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Original Research Article

A Prospective Analysis of the Acceptability, Safety, and Effectiveness of Intrauterine Device Insertion during the Postpartum Period

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Abstract

Background: Utilising the best possible hospital resources, the post-partum intrauterine contraceptive device offers a secure and perfect method of contraception. Promoting post-partum contraception proactively provides numerous health benefits and prevents difficulties from unintended births. The purpose of this study is to assess and contrast the acceptability, safety, and effectiveness of Post-partum IUCD implantation during vaginal and intra-caesarean delivery.

Methods: In this prospective study, which carried out from January 2022 to December 2022 at the Department of Obstetrics and Gynaecology, SKMCH, Muzaffarpur, Bihar. Total 145 mothers had PPIUCD implanted during the course of the 12-month study period. In 145 mothers we selected 100 mothers for PPIUCD implanted, first 50 vaginal birthing women and another 50 caesarean mothers were selected for the study.

Results: Both PPIUCD insertion techniques were proven to be extremely successful methods of birth control with very low rates of expulsion, vaginal bleeding, abdominal pain, infection, and missing thread.

Conclusion: After a vaginal or caesarean delivery, PPIUCD is a reliable and effective technique of family planning.

Keywords: IUCD, PPIUCD, Family Planning Method.

Introduction

In India, over 27% of deliveries occur within 24 months of the initial delivery, and another 34% occur within 24 to 35 months. In India, 61% of births occur at intervals that are less than the suggested birth to birth period of roughly 36 months. In the first year of usage, Multiload Cu- 375 A has a failure rate of less than 1 per 100 women, making it an efficient and secure approach for spacing deliveries and reducing births in the early postpartum period [1].

After the woman receives counselling and provides informed consent, the PPIUCD must be implanted. Counselling should be provided throughout the prenatal stage, the beginning of labour, or right after delivery. After placenta delivery, after a caesarean section, or within 48 hours of childbirth, PPIUCD can be implanted [2].

By utilising the postpartum window for family planning advice and PPIUCD insertion, several obstacles to service delivery are removed. Since most women only see medical professionals during childbirth and may never return to seek contraceptive guidance, PPIUCD may offer the best potential to reduce fertility rates in poor nations. The study objective was to assess the effectiveness and safety in terms of complications like accidental pregnancy, expulsion, infection, missing string, pain in the abdomen, bleeding per vagina, white discharge, uterine perforation, and discontinuation and to compare them between the two modes of insertion, namely vaginal insertion versus intra-caesarean insertion.

Material and Methods

From January 2022 to December 2022, an interventional prospective study was carried out in the Obstetrics and Gynaecology Department at Sri Krishna Medical College and Hospital, Muzaffarpur, Bihar. All qualified women who met the inclusion requirements (parity within 48 hours of delivery and postpartum mother of any age) were enrolled in the trial. Mothers who were more than 48 hours postpartum, had a history of chorioamnionitis, experienced protracted membrane rupture, or had untreated PPH were not eligible for PPIUCD implantation. Multiload Cu-375 was inserted high up in the fundus shortly after vaginal delivery, within 10 minutes of placenta expulsion (referred to as post-placental), or within 48 hours post-partum using long Kelley's forceps, after advising and obtaining informed permission. Mothers were released from the hospital 48 hours after delivery and the strings were left intact and not visible vaginally.

These mothers underwent caesarean sections, and the Multiload Cu-375 was inserted through the uterine incision while being held by sponge-holding forceps and put high up at the fundus. To prevent contamination and Multiload Cu-375 displacement as well as infection by vaginal flora, strings were positioned in the lower portion but not forced into the cervical canal. Strings must be excluded with caution during suture. 350 mothers in all received prenatal counselling.

155 of them agreed to use it, and 135 of them actually performed the insertion. Within 10 minutes of the placenta being expelled, Multiload Cu-375 was implanted in 70 mothers who gave birth vaginally. Multiload Cu-375 was implanted after caesarean sections in 65 women. Following vaginal birth, 40 more mothers received counselling, and 15 of them agreed. Out of the 15 people who agreed to it, Cu T was added in 10 instances. There were so 80 moms in all in whom vaginal insertion was performed. They were split into the vaginal PPIUCD insertion group (Post placental + immediate Post-partum and intra-caesarean insertion PPIUCD group) depending on the method of delivery. The first 50 women in each group were enlisted serially, and these women were used as the study population. They were monitored for six weeks, six months, and twelve months before being statistically analysed.

Result and Analysis

According to the results of our study, acceptability of PPIUCD was highest among patients aged 21 to 25 (42% and 46%) and lowest among those aged 26 to 30 (26% and 24%) in both groups (Vaginal insertion and intra-caesarean). Primipara mothers were more likely to accept PPIUCD than other

mothers (in the vaginal and intra-caesarean groups, respectively, 44% and 50%). In compared to rural mothers (40% for vaginal delivery and 44% for caesarean), mothers from urban backgrounds were more motivated (60% and 56%) (Table 1).

Table 1: Distribution of Study Population of both groups

	Vaginal Insertion		Intra-CaesareanInsertion	
	No.	**Percentage**	**No.**	**Percentage**
Age Group (Years)				
<20	10	20.00%	7	14.00%
21-25	21	42.00%	23	46.00%
26-30	13	26.00%	12	24.00%
31-35	4	8.00%	7	14.00%
>35	2	4.00%	1	2.00%
Parity				
Para 1	22	44.00%	25	50.00%
Para 2	20	40.00%	20	40.00%
Para 3	8	16.00%	5	10.00%
Educational Status				
Illiterate	10	20.00%	5	10.00%
Literate	40	80.00%	45	90.00%
Residence				
Rural	20	40.00%	22	44.00%
Urban	30	60.00%	28	56.00%

Expulsion rates were not statistically significant at 2% for vaginal insertion and 1% for intra-caesarean delivery.

When ejection rate was examined between post-placental PPIUCD (2.22%) and immediate Post-partum PPIUCD (20%) in the vaginal group, a statistically significant difference was discovered (p=0.0659) (Table-2).

Table 2: Complications of PPIUCD among Vaginal and Intra-Caesarean Group

	Vaginal Group			Intra- caesareangroup (50)
Complications	**Post-Placental(45)**	**Immediate Postpartum(5)**	**Total (50)**	
Expulsion	1(2.22%)	1(20.0%)	2%	1(2%)
Bleeding p/v	5(11.11%)	1(20.0%)	6%	3(6%)
Pain abdomen	4(8.88%)	1(20.0%)	5%	3(6%)
Pregnancy	0	0	0	0
Infection	1(2.22%)	0	1%	1(2%)
Long strings	3(6.67%)	0	3%	3(6%)
Missing strings	8(17.77%)	0	8%	15(30%)

6% of mothers in the vaginal group and 3% of mothers in the intra-caesarean group both had vaginal haemorrhage. 5% of vaginal delivery mothers and 3% of intra-caesarean delivery mothers both reported experiencing abdominal pain.

Table 3: Causes for Discontinuation of PPIUCD

Causes for Removal	Type of Insertion	Removal at 6 Weeks	Removal at 6 Months	Removal at 12 Months	Total Removal
Excessive Vaginal Bleeding	Vaginal Intra-caesarean	1 0	1 0	1 0	3 0
Severe pain Abdomen	Vaginal Intra-caesarean	0 0	0 1	1 1	1 2
Partial Expulsion	Vaginal Intra-caesarean	2 1	0 0	0 0	2 1
Total Removal	Vaginal Intra-caesarean	3 1	1 1	2 1	6 3

IUCD had to be removed for vaginal haemorrhage in 3% of women in the vaginal group and in 0% of mothers in the intra-caesarean group. In the surgical group (2%), and the vaginal group (1%), abdominal pain forced removal. (Table 3). In any group, no pregnancies were noted during the following year of follow-up. In both the vaginal and intra-caesarean groups, 1% of mothers showed signs of infection.

Long string was discovered in 6.67% of moms who underwent post-placental insertion, 20% of mothers who underwent immediate post-partum insertion, and 3% of mothers who underwent intra-caesarean section. Missing strings were reported by 8% of vaginal delivery mothers and 15% of intra-caesarean delivery mothers, which is statistically significant ($p \geq 0.031$). No strings were lost from the immediately post-partum insertion in the vaginal group.

It is not statistically significant that 6% of PPIUCD were completely removed during vaginal delivery and 3% via caesarean delivery. Partial spontaneous expulsion accounted for 2% of removals in the vaginal group and 1% in the caesarean group. In the vaginal group, excessive vaginal haemorrhage resulted in 3% of multiload Cu-375 removal, compared to 0% in the intra-caesarean group. 2% of intra-caesarean babies were removed because to severe abdominal pain, compared to 1% of vaginal babies.

Discussion

In contrast to the study conducted by Safwat *et al*. in Egypt, where 16% of primipara accepted the usage of PPIUCD compared to one third of grand multipara, acceptability of PPIUCD was higher among parity 1 and parity 2 in our study.[3] The urban population is more accepting than the rural population, which may be a result of the urban population's greater educational standing. The study by Safwat *et al*., which found that women with formal education were accepted at a rate of 19.4% while those without had an acceptance rate of 9.4%, supports this. In our investigation, the expulsion rate was 2% in the vaginal group and 1% in the intra-caesarean group, which was much lower than the expulsion rate of 12.3% in the early post-placental insertion of IUCD in the study by Celen S *et al*. in 2014.[4] In 2017, a different study indicated that the ejection rate for intra-caesarean IUCD was 17.6%. [5] According to a study by Kapp N. *et al*., post-placental birth had lower ejection rates than immediate post-partum delivery in the vaginal group.[6]

As seen by Welkovic *et al*.[7], there was statistically no significant difference in bleeding and infection between the vaginal and intra-caesarean groups in our investigation. In our study, 1% of women had

a pelvic infection, which is consistent with research done in Kenya and Mali, where the infection rate was less than 2%. In the groups of moms who underwent vaginal and intra-caesarean insertions, respectively, 5% and 7% reported white discharge, which is not statistically significant. 5% and 3% of mothers of the vaginal and intra-caesarean implantation groups, respectively, reported abdominal pain.

There was a significant difference between the two groups in terms of the number of missing threads (p=0.028), however there were none in the group of women who had just given birth. In our study, a large number of intra-caesarean inserted PPIUCD moms presented with no clinically evident threads even at 12 months follow-up, which is later validated by ultrasonography. Nelson A et al. detected the string in all intra-caesarean implanted PPIUCD.[8]

Long string that causes unease and discomfort was detected in 3% of women with vaginal PPIUCD and 3% of mothers with intra-caesarean PPIUCD. However, there was a statistically significant difference between the two groups of vaginal insertion. 20% of moms with post-placental IUCD and 20% of mothers with immediate post-partum IUCD were found to have lengthy threads. Similar to the study conducted by Levi E. et al., 70% of the women were satisfied with the PPIUCD placed vaginally and 65% in the group undergoing caesarean section.[9] Whether an IUCD was put intra-caesarean or vaginally, the contraceptive effectiveness was the same, or 0 per HWY, and neither group experienced a perforation. According to the findings of our study, PPIUCD is a reliable and secure method of contraception, supporting the conclusion made by Grimes et al. in their 2015 Cochrane Database review.[10]

Conclusion

Our study has shown that PPIUCD is safe and effective for post-partum family planning, regardless of the delivery method, as inserting Multiload Cu-375 during the post-partum period is safe, leading to increased use of the IUCD. In contrast to earlier investigations, the ejection rate in our study is low.

Both intra-caesarean insertion and vaginal insertion are effective methods of contraception and low-risk in terms of complications. The PPIUCD is risk-free; there have been no reports of pregnancies, and ejection, abdominal pain, pelvic infection, or string loss are uncommon. When compared to vaginal insertion, the continuation rate for intra-caesarean insertion is higher.

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