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Research Article

Ultrasonography: a diagnostic choice to localise intra uterine contraceptive devices

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ABSTRACT

Background: Intrauterine devices are important method of contraception. They are more effective than oral contraceptives. They are also reversible forms of contraception. They provide contraception for years. Sonography is very useful in localization of intra uterine contraceptive devices. Before insertion, it tells us about uterine anomalies, tumours and shape of uterus. After IUCD insertion, it is helpful for locating IUCD and confirming the place where required and also tells us its relative position at follow up also.

Methods: In this study, sonography is used for localization of Cu-T, IUCD by its four very important features namely, type-specific morphology, posterior acoustic shadowing, entrance-exit reflection, anechoic halo around the IUCD.

Results: In this study, it was observed that 100 % localization of IUCD is possible by these parameters.

Conclusions: It was concluded that ultrasonography acts as diagnostic tool for localization of Copper T IUCD.

Keywords: Intrauterine contraceptive device, Sonography, Contraception

INTRODUCTION

Contraceptive methods are the methods used to help couple to get rid of unwanted pregnancies. In last few years, human being is trying to develop ideal contraceptive by interfering with ovulation cycle. But no such ideal contraception method was developed. The ideal contraception method is one which is safe, effective, acceptable, inexpensive, reversible, simple to administer, independent of coitus, long lasting enough to obviate frequent administration and requiring little and no medical supervision. They are broadly classified into two classes: spacing and terminal methods. Intra uterine device is one among the spacing method used for contraception.¹

IUDs are more effective than any non-surgical method except oral contraceptives. IUCD are of two types: medicated and non-medicated. IUDs are made of polyethylene or other polymers. They either release metal ions (copper) or hormones (progestogens). Cu-T is one of the important types which release copper ions. The polyethylene copper T has barium sulfate for radiopacity. Copper ions released from free ends of Cu-T increases the local foreign body inflammatory response and mobility and viability of sperm is reduced. Thus fertilization is decreased.² Two polyethylene monofilaments connected to the stem, referred to as retrieval strings, allow for detection and removal of Cu-T.³

Numerous methods for the localization of contraception device have been recommended. Many of these methods use significant dose of ionizing radiations. Frequently, when a large number of methods are advocated, none is altogether satisfactory. Ultrasound, however, has a high degree of accuracy in localization of IUCDs without any known adverse effects. It is also capable of defining other unsuspected pathological conditions. Diagnostic ultrasound is a new method of locating the intrauterine contraceptive devices. It is also used to localize the IUCD precisely if it lies within the uterine cavity.

Several sonographic features of IUCDs are highly specific and easily demonstrated. The identification of these features adds greatly to one's confidence that the IUCD is present in the uterus and more specifically, within the endometrial cavity. Sonography has been recommended for localisation of an intrauterine contraceptive device when the strings are not visible or felt per vaginum.

Ultrasonic examination would be particularly useful before the insertion of the IUCD and immediately afterwards. The position of the uterus can be ascertained, its size defined, uterine anomalies and tumours diagnosed, the location of the contraceptive device after the insertion established and if a perforation occurs can be revealed immediately in this way. Ultrasonography is the established method of choice for evaluation of IUCDs. It can identify the presence, type, location of an IUD.

The copper-7 has a long limb which can be seen on longitudinal section and a short limb seen on transverse section. The copper-T is similar to the 7 except the short limb which can be demonstrated to cross in the typical T shape. Recognition of characteristic features of IUCD will allow unequivocal and accurate determination of its correct intrauterine location.

Prilroinen stated that a new method of locating the IUCD is the ultrasonic examination.⁴

For localisation of intrauterine contraceptive device, four important ultrasonographic features have been recognized which are:-

- Type-specific morphology
- Posterior acoustic shadowing
- Entrance-exit reflection
- Anechoic halo around the IUCD

METHODS

In the present study 100 patients using IUCDs in the reproductive age group were selected. Ultrasound examination was done after taking written consent. In order to enable the uterus and the organs in its vicinity to be visualized in the ultrasonic examination, the full bladder technique was used. The distended bladder

displaced gas filled segments of bowel out of the true pelvis and provided an effective acoustic window through which the uterus and adnexa were examined. Real time ultrasound examination of the patients was carried using 3.5 MHz transducer. The patient was made to lie in the supine position and acoustic jelly was applied over the skin of the area of examination to act as a coupling agent. Both longitudinal and transverse sections were taken. The IUCD was localized using following criteria: Type specific morphology, posterior acoustic shadowing, entrance-exit reflections, anechoic halo.

RESULTS

Table 1: Age-wise distribution of cases.

Age group in years	No. of cases
20-25	24
26-30	26
31-35	32
36-40	16
41-45	2
Total	100

The majority of cases (32%) were in the age group of 31-35 year. The youngest was 20 years old and the oldest was 45 year old (Table 1). Out of 100 cases studied, IUCD thread was felt in 72 cases (Table 2). In 90 % of cases studied, lie of uterus is Anteverted (Table 3). Table 4 shows that localisation of IUCD from any of the parameter mentioned individually is from 69 to 91 percent and 100 percent if taken collectively.

Table 2: Cases in which thread is felt per vaginum.

Cases	No. of case
Threads felt	72
Threads not felt	28
Total	100

Table 3: Cases according to lie of uterus.

Position of uterus	No. of cases
Anteverted	90
Retroverted	10
Total	100

Table 4: Localisation of IUCD depending on ultrasonographic parameters.

Ultrasonographic features of Copper-T.	No of cases	Present
Type- specific morphology	100	81
Posterior acoustic shadowing	100	91
Entrance-exit reflection seen in	100	69
Anechoic halo	100	71
Localisation from any of above parameter	100	100

DISCUSSION

There are several features of intrauterine contraceptive devices on ultrasound which are highly specific and easily demonstrable. Identification of these features adds greatly to one's confidence that the IUCD is present in the uterus and more specifically within endometrial cavity. Often a characteristic echo pattern is obtained from each type of device. If a typical echo pattern is not obtained, then strong echo activity with acoustical shadowing is highly suggestive of the presence of a device. Ianniruberto et al reported correct localization of IUCD in all the 55 patient they examined using ultrasonography.⁵ Cochrane et al in a similar series showed no error in localizing the intrauterine contraceptive device.⁶

Colin et al performed ultrasonic examination of 51 patients for the localization of missing intrauterine contraceptive devices.⁷ The presence or absence of the device within the uterus was correctly diagnosed in 50 of the 51 patients (98%) in the single instance where the IUCD later shown to be present was not detected, the patient had numerous fibroids.

Callen et al evaluated 50 consecutive patients using sonography for the localization of IUCDs and demonstrated four important features of intrauterine contraceptive devices, which allowed their identification and intrauterine location.⁸ These features are- posterior acoustic shadowing seen in 90% of patients. Type-specific morphology in 81% of patients. Entrance-exit reflection in 65%. Anechoic halo around the IUCD in 72% of patients. By the study of these ultrasonographic patterns, they were able to determine the correct intrauterine localization of IUCD. Their results were unequivocal and accurate.

Aaron et al examined 100 patients using ultrasonography and was able to localize the device in 97% of the patients.⁹ In present study (Table 4), out of 100 patient examined with ultrasound, type-specific morphology was seen in 81% having intrauterine contraceptive device (Figure 1). Posterior acoustic shadowing was seen in 91% (Figure 3). Entrance- exit reflection was seen in 69% of patients (Figure 2). Anechoic halo was seen in 71% of the cases in which the device was actually present in the uterus (Figure 4).

Thus ultrasound was able to localise IUCD in 100% of the cases from any of the four ultrasonic parameters of the Cu-T intrauterine contraceptive device. Thus this shows that ultrasonography is of diagnostic choice for localisation of intrauterine contraceptive device.

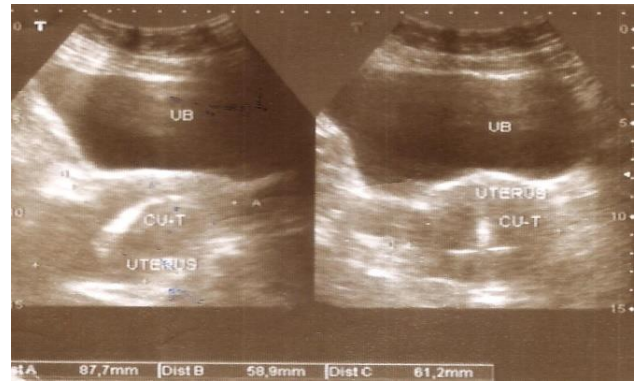


Figure 1: Type specific morphology on sonograph.

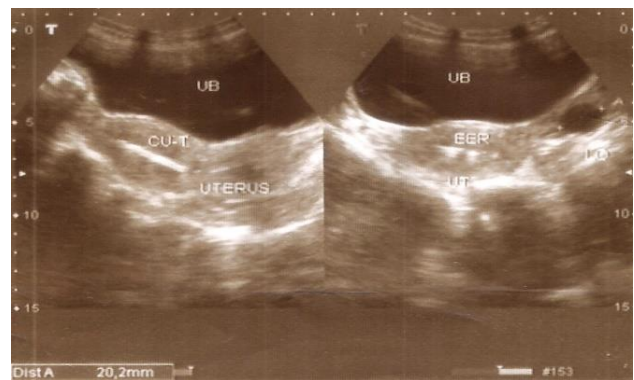


Figure 2: Entrance exit reflection on sonograph.

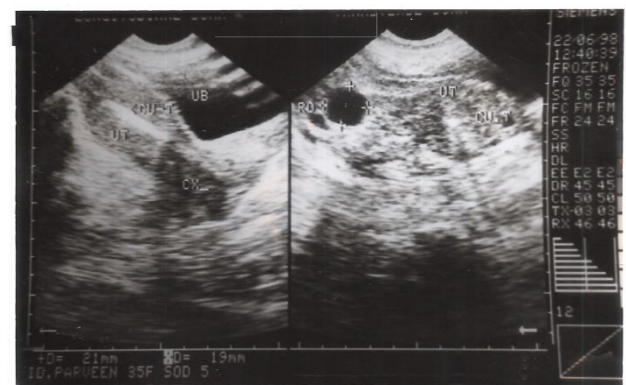


Figure 3: Posterior acoustic shadowing on sonograph.



Figure 4: Anechoic halo on sonograph.

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