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Original Research Article

## Analysis of postpartum intrauterine contraceptive devices

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### ABSTRACT

**Background:** PPIUCDs are the only postpartum family planning method for couples requesting a highly effective and reversible, yet long acting, family planning method that can be initiated during the immediate postpartum in lactating women. The public health benefits from PPIUCDs stemmed from the women's increased accessibility to PPIUCDs following facility births, as PPIUCDs could be offered at health facilities after childbirth. It is an attempt to reduce unmet family planning need. The specific aims of this study were to assess the acceptability, feasibility expulsion rate and complications of PPIUCD insertion among women delivering at term in our institute who were eligible and counselled for PPIUCD.

**Methods:** Prospective study undertaken at Dr. Vaishampayan memorial government medical college, Solapur, Maharashtra conducted from September 2015 to August 2017. All women undergoing delivery at term in this institute and not having any contraindications for postpartum IUCD insertion were counseled for PPIUCD.

**Results:** A total 3032 were eligible for PPIUCD insertion and were counseled for the same. 1.97% women accepted PPIUCD insertion while 98.03% of them declined insertion. 1124 underwent caesarean section while 1908 had vaginal delivery. Among vaginal delivery group rate of acceptance was 1.20% while that in caesarean section group was 3.29%.

**Conclusions:** The present study concluded that overall acceptance of PPIUCD in our institute is 1.97%. Considering fear of complications related to IUCD and partner refusal as major causes of refusal for PPIUCD in our study, emphasis on this aspect during counseling can improve acceptance.

**Keywords:** PPIUCD, Acceptability, Expulsion, Complications, Copper T 380 A

### INTRODUCTION

Postpartum family planning (PPFP) aims to prevent unintended pregnancy and closely spaced pregnancies after childbirth. It can save mothers lives-family planning can prevent more than one-third of maternal deaths. PPFP can also save babies lives-family planning can prevent 1 in 10 deaths among babies if couples space their pregnancies more than 2 years apart. PPFP aims to ensure that women have a method of contraception that they can

start before the risk of pregnancy returns after childbirth. Best practice is for the chosen method of contraception to be started before the woman leaves the birthing facility. According to the WHO medical eligibility criteria, an IUCD can be inserted in the 48 hours postpartum, referred to here as a postpartum IUCD (PPIUCD) or after four weeks following a birth.<sup>1</sup> The most effective reversible methods of contraception are PPIUCDs. Once inserted, their failure rates are extremely low (less than 1 unintended pregnancy per 1000 users within the first year

of typical use). Unlike other methods of contraception, once IUDs are in place the user needs to do nothing on a regular basis to ensure their effective action. They also need to take steps to get them removed (rather than simply stopping the method) and so continuation rates and pregnancy prevention are high.

In India, PFP is crucial because of huge unmet need (73% in first 3 months), birth to birth interval (57.6% of births had interval of less than 36 months), high vulnerability to unintended pregnancy (due to low awareness). India is scaling up PPIUCD services nationally, with these services already in 19 of 28 states. Unmet need for family planning among currently married women is 13%.<sup>2</sup> The PPIUCD is most effective, safe, long-acting, coitus independent and rapidly reversible method of contraception with few side effects. The specific advantages of an IUCD placed in the immediate postpartum period include convenience, saves time and additional visit, safe because it is certain that she is not pregnant at the time of insertion, lower rates of perforation and infection, does not interfere with breast feeding, return of fertility is immediate after an IUD is removed, the woman has an effective method for contraception before discharge from hospital.<sup>3</sup>

#### ***Advantages for the service provider or the service delivery site***

Certainty that the woman is not pregnant, saves time as performed on the same delivery table for post placental/intracaearean insertions. Additional evaluations and separate clinical procedure is not required, need for minimal additional instruments, supplies and equipment, convenience for clinical staff, helps relieve overcrowded outpatient facilities thus allowing more women. IUCD is a safe and effective contraceptive option for postpartum women who wish to either space or limit subsequent births.<sup>3,5</sup>

#### ***Aim***

The aim of the study was to assess the acceptability, feasibility and expulsion rate of PPIUCD insertion among women delivering at term in this institute who were eligible and counseled for PPIUCD and to evaluate the follow up and outcome.

## **METHODS**

This is a hospital based prospective study undertaken at Dr. Vaishampayan memorial government medical college, Solapur, Maharashtra institute. All women undergoing delivery at term in this institute and not having any contraindications for postpartum IUCD insertion, counseled for PPIUCD. This study was conducted from September 2015 to August 2017.

#### ***Sample size with justification***

Assuming prevalence of acceptance for PPIUCD insertion to be 24%, the maximum error in the estimate we are willing to tolerate (say  $\pm 4.65\%$ ), at confidence level 95% and power equal to 80%, expected sample size is 620 women delivering at term and counseled for postpartum IUCD insertion during antenatal visits or during early labor.

#### ***Inclusion criteria***

All women delivering vaginally or by caesarean section at/or more than 37 weeks of estimated gestational age counseled for postpartum IUCD insertion in antenatal period or during early labor and who consent for participation in the study and follow up and meeting all the eligibility criteria for postpartum IUCD insertion.

#### ***Exclusion criteria***

Patients who were excluded are those that refused, patients with puerperal sepsis, unresolved, postpartum hemorrhage, temperature  $>38$  degree celsius, tender uterus, tumors distorting the uterine cavity (e.g. fibroids), extensive genital trauma.

All women undergoing delivery at term in this institute not having any contraindications for postpartum IUCD insertion were given information regarding advantages, complications and procedure about immediate postpartum IUCD insertion during antenatal visits or during early labor. Those who selected postpartum IUCD insertion as a method of contraception had copper T380A insertion either within 10 minutes of expulsion of the placenta following a vaginal delivery or intracaearean-insertion that takes place during a cesarean section after removal of placenta and before closure of uterine incision or within 48 hours after delivery prior to discharge from the postpartum ward. Women were followed up at 6 weeks to assess expulsion or any other complications. If IUCD was removed for any reason, reason for its removal was noted. Transvaginal ultrasonography was performed if the IUCD threads were not visible per vaginum.

#### ***Insertion techniques***

##### ***Post placental insertion***

The IUCD used was CuT 380A, which was available free of cost in the government program. The IUCD was removed from the insertion sleeve and grasped with the Kelly's placental forceps using no-touch technique. Once it was inserted in to lower uterine segment other hand was moved to abdomen and placed over the fundus and uterus was pushed gently upward to reduce the angle and curvature between the uterus and vagina. The cervical os was then gently inspected for the strings. She was allowed to take rest for some time after the procedure.

*Intracerean insertion*

IUCD was inserted into the uterus through uterine incision and released at fundus of uterus. Strings were guided toward the lower uterine segment without disturbing IUCDs fundal position. Enough care was taken not to include IUCD strings during uterine closure.

*Prior to discharge*

Type of IUCD and date of insertion were mentioned in her discharge card. Woman was informed about the IUCD side effects. She was told when to return for IUCD follow-up. She was advised to report back for any one of the following complaints like foul smelling vaginal discharge different from the usual lochia, lower abdominal pain, especially if accompanied by not feeling well, fever or chills, suspicion that the IUCD has fallen out.

**Statistical methods**

We used statistical package for social sciences (SPSS) 21 statistical software. Data was expressed in frequency and percentage. Chi square or Fisher’s exact test was used to find the significance between women who accepted and not accepted PPIUCD with respect to various parameters like age, parity, education (Qualitative data type). These tests were also used to find various parameters like rate of complications such as rate of expulsion, infection, missing threads, excessive bleeding p/v. All statistical test used at 5% level of significance. P value less than 0.05 considered as significant.

**RESULTS**

The total number of women delivering at this tertiary care centre during period of September 2015 to August 2017 was 25987. Out of which 3032 were eligible for PPIUCD insertion and were counselled for the same. 1.97% women accepted PPIUCD insertion while 98.03% of them declined insertion Figure 1. Those women in whom PPIUCD was inserted were followed up at six weeks. In our study, we found 60% follow up as women were reminded telephonically about their clinical visit at 6 weeks postpartum for IUCD localization and for complaints if any.

Out of 3032 women, 1134 women received counselling regarding PPIUCD in antenatal period while remaining

1898 were counselled in early labor after admission to labor room. Application of Chi square test showed p value 0.04 (<0.05) which is significant. Counselling in early labor had higher rate of acceptance.

Out of 3032 women counselled for PPIUCD 1124 underwent caesarean section while 1908 had vaginal delivery. Application of Chi square test reveals acceptance was significantly higher (p value <0.001) among women with caesarean section.

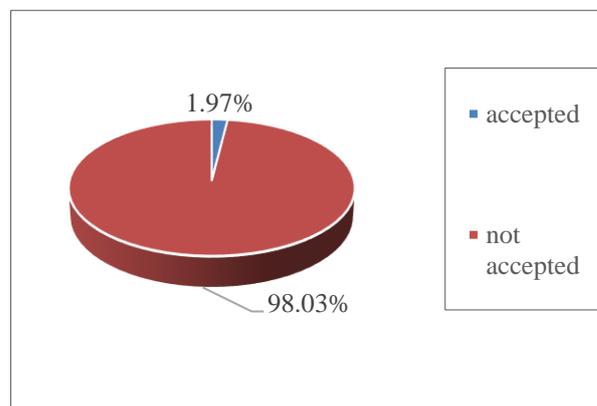
Some women had given more than one reason for acceptance. Out of 60 women who accepted PPIUCD, majority accepted as it was reversible and long term.

Out of 3032 women who denied PPIUCD insertion, in 1151 (38.06%) women refused PPIUCD because of fear of complication related to IUCD insertion like pain in abdomen and heavy menstrual bleeding.

In this study, as 40.00% women had expulsion, it was found to be a significant complication.

Chi square test for statistical significance shows that complication in vaginal insertion is highly significantly more than LSCS insertion.

Intracerean PPIUCD insertion group had lower expulsion rate (10.34%) than IUCD insertion in vaginal delivery group (65.21%) which included women with both post placental and immediate postpartum PPIUCD insertion.



**Figure 1: Distribution of women who accepted and not accepted PPIUCD.**

**Table 1: Distribution of women with respect to time of counselling.**

Time of counseling	Total women counseled	Number of women accepted	Percentage accepted	P value
<b>Antenatal</b>	1134	15	1.32	0.04 (<0.05)
<b>In early labor</b>	1898	45	2.37	
<b>Total</b>	3032	60	1.97	

**Table 2: Distribution of women depending on mode of delivery.**

Mode of delivery	Total women counseled	Number of women accepted	Percentage accepted	Number of women declined	Percentage declined	P value
LSCS	1124	37	3.29	1087	96.70	<0.001
Vaginal	1908	23	1.20	1885	98.79	
Total	3032	60	1.97	2972	98.02	

**Table 3: Reasons for acceptance of PPIUCD.**

Reason for acceptance	Number of patients	Percentage
Reversible	43	71.66
Long term	34	56.66
No remembrance once inserted	31	51.66
Safety	15	25.0
No effect on breast feeding	13	21.66
Previous use of IUCD	8	13.33
Total	144	

**Table 4: Reasons for refusal.**

Reason for refusal	Number of women	Percentage
Prefer to use another method	280	9.29
Satisfied with previous method of contraception	193	6.39
Fear of pain and heavy bleeding	1151	38.06
Partner refusal	817	26.67
Religious belief	45	1.50
No reason	546	18.03
Total	3032	100.00

**Table 5: Distribution of different complications in women with PPIUCD.**

Complication	Number of women	Percentage
Excessive bleeding	14	35.00
Expulsion complication	18	45.00
Missing threads	11	27.50
Pain in abdomen	18	45.00

**Table 6: Correlation between rate of complication and mode of delivery.**

Mode of delivery	Complication		Total	P value
	Present	Absent		
LSCS	7	30	37	<0.001
Vaginal	19	4	23	
Total	26	34	60	

**Table 7: Correlation between rate of expulsion and type of insertion.**

Time of insertion	Expulsion		Total	Percentage	P value
	Present	Absent			
Post placental	9	7	16	52.63	<0.001
Immediate postpartum	5	2	7	75.00	
Intra cesarean	3	34	37	10.34	
Total	18	42	60	30.00	

**Table 8: Distribution of reasons for removal.**

Reason for removal	Number of women	Percentage
<b>PV bleeding</b>	1	1.66
<b>Pain in abdomen</b>	1	1.66
<b>Partial expulsion</b>	0	0
<b>Social reason</b>	0	0

**Table 9: Follow up at 6 weeks.**

Follow up at 6 weeks	Number of women (n=36)	Percentage
<b>Expulsion</b>	6	16.66
<b>IUCD in situ</b>	30	83.33

## DISCUSSION

Though the popularity of immediate postpartum IUCD insertion in countries as diverse as China, Mexico and Egypt support the feasibility of this approach to improve its acceptance in our population it is vital to determine the factors which influence acceptance and refusal of postpartum IUCD as a method of contraception.<sup>6</sup> In this study, we evaluated the proportion of women accepting PPIUCD and their follow up and outcome.

In our study, out of 3032 counseled women we found acceptance rate of 1.97%. Study conducted in Bundelkhand region in 2014 found 21.77% acceptance rate.<sup>7</sup> Acceptance was higher when counseling was done during early labor (2.37%) than in antenatal period (1.32%). This is in comparison to study of Ashwathy Shanavas, Sujamol Jacob, Nirmala Challamma where percentage of acceptance in early labor (56%) was higher than in antenatal period (44%).<sup>8</sup> Acceptance was higher in caesarean mode of delivery (3.29%) than vaginal delivery (1.97%). This was in comparison to Rajani Gautam study in 2014 where acceptance was 36.09% among caesarean delivery and 11.33% among vaginal mode of delivery.<sup>7</sup> Among women in whom PPIUCD was inserted, 56.66% accepted it due to its long term effect, 25% due its safety, 71.66% due to reversibility and 51.66% accepted it because of no remembrance once inserted as it required single time motivation and fewer follow up visits. This shows that postpartum women need a contraceptive method which is long acting, reversible, safe and convenient. 21.66% women accepted this method because it does not affect lactation. 13.33% women were satisfied with previous use of IUCD and therefore accepted it again as postpartum contraception also. These were found to be similar to study conducted by Sujanendramishra in 2014 and Rajani Gautam study in 2014.<sup>7,9</sup> Among 2972 women who declined PPIUCD, 38.06% of women denied PPIUCD because of fear of heavy bleeding and pain in abdomen due to IUCD. This fear was possibly put into mind of these women by their relatives or friends relating their experiences with IUCD use. So there is need of providing thorough knowledge and proper answers to the questions of women until their

satisfaction at the time of counseling so as to eliminate any misbeliefs regarding PPIUCD in their mind.

In our study 26.67% women refused PPIUCD insertion due to partner refusal. This was observed as one of the major barriers for acceptance of PPIUCD in this study. This finding emphasizes importance of involvement of male partner in counseling. Sujnanendra Mishra in 2014 also found in his study refusal by partner as a dominant reason (50.28%) for denial of PPIUCD.<sup>9</sup> 29% preferred to use another contraceptive method, 6.39% of them were satisfied with previous contraceptive method used and wanted to continue the same. In a study done in Egypt, among the 71.1% women who refused the IUCD, planning another pregnancy in the near future (34.3%) was the most common reason followed by the preference of interval IUCD (30.2%) and lactational amenorrhea (9.3%).<sup>10</sup> Expulsion rates of the immediate PPIUCD at 6 weeks interval was 30% which compares to the expulsion rate of 5.23% reported among 210 women included in study in Hubli, India, 1.6% among 3000 women in a hospital in Paraguay and 3.6% among women included in study by Somesh Kumar.<sup>5,11,12</sup>

In this study, out of 60 women with postpartum IUCD insertion, expulsion was noticed in 9 women with post placental insertion, 6 with immediate postpartum insertion and 3 case of expulsion in intracesarean insertion. P value <0.001 using Chi square test shows significant correlation between expulsion rate with type of insertion with lower expulsion rate observed in intracesarean insertion when compared to PPIUCD insertion in vaginally delivered women, while post placental insertion had lower expulsion rate than immediate postpartum insertion. Similar findings were observed in a study done in Mexico where at 1 year of follow-up, expulsion rates were 9% and 13% for immediate post placental insertion after cesarean and vaginal delivery, respectively and 4% and 12% for delayed postpartum insertion, respectively.<sup>13</sup> In contrast to this finding no significant difference was found in expulsion rates for the immediate and delayed group, which were 2.4 and 2.6 per 100 women years, respectively in a study conducted in Egypt.<sup>14</sup>

Most of the studies which compared expulsion rates in different types of PPIUCD insertion had period of follow up different from our study. But the finding of expulsion-rate being higher after immediate postplacental insertion (within 48-72 hours of delivery) than immediate postpartum insertion is similar as in our study. Thus, limitation of our study was that women should have been followed up on long term basis so as to estimate cumulative expulsion rate in different types of PPIUCD insertion. We found very less expulsion in women with intra caesarean insertion of PPIUCD when compared to expulsion rate of 82.3% in vaginal delivery insertion group which included women with both post placental and immediate postpartum insertions at 6 weeks. This shows that intracesarean insertion of PPIUCD had lower expulsion rate than that in vaginal delivery insertion group. Similar results were found in studies Lara R et al in 1989 and Ricalde RL et al in 2006.<sup>15,16</sup> But as already explained shorter follow up being limitation of our study, this result requires evaluation on long term follow up basis.

In our study, out of 60 PPIUCD insertions, 37 were in intracesarean group while remaining 23 were done in vaginal delivery group. Out of 37 women with intracesarean insertion of PPIUCD, 4 developed complications. Similarly out of 23 in vaginal delivery group, 19 developed complications. P-value is <0.001 (highly significant) after applying Chi-square test. Thus there is statistical association between occurrences of complications with mode of delivery. Chi square test for statistical significance shows that complication in vaginal insertion is highly significantly more than LSCS insertion.

Out of 60 women who had PPIUCD insertion, excessive p/v bleeding (35.00%) was found to be the most common complication at follow up visit. These women were reassured and treated with tranexamic acid. Out of 14, 11 women responded to treatment and continued with PPIUCD while 2 women requested removal of it. Pain in abdomen was noticed in 18 (45%) women. In our study we did not encountered with complications like infection and perforation of uterus. These findings support the safety of IUCD insertion in postpartum period. Similar conclusion was drawn by Sujnanendra Mishra in his study.<sup>9</sup> He found PPIUCD demonstrably safe, with no reported incidence of perforation with low rates of expulsion, pelvic infection and few lost strings. 27.5% women among those inserted with PPIUCD had lost strings at six weeks. In this study, 60% follow up of women with PPIUCD insertion were seen. Among them 16.66% had expulsion of PPIUCD and 83.33% had IUCD in situ, which was confirmed by pelvic USG.

#### **Limitations of the study**

Expulsion rate and other complications were assessed at 6 weeks in our study. Follow up on long term basis is required to evaluate cumulative expulsion rate, rate of

removal for various reasons and actual continuation of this method with satisfaction. Further studies could be conducted that involved one or two years follow up assessments.

#### **CONCLUSION**

The present study concluded that overall acceptance of PPIUCD in our institute is 1.97%. Various factors like parity, partner refusal and fear of side effects of PPIUCD affected acceptance of PPIUCD. Even though majority of women in our study had primary level of education, proper counselling can improve acceptance even in women with less education. Considering fear of complications related to IUCD and partner refusal proved to be major causes of refusal for PPIUCD in our study, emphasis on this aspect during counselling can improve acceptance. Acceptable expulsion rate and absence of complications like uterine perforation and infection, advantages of IUCD such as absence of systemic side effects, convenience as it requires less follow up visits, availability of CuT 380A free of cost by government of India makes application of this approach feasible. Intracesarean PPIUCD insertion was found to be more effective as it had higher acceptance rate and lower expulsion rate.

The provision of PPIUCD is feasible and safe approach. Appropriate counselling can eliminate fear of complications associated with IUCD use and increase acceptance in women even with less education. Involvement of male partner in counselling can play a pivotal role in improving acceptance of PPIUCD. To improve acceptance of PPIUCD strategies to increase public awareness of the PPIUCD through different media sources should be developed. Modification of inserter available with CuT by increasing its length could make IUCD insertion easier.

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