Italian Journal of
Gynæcology & Obstetrics
June 2025 - Vol. 37 - N. 2 - Quarterly - ISSN 2385 – 0868

Spontaneous intrauterine fragmentation of intrauterine device (IUD Novaplus T 380 Ag Normal): uncommon, reported case

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ARTICLE INFO

History
Received: 24 April 2024
Received in revised form: 02 September 2024
Accepted: 23 September 2024
Available online: 30 June 2025

DOI: 10.36129/jog.2024.184

Key words
Intrauterine fragmentation; intrauterine device; reversible contraception.

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ABSTRACT

Background. Intrauterine devices (IUDs) are widely used for reversible contraception. Although complications are infrequent and well-documented, they can occur during insertion, use, and removal. While fragmentation of an IUD during removal is well-known and extensively described, instances of self-destruction due to the spontaneous degradation of the plastic material are very rare. There have been a few reported cases where the lateral arm of the IUD broke off, but fragmentation typically occurs during extraction.

Case presentation. The study describes the case of a 48-year-old patient who had an IUD inserted six years ago. She experienced an unexpected expulsion of a small IUD fragment at home and subsequently presented it to her gynaecologist.

Conclusions. Detecting retained fragments in the endometrial cavity can be challenging, especially with plastic arms, as sonography, X-ray, and computed tomography are not always successful [5]. Retained IUD fragments in the uterus can result in perforation, migration into the abdominal cavity, and infection [6]. Based on these considerations, the patient was immediately referred for hysteroscopy. Two IUD fragments were detected, but extraction was difficult as the fragile material crumbled when grasped. However, all fragments were successfully removed.

INTRODUCTION

Intrauterine devices (IUDs) are among the most commonly used methods of reversible contraception [1]. Complications, although rare and well-documented, can occur during insertion, use, and removal. Fragmentation of an IUD during removal has been known and extensively described, but self-destruction due to the spontaneous degradation of the plastic material is very rarely reported [2-3]. There have been few cases reported in which the lateral arm of the IUD broke off, but fragmentation was almost always observed during extraction [4].

CASE PRESENTATION

A 48-year-old patient, G2 P2, had a Novaplus T 380 Ag Normal IUD inserted in 2018, with an expiry date of 2022. She retained the IUD until December

2023, experiencing one year of amenorrhoea without any symptoms. In December 2023, the vertical stem was spontaneously expelled at home and was found by the patient in her underwear. She was referred to our outpatient hysteroscopy service at Seriate Hospital (Bergamo, Italy). Our outpatient hysteroscopic procedure protocol includes no fasting, 20 drops of oral midazolam, intravenous paracetamol, a paracervical block with Naropin, and vaginoscopic access.

The introduction of the 5.4 mm Storz Hysteroscope into the cervical canal and endometrial cavity was straightforward, quick, and painless. Inside the uterine cavity, the arms of the IUD were found, but their removal was complicated due to the fragmentation of the material each time it was grasped by the microforceps. Nevertheless, all fragments were eventually removed, and the patient did not experience any discomfort, returning to her daily activities immediately.

An investigation of the material was carried out by the manufacturer [7], revealing that the rupture of the IUD was caused by a defect in the raw material used in its construction. It is likely that the mixture of the polymer and barium sulphate (necessary for the X-ray detection of the device) was faulty, resulting in the random formation of barium sulphate agglomerates. These agglomerates, being located in particularly critical areas of the structure, may have weakened it to the point of breakage (**Figures 1-5**).

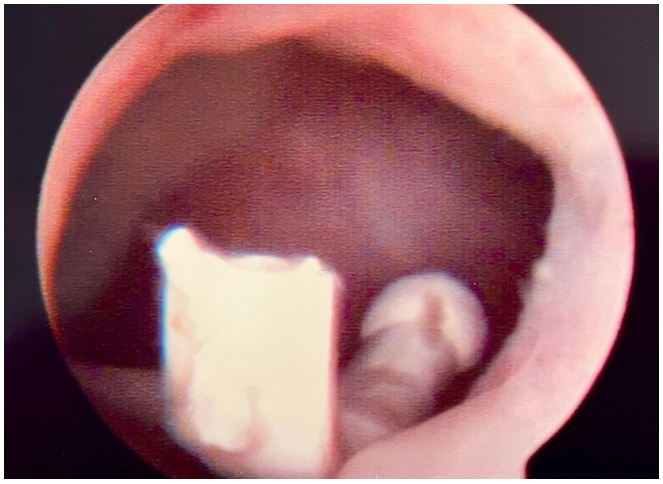

Figure 1. *IUD (arms) fragments in the uterine cavity.*

Figure 2. *IUD arm broken.*

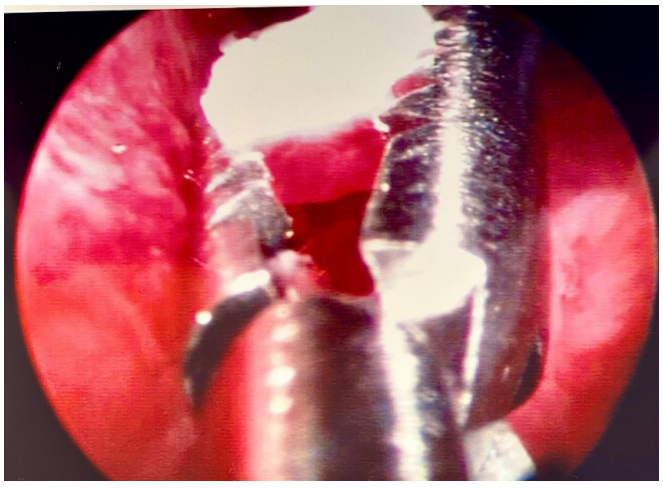

Figure 3. *Friable fragments extraction with microforceps.*

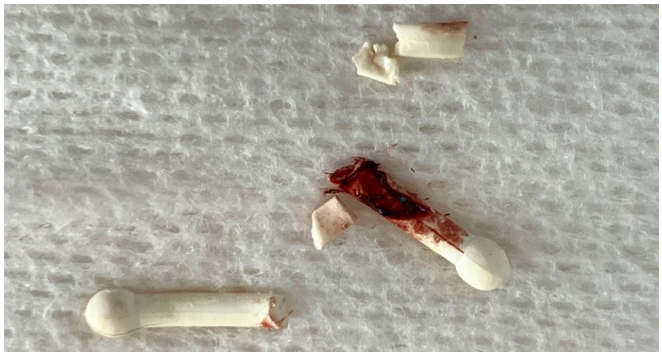

Figure 4. *IUD fragments extracted.*

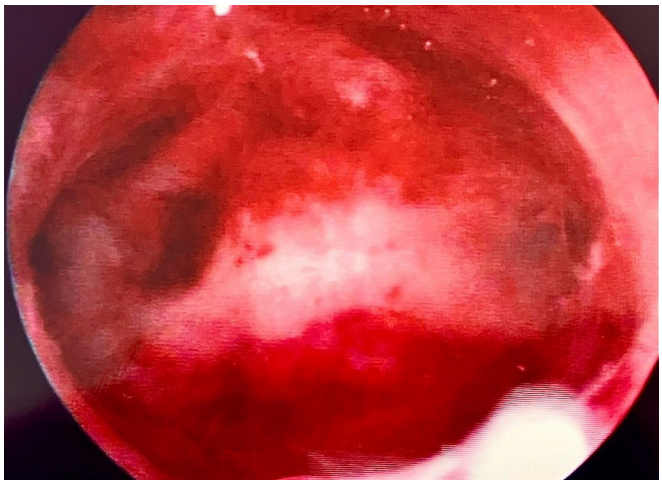

Figure 5. *Uterine cavity at the end of the operation.*

DISCUSSION

Contrary to popular belief, an IUD can rupture spontaneously rather than solely during its extraction. Removal can be challenging due to the brittleness that the plastic material may acquire as a result of alterations in the production process.
It is crucial for both patients and healthcare providers to be aware that IUDs can rupture spontaneously, not just during extraction. This underscores the need for ongoing monitoring and vigilance, even if the device is thought to be stable.
The brittleness of the IUD material after prolonged use or due to manufacturing defects can make removal challenging. This suggests a need for improved techniques or tools for safely removing IUD fragments to minimize patient discomfort and prevent complications.
Given the potential for spontaneous rupture, regular check-ups for women with IUDs are recommended. This could involve periodic imaging or physical examinations to ensure the device remains intact and properly positioned.
Educating patients on the signs of IUD malfunction, such as unexpected expulsion or changes in menstrual patterns, is essential. This knowledge can prompt timely medical consultations, potentially preventing more serious complications.

CONCLUSIONS

The case highlights the importance of strict quality control during the manufacturing of IUDs. Manufacturers should ensure that the materials used, especially in critical components like the arms of the IUD, are of high quality and properly processed to avoid defects that could lead to spontaneous breakage.

COMPLIANCE WITH ETHICAL STANDARDS

Authors' contribution
CC contributed entirely to the work.

Funding
None.

Study registration
N/A.

Disclosure of interests
The author declare no conflict of interests.

Ethical approval
Anonymous case that does not allow any recognition of the subject; being a manufacturing defect of the product, the Ethic Committee was not involved.

Informed consent
N/A.

Data sharing
Data are available under reasonable request to the corresponding author.

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