

## Awareness, acceptability and clinical outcome of post-placental insertion of intrauterine contraceptive device in Marathwada region, India

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### Abstract

**Objective:** Despite contraception becoming widely available, there is poor acceptance of contraceptive methods either because of ignorance or fear of associated complications. The Marathwada region is an economically backward area of the Maharashtra state in India with a large number of floating populations. Consistent use of family planning methods is difficult in such populations. Post-placental insertion of intrauterine contraceptive device (PPIUCD) has huge potentiality and scope in the Marathwada region. Therefore, our study aimed to assess the awareness, acceptability and clinical outcomes of PPIUCD in a tertiary care hospital.

**Study design:** This was an observational study conducted in the department of Obstetrics and Gynaecology, Government Medical College and Hospital, Aurangabad between January 2015 and December 2015. Subjects were 1944 women visiting the antenatal clinic. A preformed and predesigned questionnaire was applied to determine if these women were aware of the PPIUCD. Acceptability was defined as the number of antenatal women who agreed to undergo insertion of PPIUCD. The primary outcome was safety assessed by pain, bleeding, infection, perforation, expulsion rate, and removal rate.

**Results:** Of 1944 women, only 78(4%) were aware of the PPIUCD. The overall acceptability was found to be 25%. Approximately 37% of women had complications. Not a single woman suffered from uterine perforation. The expulsion and removal rates were 9.2% and 10.2%, respectively.

**Conclusion:** The PPIUCD seems to be a safe, effective option for spacing pregnancies as well as limiting the family size; it can be a useful contraceptive tool for migrant populations.

**Implications:** The Marathwada region in India is an economically backward area with a large number of floating populations. Consistent use of family planning methods is difficult in such populations. The PPIUCD has huge potentiality and scope in the Marathwada region and seems to be a useful contraceptive tool for migrant populations.

**Keywords:** Post-placental insertion of intrauterine contraceptive device (PPIUCD), Contraception awareness, Acceptability of PPIUCD, Expulsion rate of PPIUCD, Long term contraception, Reversible contraception, Removal rate of PPIUCD.

### Introduction

The national population policy of India was formulated in the year 2000 with the long term objective of achieving a stable population by 2045, at a level consistent with the requirements of sustainable economic growth and social development.<sup>(1)</sup> Providing quality contraception services to women is one of the cornerstones for achieving the Millennium Development Goal of improved maternal and child health.<sup>(1)</sup> The use of effective contraception in the postpartum period is an essential strategy to prevent unintended pregnancies. The intrauterine contraceptive device (IUCD) has been used by women in India for decades to space pregnancies. The CuT 380 is a highly effective (>99% effective) IUCD with an incidence of 0.6 to 0.8 pregnancies per 100 women in the first year of use. The Cu T380A is effective for 10 years of continuous use.<sup>(2)</sup> However, it is estimated that around 65% of women experience an unmet family planning needs in India.<sup>(1)</sup> Further, returning to health facilities for postpartum services is difficult for women who have competing demands. To overcome these barriers, the insertion of a post-placental intrauterine contraceptive device (PPIUCD) might be useful.

The Government of India has introduced the PPIUCD service in 19 states of India in 2010 in collaboration with Jhpiego, India.<sup>(3)</sup> Despite making contraception widely available, there is poor acceptance of contraceptive methods either because of ignorance or fear of associated complications. Inadequate knowledge about contraceptive methods and incomplete or erroneous information about their use or where to procure them are the main reasons for not accepting family planning. Awareness has been highlighted by many as a key indicator of success in a range of performance. The Marathwada region is an economically backward area of Maharashtra state, India. This region is characterized by drought events during certain periods of the year. A large portion of floating population migrates to Western Maharashtra to work in sugarcane farms. A consistent use of family planning methods is difficult in this population even though women may be willing to use PPIUCD. Further, if widely used, it may have a strong impact on family planning and help prevent unintended pregnancies and its potential consequences.

A recent Cochrane review (2015) concluded that the quality of evidence was moderate and future trials are needed to estimate expulsion rates and side effects

of PPIUCD.<sup>(4)</sup> Thus, we consider that it is important to generate region-based evidence on the post-insertion outcomes after the introduction of the PPIUCD program. Additionally, information related to the demographic profile of women who accept PPIUCDs, the dynamics of their decision-making process and outcome may vary from region to region. Keeping this in mind, this study was undertaken to assess the awareness and acceptability to undergo the insertion of the PPIUCD and its clinical outcome.

## Material and Methods

This was an observational study conducted in the department of Obstetrics & Gynaecology, Government Medical College and Hospital, Aurangabad between January 2015 and December 2015. Eligible subjects were pregnant women before the onset of active labor visiting the antenatal clinic. This study was approved by the Institution Ethics Committee of Government Medical College and Hospital, Aurangabad. Women in active labor with a known medical disorder, with uterine anomaly, hemoglobin <8 g, as well as woman planning to undergo delivery at another health facility were excluded from the study.

Written informed consent was obtained from all participants in the study. Confidentiality was maintained during data collection and compilation. Characteristics such as medical history, age, parity, religion, and socioeconomic status along with interval from last childbirth and desired interval for future pregnancy, were noted in a predesigned and pretested questionnaire. It included questions regarding knowledge and sources of information. The reasons for the acceptance or reluctance to the PPIUCD insertion were inquired and noted in the case sheet. Subsequently, counselling was performed by health care personnel with information, education, and counselling (IEC) material regarding PPIUCD insertion and its benefits, associated complications and required follow up. Acceptability was defined as those antenatal women who agreed to undergo insertion of the intrauterine contraceptive device within 10 minutes of expulsion of the placenta. Women who were not willing to undergo PPIUCD were counselled regarding other methods of family planning.

The PPIUCD was inserted by specially trained postgraduate doctors. After the active management of the 3<sup>rd</sup> stage of labor, bimanual examination was performed. It was assured that the uterine cavity was empty and with appropriate tone. The perineum was properly inspected for lacerations. The cervix and vagina were cleaned, and the anterior lip of the cervix was gently grasped with ring forceps. The IUCD was removed from the insertion sleeve and grasped with the modified Kelley forceps using the no-touch technique. Once it was inserted in the lower uterine segment, the left hand was placed over the abdomen to palpate the fundus of the uterus. Then, the uterus was pushed

gently upward to reduce the angle and curvature between the uterus and vagina. The IUCD was moved upward with the forceps until it was felt at the fundus. Then, the forceps were opened to release the IUCD and swept to side wall. The uterus was stabilized until the forceps removal was complete.<sup>(1)</sup> All patients were prescribed cefixime 200 mg twice daily for five days. The follow-up was scheduled either at the clinic or by telephone at 6 weeks and at 6 months or earlier if there was suspicion of expulsion or any complication.

The PPIUCD insertion outcome was safety in terms of pain, bleeding, infection, perforation along with expulsion rate and removal rate. Data were analyzed using Microsoft Office Excel 2007. A Chi-square test was applied for qualitative data.

## Results

A total 1944 pregnant women were recruited in the study (Fig. 1). Out of 1944 women, only 78 (4%) were aware about PPIUCD (Fig. 2) and they received information from the IEC material displayed in the antenatal clinic. Out of these 78 women, 50 women (64%) agreed with PPIUCD insertion. Out of 1866 unaware women, only 436 (23.36%) agreed with PPIUCD. Agreement with PPIUCD insertion was higher in women who were aware about the PPIUCD ( $\chi^2 = 64.11$ ;  $p < 0.0001$ ). Overall acceptability was found in 486 (25%) patients (Fig. 3).

The main reason for acceptance (Table 1) was awareness about its long-term use [112 women (23.04%)] followed by awareness regarding safety of the device in [107 women (22.01%)]. The main reason for non-acceptance (Table 2) was the need to discuss the procedure with the partner and family [524 women (35.93%)] followed by refusal by partner and family [234 women (10.04%)].

In the present study, the highest acceptance was seen in women in the age group ranging from 20 to 29 years (64.60%), those coming from urban areas (56.96%), Hindus (51.44%), those with secondary or higher level of education (63%), and those with middle socioeconomic status (52%) (Table 3). A higher acceptance rate was also observed among multiparas (74.27%), women having last childbirth interval of <2 years (51.02%) and those who had a desire for future pregnancy after an interval of more than 2 years (42.18%).

Out of the 486 (25%) women who accepted the PPIUCD insertion, only 404 (20.78%) women underwent PPIUCD insertion. The reasons that 82 women were unfit for PPIUCD insertion were premature rupture of membranes of more than 18 hours, infection, unresolved postpartum hemorrhage, any operative intervention like caesarean section, and manual removal of the placenta. One woman planned to deliver her infant at another health facility; thus, she did not undergo the PPIUCD insertion.

After PPIUCD insertion, 62.18% of women had an uneventful course and 37.82% women had complications. Not a single woman suffered from perforation, or any other life-threatening complication. The expulsion rate was 9.2% and maximum expulsions were noted between 7 days and 6 weeks post-insertion. The removal rate was 10.2%, and the continuation rate was 80.4% (Table 4).

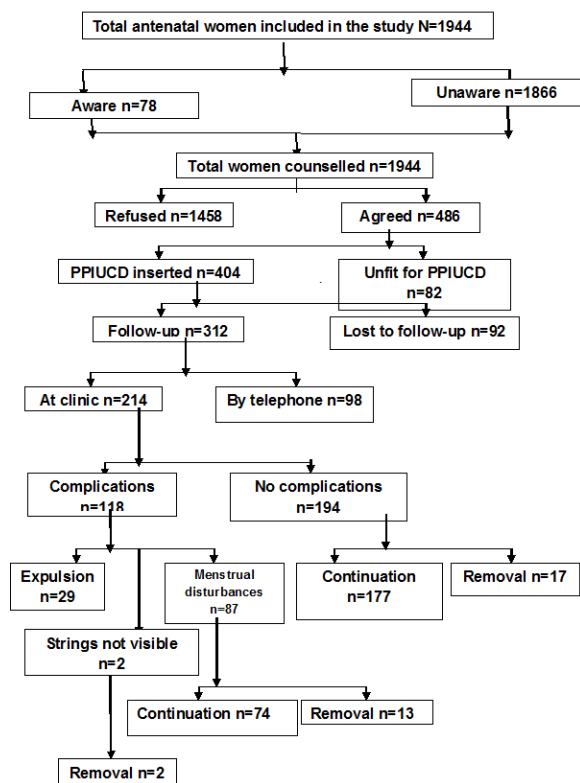


Fig. 1: Flow chart showing the recruitment of study participants

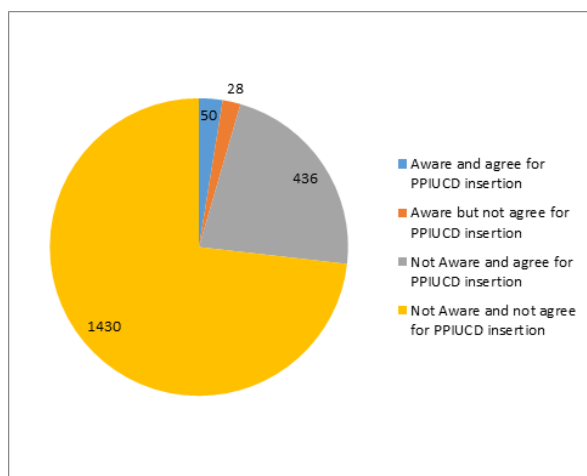


Fig. 2: Awareness and acceptance of participants for PPIUCD insertion

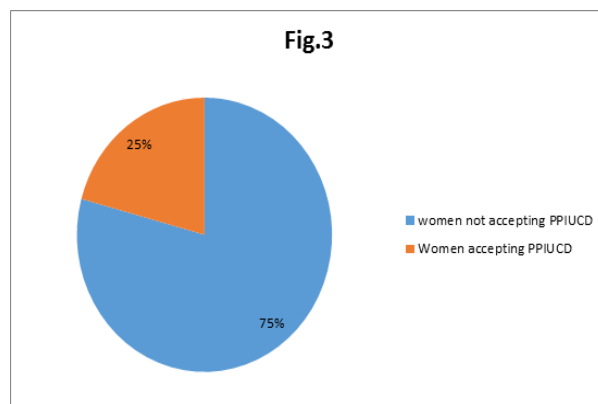


Fig. 3: Acceptability of PPIUCD insertion among study participants

Table 1: Reason for Acceptance in study participants

Reason for acceptance*	Number of antenatal women (n= 486)	%
Long term	112	23.04
Safe	107	22.01
Previous use of interval IUCD	30	6.17
My doctor's advice must be a good one	88	18.10
Reversible	83	17.07
Fewer clinic visits	30	6.17
Non hormonal	12	2.46
No interference with breast feeding	12	2.46
No interfere with sexual act	12	2.46

\*Main reason for acceptance IUCD, intrauterine contraceptive device.

Table 2: Reason for Non Acceptance of PPIUCD in study participants

Reason for non-insertion**	Number of antenatal women N= 1458	%
Need to discuss with partner and family	524	35.93
Partner and family refusal	234	10.04
Fear of pain and heavy bleeding	190	13.03
Satisfied with previous method	153	10.49
Prefer to use another method	110	7.54
No reason	109	7.47
Willing but unfit for PPIUCD	78	5.34
Fears cancer	40	2.74
Religious beliefs	10	0.68
Interferes with sexual intercourse	9	0.61

\*\*Main reason for non-insertion.

PPIUCD, post-placental intrauterine contraceptive device

**Table 3: Baseline Characteristics of Women with Acceptability PPIUCD Insertion**

Variables		Number of women (n=486)	%
Age in years	≤19	136	28.00
	20-29	314	64.60
	>30	36	07.40
Residence	Urban	272	56.96
	Rural	214	44.03
Religion	Hindu	250	51.44
	Muslim	189	38.88
	Christian	47	09.67
Educational status	No formal education	10	02.05
	Primary	174	35.80
	Secondary	208	42.79
	Higher	94	19.34
Socio economic status	Upper	19	04.00
	Upper middle	58	11.93
	Lower middle	196	40.32
	Upper lower	184	37.86
	Lower	29	05.96
Parity	P1	115	23.66
	P2-P4	361	74.27
	>P4	10	02.05
Last child birth interval	0-2 years	248	51.02
	2-4 years	213	43.82
	≥4 years	25	05.14
Desire for future pregnancy	Interval>2 years	205	42.18
	Not sure	145	29.82
	No more	136	27.98

PPIUCD, post-placental intrauterine contraceptive device.

**Table 4: Post-placental intrauterine contraceptive device insertion outcome**

Outcome of PPIUCD		Total number of women n=312 <sup>b</sup>	%	
<b>Without complications</b>		194	62.18	
<b>Complications</b>	Menstrual disturbances	87	27.88	
	Pain in abdomen	29	9.29	
	Infection	02	0.64	
	Perforation	0	0	
<b>Total number of complications</b>		118	37.82	
<b>Timing of expulsion</b>	Expulsion within 7 days	02	0.6	
	>7 days to 6 weeks	25	8.01	
	>6 weeks to 6 months	02	0.6	
<b>Total expulsion rate</b>		29	9.2	
<b>Removal</b>	<b>Due to complications</b>	Heavy Menstrual Bleeding	9	28.2
		Getting pain in abdomen	2	6.25
		Infection	2	6.25
		Other (including string problem)	2	6.25
	<b>Without complications</b>	Pressure from family and partner	15	46.87
		Don't want to continue	2	6.25

<b>Total removal rate</b>	32	16.67
<b>Continuation rate</b>	251	80.4

b. women lost for follow up were excluded.

## Discussion

Out of 1944 women, only 78 (4%) were aware of PPIUCDs which was similar to the results reported by Kathpalia et al.<sup>(5)</sup> and Katheit et al.<sup>(6)</sup> This is probably because of the fact that the concept of PPIUCD is still rather new in the community. This finding suggests a strong need to increase the knowledge and awareness in the community by providing health education and counseling.

In the present study, the acceptance rate was 25%. The highest acceptance rate was seen among women aged between 20 and 29 years (64.60%), those residing in urban areas (56.96%), those who practiced Hinduism (51.44%), women with secondary education or higher (63%), and those with middle socioeconomic status (52%). These findings are in line with those observed by Bai Gujju et al.<sup>(7)</sup> In the present study, a higher acceptance rate was also observed among multiparas (74.27%), women having last childbirth interval of <2 years (51.02%) and desired time interval for future pregnancy greater than 2 years (42.18%). In a study conducted by Mishra S.<sup>(8)</sup> and a study conducted by Gautam et al.,<sup>(9)</sup> it was observed that there was a higher acceptance rate in primigravidas, which was contrary to that observed in the present study. This finding suggests that the mothers from present study with a higher order of births were receptive to this spacing method as a semi-permanent method of contraception.

We also noted that the long-term use and safety were the important reasons for acceptance of the PPIUCD. More women were attracted to the fact that this method provides long-term contraception. This indicates that PPIUCD may be a good contraception method for women who wish to space pregnancies as well as limit the size of their family. Our findings support those by Mishra S.<sup>(8)</sup>

Mishra S.<sup>(8)</sup> noted that a significant number of women declined PPIUCD because of the partner's non-involvement in the decision-making process. Our findings were similar. As India is a male-dominant society, the husband's participation in the decision-making process is necessary to increase the acceptance and prolong the continuation rate. Gautam et al.<sup>(9)</sup> also observed similar findings. In the present study, partner participation was low as women are not accompanied by their husbands while visiting the antenatal clinic. This suggests that health care personnel should understand the importance of couples counselling for contraception decision making. A gender-sensitive approach should be adopted for couples counselling to achieve better compliance.

In the present study, 62.17% women had an uneventful course of after PPIUCD insertion. A total of 37.82% of women had complications in the form of

menstrual disturbances (27%), abdominal pain (9.29%), and infection (2%). No serious complications were encountered in the present study. There were no cases of perforation or any other life-threatening complication. There was not a single case of PPIUCD failure. A study by Mishra S. on a similar population arrived at similar findings.<sup>(8)</sup> The expulsion rate in this study was 9.2%, which was similar to that reported in many previous studies.<sup>(8,10)</sup> Out of 29 cases of expulsion, 25 cases had expulsion between 7 days to 6 weeks of device insertion. A similar finding was noted by Mishra S.<sup>(8)</sup> A possible explanation for this finding is the uterine involution that occurs during the postpartum period. High fundal placement, sweeping of Kelley's forceps by the side walls of uterus and taking precautions to avoid withdrawal of IUCDs are the factors identified for decreasing expulsion rate.<sup>(1)</sup> Gautam et al.<sup>(9)</sup> reported that the expulsion rate at 6 weeks of insertion was as low as 3.1%. The difference between their study and ours may be attributed to their routine use of ultrasound postinsertion examination to confirm the position of the IUCD.

The removal rate in our study was 10.2%, which was in accordance with the findings of Mishra S.<sup>(8)</sup> and Gautam et al.<sup>(9)</sup> In our study, the rate of device removal for nonmedical reasons was slightly higher than that for medical reasons. This finding emphasizes the importance of couples counselling, motivation, and knowledge about probable complications and the need for regular follow-up to achieve prolonged use and better acceptance of the PPIUCD.

The continuation rate of our study was 80.4%, which is similar to that reported in other studies.<sup>(8,9)</sup> Education of the masses, uplifting economic standards, strong political commitment, effective health care system, and change in knowledge, attitude, and practice of contraception as a whole constitute important factors in increasing acceptance and usage of contraception.

The present study had several limitations. The participants were enrolled at a single center, which limited the generalizability of our results. Additionally, the follow-up by phone and the use of a questionnaire for data collection may have introduced recall bias.

## Conclusion

The PPIUCD insertion seems to be safe and effective; additionally, it is an attractive option for spacing pregnancies as well as limiting family size. The awareness of the PPIUCD among the women of the Marathwada region was very poor. Integration of a PPIUCD counselling service at the antenatal clinic, with involvement of the partner, will contribute to the success of this program. Insertion of the PPIUCD can have a huge scope in India and if widely used, it will

have a strong impact on family planning and will prevent unplanned pregnancies and their potentially negative consequences.

## References

1. Postpartum IUCD Reference Manual, November 2010. Family Planning Division, Ministry of Health and Family Welfare, Government of India; 2010, <http://www.rajsvasthya.nic.in/Safe%20Motherhood%20day%2011.04.12/PPIUCD%20Training%20Package,cg/PP%20IUCD%20Reference%20Manual/PPIUCD%20Reference%20Manual-Feb%202011-final.pdf> {accessed 13.03.16}.
2. Majhi AK. Importance of PPIUCD in the perspective of present Indian population scenario. *Indian Journal of Perinatology and Reproductive Biology* 2012;2(2), <http://www.mchip.net/sites/default/files/mchipfiles/Indian%20Journal%20of%20Perinatology%20and%20Reproductive%20Biology.pdf>.
3. Banapurmath S, Dotrad G, Doreswamy N, Shyamala. Feasibility of Postpartum Insertion of Intrauterine Device-Expanding the Use of Intrauterine Contraceptive Device in Postpartum Period-A Cross Sectional Study in Developing Country, India. *International Journal of Current Research and Review* 2014;6:38-49.
4. Lopez LM, Bernhole A, Hubacher D, Stuart G, Van Vliet HA. Immediate postpartum insertion of intrauterine device for contraception. *Cochrane Database Syst Rev* 2015;(6):CD003036. doi: 10.1002/14651858.CD003036.pub3.
5. Kathpalia SK, Mustafa MS. Awareness about Postpartum insertion of intrauterine device among antenatal cases. *Med J Armed Forces India* 2015;71:221-4. doi: 10.1016/j.mjafi.2015.04.002.
6. Katheit G, Agarwal J. Evaluation of post-placental intrauterine device (PPIUCD) in terms of awareness, acceptance, and expulsion in a tertiary care centre. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology* 2013;2:539-43, <http://www.scopemed.org/?mno=44335>.
7. Bai Gujju RL, Prasad U, Prasad U. Study on the acceptance, complications, and continuation rate of postpartum family planning using the post placental intrauterine contraceptive device among women delivering at a tertiary care hospital. *International Journal of Reproduction, Contraception, Obstetrics and Gynaecology* 2015;4:388-391, <http://www.ijrcog.org/?mno=178674>.
8. Mishra S. Evaluation of safety, efficacy, and expulsion of post-placental and intracerebral insertion of intrauterine contraceptive device (PPIUCD). *J Obstet Gynaecol India* 2014;64:337-43.
9. Gautam R, Arya KN, Kharakwal S, Singh S, Trivedi M. Overview of immediate PPIUCD application in Bundelkhand Region. *Journal of Evolution of Medical and Dental Sciences* 2014;3: 9518-26. doi: 10.14260/jemds/2014/3230Somesh Kumar.
10. Kumar S, Sethi R, Balasubramaniam S, Charurat E, Lalchandani K, Semba R, et al. Women's experience with postpartum intrauterine contraceptive device use in India. *Reprod Health* 2014,11:32. doi: 10.1186/1742-4755-11-32.