

INTRAUTERINE RETAINED FETAL BONES AS A CAUSE OF SECONDARY INFERTILITY

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SUMMARY

Three cases of retained fetal bones, the first two after mid-trimester termination of pregnancy and the third after dilatation and evacuation (D&E) of the uterus for a missed abortion, are presented. All the cases were complicated by secondary infertility. In all the cases the diagnosis was confirmed by a high resolution pelvic ultrasound scan. The pieces of bones were removed at dilatation and evacuation under general anaesthesia. In two of the cases pregnancy occurred within 6 months of removal of the bones. It is believed that bones retained freely in the endometrial cavity behave as an intrauterine contraceptive device (IUCD). Because of the many complications associated with mid-trimester dilatation and evacuation of the uterus, its role in modern gynaecology should be limited. It is suggested that retained fetal bones should be considered in the differential diagnosis of women presenting to infertility clinics when there is a history of mid-trimester D&E of the uterus.

Keywords: Fetal bones, retention, Infertility management.

INTRODUCTION

Uterine and fallopian tube factors are known to be the commonest causes of infertility in developing countries. Abortion has always been known to be associated with later fertility problems, mostly as a result of damage to the fallopian tubes from infections or rarely as a result of damage to the endometrial lining resulting in endometrial adhesions or synechiae called Asherman's Syndrome. A rare but significant cause of uterine factor of infertility is retained fetal bones from previous mid-trimester D&E. Apart from secondary infertility, retained fetal bones may also present with irregular bleeding per vaginam, dysmenorrhoea, dyspareunia and chronic pelvic pain. The incidence of retained fetal bones is unknown. A high index of suspicion is needed for the diagnosis to be made. However imaging techniques such as a high resolution pel-

vic ultrasound scan, pelvic X-rays, sonohystero-gram and hysteroscopy may make the diagnosis fairly simple. The treatment is simply the removal of the retained bones and the success rate in terms of resumption of normal fertility and the resolution of other symptoms can be very high. Three cases of retained fetal bones, all presenting with secondary infertility are presented followed by a review of the literature to remind practitioners of the presence of this condition especially in clients with the history of mid-trimester terminations of pregnancy. This may be the first report of such cases in Ghanaian contemporary medical literature.

Case 1

Thirty-five year old madam MN, para 0+1, presented to the gynaecology outpatient department of Ridge Hospital in January 2004 with a four-year history of chronic pelvic pain, severe dysmenorrhoea, dyspareunia, and secondary infertility. She had a history of termination of pregnancy at 16 weeks gestation by dilatation and evacuation four years prior to presentation. After the procedure she had severe lower abdominal pain associated with foul smelling vaginal discharge which was treated with antibiotics and non-steroidal anti-inflammatory agents. The foul smelling vaginal discharge subsided but the pain never did. She visited several hospitals where she was treated with antibiotics and pain killers without long term improvement.

Examination revealed a young, anxious looking woman. The general physical examination did not reveal any abnormality. On pelvic examination the uterus was slightly enlarged with positive cervical excitation tenderness. The external os accepted the tip of the forefinger and a sharp irregularity was felt. A high resolution pelvic ultrasound was done which suggested the presence of three highly echogenic substances in the uterine cavity (Figure 1).

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Figure 1 USG Impression of Intrauterine Fetal bones.

She was prepared for examination under anaesthesia and dilatation and evacuation of the uterus. In theatre 3 pieces of small bones, each about 2.0 cm long, were retrieved from the uterine cavity (Figure 2). Post-operatively she was managed on antibiotics. Before discharge from the hospital repeat ultrasound scan confirmed an empty uterine cavity. She was reviewed in two weeks and was found to be free of pain. Her next menstrual flow was also less painful. Coitus was also no more associated with pain. Hysterosalpingogram was then performed after two months and the uterine cavity was found to be well outlined with bilateral spillage of dye. The luteal phase progesterone and serum prolactin levels were in the normal range. The husband's semen analysis was normal and she was re-assured. Four months after the procedure she missed her periods and urine pregnancy test was positive. A pelvic ultrasound scan confirmed a twin gestation which was carried successfully to term.



Figure 2 Picture of retrieved bones (cm markings below).

Case 2

Thirty year old Madam GD reported to the gynaecology out patient in June 2004 department with a complaint of infertility of 2 years duration. She was G1P0+1. She got married two years prior to presentation and had since not achieved any pregnancy. She had regular menstrual periods without any significant dysmenorrhoea. Systemic review did not reveal any abnormality. She had no past medical history of significance. She had termination of pregnancy 3 years prior to presentation at 4 months gestation. Post-operative recovery was unremarkable. Subsequent menstrual function was normal. There was no dyspareunia.

No abnormality was found on general physical examination. Bimanual vaginal examination revealed a normal sized uterus with the cervical os closed and normal adnexae. Basic infertility investigation was instituted for her and the partner. Luteal phase progesterone and the serum prolactin levels were normal. The husband's semen analysis was normal. Pelvic ultrasound scan suggested a normal sized uterus with the presence of a highly echogenic substance in the endometrial cavity suggestive of a foreign body most probably retained fetal bones (Figure 3).

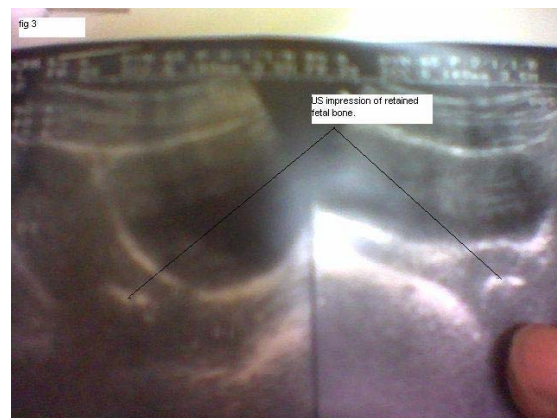


Figure 3 Ultrasonogram of Case 2

Hysterosalpingogram revealed normal endometrial lining and both fallopian tubes were filled with dye with bilateral spillage in the peritoneal cavity. A diagnosis of retained fetal bones secondary to termination of a mid-trimester pregnancy was made. After the necessary counselling was done she was prepared for theatre and 5 small pieces of bone were retrieved (Figure 4). The pelvic ultrasound scan was repeated post-operatively and the uterine cavity was found to be empty. Five months after

the procedure the patient became pregnant and carried the pregnancy successfully to term.

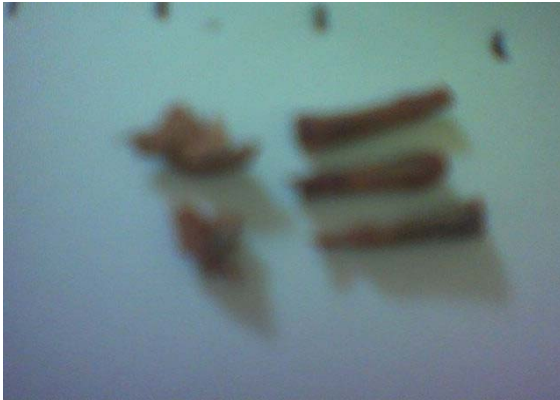


Figure 4 Materials retrieved from the uterus of Case 2

Case 3

The third case was that of 42 year old Madam DD who reported at the cervical cancer screening unit of Ridge Hospital for visual inspection of the cervix with acetic acid (VIA) in January 2005. On vaginal examination during the VIA a sharp substance was found protruding from the cervical os. She was then referred for a gynaecological assessment. She was G2P1+1. She had a 'Missed Abortion' 10 years prior to presentation for which she had dilatation and evacuation (D&E) done. Since then she has not been able to achieve pregnancy even though she was not on any contraceptive methods. She, however, did not report for any formal infertility assessment and treatment. On direct questioning she had severe dysmenorrhoea, dyspareunia and chronic pelvic pain. She had taken pain killers and antibiotics several times without any improvement in her symptoms.

On vaginal examination, a small piece of sharp object was felt protruding from the cervical os. This was removed and was identified as a piece of bone. Pelvic ultrasound was done which revealed the presence of highly echogenic materials in the uterine cavity. She was counselled and prepared for (D&E) under general anaesthesia in theatre. During the procedure 2 small pieces of bone were obtained. Post-operatively the pelvic ultrasound examination revealed normal endometrial cavity. Her symptoms of dysmenorrhoea, dyspareunia and chronic pelvic pain have since subsided. Two months after the procedure she had a hysterosalpingogram (HSG) which showed normal endometrial cavity with bilateral spillage of dye. Her luteal phase progesterone levels were in the normal ovulatory range and the husband's semen

analysis was also normal. At the time of this report it is about 6 months since the procedure and she is not yet pregnant.



Figure 5 Bones obtained from Case 3

DISCUSSION

These 3 case reports illustrate one of the complications of second trimester dilatation and evacuation of the uterus, retained fetal bones. The first two cases had a second trimester dilatation and evacuation of the uterus for an unwanted pregnancy whilst the third case had an evacuation of the uterus for a missed abortion. Apart from the very high risk of excessive haemorrhage and uterine perforation, the evacuation of the uterus at such gestations is very likely to be complicated by retained products including fetal bones unless it is done under ultrasound guidance. Fetal bones can be retained freely in the endometrial cavity. On the other hand they can be totally or partially embedded in the myometrium¹.

The usual symptoms of retained fetal bones are abnormal uterine bleeding, dysmenorrhoea, dyspareunia, chronic pelvic pain and secondary infertility². These symptoms were variously demonstrated by these cases with the exception of the abnormal uterine bleeding. On the other hand retained bones may be completely asymptomatic and discovered only during pelvic ultrasound scan as part of routine infertility assessment as in case 2. A high index of suspicion must therefore be maintained for those patients who have a history of mid-trimester termination of pregnancy by D&E, in order not to miss the diagnosis.

The risk of infertility depends on whether the retained piece of bone is embedded in the myometrium or lie freely in the endometrial cavity. There is some evidence that the presence of an

intramural bony fragment per se does not seem to compromise fertility if it is completely embedded¹. 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 synechia' or an 'IUCD' and thus prevent pregnancy³. 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 prostaglandins (e.g. F2alpha) and thus impair implantation³.

Apart from history and examination, imaging studies are very important in the diagnosis. Pelvic ultrasound scan, especially with the vaginal probe, is particularly reliable. Hysterosalpingogram is useful in outlining the endometrial cavity and in determining the state of the fallopian tubes but its usefulness in the diagnosis of retained bones is limited. In one series that consisted of 11 women with secondary infertility after mid-trimester abortions, hysterosalpingograms missed the diagnosis in 10 cases whilst vaginal ultrasonography revealed the presence intrauterine bones in all the 11 cases⁴. In Case 2, an HSG done before the evacuation, for example, could not detect the presence of the bones. However, hysterosalpingogram, if done properly with a control film or under fluoroscopic guidance, should theoretically be able to reveal the retained bones. After passing the dye the bones are covered and may no longer be visible.

Hysteroscopy has both diagnostic and therapeutic values. Presumably, hysteroscopy should be the most accurate diagnostic tool. Hysteroscopic removal of the bony pieces should be regarded as the gold standard of treatment since it enables a complete removal of the bones under direct vision. But this service is unavailable in many centres in the developing world. In the absence of hysteroscopy blind dilatation and evacuation of the uterus, followed post-operatively by an ultrasound to confirm complete removal of the bony pieces, is fairly satisfactory.

Provided there are no additional complications such as tubal damage or endometrial synechia, the chance of resumption of normal fertility is high. In the series of 11 cases⁴ earlier referred to, all the women, except 1 with bilateral tubal occlusion, conceived and delivered full-term infants after the removal of the bones. In 8 cases, conception occurred within 3 months of bone fragment

removal⁴. In our series of 3 cases, two became pregnant within six months of treatment.

Endocervical swab for microbiological studies and endometrial curetting for histopathological changes associated with the retention of foreign bodies would have been educative. But these were not done in this case series.

Apart from retained intrauterine bones after second trimester D&E, endometrial calcified lesions and the presence of ectopic bones can also occur by metaplasia in association with chronic inflammation and tissue destruction, which are likely to be present after repeated spontaneous or therapeutic abortions⁵. Osseous metaplasia usually presents as diffuse, sporadic ossifications without the tissue reaction frequently occurring around retained fetal tissue⁵. It has been postulated that the endometrial stroma is capable of cartilaginous metaplasia⁶. Another hypothesis is that heteroplasia may occur in the multipotential stroma cells present in the uterus thereby forming osseous tissue⁷.

CONCLUSION

In these days when safe, effective and cheap prostaglandins are available for the termination of mid trimester pregnancies⁸ and also for the management of missed abortions, there is no justification any longer for dangerous procedures like mid-trimester D&E. Even when D&E is used under certain conditions, pelvic USG especially using vaginal probe must be done to confirm uterine emptiness. If such patients present later with secondary infertility a high index of suspicion must be maintained regarding the possibility of retained fetal bones being the cause. The important role of routine pelvic ultrasound scan, or where facilities exist, routine hysteroscopy for infertility, especially those with a history of mid-trimester D&E, is emphasized by these case reports. 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.

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