BRITISH JOURNAL OF HOSPITAL MEDICINE

CASE REPORT

Intrauterine Device Completely Encapsulated by Fibrous Tissue in a Postmenopausal Woman: A Case Report

Yun Huang[1,*], Yiqun Zhang[1], Shuyan Qu[1], Yun Chu[1,*]

[1]Department of Traditional Chinese Medicine (TCM) Gynecology, Hangzhou Hospital of Traditional Chinese Medicine, Hangzhou, Zhejiang, China

*Correspondence: yhuang1871@sina.cn (Yun Huang); 380139366@qq.com (Yun Chu)

Abstract

A 54-year-old woman, who had been menopausal for over two years and had an Intrauterine Device (IUD) in place for over twenty years, requested a removal of the IUD. The IUD was found to be embedded during the removal process. Under ultrasound guidance, a hysteroscopic examination revealed the embedded IUD and additional uterine cavity content. Hysteroscopic removal of the IUD and the foreign body was performed, and the pathology report indicated fibrous tissue with hyaline degeneration. For postmenopausal women with IUDs, early removal is recommended to minimise complications. Hysteroscopic examination should be the first choice for the rare complication of embedded IUDs covered with fibrous tissue, with hysteroscopic removal as the preferred treatment.

Key words: IUD; embedment; postmenopausal women; fibrous tissue; hysteroscopic surgery; case report

Submitted: 18 May 2024 Revised: 10 July 2024 Accepted: 15 July 2024

Introduction

The Intrauterine Device (IUD) is a highly efficient, safe, and convenient long-term contraceptive method commonly used in China. According to the Fourth International IUD Conference, over 100 million people globally use IUDs, with more than 80 million users in China, accounting for about 40% of women of childbearing age (Liu, 2020). However, the incidence of complications increases with the duration of IUD placement. In China, many elderly rural women do not undergo timely removal of the IUD post-menopause due to a lack of medical knowledge, increasing the risk of complications. Clinically, fibrous encasement of IUDs in the uterine cavity is extremely rare. Here, we report a case of an IUD being completely encapsulated by fibrous tissue in a postmenopausal woman.

Case Report

A 54-year-old woman was admitted for the removal of her IUD because of lower abdominal distension. The IUD had been in place for over 20 years for contraception. She had one pregnancy and one childbirth, and naturally became menopausal two years prior, denying any postmenopausal abnormal vaginal bleeding or fluid discharge. She had no history of chronic diseases. Upon admission,

How to cite this article:
Huang Y, Zhang Y, Qu S, Chu Y. Intrauterine Device Completely Encapsulated by Fibrous Tissue in a Postmenopausal Woman: A Case Report. Br J Hosp Med. 2024. https://doi.org/10.12968/hmed.2024.0352

physical examination showed stable vital signs, and a soft abdomen without tenderness or rebound pain. Gynaecological examination revealed normal external genitalia, a smooth, atrophic cervix, a retroverted uterus without tenderness, and normal adnexal areas. Gynaecological ultrasound revealed a retroverted uterus, measuring approximately 3.7 cm × 3.8 cm × 3.0 cm, with a double-layered endometrium of 0.3 cm and an IUD echo in the central position of the uterine cavity (Fig. 1). Pelvic radiography revealed a high-density shadow in the pelvic cavity (Fig. 2). Initial attempts to remove the IUD with a hook and forceps were unsuccessful due to embedment. Consequently, with full disclosure to the patient and her family, and after obtaining the patient's consent, hysteroscopic removal of the IUD was performed under general anaesthesia. Upon insertion of the hysteroscope, a γ-shaped copper IUD encased in organized tissue (appearing as yellow-brown necrotic material) was seen (Fig. 3A), and the lateral arms of the IUD were embedded in the myometrium of the uterine horns (Fig. 3B). The embedded myometrium was incised using micro-scissors (Fig. 3C), and after separating part of the endometrium, the IUD and surrounding encased material were removed (Fig. 3D). A subsequent hysteroscopic examination showed a normal uterine cavity with no foreign bodies (Fig. 3E). Eleven days after surgery, the postoperative ultrasound indicated that no foreign materials were left behind in the uterus, and revealed a double-layered endometrium thickness of approximately 0.1 cm (Fig. 4). Hematoxylin and Eosin staining of the pathological tissue confirmed a fibrous connective tissue capsule with hyalinization (Fig. 5).

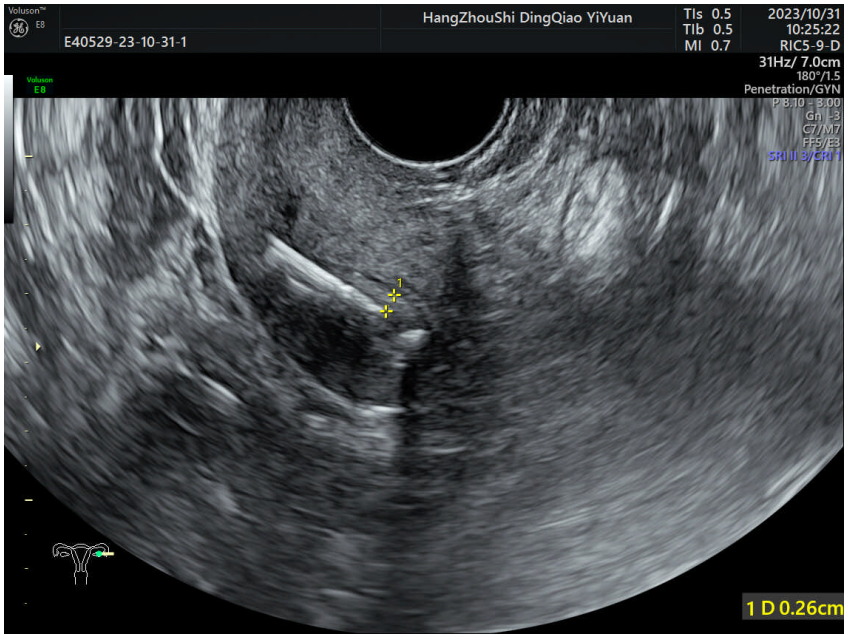

Fig. 1. Preoperative ultrasonography showing the echo of the Intrauterine Device (IUD) within the uterus. The position marked by the arrow in the figure is the IUD.

Fig. 2. Preoperative pelvic X-ray revealing a high-density shadow of the "γ"-shaped copper Intrauterine Device (IUD) in the pelvic cavity.

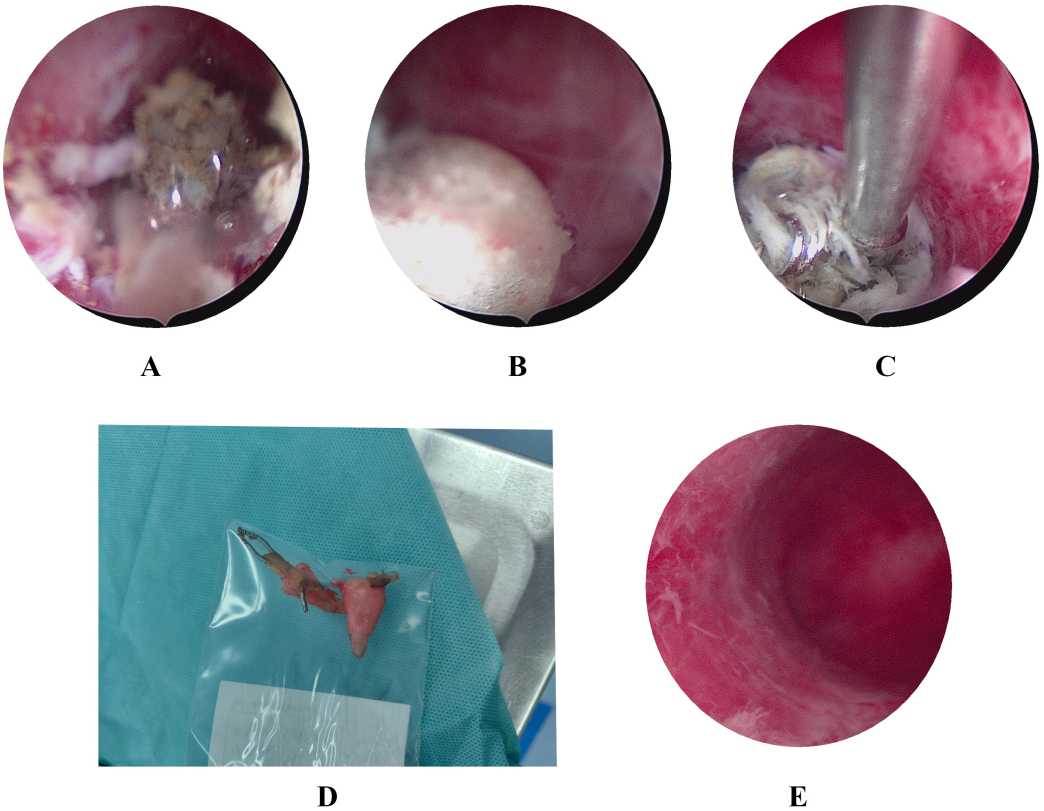

Fig. 3. Intraoperative situation of hysteroscopy and specimen. (A) Hysteroscopic view of the Intrauterine Device (IUD) in the uterine cavity and the surrounding yellow-brown tissue. (B) The fibrous encasement tissue partially embedded in the myometrium of the right uterine horn. (C) Separation of tissue using micro-scissors under hysteroscopic view. (D) The removed IUD and its surrounding encasing material. (E) The condition inside the uterine cavity after removal of the IUD.

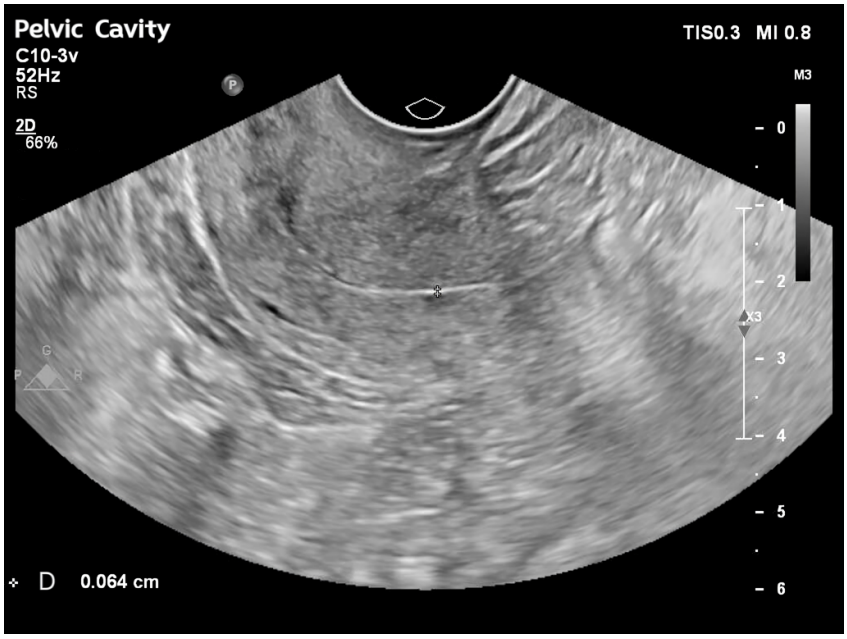

Fig. 4. The postoperative ultrasound indicated no foreign materials were left behind in the uterus.

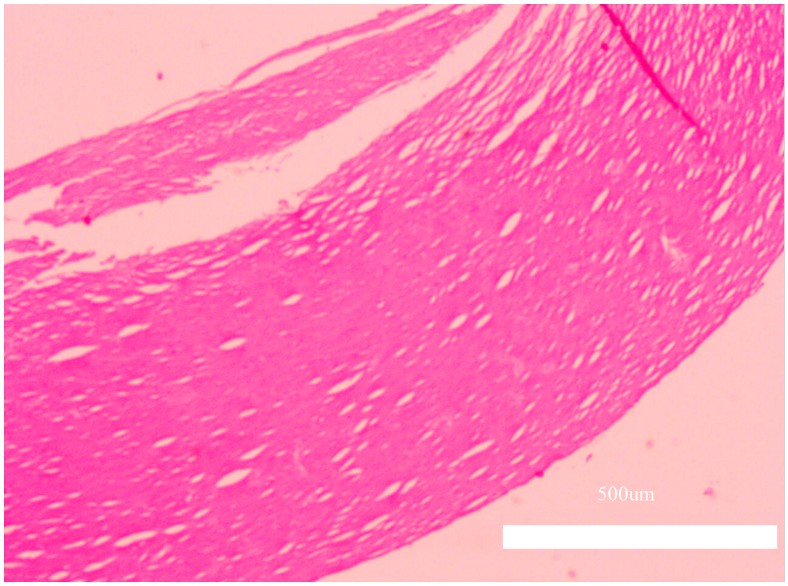

Fig. 5. Pathology of the nodule showed layered hyaline degeneration of fibrous tissue with indistinct cellular structure (Hematoxylin and Eosin staining, 100×).

Discussion

In China, the use of the IUD as a contraceptive measure is widespread among women of childbearing age. Previous studies have not shown that perimenopausal IUD retention is related to health status, physical work, perimenopausal symptoms, gynaecological diseases, or the occurrence of anaemia (Lohr et al, 2017; Xie, 2012; Yang et al, 1997; Zhuang et al, 1994). However, long-term postmenopausal IUD retention in utero may become a source of infection, and once postmenopausal bleed-

ing occurs, it is difficult to identify the cause (Martins et al, 2016; Xu and Cheng, 2010). However, the formation of fibrous encasement tissue within the uterus due to IUD placement is relatively rare, with only 12 cases previously reported in the literature (Chen et al, 2019; Shangguan et al, 2002; Wang, 2007; Wei et al, 2016; Wen et al, 2006; Zhang et al, 2000; Zhao, 2009).

The copper IUD can release copper ions continuously, thus inhibiting and killing sperm. In addition, the local pressure of the IUD on the uterine lining triggers an inflammatory response. This inflammation, toxic to the embryo, is characterized by a large number of macrophages covering the endometrium, hindering the implantation of the fertilized egg. Furthermore, prolonged foreign body stimulation causes endometrial damage and chronic inflammation, thereby preventing the implantation of the fertilized egg and achieving contraceptive effectiveness (Xie et al, 2018). As menopause progresses and ovarian function declines in postmenopausal women, hormonal levels decrease, leading to atrophy of the uterine cavity, cervical stenosis, and endometrial tissue atrophy. The size of the IUD remains constant, which makes it more likely to be compressed and embedded in the myometrium. The IUD, as a foreign body in the uterus, evokes a chronic inflammatory response in the endometrium. Inflammatory responses involve severe damage to the vascular walls, increased vascular permeability, and enhanced fibrinogen exudation, resulting in fibrinous inflammation. Excessive fibrin exudation, insufficient neutrophil infiltration, or high antiprotease levels in the tissue can lead to fibrin clearance obstacles (Bu and Li, 2018). Therefore, in this patient, prolonged stimulation by the IUD caused inflammatory exudation of the endometrium. Fibrin accumulated around the IUD over time, leading to the formation of a fibrous encasement tissue, characterized by collagen fiber-encased granulomas, eventually evolving into a tumor-like nodule encapsulating the IUD (Wei et al, 2016).

Conclusion

The longer the duration of menopause, the higher the risk of IUD incarceration and the more difficult it is to remove. It is advisable to remove the IUD within 6–12 months post-menopause. For patients with a long-duration post-menopause and with embedded IUDs or unsuccessful IUD removal, preoperative ultrasonography is the most common diagnostic method. It can indicate the position and morphological changes of the IUD or intrauterine masses but cannot definitively identify the nature of the lesion. For the rare complication of fibrous encasement nodules caused by IUDs, hysteroscopic examination, supplemented by ultrasound, is preferred. This approach can assist in differentiating the nature of intrauterine masses through pathological examination, excluding the possibility of tumours. If a fibrous encasement nodule caused by an IUD is definitively diagnosed, hysteroscopic removal is the preferred treatment, due to its minimal invasiveness and rapid recovery. In elderly, asymptomatic patients with larger fibrous tissues that are difficult to remove vaginally, the tissue should not be removed by force, so as not to cause greater trauma. Instead, close follow-up and observation are recommended.

Learning Points

- Regular follow-up is essential after IUD placement. For postmenopausal women who no longer require contraception due to the loss of fertility, it is recommended to remove the IUD early.
- Clinically, fibrous encasement nodules in the uterine cavity caused by IUDs are extremely rare. Hysteroscopic removal is the preferred treatment.
- Pathological results showed that the IUD embedded in fibrous tissue had no risk of malignant transformation. If the patient has no obvious symptoms, and pathology suggests fibrous tissue entrapment, follow-up is recommended instead of surgical treatment.

Availability of Data and Materials

The authors confirm that the data supporting the findings of this study are available within the article.

Author Contributions

YH contributed to conceptualization and drafted the original manuscript. YC provided methodology expertise, conducted formal analyses, and managed resources. SQ guided surgical aspects and selected article topics, overseeing project administration. YZ contributed to writing, reviewed and edited the manuscript, and managed project administration tasks. All of the authors made a significant contribution to the study concept and design, acquisition of data, analysis and interpretation of data, and revise the manuscript for important intellectual content. All authors read and approved the final manuscript. The authors agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Ethics Approval and Consent to Participate

This prospective study was performed in accordance with the Declaration of Helsinki after approval by the Hangzhou Hospital of Traditional Chinese Medicine (Approval number: 2023-1111-6). Informed written consent for publication of this report and any accompanying images was obtained from the patient.

Acknowledgement

Not applicable.

Funding

This research received no external funding.

Conflict of Interest

The authors declare no conflict of interest.

References

Bu H, Li YL. Pathology (pp. 76–81). 9th edn. People's Medical Publishing House: Beijing. 2018. (In Chinese)

Chen Q, Zeng LP, Wu RF. A Case Report of IUD Fracture and Incarcerated for 39 Years with Intrauterine Calcification. Journal of International Obstetrics and Gynecology. 2019; 46: 625–626. (In Chinese) https://doi.org/10.3969/j.issn.1674-1870.2019.06.006

Liu YF. Analysis of difficulties in removing intrauterine devices in postmenopausal women and exploration of methods. Chinese Remedies and Clinics. 2020; 20: 4133–4136. (In Chinese) https://www.cnki.com.cn/Article/CJFDTotal-YWLC202024040.htm

Lohr PA, Lyus R, Prager S. Use of intrauterine devices in nulliparous women. Contraception. 2017; 95: 529–537. https://doi.org/10.1016/j.contraception.2016.08.011

Martins GG, Tomaz T, de Andrade CL, Campos W, Junior JE. The risk of genital infections in women using intrauterine device. Brazilian Journal of Sexually Transmitted Diseases. 2016; 28: 61–63. https://www.researchgate.net/publication/311064934

Shangguan XJ, Yang ML, Chen FL. Two cases of uterine nodules caused by intrauterine devices after menopause. Chinese Journal of Obstetrics and Gynecology. 2002; 37: 186. (In Chinese) https://doi.org/10.3760/j.issn:0529-567X.2002.03.029

Wang Y. One case of intrauterine device complicated with stones. Chinese Journal of Family Planning. 2007; 15: 501. (In Chinese) https://doi.org/10.3969/j.issn.1004-8189.2007.08.034

Wei DY, Yan L, Wang HQ. Analysis on two postmenopausal women with clinical symptoms resulting from completely encapsulated intrauterine device by fibrous tissue. Clinical and Experimental Obstetrics & Gynecology. 2016; 43: 911–913. https://pubmed.ncbi.nlm.nih.gov/29944252/

Wen Y, Luo GL, Gao XM. Report of 4 cases of intrauterine device encapsulation calcification leading to uterine cavity stones. West China Medical Journal. 2006; 21: 138. (In Chinese) https://lib.cqvip.com/Qikan/Article/Detail?id=21334446

Xie X, Kong BH, Duan T. Obstetrics and gynecology. 9th edn. People's Medical Publishing House: Beijing. 2018: 366–368. (In Chinese)

Xie Z. Effect of intrauterine device retention on reproductive health during perimenopausal period. China Health Care & Nutrition. 2012; 2012: 38. (In Chinese) https://xueshu.baidu.com/usercenter/paper/show?paperid=5f125c918cc653321151470bd6324e93&site=xueshu_se

Xu JX, Cheng LN. Contraception for women at premenopause period. Journal of International Reproductive Health/Family Planning. 2010; 29: 343–345. (In Chinese) https://lib.cqvip.com/Qikan/Article/Detail?id=35671110

Yang XL, Zhuang LQ, Sun JF. The safety of IUD situ after manopause. Chinese Journal of Family Planning. 1997; 6: 14–18, 62. (In Chinese) https://d.wanfangdata.com.cn/periodical/ChlQZXJpb2RpY2FsQ0hJTmV3UzIwMjQwNzA0Eg5RSzE5OTcwMDI3NTk3ORoIeHZpZ3hnbnU=

Zhang Y, Wang XY, Zhou YW. One case of intrauterine device causing stones. Chinese Journal of Obstetrics and Gynecology. 2000; 35: 168. (In Chinese) https://med.wanfangdata.com.cn/Paper/Detail?id=PeriodicalPaper_zhfck200003026

Zhao LY. Analysis of the relationship between intrauterine stones and intrauterine devices in one case. Chinese Journal of Modern Drug Application. 2009; 3: 199–200. (In Chinese) https://lib.cqvip.com/Qikan/Article/Detail?id=31228799

Zhuang LQ, Sun JF, Yang XL, Wu PQ, Xu MH, Xiao ZQ. The safety of IUD in situ after menopause. Reproduction and Contraception. 1994; 14: 202–208. (In Chinese) https://lib.cqvip.com/Qikan/Article/Detail?id=1471798