International Journal of Health Sciences and Research
[Indexed, Peer-Reviewed Journal]
Volume 16; Issue: 3; March 2026
Website: www.ijhsr.org
Original Research Article *ISSN: 2249-9571*

Evaluation of Complications, Removal, and Continuation Rates Among Women Who Underwent Postpartum Intrauterine Contraceptive Device Insertion: A Retrospective Study

Sridhar HK[1], Suma HR[2], Sushma Basavaraju[3], Ragupathi K[4]

[1]Associate Professor, Department of Obstetrics and Gynaecology, Hassan Institute of Medical Sciences, Hassan, Karnataka, India
[2]Assistant Professor, Department of Obstetrics and Gynaecology, Hassan Institute of Medical Sciences, Hassan, Karnataka, India
[3]Postgraduate Student, Department of Obstetrics and Gynaecology, Hassan Institute of Medical Sciences, Hassan, Karnataka, India
[4]Assistant Professor, Department of Obstetrics and Gynaecology, Hassan Institute of Medical Sciences, Hassan, Karnataka, India

Corresponding Author: Dr. Suma HR

DOI: https://doi.org/10.52403/ijhsr.20260302

ABSTRACT

Background: Postpartum intrauterine contraceptive device (PPIUCD) is an established, safe, reversible, and long-acting contraceptive method. However, immediate post-delivery insertion of an IUCD may be associated with certain complications.
Aim and Objectives: To evaluate complications, removal, and reasons for removal of PPIUCD among PPIUCD user women in our tertiary care centre.
Materials and Methods: This is a retrospective study done by evaluating medical records of 260 PPIUCD user women. Incidence of complications such as abdominal pain, abnormal bleeding, abnormal vaginal discharge, and missing IUCD following PPIUCD insertion were assessed as primary outcomes. The secondary outcomes include removal rate and reasons for removal.
Results: The mean (±SD) age of participants was 25.1 (±4.0) years with majority found in 21-30 years age group (76.9%). Majority of the IUCD user women i.e., 51.2% were multiparous followed by primiparous (48%). Major proportion of study participants delivered through vaginal route (80.4%) followed by cesarean section (19.6%). Out of total 260 PPIUCD users' abdominal pain complication was observed in 15 women (5.8%), abnormal bleeding in 10 women (3.8%), and missed IUCD in only 4 women. Among 260 PPIUCD users, device removal was done in 18 patients (6.9%) majorly due to mutual decision by couple (6 users) and desire for pregnancy (5 users). One each user (0.4%) decided to remove PPIUCD because of change in family planning goals, completion of recommended IUCD duration, family size completed, personal preference, and wants to go tubectomy.
Conclusion: PPIUCD is a scientifically validated, safe, reversible and long-acting contraceptive tool with high retention and success rates particularly beneficial in the tertiary care centre, where women live in remote areas and may not return for follow-up.

Keywords: PPIUCD, Abdominal pain, Bleeding, Family planning, Contraception, Follow-up

INTRODUCTION

Family planning is globally recognized as an essential health care intervention across a woman's reproductive lifespan [1]. The World Health Organization (WHO) recommends maintaining a minimum interval of 24 months between consecutive pregnancies to optimize maternal and child health outcomes [2]. Additionally, an analysis of Demographic and Health Survey data from 27 countries reported that although 95% of women within 0–12 months postpartum intended to avoid pregnancy over the subsequent 24 months, nearly 70% were not using any contraceptive method [3].

At present, India is the most populous country, with an estimated population of approximately 1.45 billion. Approximately, 17.78% of world's population is residing in only 2.4% of global land mass [4]. India was also the first country to launch a nationwide family planning program. The family welfare program aimed to promote small family norms and stabilize the population at around 1.533 billion by the year 2050 [5].

India's family planning program, initiated in 1952 [6], and has been historically emphasized limiting family size, predominantly through female sterilization, which accounts for over 50% of family planning method use [7]. Other components of family planning have received comparatively less attention. This underscores the need to improve awareness and availability of spacing methods. In response, the Government of India has implemented several strategies to enhance access to effective birth spacing methods [6].

A key element of these initiatives is strengthening postpartum family planning services for women of reproductive age. As part of this effort, postpartum intrauterine contraceptive device (PPIUCD) services were introduced in India in 2010–2011 with technical support from Jhpiego [8]. This initiative was informed by global evidence demonstrating that PPIUCD is a safe and effective contraceptive option [9,10]. Furthermore, contact with the health system during childbirth provides a valuable opportunity to deliver family planning services, particularly in resource-limited settings [11].

Based on recommendations from technical experts on healthy timing and spacing of pregnancies, women are advised to wait at least 24 months and not more than five years after a live birth before conceiving again. In India, approximately 65% of women in the first year postpartum have an unmet need for family planning; only 26% are using any contraceptive method, while 8% desire another pregnancy within two years [12]. Fertility may return as early as 4–6 weeks postpartum in women who are not exclusively breastfeeding. Nearly 40% of women resume sexual activity within three months after delivery, increasing to about 90% by 10–12 months postpartum, thereby heightening the risk of early unintended pregnancy. Consequently, initiation of family planning within six weeks postpartum is of critical importance [1].

PPIUCD is a non-hormonal, long-acting, and highly effective contraceptive method that does not impair future fertility. It is suitable for women across all reproductive age groups and is considered one of the most cost-effective options for preventing unintended pregnancies [13]. However, PPIUCD utilization varies considerably across Indian states, ranging from 1.2% to 40.2%, with a national average of 16.3% [14,15]. Given the substantial unmet need for birth spacing and the increasing rate of institutional deliveries, the Government of India has been actively scaling up postpartum family planning services, with particular emphasis on expanding PPIUCD service capacity [16].

Despite its advantages, concerns related to complications, expulsion, and early removal continue to influence the acceptability and continuation of PPIUCD. Moreover, there is a paucity of local data regarding the frequency and pattern of these outcomes in

routine clinical settings. Assessing complications, removal rates, and continuation of PPIUCD use is essential to evaluate its safety and effectiveness, and to identify factors contributing to discontinuation, and improve counseling and service delivery during the postpartum period. In this context, the present study was undertaken to evaluate complications, removal rates, and reasons for removal of PPIUCD among women attending our tertiary care center.

MATERIALS & METHODS

Study design and patients

This is a retrospective study done by evaluating medical records of 260 PPIUCD user women in Department of Obstetrics and Gynecology, Hassan Institute of Medical Sciences (HIMS), Hassan, Karnataka.

Inclusion criteria

Women who had:

1. Delivered vaginally or by caesarean section
2. In postpartum period
3. Received counselling for PPIUCD in the antenatal or immediate postpartum period
4. Eligible for PPIUCD insertion as per national family planning guidelines
5. Complete medical records including age, parity, mode of delivery, and PPIUCD status

Exclusion criteria

1. Women with following contraindications to IUCD insertion
   - Puerperal sepsis
   - Postpartum hemorrhage requiring surgical intervention
   - Uterine anomalies
   - Chorioamnionitis
2. Opted for permanent sterilization immediately after delivery
3. Chose other postpartum contraceptive methods *viz.* injectables, implants, oral contraceptives
4. Delivered outside the study institution

Data collection

Data were collected retrospectively from labour room registers, operation theatre registers, family planning registers, and medical case records. A structured data collection proforma was used to record demographic variables, and baseline characteristics such as maternal age, parity, mode of delivery, type of IUCD.

Study outcomes

The primary outcomes include, incidence of complications (abdominal pain, abnormal bleeding, abnormal vaginal discharge, and missing IUCD) following PPIUCD insertion. While, removal rate and reasons for removal were assessed as secondary outcomes.

Statistical Analysis

Data were entered in Microsoft Excel 2021 and statistical analysis was done using IBM Statistical Software for Social Sciences (SPSS) version 20. Categorical variables were represented in the form of percentages, and frequencies. Continuous variables were presented as descriptive statistics (Mean and Standard deviation). Categorical variables were analysed using the Chi-square test. $p \leq 0.05$ was considered statistically significant.

RESULT

The mean (±SD) age of subjects was 25.1 (±4.0) years with majorly found in 21-30 years age group (76.9). Major proportion of IUCD users having high school level of education (64.2%) followed by primary school education (48.8%), and PUC & Bachelor's degree (12.3% each). Majority of the subjects i.e., 51.2% were multiparous followed by primiparous (48%). Major proportion of study participants delivered through vaginal route (80.4%). Whereas, 19.6% of study participants delivered through cesarean section mode of delivery (Table 1).

Table 1. Demographic and baseline characteristics

Variables	n (%)
Age	
10 - 20 years	37 (14.2)
21 - 30 years	200 (76.9)
31 - 40 years	23 (8.8)
Mean ± SD	25.1 ± 4.0
Education	
Primary	29 (11.2)
High school	167 (64.2)
PUC	32 (12.3)
Bachelor degree	32 (12.3)
Parity	
Primipara	127 (48.8)
Multipara	133 (51.2)
Mode of delivery	
Vaginal	209 (80.4)
Cesarean	51 (19.6)

Values were n (%) unless otherwise stated

Majority of women i.e., 81.9% preferred Multiload (ML) Cu 375 type of ICUD followed by Copper T 380A (18.1%) type of device (Figure 1).

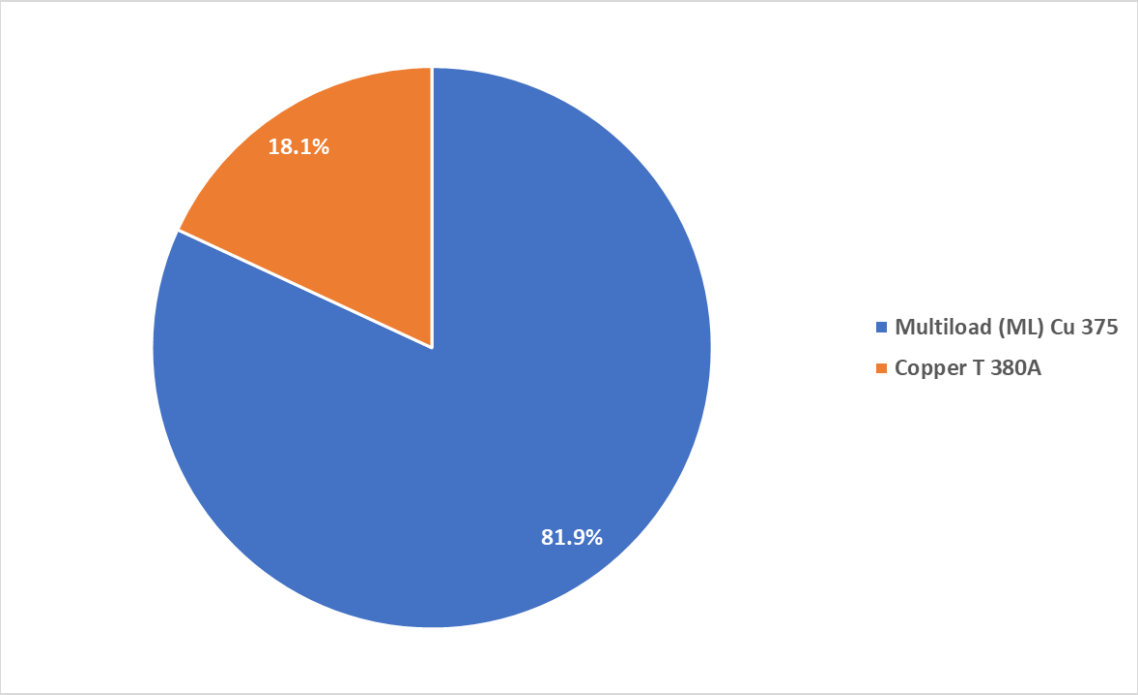

Figure 1. Type of IUCD used

Out of total 260 PPIUCD users' abdominal pain complication was observed in 15 women (5.8%), abnormal bleeding in 10 women (3.8%), and missed IUCD in only 4 women (Table 2). Among 260 PPIUCD users, device removal was done in 18 patients (6.9%) majorly due to mutual decision by couple (6 users [2.3%]) and desire for pregnancy (5 users [1.9%]). While, one each user (0.4%) decided to remove IUCD because of change in family planning goals, completion of recommended IUCD duration, family size completed, personal preference, and wants to go for tubectomy (Table 2 and Figure 2).

Table 2. Primary and secondary outcomes

Outcomes	Yes	No
Primary outcomes		
Abdominal pain	15 (5.8)	245 (94.8)
Abnormal bleeding	10 (3.8)	250 (96.2)
Abnormal vaginal discharge	0 (0.0)	260 (100.0)
Missed IUCD	4 (1.5)	256 (98.5)
Secondary outcomes		
Removal	18 (6.9)	242 (93.1)

Values were n (%)

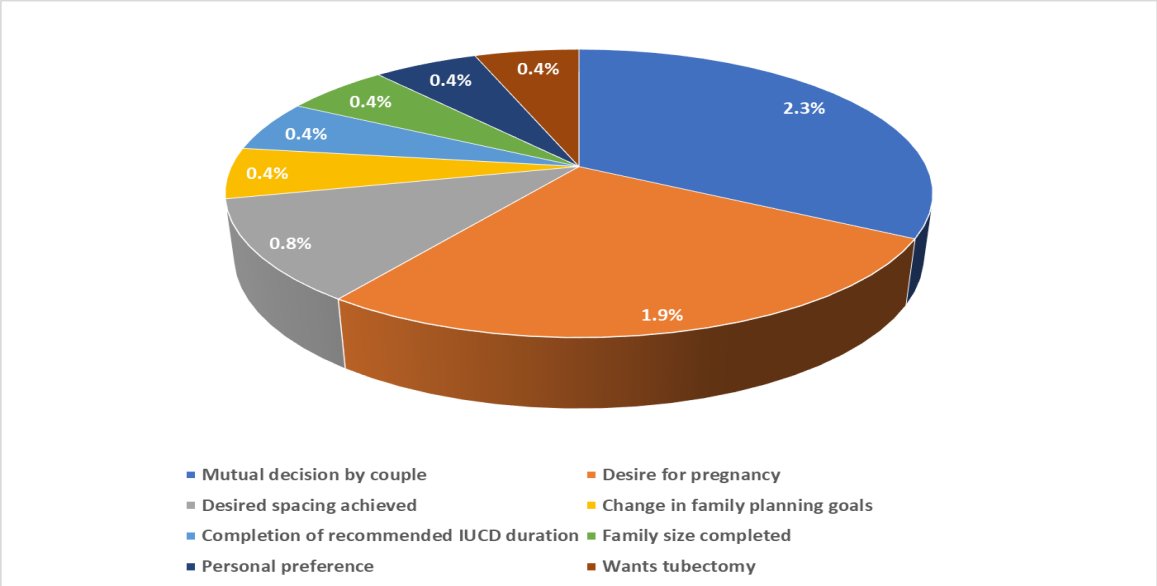

Figure 2. Reason for IUCD removal

The results on association between type of PPIUCD and complications were represented in Table 3. Results showed non-significant association between type of PPIUCD and abnormal bleeding (X^2 = 2.295; p = 0.130), abdominal pain (X^2 = 1.399; p = 0.237), and missed IUCD (X^2 = 0.131; p = 0.717).

Table 3. Association between PPIUCD type and complications

Complications			Type of PPIUCD		Total	Chi-square value (X^2)	p-value
			Multiload (ML) Cu 375	Copper T 380A			
Abnormal bleeding	No	Count	203	47	250	2.295	0.130
		%	95.3%	100.0%	96.2%		
	Yes	Count	10	0	10		
		%	4.7%	0.0%	3.8%		
Total		Count	213	47	260		
		%	100.0%	100.0%	100.0%		
Abdominal pain	No	Count	199	46	245	1.399	0.237
		%	93.4%	97.9%	94.2%		
	Yes	Count	14	1	15		
		%	6.6%	2.1%	5.8%		
Total		Count	213	47	260		
		%	100.0%	100.0%	100.0%		
Missed IUCD	No	Count	210	46	256	0.131	0.717
		%	98.6%	97.9%	98.5%		
	Yes	Count	3	1	4		
		%	1.4%	2.1%	1.5%		
Total		Count	213	47	260		
		%	100.0%	100.0%	100.0%		

DISCUSSION

Appropriate birth spacing of more than two years has the potential to prevent nearly one-third of maternal deaths and about 10% of child mortality. With the increasing proportion of institutional deliveries in India, PPIUCDs offer a valuable opportunity to address the substantial unmet need for spacing methods. Furthermore, in the current digital era, overall awareness regarding contraceptive options among women has improved, which may positively influence acceptance and continuation rates [17]. PPIUCD is a well-established, safe, reversible, and long-acting contraceptive method, inserted within 48 hours of delivery. However, despite its availability, acceptance remains suboptimal [1]. Moreover, immediate postpartum IUCD insertion may be associated with certain complications. Therefore, the present retrospective study was undertaken to assess complications, removal rates, and reasons for removal of PPIUCD at our tertiary care center.

In the present study, the mean age of participants was 25.1 years, with the majority (76.9%) belonging to the 21–30-year age group. These observations were comparable to those reported in earlier studies. Verma et al., in their prospective study, found that most women were aged 26–30 years (36.5%), followed by 21–25 years (27%) and 31–35 years (21%) [1]. Similar age distributions were also reported by Gupta et al. [18], Agarwal et al. [19], and Tomar et al. [4], with a predominance of women in the 21–25-year age group.

Regarding educational status, Verma et al., reported that nearly half of the participants (48.5%) were graduates, followed by women educated up to senior secondary level (27.5%) and secondary school level (10.5%), while smaller proportions had middle school (8%), primary school (3%), postgraduate education (2%), or were illiterate (0.5%) [1]. In contrast, the majority of PPIUCD users in the present study had completed high school education (64.2%), followed by primary school education (48.8%), and pre-university course (PUC) or bachelor's degree (12.3% each). Sharma et al., similarly observed the highest acceptance of PPIUCD (56.95%) among women with secondary education [20].

In the current study, more than half of the PPIUCD users (51.2%) were multiparous, while 48% were primiparous. These findings are consistent with those reported by Verma et al., who documented PPIUCD usage among 66% multiparous and 34% primiparous women [1]. Comparable observations by Sharma et al., suggest a preference for an immediate, long-acting, safe, and reversible contraceptive method that requires fewer follow-up visits [20].

It was understood from the literature that PPIUCD insertion rates were 67.5% post-vaginal delivery and 32.5% intra-caesarean [1]. Chauhan et al., also reported similar findings (67.3% and 31.8% respectively) [21]. This was attributed to the higher number of vaginal deliveries. Concurrently, in the current study participants delivered through vaginal mode (80.4%), and cesarean section (19.6%) were inserted with IUCD as a family planning strategy.

Among the 260 PPIUCD users in this study, abdominal pain was reported by 15 women (5.8%), abnormal bleeding by 10 women (3.8%), and missed IUCD by only four women. This relatively low incidence of complications may be attributed to appropriate client selection, use of Kelly's forceps to ensure high fundal placement, and strict adherence to standard procedural guidelines [22]. Additionally, in this study, PPIUCD insertions following vaginal delivery were performed exclusively by trained midwives. Other studies have reported a higher frequency of complications following cesarean section deliveries, with an increased prevalence observed in cesarean-related PPIUCD insertions [22,23].

A wide range of reasons for PPIUCD removal have been documented in the literature. Verma et al., identified lack of adequate knowledge (55.7%) as the most common reason for refusal, followed by

partner or family opposition (41.3%), preference for an alternative method (35.3%), and no specific reason in 15% of women [1]. In contrast, studies by Gupta et al. [18], and Nigam et al. [14], reported partner and family resistance as the predominant reason for discontinuation, while Gonie et al., found fear of complications to be the leading concern (24.8%) [24]. Concurrently, the decisions to remove PPIUCD in our study was majorly due to mutual decision by couple (6 users) and desire for pregnancy (5 users). While, one each user (0.4%) decided to remove IUCD because of change in family planning goals, Completion of recommended IUCD duration, family size completed, personal preference, and wants to go for tubectomy.

Certain limitations of this retrospective study should be considered. As the study was conducted at a single tertiary care center, the findings may not be generalizable to other settings. Furthermore, poor follow-up attendance limited the evaluation of long-term outcomes. Therefore, future multicentric studies with improved follow-up rates are recommended to better assess long-term safety, continuation, and effectiveness of PPIUCD use.

CONCLUSION

PPIUCD is a scientifically proven, safe, reversible, and long-acting contraceptive method with high effectiveness and continuation rates, particularly advantageous in settings where women reside in remote areas and may have limited access to follow-up services. Furthermore, regular follow-up visits are essential, as they enable early identification of device-related complications or side effects, allowing timely and appropriate management.

Declaration by Authors

Ethical Approval: Approved
Acknowledgement: None
Source of Funding: None
Conflict of Interest: The authors declare no conflict of interest.

REFERENCES

1. Verma J, Thakur S, Thakur R, Pathania K, Thakur N. Evaluation of safety, efficacy and continuation rates of post-partum intrauterine contraceptive device. Int J Reprod Contracept Obstet Gynecol 2025; 14:4235-41.
2. Geda YF, Nejaga SM, Belete MA, Lemlem SB, Adamu AF. Immediate postpartum intrauterine contraceptive device utilization and influencing factors in Addis Ababa public hospitals: a cross-sectional study. Contracept Reprod Med. 2021;6(1):1–10.
3. Kanakuze CA, Kaye DK, Musabirema P, Nkubito P, Mbalinda SN. Factors associated with the uptake of immediate postpartum intrauterine contraceptive devices (PPIUCD) in Rwanda: a mixed methods study. BMC Pregnancy Childbirth. 2020;20(1):650.
4. Tomar B, Saini V, Gupta M. Post-partum intrauterine contraceptive device: acceptability and safety. Int J Reprod Contracept. 2018;7(5):2011-8.
5. Rani K, Pangtey NK, Khanna G, Rani M. Postpartum intrauterine contraceptive device (PPIUCD) insertion: practices and aftermath at tertiary care centre. Int J Reprod Contracept Obstet Gynecol. 2018;7(11):4742 7.
6. Government of India. India's Vision FP 2020. New Delhi: Family Planning Division, Ministry of Health & Family Welfare; 2014. Available from: https://advancefamilyplanning.org/sites/default/files/resources/FP2020-Vision-Document%20India.pdf. Accessed February 07, 2026.
7. International Institute of Population Sciences (IIPS). District Level Household and Facility Survey (DLHS-3) 2007–08. Mumbai, India: IIPS; 2010. Available from: http://rchiips.org/pdf/INDIA_REPORT_DLHS-3.pdf. Accessed February 07, 2026.
8. Kumar S, Sethi R, Balasubramaniam S, Charurat E, Lalchandani K, Semba R, Sood B. Women's experience with postpartum intrauterine contraceptive device use in India. Reprod Health. 2014; 11:32.
9. Kapp N, Curtis KM. Intrauterine device insertion during the postpartum period: a systematic review. Contraception. 2009;80(4):327-36.
10. World Health Organization. Medical eligibility criteria for contraceptive use. 5th

ed. Geneva: World Health Organization; 2015. Available from: http://apps.who.int/iris/bitstream/10665/181468/1/9789241549158_eng.pdf. Accessed February 08, 2026.
11. Pfitzer A, Mackenzie D, Blanchard H, Hyjazi Y, Kumar S, Lisanework Kassa S, Marinduque B, Mateo MG, Mukarugwiro B, Ngabo F, Zaeem S, Zafar Z, Smith JM. A facility birth can be the time to start family planning: postpartum intrauterine device experiences from six countries. Int J Gynaecol Obstet. 2015;130 Suppl 2:S54-61.
12. Goyal A, Wadhwani R. Comparative study of IUCD inserted intracesarean and after vaginal delivery. Int J Reprod Contracept Obstet Gynecol. 2018;7(5):2007 11.
13. Gebremedhin M, Alemayehu A, Yihune M, Dessu S, Melis T, Nurahmed N. Acceptability and Factors Associated with Immediate Postpartum Intrauterine Contraceptive Device Use Among Women Who Gave Birth at Government Hospitals of Gamo Zone, Southern Ethiopia, 2019. Open Access J Contracept. 2021; 12:93-101.
14. Nigam A, Ahmad A, Sharma A, Saith P, Batra S. Postpartum Intrauterine Device Refusal in Delhi: Reasons Analyzed. J Obstet Gynaecol India. 2018;68(3):208-213.
15. Dewan R, Bajaj B, Kapoor G, Pardeshi GS. Changing Scenario in Indian Contraceptive Methods: A Glimpse Through a Tertiary Hospital Statistics. J Obstet Gynaecol India. 2019;69(5):462-466.
16. Singh R, Yadav P, Sweta S, Singh S, Nigam A, Singh H. Clinical Outcome of Cu-T 375 PPIUCD by Novel Dedicated Inserter Technique. J Obstet Gynaecol India. 2021;71(4):430-436.
17. Yadav M, Bharti A, Kour G. Evaluation of expulsion and continuation rate of immediate postpartum intrauterine contraceptive devices: a prospective hospital-based study. J Clin Diagn Res. 2022;16(12): QC33–QC36.
18. Gupta S, Bansal R, Shergill HK, Sharma P, Garg P. Correlates of post-partum intrauterine copper-T devices (PPIUCD) acceptance and retention: an observational study from North India. Contracept Reprod Med. 2023;8(1):25.
19. Agarwal N, Gupta M, Sharma A, Arora R. Antenatal counselling as a tool to increase acceptability of postpartum intrauterine device insertion in a tertiary care hospital. Int J Repord Contracept Obstet Gynecol. 2015;4(4):1137-42.
20. Sharma A, Gupta V. A study of awareness and factors affecting acceptance of PPIUCD in south-East Rajasthan. Int J Community Med Public Health. 2017;4(8):2706-10.
21. Chauhan R, Sahni S, Hanumantaiya S. Evaluation of acceptability, safety and expulsion rate of PPIUCD. Int J Reprod Contracept Obstet Gynecol. 2018;7(3): 1083-9.
22. Jatlaoui TC, Marcus M, Jamieson DJ, Goedken P, Cwiak C. Postplacental intrauterine device insertion at a teaching hospital. Contraception. 2014;89(6):528-33.
23. Hooda R, Mann S, Nanda S, Gupta A, More H, Bhutani J. Immediate Postpartum Intrauterine Contraceptive Device Insertions in Caesarean and Vaginal Deliveries: A Comparative Study of Follow-Up Outcomes. Int J Reprod Med. 2016; 2016:7695847. doi: 10.1155/2016/7695847.
24. Gonie A, Worku C, Assefa T, Bogale D, Girma A. Acceptability and factors associated with postpartum IUCD use among women who gave birth at bale zone health facilities, Southeast-Ethiopia. Contracept Reprod Med. 2018;3(1):1-8.

How to cite this article: Sridhar HK, Suma HR, Sushma Basavaraju, Ragupathi K. Evaluation of complications, removal, and continuation rates among women who underwent postpartum intrauterine contraceptive device insertion: a retrospective study. *Int J Health Sci Res.* 2026; 16(3):9-16. DOI: *https://doi.org/10.52403/ijhsr.20260302*

******