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CLINICAL OUTCOMES FOLLOWING POSTPARTUM INSERTION OF Cu375 VERSUS CuT380A IUCDs: A PROSPECTIVE STUDY

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ABSTRACT

Background: The effective and safe approach for long term contraception is the postpartum intrauterine contraceptive devices (PPIUCDs). However, concerns related to pain, abnormal bleeding, and expulsion may influence acceptance and continuation rates. This study is intended to evaluate the association between the type of PPIUCD (Cu375 vs. CuT380A) and common post-insertion complications, using ultrasonography to assess device position.

Methods: An observational prospective cohort study was conducted in New Delhi, from October 2019 to April 2021. In the study, a total of 150 postpartum women who underwent IUCD insertion (Cu375 or CuT380A) were included. Transabdominal and transvaginal ultrasonography were performed within 48 hours and at 6 weeks postpartum to assess device position. Patients' symptoms including cramping pain, abnormal bleeding, and expulsion were recorded over a 3-month follow-up period.

Results: Cramping pain was reported by 27.3% of patients, with similar incidence in Cu375 (26.9%) and CuT380A (27.6%) groups ($p = 1.000$). Occurrence of abnormal bleeding was observed in 6.7% overall, slightly higher in CuT380A (9.2%) than Cu375 (1.9%) users ($p = 0.166$). The expulsion rate was 8.7%, with no significant difference between Cu375 (11.5%) and CuT380A (7.1%) ($p = 0.362$). Ultrasonographic evaluation was useful in confirming device position and guiding follow-up.

Conclusion: Both Cu375 and CuT380A PPIUCDs were associated with comparable rates of post-insertion symptoms and expulsion. Ultrasonography proved to be a valuable tool for early identification of malposition and management of complications. Selection of IUCD type can be individualized based on clinical context and patient preference.

Keywords: *Postpartum IUCD, Cu375, CuT380A, Cramping pain, Abnormal bleeding, Expulsion, PPIUCD complication.*

INTRODUCTION

Safe, long acting, effective and reversible method of postpartum contraception and that does not also interfere with breast feeding is ensured by the immediate insertion of postpartum

intrauterine device (PPIUD). After the caesarean section, pregnancy with a short inter conceptional period may increase the risk of morbidity [1]. Insertion of intrauterine contraception device (IUCD) has been found to have few negative effects. However, one of the most common complications of IUD users is bleeding and it is fond that there is variation with different types of IUDs. While use of IUD ML CU 375 showed a significant decrease in the rate of bleeding [2]. The CuT380A method used in immediate postpartum .contraception is found to have a high level of safety, effectiveness and high continuation rate [3]. Insertion of intrauterine devices sometimes may result in heavy menstrual bleedings, menstrual abnormalities and infection. These difficulties may be reduced by strict aseptic process throughout the insertion procedure [4,5]. It is found that, all the inserted IUDs in the immediate postpartum period. The current study investigates the relationship between the type of IUCD and common complications that arise during the immediate insertion of IUCD during postpartum.

SUBJECTS AND METHODS

Study Design and Setting

The study was performed in the Postnatal Ward of the Department of Obstetrics and Gynecology at the Employee's State Insurance Corporation–Post Graduate Institute of Medical Sciences and Research (ESIC-PGIMSR), Model Hospital Basaidarapur, New Delhi. The study was a prospective cohort study which was carried out between October 2019 and April 2021, the study was approved by the Institutional Ethics Committee.

Inclusion criteria

A total of 150 postpartum women were included for the study based on the criteria listed below women in early or active labor, delivering by either vaginal or cesarean route and women who are willing to undergo postpartum intrauterine contraceptive device (PPIUCD) insertion. They were enrolled after obtaining informed written consent. While contraindications to IUCD use (as per CDC Medical Eligibility Criteria Category 3 or 4), immediate postpartum hemorrhage and premature rupture of membranes (PROM) >12 hours or diagnosed chorioamnionitis.

IUCD Insertion Procedure

Immediately after delivery of the placenta and confirmation of hemostasis, Copper IUCD (either CuT380A or Cu375) was inserted using Kelly's forceps under sterile conditions, as per standard postpartum insertion protocol. Patients were then transferred to the postnatal ward for observation as well as follow-up.

Collection of data

Data was collected on demographic and obstetric information using a structured proforma. The data included was the type of IUCD inserted, Antenatal and intrapartum complications and postpartum complications.

Ultrasonographic Assessment

A 2D transabdominal and transvaginal ultrasound examination was performed on each patient within 48 hours postpartum and repeated at the 6-week follow-up visit. Scans were conducted by the same trained sonologist using a Philips ClearVue ultrasound machine equipped with a **6** MHz transvaginal probe and a 3.75 MHz transabdominal probe.

Recording is done by the following IUCD position parameters were recorded:

1. Distance from fundus to upper end of CuT
2. Distance from lower end of CuT to internal os
3. Distance from left uterine wall to lower end of CuT
4. Distance from right uterine wall to upper end of CuT

IUCD position was classified as normal, low-lying, or malpositioned, based on standard clinical criteria.

Follow-up of Symptoms

Follow up of patients was done up to 3 months postpartum. Clinical complaints such as abnormal uterine bleeding, pelvic or abdominal pain, and IUCD expulsion were recorded during routine follow-up visits. Appropriate medical care was provided as for necessity.

Statistical Analysis

All data were entered into Microsoft Excel and analyzed with the help of SPSS version 21.0. The categorical variables were expressed as frequencies and percentages.

- Continuous variables were presented as mean ± standard deviation (SD) or median (IQR).
- Comparison of ultrasound parameters between symptomatic and asymptomatic patients was done using t-tests or Mann–Whitney U tests as appropriate.
- Chi-square test or Fisher's exact test was used for categorical comparisons.
- Receiver Operating Characteristic (ROC) curve analysis was conducted to determine cutoff values of ultrasound parameters predictive of IUCD-related complications.
- A p-value < 0.05 was considered statistically significant.

RESULTS

The current study revealed that, no statistically significant association was observed between the type of postpartum IUCD (Cu375 or CuT380A) and the occurrence of common post -insertion complications such as cramping pain, abnormal bleeding, or expulsion. In 27% of all the participants, cramping pain was reported with similar rates in both the Cu375 group (26.9%) and the CuT380A group (27.6%) ($p = 1.000$). While abnormal bleeding was reported by 6.7% of the participants overall, occurring in 1.9% of those with Cu375 and 9.2% of those with CuT380A ($p = 0.166$). With the IUCD expulsion, it was observed that, in 8.7% of patients, it was slightly higher rate in the Cu375 group (11.5%) compared to the CuT380A group (7.1%)., even though this difference was not statistically significant ($p = 0.362$). These results suggest that both types of IUCDs are similarly tolerated in the postpartum period with regard to these specific outcomes.

Association Between Type of PPIUCD and Cramping Pain: Out of the 150 participants, cramping pain was experienced by 27.3% participants, while 72.7% of the participants reported no pain. Among the users of Cu375, 26.9% reported pain, and 73.1% had no pain. Similarly, among CuT380A users, 27.6% reported pain, and 72.4% had no pain. Thus, there **was** no statistically significant association between the type of IUCD and cramping pain ($p = 1.000$).

Table 1: Type of PPIUCD and Cramping Pain

			Cramping Pain		
			No	Yes	p value
Type of PPIUCD	Cu375	Frequency	38	14	1.000
		% within Type of PPIUCD	73.1%	26.9%	
	CuT380A	Frequency	71	27	
		% within Type of PPIUCD	72.4%	27.6%	
Total		Frequency	109	41	
		% within Type of PPIUCD	72.7%	27.3%	

Association Between Type of PPIUCD and Abnormal Bleeding: On whole, **6.7%** of participants experienced abnormal uterine bleeding post-insertion.In the Cu375 group, only 1.9% reported abnormal bleeding. While in the CuT380A group**,** 9.2% reported abnormal bleeding. Although the frequency was higher in the CuT380A group, the difference was not statistically significant (p = 0.166).

Table 2: Type of PPIUCD and abnormal bleeding

			Abnormal Bleeding		
			No	Yes	p value
Type of PPIUCD	Cu375	Frequency	51	1	0.166
		% within Type of PPIUCD	98.1%	1.9%	
	CuT380A	Frequency	89	9	
		% within Type of PPIUCD	90.8%	9.2%	
Total		Frequency	140	10	
		% within Type of PPIUCD	93.3%	6.7%	

Association Between Type of PPIUCD and Expulsion: Data obtained from 150 patients, 13 IUCD expulsions (8.7%) were noted: Cu375: 11.5% expulsion rate. With CuT380A, there was 7.1% of expulsion rate. There was no significant association between IUCD type and expulsion (p = 0.362).

Table 3: Type of PPIUCD and Expulsion

			Expulsion		
			No	Yes	P value
Type of PPIUCD	Cu375	Frequency	46	6	0.362
		% within Type of PPIUCD	88.5%	11.5%	
	CuT380A	Frequency	91	7	
		% within Type of PPIUCD	92.9%	7.1%	
Total		Frequency	137	13	
		% within Type of PPIUCD	91.3%	8.7%	

DISCUSSION

This prospective observational study assessed the association between the type of postpartum intrauterine contraceptive device (PPIUCD)—Cu375 and CuT380A—and the associated common post-insertion complications such as cramping pain, abnormal uterine bleeding, and expulsion.

Cramping pain was reported in 27.3% of participants, and the percentage was at nearly identical rates between Cu375 (26.9%) and CuT380A (27.6%) users ($p = 1.000$). This indicates that the type of copper IUCD does not significantly affect the likelihood of post -insertion pain. These findings align with prior studies [6] suggesting that post-insertion cramping is generally influenced by uterine contractility and individual pain sensitivity rather than IUCD design.

Abnormal uterine bleeding was observed in 6.7% of the study population. Although the incidence was higher in the CuT380A group (9.2%) compared to Cu375 (1.9%), the difference was not statistically significant ($p = 0.166$). The trend toward increased bleeding with CuT380A may be attributed to its larger copper surface area, potentially causing greater endometrial response, but further studies with larger sample sizes are needed to validate this observation. These results are in confirmation with the previous investigations [7,9].

The overall expulsion rate in this cohort was 8.7%, consistent with existing literature on PPIUCD expulsion rates. The expulsion rate was higher in the Cu375 group (11.5%) than in the CuT380A group (7.1%), though this difference did not reach statistical significance ($p = 0.362$). These findings suggest that factors such as timing of insertion, insertion technique, and uterine involution may play a more critical role in expulsion than the specific IUCD type. These findings align with the previous research studies [8,10].

In conclusion, both Cu375 and CuT380A demonstrate comparable clinical outcomes in the postpartum period. The lack of statistically significant differences in pain, bleeding, or expulsion supports the safe use of either device following delivery. Further randomized controlled trials with extended follow-up may help refine the choice of IUCD type based on patient characteristics and risk profiles.

CONCLUSION

This study demonstrated that both Cu375 and CuT380A are safe and effective options for postpartum intrauterine contraceptive device (PPIUCD) insertion, with no statistically significant differences in the incidence of cramping pain, abnormal uterine bleeding, or expulsion. Ultrasonographic monitoring remains a valuable tool for assessing IUCD position and guiding clinical follow-up. Given the comparable outcomes, the choice between Cu375 and CuT380A can be individualized based on availability, provider preference, and patient-specific factors. Continued follow-up and larger-scale studies are warranted to further evaluate long-term outcomes and optimize postpartum contraceptive care.

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