

Experience on Awareness, Acceptability, Safety, Efficacy, Complications and Expulsion of Post-partum Intrauterine Contraceptive Device Insertion

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Abstract

Background: Purpose: This study was conducted to evaluate the awareness, acceptance, safety, efficacy, complications and expulsion rate of Post-partum Intrauterine Contraceptive Device (PPIUCD) insertion among pregnant women in a tertiary care center.

Materials and Methods: This is a retrospective analytical study conducted in S.C.B Medical College and Hospital, Cuttack, Odisha, over a period of 4 years. Willing 6104 clients were inserted PPIUCD who delivered either vaginally or by cesarean section. Post insertion follows up done. Various relevant parameters are critically analyzed.

Results: Awareness about PPIUCD was significantly low compared to interval IUCD (11.37% vs. 69.53%). Acceptance rate was low (25.32%). Acceptance was higher in the age group of 26-30 years (35.3%), para-2 (42.84%) and those undergoing cesarean section (69%). 32.2% of acceptors came for follow-up. The main complaints at follow-up were missing thread and bleeding. Expulsion rate was low (2.91%). Continuation rate was 85.3%. No case of perforation, failure or any other major complication reported. The main causes of removal were bleeding and pressure from family.

Conclusion: This study indicates that PPIUCD as a postpartum family planning method was highly effective, demonstrably safe, having no serious complication reported after insertion or during follow-up and had lower rate of expulsion in spite of low acceptance. The method may be particularly beneficial in our setting where women do not come for postnatal contraception counseling and usage. The acceptance of PPIUCD can be increased with repeated counseling beginning at the early antenatal period, public awareness, and offering incentives to acceptor, motivator and course provider.

Key words: Acceptance, Contraception, Counseling, Intrauterine insertion, Post-placental intrauterine device

INTRODUCTION

India's population of over 1.2 billion is slated to overtake China as the world's most populous country, in <1 and half decade. Family planning could bring more benefits to more people at less cost than any other single technology now available to the human race (UNICEF). 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 India was the world's first nation to adopt an official population policy and launched Family Planning Programme in 1951. Even though India has made considerable progress in reducing maternal mortality ratio, it still contributes 20% of maternal deaths worldwide (World Bank, UNFPA and WHO, 2012). Recommended spacing between the births to next pregnancy is at least 24 months and between abortions to next pregnancy should be at least 6 months (WHO Technical Committee, 2006). National Family Health Survey reported that 61% of birth were spaced <3 years and 22% of married women had an unmet need for family planning. There is 168 million eligible couple in India, of which only 44% practicing effective contraception. Better family planning and birth spacing services resulted in better maternal and neonatal outcome (WHO-2006).

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Unmet need of family planning is 20.5%. 7.2% unmet need for spacing and 13.3% unmet need for limiting. (DLHS 3, 2007-2008). The unmet need for the contraception in the extended postpartum period (0-1 year) is high, i. e., around 65%, but only 26% of women are using any method of family planning during the 1st year postpartum period. If this unmet need is full filled over next 5 years, maternal mortality can be reduced to above 29%. After 3 months of childbirth, exclusive breastfeeding decreases while sexual activity increases and menstruation returns and hence the chance of pregnancy increases.

Immediate postpartum period is an ideal time to educate and counsel women on exclusive breastfeeding, future fertility, birth spacing or limiting intentions and provision of appropriate family planning methods in view of the high rate of unintended pregnancy² Apart from lactational amenorrhea, postpartum family planning (PPFP) methods available are barrier methods, progesterone only preparations, sterilization, and intrauterine device (IUCD). IUCD is convenient, hormone free, very safe, highly effective, reversible, coitus-independent, user-friendly due to the onetime application and long lasting method of contraception with high continuation rate. Advantage of immediate postpartum IUCD insertion includes high motivation, assurance that woman is not pregnant and convenient for women and service provider.³ Post-partum Intrauterine Contraceptive Device (PPIUCD) can serve both for spacing and limiting⁴ Immediate PPIUCD during cesarean section provides adequate protection against pregnancy.⁵

Increase in facility-based births offers convenient opportunities to provide women with this long-acting reversible method of contraception before they live the hospital in a setting where women do not come for postnatal contraception counseling and usage. Government of India has introduced the PPIUCD (Cu-T380A) insertion free of cost during the year 2011-2012, which provides effective protection for 10 years with a very low failure rate of (<0.5 HWY).

MATERIALS AND METHODS

This is a prospective analytical study conducted in the Department of Obstetrics and Gynecology, S.C.B. Medical College and Hospital, Cuttack, Odisha, India. It was conducted from January 2013 to January 2017. The study included 6104 pregnant women who were admitted and delivered vaginally or by cesarean section and inserted with PPIUCD (Cu-T380A). Types of insertion were post-placental, immediate postpartum and intracesarean who full filled the WHO medical eligibility criteria after

taking informed consent. At the time of discharge, clients were advised to come for checkup at 6 weeks also counseled to report earlier for any side effects and complications such as foul smelling vaginal discharge, excessive vaginal bleeding, lower abdominal pain and discomfort, fever, any partial, or complete expulsion of the device. At 6 weeks of follow-up women were examined, any complaints are noted and treated. If the Cu-T is in place and she had no problem no further follow-up visits are required.

Various data in relation to demographic factors such as age, parity, socioeconomic status, and awareness to PPIUCD are analyzed among 6104 clients; so also the acceptance rate, insertion rate, timing and mode of insertion, follow-up of clients, safety, efficacy, side effects and complications, reason for removal of the device were analyzed.

RESULTS

During the study period total, no of PPIUCD acceptance was 6104 out of 24107 counseled patients with an acceptance rate of 25.32%. It is observed that acceptance rate had not significantly improved over a period of time. During counseling for PPFP method it is observed that majority of women were aware of Copper-T (interval IUCD), but few had ever heard its insertion in postpartum period (PPIUCD), (69.53% vs. 11.37%). (Tables 1 and 2).

Majority of PPIUCD acceptors were in the age group of 26-30 years (35.30%). Maximum acceptance was observed among para-2 (42.84%) (Tables 3 and 4).

60% of the acceptors belong to middle socioeconomic status (Table 5).

Insertion rate of PPIUCD has gone up over time though not significantly, and in the year 2016, 21.02% of total

Table 1: Acceptance rate (year wise)

Year	Total counseled	Accepted	%
2013	5108	780	15.27
2014	5724	1556	27.18
2015	5827	1588	27.25
2016	7448	2180	29.26

Table 2: Awareness about IUCD vs. PPIUCD (n=24107 client, counseled)

Awareness	n (%)	
	Interval IUCD	PPIUCD
Yes	16761 (69.53)	2741 (11.37)
No	7346 (30.47)	21366 (88.63)

PPIUCD: Post-partum intrauterine contraceptive device

Table 3: PPIUCD acceptors in different age group (year wise)

Age (years)	Acceptors year 2013	Acceptors year 2014	Acceptors year 2015	Acceptors year 2016	Total acceptors	%
18-25	233	401	305	318	1257	20.60
26-30	303	602	578	670	2153	35.30
31-35	169	355	501	551	1576	25.80
36-40	75	198	204	641	1118	18.30
Total	780	1556	1588	2180	6104	

PPIUCD: Post-partum intrauterine contraceptive device

Table 4: Acceptance of PPIUCD according to parity

Year	Total insertion	Primipara (%)	Para-2 (%)	Multipara (%)
2013	780	257 (32.95)	358 (45.90)	165 (21.15)
2014	1556	529 (34.00)	652 (41.90)	375 (24.10)
2015	1588	576 (36.27)	668 (42.07)	344 (21.66)
2016	2180	835 (38.30)	937 (42.98)	408 (18.72)
Total	6104	2197 (36.00)	2615 (42.84)	1292 (21.16)

PPIUCD: Post-partum intrauterine contraceptive device

delivery cases accepted PPIUCD as PPF method (Table 6).

In this study, acceptors of PPIUCD were more among cases requiring cesarean section (69%) followed by post-placental insertion (19.95%) (Table 7).

Follow-up 4077 cases lost during the study, only 33.20% (2027 out of 6104) of clients turned for follow-up at 6 weeks. Our study shows the number of follow-up cases following PPIUCD insertion did not increase over the period of time (Table 8).

Out of 2027 clients who returned for follow-up, 357 no of acceptors, i.e., 17.61% insisted for removal of the device due to bleeding problem followed by pressure from the family and 239 no of IUCDs were removed with a removal rate of 11.79%.

In our study, the main reason for removal of PPIUCD was due to bleeding problem (39.33%, [94/239]) and due to family pressure (35.14%, [84/239]).

Of the 2027 followed up patients 564 had complications with a complication rate of 27.82%. It was observed that 246 clients (12.13%) had irregular bleeding, 103 (5.08%) had abdominal pain, 98 (4.83%) had missed thread, 58 (2.86%) had infection, and 59 (2.91%) had expulsion (Table 9). Neither any major complications nor any failure was noticed during the 4 years study period.

The higher rate of expulsion (2.12%) was seen between 7 days and 6 weeks of PPIUCD insertion and was lowest after 6 weeks of insertion (0.79%). Most of the complaints were dealt with assurance, antibiotics for infection, and nonsteroidal anti-inflammatory drug for

pain. No one needed hospitalization. To locate the device ultrasonography was done in clients having missing strings. Out of 6104 insertion, 2027 clients came for follow-up. 59 had expulsion and 239 had removal leads to a continuation rate of 85.3%. Clients who had expulsion of the device were counseled for an alternative method of modern contraception including interval IUCD.

DISCUSSION

In our study, the total acceptance for PPIUCD was 6104 out of 24107 number of women counseled with acceptance rate of 25.32%, whereas 18.8% acceptance rate was observed by Geeta and Juhi. from Bhopal and acceptance rate of 36.66% was observed by Runjun and Bornali in their 2 years study in a rural medical college in Assam.⁶⁷ In this study, the acceptance rate was not significantly improved over the period of time, which has to be readdressed. Highest rate of acceptance was among the age group of 26-30 years (35.3%). Alvarez Pelayo and Borbolla Sala (1994) also found the average age of PPIUCD acceptors was 20.6%, whereas in a study conducted by Malchuru *et al.* from Guntur the highest rate of acceptance was among the age group of 30-39 years (27.67%).^{8,9} A study conducted by Katheit and Agarwal and Mishra revealed the highest rate of acceptance was among the age group of 21-25 years^{10,11} According to the director of family welfare, Tamil Nadu, India in the year 2011-12, 59% of the acceptors were in the age group of 20-24 years, 31% were in the age group of 25-29 years, 6% in the age group of 34-44 years, and only 4% were in the age group of 15-19 years.

In our study, maximum acceptors were para-2 (42.84%). Bhalerao and Purandare had 46.5% of the women para-1, 46% were para-2, and 69% had accepted IUCDs because they had at least one living male child.¹² Whereas Malchuru *et al.*, Mishra, Goutam *et al.* and Vidyarama *et al.* found an acceptance rate of 15.42%, 13.76%, 71.91%, and 15.47%, respectively, in primipara.^{9,11,13,14} As per the study conducted by DFW, Tamil Nadu 2011-2012 most (72%) of the acceptors were primipara, 25% were para-2, and only 3% had a higher order of birth. Our finding is similar to that of the study by Grimes *et al.*, where they found most of the PPIUCD acceptors were multiparous clients (65.1%).³

Table 5: Socio economic status among acceptors (year wise)

S-E status	Number of acceptors year 2013 %	Number of acceptors year 2014 (%)	Number of acceptors year 2015 (%)	Number of acceptors year 2016 (%)	Total acceptors year 2013-2016 (%)
Low	193 (24.74)	379 (24.36)	428 (27.00%)	502 (23.00)	1502 (24.60)
Middle	472 (60.52)	902 (57.97)	1001 (63.00)	1287 (59.00)	3662 (60.00)
High	115 (14.74)	275 (17.67)	159 (10.00)	391 (18.00)	940 (15.40)
Total	780	1556	1588	2180	

Table 6: Insertion rate of PPIUCD in S.C.B. medical college, cuttack

Year	Total delivery	Total insertion	Insertion rate (%)
2013	9916	780	7.87
2014	9632	1556	16.15
2015	9463	1588	16.78
2016	10370	2180	21.02

PPIUCD: Post-partum intrauterine contraceptive device

Table 7: Timing of PPIUCD insertion

Year	Post placental (%)	Post-partum	Intra caesarean	Total insertion
2013	166 (21.28)	40 (5.13)	574 (73.59)	780
2014	205 (13.18)	65 (4.18)	1286 (82.64)	1556
2015	465 (29.28)	265 (16.68)	858 (54.04)	1588
2016	382 (17.52)	303 (13.90)	1495 (68.58)	2180
Total (2013-2016)	1218	673	4213	6104

PPIUCD: Post-partum intrauterine contraceptive device

Table 8: Follow-up rate of clients

Year	Total insertion	Total follow-up	%
2013	780	119	15.25
2014	1556	578	37.72
2015	1588	611	38.47
2016	2180	719	32.98
Total	6104	2027	

During the study, it was found that only 11.37% of the clients were familiar with PPIUCD. A study conducted by Geeta and Juhi (2013) revealed that only 5.79% were familiar with PPIUCD and 94.21% women have not even heard of PPIUCD which emphasizes poor awareness regarding insertion of IUCD immediately after delivery though PPIUCD has many advantages over interval IUCD.⁶ 60% of the acceptors in our study belong to middle socioeconomic status. As IUCDs are supplied free of cost by Government of India, socioeconomic status does not play any key role so far as the PPIUCD insertion is concerned. In this study, the insertion rate of PPIUCD has gone up though not significantly over a period of time and in the year 2016, 21.02% of the total delivery cases accepted PPIUCD as PPF method. In our study acceptance of PPIUCD was more among the cases requiring cesarean section (69%). A study was conducted by Runjun and

Bornali (2016) the acceptance of PPIUCD among lower segment cesarean section patients and vaginally delivered patients were 77.07% and 22.93%, respectively.⁷ According to study conducted by Shobhasmita *et al.* (2011-2014) intracesean insertion was 83.73%,¹⁵ This indicates high motivation among women who are going to deliver by LSCS, because of future uterine scar rupture if they become pregnant early and of course they do not want higher order of birth. Somesh *et al.* in their study reported one-third of insertion during cesarean section.¹⁶

2027 no of clients out of 6104 insertion i.e. 33.2% returned for follow-up in our study in a urban tertiary care hospital.

In this study, expulsion rate was 2.91% which is low as compared to a study conducted in Zambia (5.6%).¹⁷ Mishra and Shobhasmita *et al* reported expulsion rate of 6.4% and 6% respectively.^{11,15} The result of our study is comparable with a study done in the year 2011-2012 in 16 health facilities in eight states and territory Delhi where they have reported 3.6% of expulsion rate. Geeta and Juhi, Bhalerao & Purandare and Tatum *et al* reported gross cumulative expulsion rate of 10.5%, 16.4% and 16.2% respectively.^{6,12,18} Lower rate of expulsion (1.6%) was found among 3000 acceptors of PPIUCD in a hospital in Paraguay. According to Chi *et al.*, insertion during cesarean section has lower expulsion rate than during postpartum.¹⁹

In our 4 years study period in a tertiary care hospital in Odisha <50% (2027 out of 6104; i. e., 33.20%) of clients turned for follow-up at 6 weeks of insertion, and the follow-up rate did not increase over the period of time. whereas the study conducted by Geeta and Juhi in Bhopal, Mishra in a District Head Quarter Hospital, Bolangir and Manju *et al* in North India observed follow-up rate of 83.41%, 59.98% and 78.62% respectively.^{6,11,20} The reason behind lesser no of women turned for follow to our institution could be that many of the clients might have attended the local hospitals.

Out of 2027 clients who turned for follow-up 12.13% had irregular bleeding, 5.08% had abdominal pain, 4.83% had missed strings, and 2.86% had infection. Mishra and Shobhasmita *et al* observed excessive bleeding in 23.5% and 11% of clients, respectively, during their follow-up.^{11,15}

Table 9: Complications

Pain (%)	Bleeding (%)	Missing threads (%)	Expulsion	Infection	Total
103/2027 (5.08)	246/2027 (12.13)	98/2027 (4.83)	59/2027 (2.91)	58/2027 (2.86)	564/2027

In our study most common reason for removal of Cu-T was bleeding problem (39.33%), which is similar to reporting done by Runjun and Bornali (42.11%) and Mishra (32.56%).^{7,11} whereas Malchuru *et al.* reported 27.27% of the removal was due to the bleeding problem⁹ Our study reveals that 35.14% of removal of PPIUCD was due to family pressure. Mishra has reported that 23.26% of removal of PPIUCD was due to family pressure,¹¹ whereas Runjun and Bornali reported 17.54% and Malchuru *et al.* reported 27.27% of removal were due to family pressure.^{7,9} Goswami *et al.* highlighted family pressure as the significant reason for IUCD removal.²¹

In our study not a single case of pregnancy had occurred out of 2027 followed up clients. Whereas one case of intrauterine pregnancy occurred out of 939 followed up patient and out of 52 followed up patients in the study conducted by Runjun & Bornali and Kanhere *et al* respectively.^{7,22}

Our study reported missing thread of 4.83% among 2027 followed up clients which are lower than study conducted by Mishra and Manju *et al* where they have reported 8.69% and 11.2% respectively.^{11,19}

In our study, request for removal was 17.61% which is higher as compared to other studies (7.5% by Shobhasmita *et al.*,¹⁵ 3% by Blumenthal *et al.* among women in Zambia,¹⁷ and 7.6% by Kittur *et al.* in Hubli, Karnatak).²³ This speaks of the importance of reassurance and counseling to achieve higher continuation rate.

Our study among 6104 no of acceptors over a period of 4 years from January 2013 to January 2016 with follow-up rate of 33.20% concludes with acceptance rate 25.32%, declined 74.68%, complication 27.82%, and continuation in 85.29%.

CONCLUSION

To conclude our study, we found good retention and continuation rate among the users with average acceptance rate. At present overall acceptance rate is low and need to be improved. There was no major complication. Minor side effects need reassuring. The acceptance was higher in patients undergoing cesarean section which has its own vivid advantage in terms of birth spacing, regaining parturient's health. Major problem we faced

is strong myths and misconceptions regarding IUCD as a method of contraception. The myths/misconception regarding IUCDs were infection, perforation, migration, infertility, and bleeding problem as revealed by the PPIUCD acceptors. Our study show high retention rate as comparable with other study because of proper fundal placement of Cu-T at the time of insertion by the trained service provider, adhering to strict asepsis, no touch technique and strictly following WHO medical eligibility criteria before inserting PPIUCD which also led to minimal side effects and complication. Early and repeated counseling during each antenatal visit and at the time of admission to labor room is highly required along with some incentive to both client and service provider and public awareness through different media sources to increase not only acceptance but also continuation rate in a situation of limited access to postpartum care.

Inserting CuT-380 A within 10 minutes after placental delivery and during cesarean section is one time, long term, coitus-independent, reversible demonstrably safe, effective method of contraception having low expulsion rate and has no effect on breast milk. So awareness has to be created regarding PPIUCD among pregnant women particularly during antenatal checkup. To increase the levels of awareness, the government needs to develop strategies to increase public awareness for the PPIUCD as a safe and effective method of contraception through different media sources. It is also important to arrange for training on PPIUCD to increase knowledge and skills among health-care providers. Cash incentives to the acceptor, motivator and of course provider would bring about a substantial progress in the PPIUCD use in developing countries like India where women do not come for postnatal contraception counseling and usage.

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