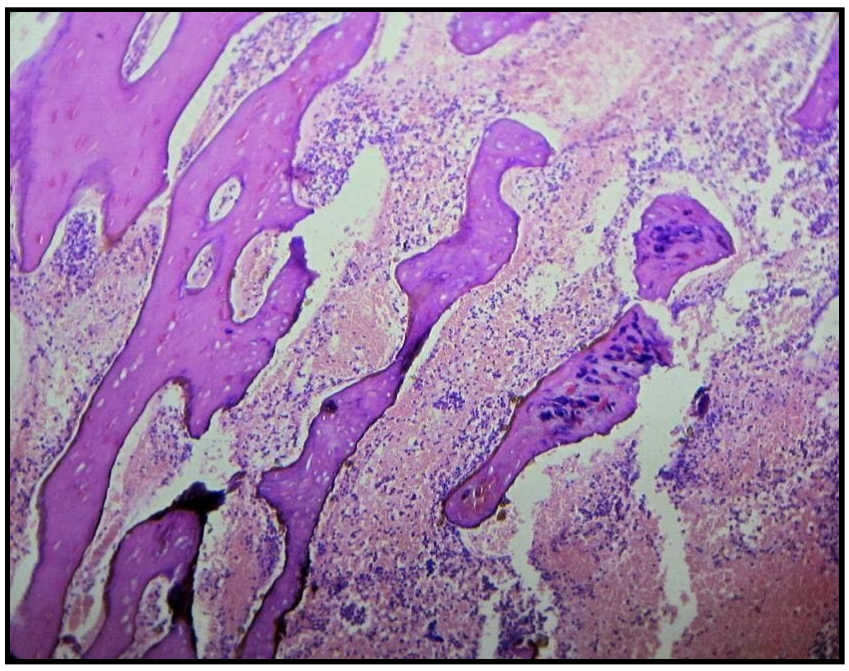

Figure 4: HPE showing space between trabeculae with entrapped endometrial stroma

Case 2

A 30-year-old female presented to Gynaecology OPD of Institute of Kidney Diseases & Research Centre, Ahmedabad, with complaints of infertility of 2 years duration. She got married four years before the presentation and had achieved one pregnancy immediately after her marriage and hence underwent termination as she felt it was too early for her to have a child. She had regular menstrual periods without any significant dysmenorrhoea. The systemic review did not reveal any abnormality. She didn't have any critical medical history.

No abnormality was found on general physical examination. The uterus was normal in size, with the cervical os closed and normal adnexa, according to a bimanual vaginal study. For her and her spouse, an essential infertility examination was started. The husband's semen analysis was average. A pelvic ultrasound scan suggested a normal-sized uterus with a highly echogenic substance in the endometrial cavity suggestive of a foreign body most probably retained fetal bones **(Figure 2)**.

The endometrial lining was standard on the hysterosalpingogram, and both fallopian tubes were full of dye, spilling into the peritoneal cavity on both sides. A diagnosis of retained fetal bones was made secondary to termination of a mid-trimester pregnancy. After the necessary counselling, she underwent hysteroscopic removal of fetal bones. Five months after the procedure, she became pregnant and carried the pregnancy successfully to term.

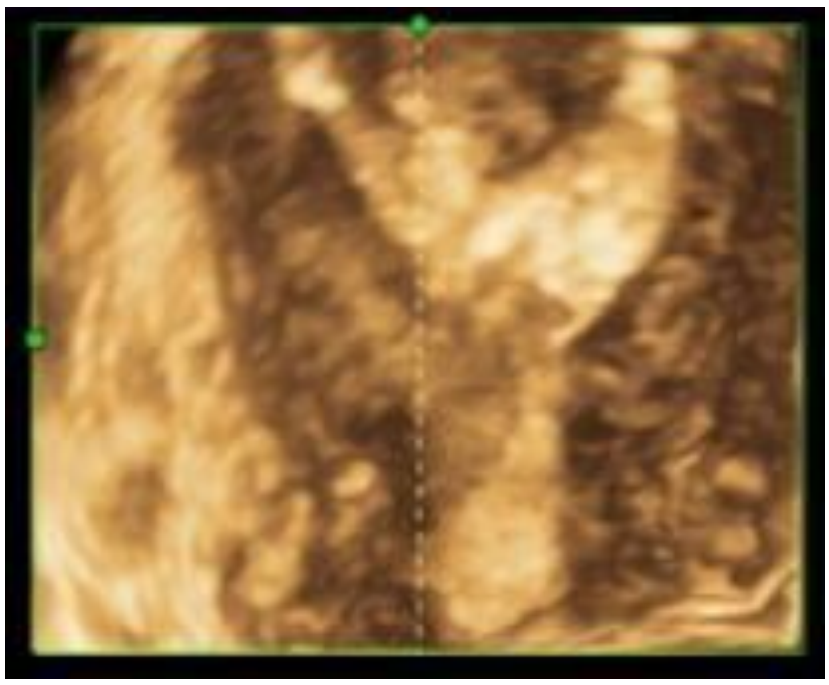

Figure 2: 3D USG showing calcified mass at the fundus

Discussion

Apart from the very high risk of excessive hemorrhage and uterine perforation, evacuation of the uterus in the early second trimester is very likely to be complicated by retained products, including fetal bones. Fetal bones can be retained freely in the endometrial cavity or can be totally or partially embedded in the myometrium **[1]**. The symptoms of retained fetal bones are abnormal uterine bleeding, dysmenorrhoea, dyspareunia, chronic pelvic pain, and secondary infertility **[2]**. These days, when safe, effective and cheap prostaglandins are available to terminate mid-trimester pregnancies, there is no longer justification for dangerous procedures like mid-trimester D & E **[3]**.

Retained bones may be completely asymptomatic and discovered only during pelvic ultrasound scans as part of routine infertility assessment. A high index of suspicion must therefore be maintained for patients with a history of mid-trimester termination of pregnancy. The risk of infertility depends on whether the retained bone fragments are embedded in the myometrium or exposed in the endometrial space. There is some evidence that the presence of an intramural bony element per se does not seem to compromise fertility if it is entirely embedded https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1790852/ - R1.

On the other hand, retained fetal bones lying freely in the endometrial cavity or those that are only partially embedded are associated with a high risk of infertility. It is speculated that the presence of the bones may act as a 'uterine synechiae' or an 'IUCD' and thus prevent pregnancy4. It is also possible that the presence of bones near the fundal region (where blastocyst implantation mostly takes place) can lead to the elevation of endometrial PGF2α and thus impair implantation **[4]**.

Pelvic ultrasonography, especially with the vaginal probe, is exceptionally reliable. Hysterosalpingography can help outline the endometrial space and determine the condition of the fallopian tubes, but it has limited usefulness in diagnosing preserved bone. In a series of 11 women with secondary infertility after pregnancy, hysterosalpingography failed in 10 cases, but vaginal ultrasonography revealed the presence of intrauterine bone in all 11 cases **[5]**.

Hysteroscopy has both diagnostic and therapeutic values. Perhaps hysteroscopy is the most accurate diagnostic tool. Removal of bone fragments via hysteroscopy should be considered the gold treatment standard as it can remove bone under direct vision. In the absence of complications such as tube damage and endometrial adhesions, normal fertility is more likely to be restored. In our series of 2 cases,

both patients conceived within six months of removing the fetal bones.

Information can be obtained from endocervical swabs for microbiological studies and endometrial curetting for histopathological changes associated with the retention of foreign bodies and biochemical levels of the substance. Osseous metaplasia usually presents as diffuse, sporadic ossification without the tissue reaction occurring around retained fetal tissue **[6]**. It has been postulated that the endometrial stroma is capable of cartilaginous metaplasia **[7]**. Another hypothesis is that heteroplasia may happen in the multipotential stromal cells present in the uterus, thereby forming osseous tissue **[8]**.

Conclusion

The critical role of routine pelvic ultrasound scan and hysteroscopy for infertility should be emphasized, especially for those with a history of mid-trimester D & E. Completely embedded bone into the myometrium with no others in the uterine cavity may be left alone as it does not seem to impair fertility.

Declarations

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Conflicts of interest: There are no conflicts of interest.

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