

# A Prospective Study on PPIUCD Insertion between Vaginal Delivery and Caesarean Section

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## ABSTRACT

**Introduction:** Postpartum Intrauterine Contraceptive Device (PPIUCD) has great potential of being the modern, reliable contraceptive that can serve the unmet need for a large number of women. The program of PPIUCD suffered a setback when it was introduced earlier due to lack of trained personnel and subsequently a poor result in terms of efficacy and side effects were observed.

**Aim:** To find out the acceptability, expulsion rate and other complications of PPIUCD in both vaginal and caesarean delivery groups.

**Materials and Methods:** A prospective study was conducted from 3<sup>rd</sup> September 2017 to 2<sup>nd</sup> December 2017 in which 2287 women were counselled during the antenatal visit, after admission to the Hospital and in the immediate post-partum period. Overall 1345 patients had PPIUCD insertion in the study period. Out of these patients first 127 mothers who delivered vaginally and the first 127 mothers who underwent caesarean section were regarded as study groups and were followed up for three months. The collected data was entered in MS Excel 2016, and was analysed by Student's t-test, Pearson's Chi-square test, on IBM SPSS<sup>®</sup> software, version 20.0. The p-value  $\leq 0.05$  was considered statistically significant.

**Results:** In the caesarean group the mean age was 25.1 years and in vaginal delivery group it was 23.6 years and the difference was statistically insignificant ( $p=0.27$ ). Expulsion

rate at six weeks was 0.8% in caesarean section group and 3.9% in vaginal delivery group ( $p=0.09$ ). At three month the expulsion rates in caesarean section group and vaginal delivery group were 3.1% and 4.7% respectively ( $p=0.51$ ). At six weeks missing string was seen in 39.3% and 34.6% in caesarean section and vaginal delivery group respectively ( $p=0.51$ ). At three months follow-up missing string was seen in 39.3% in caesarean section and 26.9% in vaginal delivery group which was statistically significant ( $p=0.04$ ). At three months, 3.9% of women in caesarean section and 4.7% in vaginal deliveries had bleeding (0.74). At three months, 6.2% women in caesarean section group complained of pain whereas 7.1% in vaginal delivery group complained of pain ( $p=0.78$ ). At three months, in caesarean section group 4.7% and in the vaginal delivery group 3.9% came with complaints of vaginal discharge ( $p=0.75$ ). No case of perforation of uterus was found in either group. Client satisfaction was assessed at three months of PPIUCD use using Visual Analogue Scale (VAS 1-5) and 61.4% in intracaesarean group and 62.7% in the vaginal group gave score 3 in the 1-5 scale.

**Conclusion:** The benefits of PPIUCD outweigh the minor risks associated with it. This study suggests that PPIUCD in caesarean section as well as in vaginal delivery group is a convenient opportunity which should not be missed in countries like ours with high rates of unplanned and short interval pregnancies with limited access to health care providers.

**Keywords:** Complication, Intracaesarean insertion, Post placental insertion

## INTRODUCTION

India is presently the 2<sup>nd</sup> most populous country in the world and with such rising trend in birth rate it may soon become ahead of China. At independence, India's population was 350 Million. Today, it stands at 1.324 billion and it is projected to reach 1.53 billion by 2050 making it the most populous country in the world [1]. Though multiple options for contraception are available the unmet need for family planning is estimated to be 12.8%. Women of reproductive age group (15-49) make up approximately 248 million, with 1.3 billion populations and approximately 174 women dying in child birth for every 100000 live births [2]. Reduction in maternal mortality is an area of concern for governments across the world. Government of India introduced IUCD services in immediate postpartum period in 2010. The program of PPIUCD suffered a setback when it was introduced earlier due to lack of trained personnel and subsequently a poor result in terms of efficacy and side effects. The Copper T 380A with a 10 year lifespan has been introduced with better training and support system. The present work, an institution based prospective study on PPIUCD insertion between vaginal delivery and caesarean section was conducted so that it may strengthen the existing knowledge about its safety, efficacy, show the impact

of counselling on acceptance and overall have an impact on the population burden of the country.

## MATERIALS AND METHODS

This prospective study was conducted in the Department of Obstetrics and Gynaecology, College of Medicine and JNM Hospital, Kalyani (West Bengal) from 3<sup>rd</sup> August 2017 to 2<sup>nd</sup> June 2018. The data was collected from 3<sup>rd</sup> September to 2<sup>nd</sup> December 2017 and then analysed. The study was approved by the ethics committee of the Institution (ref. no. F-24/PR/COMJNMH/IEC/17/1310).

All pregnant women who were admitted to undergo vaginal or caesarean delivery, had given written consent for Cu-T 380A insertion and agreed for a follow-up upto three months were included in the study. Exclusion criteria were unresolved PPH, acute purulent discharge, PROM >18 hours, chorioamnionitis, any congenital malformation of the uterus, large fibroid, etc.

All women irrespective of maternal age, risk factor and proposed mode of delivery at the antenatal clinic of the institution were counselled about contraceptive options. First 127 mothers who delivered vaginally and the first 127 mothers who underwent caesarean section were regarded as study groups and were followed up for three months.

The sample size was calculated by using the reference of scientific tables 7<sup>th</sup> edition Geigy 1970, p28 and the minimum sample required to conduct the study was found to be 127. Therefore we have taken 127 as our sample size in each group.

Cu-T 380A was inserted within 10 minutes of placental expulsion in vaginal deliveries and during caesarean section. Post placental insertion of Cu-T 380A in vaginal delivery was done by using Kelly's Forceps. IUCD was held suitably with a long forceps without a lock. The instrument was inserted up to the fundus of the uterus and the IUCD was released. Intra-caesarean PPIUCD was done by holding the IUCD between the middle and index fingers of the hand and pass it through the uterine incision. After placing it at the fundus of the uterus, the hand was withdrawn taking care that the IUCD remains properly placed.

Any possible complication in the immediate post-partum period attributable to the PPIUCD was noted. Counselling was done in the maternity ward before discharge regarding complications that can occur like expulsion, bleeding, abdominal pain and infection, etc. A follow-up plan at six weeks and three months after discharge from the hospital was explained to the patients. Both the study groups were compared based on study variables included in this study like expulsion of CuT, missing string etc. by clinical examination and ultrasonography. Socioeconomic status classification was done by standard Kuppuswamy classification. At the end of three month we compared the incidence of different complications among groups e.g., bleeding, pain, infection, perforation and client satisfaction. Client satisfaction was assessed after three months using visual analogue scale. Maximum satisfaction was given a scale of 5 and the least satisfaction was given a scale of 1. Mothers who did not come for clinical follow-up was called up by telephone calls to the number provided during admission for follow-up examination at OPD.

## RESULTS

During the data collection period 2287 women were counselled during the antenatal visit, after admission to the hospital and in the immediate post-partum period. Overall 1345 patients (799 cases in c/s group and 546 cases in vaginal delivery group) had PPIUCD insertion in the study period. Acceptance rate was 58.81% [Table/Fig-1].

Month	No. of mother counselled	No. of mother accepted	Acceptance rate (%)
September 2017	761	443	58.2
October 2017	805	475	59
November-Dec 2 <sup>nd</sup> 2017	721	427	59.2
Total	2287	1345	58.8

[Table/Fig-1]: Acceptance of post-partum IUCD among mothers after counseling.

First 127 mothers who delivered vaginally and the first 127 who underwent caesarean section were regarded as study groups and were followed up for three months. The study subjects were compared with respect to their demographic parameters [Table/Fig-2].

Different complications and patient's satisfaction using visual analogue scale was also compared [Table/Fig-3].

## DISCUSSION

In present study we found acceptance rate to be 58.81% which is quite high. Kharkwal S et al., also found acceptance rate of PPIUCD to be 60% [3] whereas, Kanhere AV et al., found acceptance rate of PPIUCD insertion to be 36% [4]. As the nurses of our maternity ward were also given training, they contributed to the increase in post placental insertions and hence training of staff is essential. In a 5 year study conducted by Shukla M et al., in 2012 in a tertiary care centre in north India, the PPIUCD acceptors were between 22-30 years of age, 31.66% were primiparas and

Parameters	Caesarean section	Vaginal delivery	Significance (p≤0.05)
Age (mean±SD)	25.1 (±4.34)	23.6 (±3.85)	0.27
Parity N (%)			
1	65 (51%)	74 (58%)	0.41
2	50 (39%)	43 (34%)	0.62
3	9 (7%)	8 (6%)	0.93
4	1 (0.8%)	1 (0.8%)	
5	1 (0.8%)	1 (0.8%)	
6	1 (0.8%)	0	
Socioeconomic status			
Upper middle	2 (2%)	4 (3%)	0.689
Lower middle	19 (15%)	19 (15%)	1
Upper lower	69 (54%)	74 (59%)	0.393
Lower	37 (29%)	30 (23%)	0.428

[Table/Fig-2]: Demographic parameters comparison of the two groups.

Parameter	Intra-caesarean group	Vaginal delivery group	Significance (p≤0.05)
Expulsion of cu-T at 6 weeks	1 (0.8%)	5 (3.9%)	0.09
Expulsion rate at 3 months	4 (3.1%)	6 (4.7%)	0.51
Missing string at 6 weeks	50 (39.3%)	44 (34.6%)	0.51
Missing string at 3 months	50 (39.3%)	34 (26.9%)	0.04
Vaginal bleeding (At 3 months)	5 (3.9%)	6 (4.7%)	0.74
Pelvic pain (At 3 months)	8 (6.2%)	9 (7.1%)	0.78
Vaginal discharge (At 3 months)	6 (4.7%)	4 (3.9%)	0.75
Score 3 in VAS	61.4	62.7	

[Table/Fig-3]: Comparison of complications between two groups.

68.33% were multiparas [5]. This was in contrast to present study where most PPIUCD acceptors were primiparas. It is evident that in a study where multipara acceptors were common, PPIUCD was an alternative to permanent sterilisation whereas in this study birth spacing was the intention. Economically the majority of the acceptors in this study were women belonging to upper lower class that had no knowledge about the benefits of PPIUCD but accepted it after proper counselling was done in antenatal clinic. 99.2% women who had insertion after vaginal delivery and 100% women with intra-caesarean insertion reported for follow-up at six weeks. Subsequently, same percent of follow-up presented at three months. In the north Indian series by Shukla M et al., 78.7% came for the first follow-up at six weeks but incidence fell to 11.37% at six months [5]. The cumulative expulsion rates in intra-caesarean and post vaginal delivery groups were 3.9% and 8.6% respectively. As a whole expulsion rate of PPIUCD was 6.3% in this study. A cohort study from China by Chi Zhou SW et al., found significantly lower expulsion rate of PPIUCD in caesarean section group than after vaginal delivery [6]. A study in Mexico investigated 157 insertions after caesarean section Vis a Vis post vaginal deliveries. After one year expulsion rates were 9% and 13% in the two groups respectively. Missing thread was a common complaint particularly in caesarean delivery group. The rate was 39.3% in intra-caesarean insertion versus 34.6% in post vaginal delivery at six weeks and 39.3% in intra-caesarean and 26.9% in post vaginal delivery at three months follow-up. At three months follow-up the difference between the two groups was statistically significant (p-value-0.04). In the study by Shukla M et al., rate of missing thread was 11.2% at six weeks 10.1% at six months [5].

The present study revealed low rate of complication viz., bleeding, pain and infection to the tune of 4.7%, 7.1% and 3.9% respectively with post placental insertion; however, in caesarean delivery group 3.9%, 6.2%, and 4.7% respectively. Moreover, when the complications compared between the two groups the difference was not statistically significant (p>0.05). None of their uterus got perforated during the procedure of insertion in both groups. No

mother in each group became pregnant during follow-up period of three months. However, further long term follow-up is essential. Hooda R et al., also found no case of pregnancy and perforation [7]. For degrees of satisfaction majority gave a score of 3 which meant that the method was acceptable to the users. A 7.1% of intra-caesarean acceptors and of 2.4% post vaginal delivery acceptors were totally dissatisfied with this type of contraception.

## LIMITATION

The present study was limited by its small sample size and short period of follow-up. Therefore, based on this study results it is hard to comment on the occurrence of uncommon complications like perforation of uterus and pregnancy rate in both the groups of PPIUCD use. A study with more number of subjects and long term follow-up would better address those issues.

## CONCLUSION

Counseling increases the acceptance of PPIUCD. Education played a pivotal role in the acceptance of PPIUCD. Missing string is a common problem following PPIUCD Cu-T 380A insertion in intra-caesarean mothers as compared to post vaginal delivery mothers. Visibility of string progressively increased with passage of time. Expulsion rate was found to be low during the follow-up period. Present study noted 100% contraception efficacy of the PPIUCD though follow-up was for three months only. With proper

insertion techniques expulsion rate can be kept low. None of mother had perforation of uterus during study period. Client satisfaction rate is comparable in both the groups of PPIUCD acceptors. This study suggests that immediate post placental insertion of IUCD is a convenient opportunity which should not be missed in countries like ours with high rates of unplanned and short interval pregnancies in women with limited exposure to health care providers.

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Date of Submission: **Mar 19, 2019**

Date of Peer Review: **Apr 04, 2019**

Date of Acceptance: **Jun 01, 2019**

Date of Publishing: **Jul 01, 2019**

FINANCIAL OR OTHER COMPETING INTERESTS: None.