

## Analysis of awareness, acceptance, safety and continuation rate of post-placental and intra-caesarean insertion of intrauterine contraceptive device

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### ABSTRACT

**Background:** Intrauterine contraceptive device (IUCD) is an effective form of long acting reversible contraception. This study was done to determine the level of acceptance among Indian women according to their socio-demographic profile and continuation rate of post-placental and intra-caesarean insertion of intrauterine contraceptive device (PPIUCD).

**Methods:** A prospective longitudinal study was conducted in the Department of Obstetrics and Gynecology at RNT Medical College, Udaipur, Rajasthan, India from August 2014 to December 2014. CuT 380A was inserted within 10 minutes of delivery of placenta in 100 counseled women who fulfilled the Medical Eligibility Criteria. They were followed up for 6 months.

**Results:** Total women counseled were 316, out of which 100 accepted and 216 declined the PPIUCD. Expulsion rate was 2%, bleeding (3%), missing strings (8%), pain abdomen (3%), removal rate (6%). Continuation rate was 92%. There was no case of pelvic infection, perforation or pregnancy with the CuT in situ in the entire followed up period.

**Conclusions:** PPIUCD was demonstrably safe, effective and high retention rate (92%). The expulsion rate was not very high (2%). Awareness of PPIUCD among Indian women was very poor. Myths and misconception among community, limited access to skilled service providers and poor awareness among people were the reasons for low acceptance levels. Increasing awareness of benefits of PPIUCD will surely ensure the change in the acceptance rate.

**Keywords:** PPIUCD, Awareness, Acceptance, Expulsion, Continuation rate

### INTRODUCTION

The modern IUCD is a highly effective, safe, long acting and rapidly reversible method of contraception. According to the 2005-2006 National Family Health Survey, 61% of births in India were spaced less than three years and that 22% of married women had an unmet need for family planning.<sup>1</sup> A stratified analysis suggested that 65% of women in the first year postpartum had an unmet need for family planning.<sup>2</sup> Only 26% of women are using any method of family planning during the first year postpartum.<sup>3</sup>

Although a remarkably low failure rate of less than 1 per 100 women in the first year of use, IUCDs are used by only 2% of current users of contraception in India.<sup>1</sup> After the introduction of JSY and JSSK in India increasing numbers of women are delivering their babies in hospitals. It allows opportunity to provide PPIUCD in an expandable manner as the woman is highly motivated at this time to consider long acting contraceptive methods.

There is a common belief that PPIUCD insertion immediately after delivery is associated with higher expulsion rate. The objective of this study was to analyze

the awareness of PPIUCD, its efficacy and safety in terms of complications like spontaneous expulsion, infection, pain abdomen, missing strings, white discharge, bleeding per vagina, uterine perforation, pregnancy with CuT in situ, its continuation and removal.

## METHODS

This was a hospital based prospective longitudinal study conducted from August 2014 to December 2014 in the Department of Obstetrics and Gynecology at RNT Medical College, Udaipur, Rajasthan, India.

### Inclusion criteria

- Women of any age and parity delivered vaginally or by caesarean section
- Desire to have CuT after counseling before insertion.
- No infection.
- Hemoglobin  $\geq 8$  gm/dl.

### Exclusion criteria

- Prolonged rupture of membrane  $>18$  h prior to delivery.
- Uncontrolled Postpartum hemorrhage.
- Having active STD or other lower genital tract infection or high risk for STD.
- HIV not on antiretroviral therapy.
- Known uterine abnormalities: bicornuate, septate uterus, uterine myomas.
- Fever during labor and delivery.
- An allergy to copper.
- Women with significant medical disorders like diabetes mellitus, heart disease and severe anemia.
- Women who did not wish PPIUCD.

A questionnaire preformat was prepared to collect the information from PPIUCD acceptors and written consent was obtained from those who opted for insertion.

### Insertion techniques

#### Post-placental insertion

All necessary instruments were arranged in a tray covered with a sterile drape. The patient was placed in a lithotomy position with buttocks at the edge of the table. The uterus was palpated to evaluate the height of the fundus and its tone. The perineum was cleaned with povidone iodine. The perineum, labia and vaginal walls were inspected for lacerations. Sim's speculum was gently inserted into the vagina to visualize the cervix. The cervix and the vaginal walls were cleaned twice with cotton swabs soaked in povidone iodine solution with speculum in place. The anterior lip of the cervix was then gently grasped with the sponge holding forceps. The CuT 380A was removed from the insertion sleeve and grasped with long Kelly's forceps using no-touch technique. Once it is inserted into

lower 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. CuT with forceps was moved upward until it can be felt at the fundus. Then the forceps were opened to release the CuT and swept to side wall. Uterus was stabilized until forceps removal was complete. The cervical os was then gently inspected for the strings. Sim's speculum was removed and patient was allowed to take rest for some time.

#### Intra-cesarean insertion

Uterine cavity was inspected for presence of any malformations following placental delivery, which would limit the use of CuT. Uterus is stabilized by grasping it at fundus. CuT was held between middle and index finger. It was inserted into the uterus through uterine incision and released at fundus of uterus. Care was taken not to dislodge CuT when hand was removed. Strings were guided towards the lower segment without disturbing CuT's fundal position. Care was also taken not to include CuT strings during uterine closure.

*Follow up:* Follow up was scheduled at 6 weeks and later on at 6 months of PPIUCD insertion.

## RESULTS

Total 316 women were counselled and motivated for PPIUCD insertion. Out of which 100 women accepted and 216 declined the PPIUCD. Total acceptance rate was 31.65%.

Table 1 shows the socio-demographic and obstetric characteristics of the 316 counselled women. Majority of women (77.8%) were in the age group of 20-29 years, out of which 35.8% accepted PPIUCD and remaining 64.2% declined. Although majority of the women were from urban areas (63.3%) but only 17.5% accepted PPIUCD whereas the acceptance was high in the women belonging to rural areas (56% out of 36.7% of the total women counselled). Acceptance was high in the women having primary (40.3%) and secondary education (32.8%). Among the total counselled women, 43.7% were para 1, out of which 43.5% accepted PPIUCD. 43% of the total women counselled were primi gravida out of which 22.8% accepted PPIUCD. Only 8.2% of the total women counselled were para-2 out of which 30.7% accepted PPIUCD. Out of the total women counselled, 63.9% were having their last child birth less than 2 years back and among these 32.18% accepted PPIUCD. Women having their last child birth more than 3 years back were only 8.5% of the total counselled women, out of which 74% accepted PPIUCD. Among the total women counselled, 46.2% were not desired of any future pregnancy, out of which 43.8% accepted PPIUCD as a permanent method of contraception (Table 1).

**Table 1: Socio-demographic and obstetric characteristics of the women included in the study.**

Characteristics	PPIUCD insertion					
	Total counselled		Accepted		Declined	
	N=316	(%)	N=100	(%)	N=216	(%)
<b>Age(in years )</b>						
≤19	26	8.2	-	-	26	100
20-29	246	77.8	88	35.8	158	64.2
30-39	44	13.9	12	27.2	32	72.7
<b>Residence</b>						
Rural	116	36.7	65	56.0	51	44
Urban	200	63.3	35	17.5	165	82.5
<b>Educational status</b>						
No formal education	75	23.7	21	28	54	72
Primary	77	24.4	31	40.3	46	59.7
Secondary	64	20.3	21	32.8	43	67.2
Higher education	100	31.6	27	27	73	73
<b>Parity</b>						
Prim gravida	136	43	31	22.8	105	77.2
1	138	43.7	60	43.5	78	56.5
2	26	8.2	8	30.7	18	69.2
≥ 3	16	5.0	1	5	15	93.7
<b>Last child birth</b>						
<2yrs	202	63.9	65	32.18	137	67.82
>2-3yrs	87	27.5	15	17.2	72	82.6
>3yrs	27	8.5	20	74	7	26
<b>Future pregnancy desire</b>						
1-2yrs	40	12.7	3	7.5	37	92.5
3-5yrs	98	31	33	33.7	65	66.3
>5yrs	12	3.8	-	0	12	100
Not sure	20	6.3	-	0	20	100
No more	146	46.2	64	43.8	82	56.2

**Table 2: Awareness and acceptance of PPIUCD among total women counselled (N=316).**

Already aware of PPIUCD (N=106)	Not aware of PPIUCD (N=210)		
Accepted PPIUCD	Declined PPIUCD	Accepted PPIUCD	Declined PPIUCD
28 (24.53%)	78 (73.58%)	72 (34.29%)	138 (65.71%)

**Table 3: Source of information for the women who were already aware of PPIUCD (N=106).**

Source	N	%
Ante Natal clinic (ANC)	32	30.19%
Media	31	29.25%
ASHA's, Health workers, others	28	26.41%
Social circle	15	14.15%

Table 2 shows the acceptance of PPIUCD in relation to its awareness among the women. Although majority of the women were not aware of PPIUCD but they accepted it in higher percentage as compared to the women who were already aware of PPIUCD (34.29% vs.24.53%) (Table 2).

Table 3 shows the source of information for the women who were already aware of PPIUCD. Majority of the women received information from ANC (Ante Natal Clinic), media, ASHA's and health workers (Table 3).

Table 4 shows the previous contraceptive method used by the women. As mentioned in the table the women who had previous PPIUCD insertion, again they accepted PPIUCD as a method of contraceptive (only 2 cases of previous PPIUCD user in this study). 46.6% of total women counselled were not using any method of contraceptive, out of which 48.1% accepted PPIUCD (Table 4).

**Table 4: Previous contraceptive method used by the women.**

Method used	PPIUCD insertion					
	Total counselled		Accepted		Declined	
	N=316	%	N=100	%	N=216	%
OCPs <sup>a</sup>	8	2.4	6	75	2	25
Male condoms	33	9.7	4	12.1	29	87.9
Natural method	22	6.5	2	9.1	20	91
Calendar method	86	25.4	10	11.6	76	88.4
Interval IUCD	30	8.8	-	0	30	100
PPIUCD	2	0.6	2	100	0	0
DMPA <sup>b</sup>	0	0	-	-	-	-
Never used	158	46.6	76	48.1	82	52

The percentages are more than 100% as there were multiple responses; a=OCPs=Oral contraceptive pills; b=DMPA= Depot Med Roxy Progesterone Acetate.

**Table 5: Reasons for acceptance of PPIUCD among women (N=100).**

Reason	N=100	%
Long term	61	61
Safe	19	19
Fewer clinic visits	36	36
Non-hormonal	3	3
No remembrance once inserted	20	20
Reversible	35	35
No interference with breast feeding	9	9

The percentages are more than 100% as there were multiple responses.

**Table 6: Reasons for refusing PPIUCD among women (N=216).**

Reason	N=216	%
Prefer to use another method	15	6.9
Satisfied with previous contraceptive method	15	6.9
Fear of pain and heavy bleeding	60	27.8
Partner and family refusal	61	28.2
Myth of not getting pregnant early	54	25
Already convinced with interval IUCD	30	13.9
Myth of interference with sexual intercourse	2	0.9
Religious beliefs	2	0.9

The percentages are more than 100% as there were multiple responses.

Table 5 shows the various reasons for acceptance of PPIUCD among women. Majority of women (61%) accepted PPIUCD because of its long term effect as a contraceptive (Table 5).

**Table 7: Mode of follow up.**

Followed up	N=100	%
In OPD	74	74
Over phone	26	26

Table 6 shows the reasons for refusing PPIUCD by women. Among the counselled women main reasons for its refusal were

- Partner and family refusal-28.2%.
- Fear of pain and heavy bleeding-27.8%.
- Myth of not getting pregnant (as earlier she did not conceive even when she was not using any contraceptive method)-25% (Table 6).

Table 7 shows the mode of follow up.

Out of the total 100 insertions, 74 were followed up in OPD and remaining 26 were followed up over phone (Table 7).

**Table 8: Side effects.**

Side effects	N <sup>a</sup> =16	%
Pain abdomen	3	3
Bleeding Per Vagina	3	3
Expulsion	2	2
Missing strings	8	8
Pelvic infection	0	0
Pregnancy	0	0
Perforation	0	0

a=Total no. of women with some side effects.

As shown in Table 8, Expulsion rate was only 2%. Vaginal bleeding and pain abdomen was complained by 3% of women each respectively. Missing strings was complained by 8% of women. There were no side effects in the remaining 84% of women. No case of pelvic infection, pregnancy or perforation was found during the followed up period. PPIUCD also had no effect on lactation (Table 8).

**Table 9: Reasons for removal.**

Reasons	N=6	%
Bleeding Per Vagina	2	33.3
Changes in menstrual cycle	0	0
Pressure from family	1	16.7
Pain abdomen	3	50
Don't want to continue	0	0
Others(including string problem)	0	0

According to Table 9, main reason for removal of Cu T during followed up period was pain abdomen-3 out of total 6 removal. Other reasons were vaginal bleeding-2 cases (Table 9).

**Table 10: Continuation rate.**

Status	Insertion		Removal		Continuation	
	N=100	%	N=6	%	N=92	%
Expulsion	2	2				
Bleeding Per Vagina	3	3	2	66.7	1	33.3
Pain abdomen	3	3	3	100	0	0
String problem	8	8	0	0	8	100
No side effects	84	84	1	1.2	83	98.8

Table 10 and 11 shows the continuation rate in various groups. According to which, continuation rate was 98.8% in those women who were not having any complaints. Women with vaginal bleeding had 33.3% as the continuation rate. Overall continuation rate was 64.28% with the women having some complaints (Table 10 and 11).

**Table 11: Continuation rate in both groups of women having and not having complication in the study.**

Status	No.	Removal		Continuation	
		No.	%	No.	%
Having complications					
Expulsion	2				
Bleeding, pain abdomen and strings problem	14	5	35.71	8	64.28
No complications	84	1	1.2	83	98.8

## DISCUSSION

In our study, majority of the women were in the age group 20-29 years (77.8%). Their mean age was 24.16 years ( $SD \pm 2.16$ ); the time for the settlement of both career and family so they accepted PPIUCD as an effective method of birth spacing. Mwinyi Ali RA found that mean age of PPIUCD acceptors was 27.6 years ( $SD \pm 5.68$ ).<sup>4</sup>

During this study, it is seen that the acceptance rate of PPIUCD was higher among the rural women (56%) as compared to urban women (17.5%). This is because the women of urban areas rely on other methods of contraception like OCPs, condoms, permanent sterilization. It was also cleared from the study that proper information and motivation lead to high acceptance of PPIUCD among rural woman. Katheit G et al found that the acceptance of PPIUCD was almost equal among rural (47.6%) and urban women (52.4%).<sup>5</sup>

Majority of the women (76.3%) in this study had at least primary level of education. Acceptance of PPIUCD was higher among women with primary and secondary education (40.3% and 32.8% respectively) than those

with no formal education (28%). This finding confirms importance of education in deciding future pregnancy. Higher education women also had lower acceptance of PPIUCD as they have easy access to other methods of contraception like condoms, OCPs and permanent sterilization. This was similar to a study done in Egypt by Safwat et al. where women with no formal education had an acceptance of 9.4%, while those with formal education was 19.4%.<sup>6</sup>

In our study, majority of the women (43.5%) who accepted PPIUCD had 2 children as they want some long term or permanent method of contraception contrary to permanent sterilization. This was similar to the study done by Katheit G et al where they found 35.76% of the women were para-2 who accepted PPIUCD.<sup>5</sup> Grand multiparous women had lower acceptance of PPIUCD in our study because they wanted permanent sterilization.

The duration since last child birth was significantly associated with acceptance of PPIUCD. About 65% of the PPIUCD acceptors had their last child birth less than 2 years back. Women on first delivery and with short birth interval felt the necessity of a long acting and reliable method of contraception. In a report released by WHO in 2006, better family planning and birth spacing services resulted in better maternal and neonatal outcome. When promoted in countries with high birth rates, 32% of all maternal deaths and over 1 million deaths of children under 5 could be prevented. Health timing and spacing of pregnancies have a positive effect on maternal health and newborn outcomes.<sup>7</sup> This was similar to the study done by Mishra S, Balangir, Odisha, India where he found 74% of the PPIUCD acceptors had their last child birth less than 2 years back.<sup>8</sup>

Majority (64%) of the women who were inserted with the PPIUCD wanted to limit their pregnancies. The PPIUCD is especially a boon to the women who do not want any more children (as a method of permanent contraception or for those who want to delay sterilization until they are sure). 33.7% of the women who were inserted with PPIUCD had their future pregnancy desire in 3-5 years. This was due to its long acting and reversible method. This was similar to the study done by Ali RA where 37.3% of the PPIUCD acceptors had their future pregnancy desire in 3-5 years.<sup>4</sup>

During the study it was found that 33.54% (106) of the women were aware of PPIUCD, while the rest 66.46% (210) were not aware. Among the women who knew about PPIUCD, majority of them expressed their concern about the side effects like pain, heavy bleeding, hinders during coitus as well as the misconceptions like it affects lactation, get misplaced, non-reversible method as the reason for not accepting PPIUCD. During the study these misconceptions were cleared up and women were educated, counselled and motivated about PPIUCD insertions. The women who were not aware of PPIUCD were also counselled and came to the conclusion that inadequate knowledge of contraceptive method is a

reason for not accepting family planning. Thus emphasis should be given on communication and good counselling to the women giving correct information about availability, source, side effects, benefits of contraceptive method, which was done in our study and raised the acceptance of PPIUCD to 34.29% in that group. In the study done by Kumar et al, 53.5% of the women were heard about PPIUCD and 45.8% were not.<sup>9</sup>

Majority of the women (30.19%) got awareness during their ANC visit in the hospital. 29.25% got awareness through media like advertisement about PPIUCD on television, radio, newspapers, posters at roadsides, in hospitals, street plays in villages. 26.41% got knowledge from ASHA's, health workers, others and remaining 14.15% got awareness from their social circle. Mass media plays an important role in promotion and acceptability of contraception. The need to advertise through media is to be enhanced as 23.7% of the women counselled were illiterate. The health personnel especially Multi-Purpose Health Workers-Female (MPHW-F) and ASHA workers who closely monitor health parameters and also a part of community should discuss the need of contraception especially spacing methods like PPIUCD to bridge the gap between knowledge and practice of contraception. In a study done by Mwinyi Ali RA 75% of the women had awareness from ANC clinic and 10.4% from the social circle.<sup>4</sup>

In our study, out of the total women counselled, 158 (46.6%) had used at least one method of contraception. The most common method of contraception used previously by women was calendar method (25.4%). PPIUCD was among one of the least used method (0.6%) and 46.6% of women had never used any contraception. Acceptance rate was 100% in the women who previously used PPIUCD as they were very much satisfied by it and had not any side effects. Those women who were not using any contraceptive, when they were counselled about the benefits of PPIUCD, 76(48.1%) accepted it. Thus proper counselling has a very much impact on acceptance of PPIUCD. Similar results were obtained in the study done by Mwinyi Ali RA where 32.5% of the total women interviewed were not using any contraceptive and through proper counselling the acceptance rate was increased to 24.5% among these women.<sup>4</sup>

In our study, 61% of the women accepted PPIUCD due to its long term effect, 36% due to fewer clinic visits and 35% due to its reversibility. This shows that postpartum women need a contraceptive method which is long acting, convenient and reversible. Similar results were obtained in the study done by Mwinyi Ali RA, where 55% of the women accepted PPIUCD due to its long term effect.<sup>4</sup>

A significant number of women (28.2%) declined PPIUCD because of partner and family refusal. This reveals the importance of partner involvement during counselling and decision making. Many studies have

shown that when the partner is involved in contraceptive counselling and decision making, the acceptance and continuation rates were higher. Unfortunately in our setup women who visit the antenatal clinic are usually not accompanied by their partners and therefore couple counseling is lost during this period. Furthermore, during the short postpartum period, partners usually come in contact with their spouses during discharge which is not appropriate for counselling. If the partners fail to agree on the method, or do not know how to use it well, even highly effective method will not be used well. Therefore, this is a good reason for including both partners when helping a couple to choose a contraceptive method which will also increase the compliance. In the Africa postpartum study done by FHI, husbands' desires for IUCD removals was a significant reason for removal, emphasizing the importance of involving the husband in prenatal counselling.<sup>10</sup> Similar results were obtained in the study done by Mishra S, Bolangir, Odisha, India where one of the main reason for refusal of PPIUCD was partner and family refusal (50.28%).<sup>8</sup>

During the follow up period, 3% of the women inserted with PPIUCD complained of pain abdomen and vaginal bleeding each. 2 out of 3 women with vaginal bleeding insisted on removal. Thus the removal rate was 66.67% among these women and 33.3% (2 out of total 6 removal) among the total PPIUCD removal. All the women with pain abdomen insisted on removal so the removal rate was 100% in that group and 50% (3 out of total 6 removal) among the total PPIUCD removal. 8% of the women had missing strings during first follow up at 6 weeks. Ultrasound was done in these women and confirmed that the IUCD were in situ. None of them insisted on removal as they were reassured, which speaks of the importance of positive attitude. Only 1 women insisted on removal due to pressure from her husband and family, which speaks of the importance of involving husband in counselling. There were no serious complications like perforation, pelvic infection in this study. Also there were no cases of pregnancy with the IUCD in situ during the follow up period up to 6 months. This is in accordance with the study of El Shafei MM et al, Ricalde et al, and Mishra S, where no perforations were observed in PPIUCD.<sup>8,11,12</sup> In the study done by Mishra S, Bolangir, Odisha, India removal rate was 32.56% among the total PPIUCD insertions.<sup>8</sup>

In my study, the expulsion rate of PPIUCD at 6 weeks follow up was 2%. In the study done by Mishra S, Bolangir, Odisha, India expulsion rate was 8.29% at 4 weeks follow up.<sup>8</sup> In a multi country study done in Belgium, Chile and Philippines the expulsion rate at 1 month ranges from 4.6 to 16%.<sup>13</sup> Expulsion rate of PPIUCD in a study done in China by Chi et al in 1994 was 9.5-12.5%.<sup>14</sup> Thus in my study expulsion rate was very low as compared to other studies done globally. The continuation rate in women having some side effects, in my study was low and in the acceptable range-64.28% and the continuation rate in the women having no side effects was 98.8%. It speaks of the importance and

motivation prior to insertion in continuing PPIUCD. In a study done by Misha S continuation rates were similar in women having or not having any side effects -89.40% and 88.52% respectively.<sup>8</sup>

## CONCLUSION

The acceptance of PPIUCD was high in this study and it is comparable to other studies done globally. Awareness of PPIUCD among these women was very poor despite high acceptance. Majority of the studied women were not aware of PPIUCD. Women who had a short duration from their last child birth (less than 2 years) and Para-2 women had greater acceptance of PPIUCD. Acceptance was higher among women with primary and secondary education.

From the study results, it can be concluded that PPIUCD in the field of PPFP (Post-Partum Family Planning) is a promising approach. The PPIUCD was demonstrably safe, having no reported incidence of perforation and pregnancy, with low rates of expulsion, pain abdomen, pelvic infection and lost strings. With the high level of acceptance despite low levels of awareness, the government needs to develop strategies to increase public awareness of the PPIUCD through different media sources. It is also important to arrange for training on PPIUCD regarding counselling methods, insertion technique and proper follow up in order to increase knowledge and skills among healthcare providers. This will also further promote PPIUCD use and aid in reduction of the expulsion rates.

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