

Retrospective Analysis on Acceptability and Complications of PPIUCD Insertion

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Abstract

Introduction: Unintended pregnancies significantly impact healthcare systems globally. Family planning can avert approximately one-third of maternal deaths and 10% of childhood mortality. Postpartum intrauterine contraceptive device (PPIUCD) insertion offers a safe, effective, and convenient long-term contraceptive solution immediately following delivery. This study aims to assess the acceptance of PPIUCD based on demographic factors and mode of delivery, while evaluating immediate complications.

Methodology: This retrospective observational cross-sectional study was conducted at Silchar Medical College from January to December 2023. Data from 200 women who accepted PPIUCD (100 following vaginal delivery and 100 intra-caesarean) were analyzed. Follow-ups were conducted at 6 weeks, 12 weeks, and 6 months to monitor complications like pain, bleeding, and expulsion.

Results: Acceptance of PPIUCD was significantly higher in the caesarean section (CS) group (41.2%) compared to the normal vaginal delivery (NVD) group (4.9%) ($p < 0.001$). Voluntary willingness was also higher in the CS group (60.2%) versus the NVD group (2.2%). Acceptance was highest among women aged 21–25 and primipara mothers. Literate and urban-based women showed greater motivation. Regarding complications, the expulsion rate at 6 months was 6% in the CS group and 0% in the NVD group ($p = 0.038$). Other complications, including abdominal pain, menstrual irregularities, and abnormal discharge, showed no statistically significant differences between the two groups over the study period.

Conclusion: PPIUCD is a safe and effective postpartum contraceptive method regardless of the mode of delivery. While complication rates are low, limited awareness and fear of side effects remain significant barriers to acceptance. Comprehensive antenatal counseling and family involvement are essential to dispelling misconceptions and improving utilization.

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Introduction

It is well established that almost 50% of all pregnancies globally at any given time period are unintended. Unwanted pregnancies have a substantial detrimental effect on our country's health care system. As obstetricians in India, we need to be constantly aware of the ticking population clock. Evidence states that family planning can avert nearly one-third of maternal death and 10% of childhood mortality if couples space their pregnancies more than 2 years apart. [1] Postpartum IUCD (PPIUCD) can be inserted immediately after childbirth, post-placental, or within 48 hours. Hospitals providing institutional deliveries are ideal for PPIUCD insertion due to

heightened motivation and timely counselling. PPIUCD offers benefits including safety, minimal side effects, reduced discomfort, lower infection risk, and effective protection against unintended pregnancies and subsequent abortions. Importantly, it does not interfere with breastfeeding. [2] Many women lack clarity about contraceptive options during the postpartum period. The World Health Organization emphasizes that Postpartum Family Planning (PPFP) aims to prevent unwanted and closely spaced pregnancies in the first 12 months after childbirth. [3] IUDs are highly popular contraceptive options. Copper IUDs, known for their effectiveness, are licensed to provide

contraception for 3 to 10 years. Despite their reliability, users may experience side effects that occasionally lead to requests for removal. [4] The Cu T IUD is widely recognized as the most popular intrauterine device globally and is commonly used at UCTH (University of Calabar Teaching Hospital) among other methods. It is inserted through the cervical canal into the endometrial cavity. Various shapes and sizes of IUDs have been experimented with, resulting in differing levels of contraceptive effectiveness. [5]

Potential spermicidal effects, interference with ova development or fertilization, and its impact on the endometrium, which may facilitate sperm phagocytosis and hinder sperm migration or capacitation. A notable observed effect is the mobilization of leukocytes in response to the presence of the foreign body. These immune cells aggregate around the IUD in the endometrial fluids and mucosa, and to a lesser extent, in the stroma and underlying myometrium. It is theorized that this immune response creates an inhospitable environment for fertilized ova. The Cu-T is a highly reliable contraceptive device, showing a failure rate of under 1% annually when used over an extended period. However, many users discontinue this method due to associated side effects. [6] Common reasons for discontinuing this contraceptive method include side effects such as bleeding, pelvic infection, and pain. Medically necessary reasons for discontinuation include partial expulsion, which typically occurs within the first few months of use, persistent cramping, and excessive bleeding leading to anaemia (accounting for about 20% of removals within the first 3 months), acute salpingitis or detection of *Actinomyces* during Pap smear testing, pregnancy, intra-abdominal placement, or perforation. Significant pain after insertion may indicate improper placement or partial perforation and can necessitate removal. [4] Studies indicate that factors influencing acceptance of IUDs include thorough counselling, motivation, awareness of the method's safety and effectiveness, and the availability of trained providers. Some studies emphasize counselling during ANC visits and involving spouses and family members. [7]

Research on barriers to PPIUCD use reveals that reasons for its non-acceptance include insufficient counselling, concerns about health issues or side effects, lack of approval or support from husbands or family members, low awareness, fear of complications, and illiteracy [8]. Taking advantage of the immediate postpartum period for counselling on family planning and PPIUCD insertion overcomes multiple barriers to service provision. In the developing countries, delivery is the only opportunity where most of women come in contact with health care providers and they may never

return seeking contraceptive advice, so PPIUCD may be the best scope to curtail the fertility rate. [9] To enhance acceptance of PPIUCD as a contraception method, comprehensive counselling, widespread publicity through mass media, promotion by primary community mobilizers like ASHA and ANMs, and educational campaigns specifically addressing PPIUCD are essential to reduce the misconceptions among the population. [10]

Aim: To assess the acceptance of postpartum intrauterine device (PPIUCD) insertion among women based on age, parity, and mode of delivery; second, to evaluate the immediate complications associated with PPIUCD insertion among those who accepted the device.

Methodology

Study Design: Hospital based Retrospective observational cross-sectional study

Study Setting: This observational study was conducted in the Department of Obstetrics and Gynecology in Silchar Medical College, which is a tertiary care hospital of Assam, over one year from January 2023 to December 2023

Study Population: Eligible 200 women fulfilling the inclusion criteria who had accepted immediate postpartum IUD insertion following delivery (vaginally and caesarean section) were included in the study

Sample Size: A retrospective study on women who accepted PPIUCD after delivery (vaginally and caesarean section) at Silchar Medical College over a period of one year from January 2023 to December 2023. The case sheets of 200 patients will be traced through labor room register, operation theatre register and medical record section

Selection Criteria

Inclusion Criteria: Woman who had accepted immediate postpartum IUD insertion following delivery (vaginally and cesarean section)

Exclusion Criteria: Mothers with more than 48 hrs PPIUCD insertion, history of chorioamnionitis, prolonged rupture of membrane for more than 48 hrs, unresolved PPH, and patients who refused to give consent for PPIUCD were excluded from the study

Statistical Analysis: The data were examined by employing SYSTAT 7.0 software developed by SPSS Inc. in the United States. An independent t-test was used to examine the differences between mean percentages. Any statistical significance was determined at a significance level of $P < 0.05$. All measures have been presented as the mean value $\pm$ the standard error.

Ethical Consideration: This research has been approved by the institutional ethical committee of Silchar Medical College. IRB number: No. SMC/ETHICS/M1/2024/07 Dated on 13/08/2024.

Methodology

All eligible women fulfilling the inclusion criteria who had accepted immediate postpartum IUD insertion following delivery (vaginally and caesarean section) were included in the study. Post-insertion counseling was done by the person who inserted the device. Patients were given dates of their follow-up on discharge documents and asked to enroll in the hospital on the particular day. After counselling and taking informed consent, PPIUCD was placed high up in the fundus immediately following vaginal delivery within 10 minutes after the expulsion of the placenta (called post-placental) or within 48 hr post-partum by long Kelley's forceps. The strings were to an extent that it's not visible outside the introitus.

Those mothers who underwent caesarean section, PPIUCD was placed high up at the fundus by holding the Cu T by sponge holding forceps and passing it through the uterine incision. Strings were placed in the lower segments but not pushed in cervical canal to avoid infection by vaginal flora, contamination, and displacement of PPIUCD. Care was taken to avoid strings from being included in the suture line.

Retrospective data of all the patients who accepted PPIUCD after normal vaginal delivery and by caesarean section from the last year in Silchar Medical College were analysed. No of patients accepted and refused to take PPIUCD was tabulated.

Two hundred postpartum patients with IPP-IUCD insertion were included in the study. Patients were grouped into two categories: (A) the first 100 cases of PPIUCD insertion following vaginal deliveries, and (B) the first 100 cases of PPIUCD insertions, intra-caesarean. Patients with post-abortion PPIUCD insertion were excluded from the study. At the 6th week visit, information regarding primary follow-up outcomes like abdominal pain, abnormal vaginal discharge, lost strings, menstrual and spontaneous expulsion was gathered and

recorded on a proforma. At the 12th week, information on menstrual irregularity was collected. Abdominal pain was defined as a constant crampy pain in the lower abdomen in the absence of urinary or bowel problems and relieved with or requiring painkiller use more than twice a week. Menstrual irregularity was defined as unpredictable, unscheduled vaginal bleeding occurring beyond six weeks postpartum. A pelvic examination was performed for abnormal vaginal discharge indicative of infection (foul-smelling yellowish discharge), strings (which were trimmed if long), and the presence of an IUCD. If no threads were visible, ultrasonography was done to check for the presence of an IUCD and confirmation of its location. The same examination was done to evaluate the women who had taken PPIUCD at the 6th month of postpartum to check the compliance and acceptance by the patient. In case of complications, the women were given treatment and reassurance. In case of severe abdominal pain, all other probable causes are ruled out, and in case of severe bleeding per vagina, PPIUCD removal was done after evaluation. Data was analyzed on SPSS version 20, and chi-square tests were used for comparison of qualitative data. A probability value of < 0.05 was considered significant

Results

From my study, I came up with the conclusion that the expulsion rate (ER) at 6 months was 0% in NVD and 6% in CS group which was found to be statistically significant (p value 0.038). No significant difference was found between NVD and CS group in the ER at 6 weeks and 12 weeks. Abdominal pain was found to be present in 18% in CS group compared to 10% in NVD group at 6 weeks post-partum, but it was not statistically significant. The two groups had no significant difference in abdominal pain at 12 weeks and 6 months postpartum. Menstrual irregularity was seen in 16% and 12% of the women receiving PPIUCD following NVD and CS respectively at the end of 6 months but it was not statistically significant and similarly, no significant changes were observed in 6 and 12 weeks study periods.

Table 1:

Complaints	6 weeks		P value	12 weeks		P value	6 months		P value
	NVD (N=100)	CS(N=100)		NVD (N=100)	CS (N=100)		NVD (N=100)	CS (N=100)	
Abdominal Pain	10(10)	18(18)	0.103	11(11)	12(12)	0.824	5(5)	8(8)	0.389
Menstrual irregularity	5(5)	6(6)	0.756	10(10)	14(14)	0.383	16(16)	12(12)	0.415
Abnormal vaginal discharge	12(12)	10(10)	0.651	14(14)	15(15)	0.841	9(9)	12(12)	0.488
Spontaneous expulsion	1(1)	0(0)	1.000	1(1)	2(2)	1.000	0(0)	6(6)	0.038*
Lost Strings	6(6)	14(14)	0.059	4	10(10)	0.096	5(5)	6(6)	0.756
Removal after severe bleeding	2(2)	0(0)	0.477	0(0)	1(1)	1.000	0(0)	0(0)	1.000
Removal after severe pain abdomen	0(0)	0(0)	1.000	1(1)	0(0)	1.000	0(0)	0(0)	1.000
No complaints	64(54)	52(52)	0.085	59(59)	46(46)	0.065	65(65)	56(56)	0.192

*statistically significant

At 12 weeks postpartum, abnormal vaginal discharge was reported in 14% of women who received PPIUCD after normal vaginal delivery (NVD) and 15% after cesarean section (CS).

This difference was not statistically significant. No significant history of abnormal vaginal discharge was observed in the study population at 6 weeks or

at 6 months postpartum. Loss of IUCD strings was reported during follow-up by 6% of women in the NVD group and 14% in the CS group at 6 weeks postpartum.

This difference was not statistically significant, and no significant variation was noted at 12 weeks or 6 months postpartum.

Table 2:

Mode of delivery	Total no of delivery in SMCH	No of 821patient taken CuT	P value	Voluntary willingness to take CuT	P value	Acceptance of CuT after counselling	P value	No of patients refused to take CuT	P value
NVD	4695	231(4.9)	<0.001*	102(2.2)	<0.001*	152(3.2)	<0.001*	3024(64.4)	<0.001*
Caesarean	4891	2014(41.2)		2942(60.2)		1042(21.3)		1045(21.4)	

*statistically significant

231(4.9%) of the total 4695 NVD in our institution during the study period accepted PPIUCD whereas 2014(41.2%) out of the total 4891 CS accepted PPIUCD. The observed difference was statistically significant ($p < 0.001$). Voluntary acceptance of PPIUCD was reported by 2,942 women (60.2%) in the cesarean section (CS) group, compared with only 102 women (2.2%) in the normal vaginal delivery (NVD) group, and this difference was

statistically significant ($p < 0.001$). A significant variation between the two groups was also noted in post-counseling acceptance, with 21.3% of women in the CS group and 3.2% in the NVD group opting for PPIUCD following counseling. Refusal rates were higher among women in the NVD group, where 64.4% declined PPIUCD, compared to 21.4% in the CS group; this difference was likewise statistically significant.

Table 3:

	vaginal insertion	caesarean insertion
Age		
<20	12	14
21-25	38	59
26-30	25	20
31-35	15	4
>35	10	3
Parity		
para 1	44	67
para 2	40	25
para 3	10	6
> para 3	6	2
educational status		
illiterate	15	8
Literate	85	92
residency		
Rural	45	40
Urban	55	60

From our study, it was found that in both groups (Vaginal insertion and intra-caesarean), acceptance of PPIUCD was best in the age group 21-25 (38% and 59%) followed by 26-30 years (25% and 20%). Primipara mothers accepted PPIUCD more than others (44% and 67% in vaginal and intra-caesarean group respectively). Mothers from urban background were more motivated (60% and 55%) in comparison to rural mother (40% for vaginal group and 45 for caesarean group). Mothers who are literate accepted PPIUCD better than illiterate (Table 3).

Discussion

From my study I came up with the conclusion of the expulsion rate (ER) at 6 months was 0% in NVD and 6% in CS group which was found to be statistically significant. No statistically significance was in both vaginal and caesarean group in terms of abdominal pain, menstrual irregularity, vaginal discharge, loss of string, severe bleeding. Only 4.9% attended the hospital for NVD accepted the PPIUCD and 41.2% of women who underwent Caesarean sections accepted PPIUCD as the method of Contraception. The voluntarily willingness to take after caesarean sections was statistically significant when compared to vaginally delivered women. Women belonging to 21- 25 accepted it more and mostly they were primigravida. Literacy and residency also played a role in the acceptance of PPIUCD awareness and acceptance.

As per the study done by Gupta et al PPIUCD very less popular among the study population. 9% patients were aware of this method. Among these only 6% wants to adopted. When they were told about this contraceptive method, acceptance was still low. Only 12% women were interested in PPIUCD. The most commonly used contraceptive

method was barrier contraception (46%), followed by female sterilization (38%), natural methods (27%), and emergency contraception (19%). While nearly half of the women (48%) had a fair level of knowledge about IUCDs, only 5.5% expressed willingness to use them. Shanker et al. reported that lack of awareness is not the primary barrier to PPIUCD acceptance. Instead, a woman's decision to opt for PPIUCD insertion is strongly influenced by her partner or family members. Therefore, educational interventions aimed at these groups may improve acceptance rates. In a study by Nigam et al., the PPIUCD insertion rate was found to be 9.1%. Most participants (78.6%) were aged between 20 and 30 years, and 79.2% had attained at least a Class X level of education. Overall awareness of contraceptive methods was high at 94.4%. Although 48.4% of women were aware of Cu-T as a contraceptive option, only 21.9% of those women had knowledge of PPIUCD, and none had previously used this method. The most prevalent misconceptions regarding Cu-T included concerns about cancer (38%) and excessive menstrual bleeding (36.4%). The husband and mother-in-law played important roles in decision regarding PPIUCD insertion and refused the same in 59 % of cases. [8] As per Laskar MR et al study, acceptance of PPIUCD was higher among parity 1 and parity 2, There is higher acceptance in the urban population compared to the rural population, which may be due to the higher educational status of the urban population compared to the rural. The expulsion rate in our study was 4% in the vaginal group and 2% in the intra-caesarean group. Statistically, no significance was found regarding bleeding and infection among the vaginal and intra-caesarean group [9]. According to a study by Pradeep et al., the Acceptance rate of PPIUCD is almost the same, at 51% and 52% in primi and

multigravida, respectively. Following effective counseling, 51.3% of women agreed to immediate postpartum PPIUCD insertion [10].

Conclusion

PPIUCD is a safe and effective option for postpartum family planning, regardless of the mode of delivery. Both vaginal and intra-caesarean insertions demonstrate low complication rates and satisfactory contraceptive efficacy, with higher continuation rates observed following intra-caesarean insertion. Despite adequate educational status among the study population, awareness of PPIUCD remains limited, contributing to increased refusal rates. Fear of perceived complications continues to be a major barrier to acceptance, even after appropriate counseling.

Recommendations

Comprehensive counseling of antenatal women, along with involvement of family members, is essential to improve acceptance of PPIUCD. Repeated counseling sessions and widespread awareness campaigns through mass media platforms such as television, radio, and newspapers, as well as community health workers (ASHA) and structured educational programs, are recommended to dispel misconceptions, reduce fear, and enhance acceptance of PPIUCD.

List of Abbreviation

- Anc – Antenatal Care
- Asha – Accredited Social Health Activist
- Cs – Caesarean Section
- Cu – Copper
- Iud – Intrauterine Device
- Nvd – Normal Vaginal Delivery
- Ppfp – Postpartum Family Planning
- Pph – Postpartum Hemorrhage
- Ppiucd – Postpartum Intrauterine Contraceptive Device
- Ucth – University Of Calabar Teaching Hospital

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