Section: Obstetrics & Gynecology

Original Research Article

A HOSPITAL BASED COMPARATIVE STUDY OF POST PARTUM INTRAUTERINE CONTRACEPTIVE DEVICE INSERTION IN VAGINAL DELIVERIES VERSUS CAESAREAN SECTION

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Received : 06/04/2025
Received in revised form : 27/04/2025
Accepted : 15/05/2025

Keywords:
PPIUCD, Menstrual Bleeding, Missing String, Parity, Vaginal Deliveries, Caesarean Deliveries.

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DOI: 10.47009/jamp.2025.7.5.4

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2025; 7 (5); 15-19

ABSTRACT

Background: Family planning is important not only for population stabilization, but it also improves maternal and new-born survival and health. Postpartum period is one of the critical times when women need an integrated package of health services including contraceptive advice. Main purpose of this study was to compare risk and complication of PPIUCD in both vaginal and cesarean delivery groups and to assess the safety, feasibility, efficacy, expulsion, removal and continuation rate of postpartum IUCD insertion in both groups. **Materials & Methods:** This is a hospital based prospective study done on obstetrics and gynecology department at government district hospital Sawaimadhopur, Rajasthan, India during one year period. A total of 120 patients with caesarean and vaginal deliveries had PPIUCD insertions and they were followed up for one year. The outcome measure analyzed were safety measures (menstrual irregularities, vaginal discharge, pelvic infection, perforation, failure, expulsion and removal). **Results:** PPIUCD is an effective intervention in both caesarean and vaginal delivery with no significant differences in safety (menstrual complaints, fever and vaginal discharge; $p>0.05$). There was no case of perforation or failure and no significant risk of infection in either group (only 1.66% vaginal discharge). Spontaneous expulsion occurred in three cases inserted by vaginal route. Missing string incidence is high in the caesarean group (60%) compared to vaginal insertion (16.66%) ($p= 0.02$). **Conclusion:** PPIUCD is a safe effective and convenient method of contraception and should be encouraged in both vaginal and caesarean deliveries.

INTRODUCTION

Family planning services is important not only for population stabilization, but it also have undergone a paradigm shift and emerged as one of the interventions to reduce maternal and infant mortalities and morbidities.[1] India became the first country in the world to launch the Family Planning Programme in 1952. However, the concept of Family planning as a strategy for population control received attention mainly after 1971 population census. In India, over the last 50 years, contraceptive usage has increased four times on an average. Overall contraceptive usage was about 13% in the 1970s to 40.6 % in 1992-93 National Family Health Survey (NFHS1 pre ICPD) to 56.3% in 2005-06 (NFHS3). For rural India this increase has been from 37% to 53%.[2,3]

Female sterilization continues to account for the most commonly used method accounting for two-thirds of contraceptive use (34.3%) and male sterilization is still the least used method (1.5%). Family planning is important not only for population stabilization, but it also improves maternal and new-born survival and health.

Government of India has launched not only several family planning programmes which promotes birth spacing but also promotes institutional deliveries all over the country where postpartum family planning services is available.[4] In India, 65 percent of women in the first year postpartum have an unmet need for family planning. Short interconceptional period in a woman puts her at increased risk of morbidity and mortality. The significance of healthy spacing of pregnancy is emphasized by the fact that nearly 61% of births in India occur at interval that is shorter than the recommended birth to birth interval of approximately 36 months.[5] Studies show that pregnancies taking place within 2 yrs of previous birth have higher risk of adverse outcome like

ISSN (O): 2687-5365; ISSN (P): 2753-6556

abortion, premature labour, postpartum haemorrhage, low birth weight babies, fetal loss and maternal death. So, spacing is important both for maternal and newborn survival and health. It reduces maternal and child mortality and morbidity. India's maternal mortality is 113/100000 live births for the period 2016-2018 (according to National sample registration system) i.e. many women to die from pregnancy and childbirth complications every year. To improve rural health care and delivery system Govt. of India launched various scheme named "Janani Suraksha Yojana" (JSY), "Janani Shishu Suraksha Yojana" (JSSY) etc. Later was launched by the Government of India on June 1, 2011. It entitles all pregnant women are delivering in public health institutions to absolutely free and no expense delivery, including caesarean section to provide drugs and diagnostics, transportation and neonatal health care up to 30 days postpartum.[6]

Postpartum period is one of the critical times when women need an integrated package of health services including contraceptive advice. At this time women are highly motivated and receptive to accept family planning (FP) methods.[5]

Various postpartum family planning methods include condoms (barrier method), intrauterine contraceptive device, LAM, progesterone only pill or injectable, female and male sterilization. Provision of intrauterine devices in immediate postpartum period offers an effective and safe method for spacing and limiting births. IUCD users have higher satisfaction rate (99% versus 91% for pill users) and higher continuation rates than users of many other methods. Post-partum intrauterine contraceptive device (PPIUCD), a long-acting reversible contraceptive (LARC) contraception in women of reproductive age worldwide.[7,8] IUCD may be inserted in post-partum period, post abortal or in interval period. PPIUCD insertion can be done following delivery of placenta, during cesarean section, within 48 hours of childbirth. The type of insertion can be categorized as: post placental: insertion within 10 minutes after expulsion of the placenta following a vaginal delivery on the same delivery. Intracaesarean: insertion that takes place during a cesarean delivery, after removal of the placenta and before closure of the uterine incision. Early postpartum: insertion within 48 hours of delivery. Delayed partum (Interval): Insertion at or after 6 weeks of delivery. The IUCD is not inserted from 48 hours to 6 weeks following delivery because there is an increased risk of infection and expulsion. Immediate PPIUCD insertion has many advantages except little higher rate of expulsion. IUCDs provide a high level of efficacy with no systemic metabolic effects. Regular continuous motivation and frequent follow up are not required to ensure efficacy once the device is inserted. So, this method for contraception thereby is good choice for illiterate population also. There are many advantages to Insert of an IUCD immediately after delivery. Mother are strongly motivated for contraception in the postpartum period as she immediately pass through a stress full journey, IUCD assure her that not get pregnant immediately. Minimum side effects of IUCD like pain in abdomen and irregular bleeding which are masked with the after pains and lochia respectively. There are less chances of heavy bleeding as most women have amenorrhea due to lactation. Chance of uterine perforation is less because of thick wall of uterus just after delivery as compared to interval period. The method is convenient for both women and also for their health care providers as it is associated with less discomfort and fewer side effects than interval insertion.[9] It saves time as it is performed on the same delivery table for post-partum and intra-caesarean insertions and needs minimal additional instruments and supplies. Increased institutional deliveries in India are the opportunity to provide women easy access to immediate PPIUCD. PPIUIUD is a good contraceptive method for lactating women because it has no effect on the quantity or composition of breast milk.[10] Postpartum IUCD is coitus independent. Expulsion rates may be as high as 10% but the retention rate is still 90%, thus despite higher expulsion rate for immediate PPIUCDs the public health benefit of the service is higher. The skilled clinician and the right technique of insertion are associated with less expulsion rates. Failure rate of this contraceptive is very little i.e. chances of pregnancy rate of 0.6 to 0.8/100 women year of first year of uses. IUCD provides effective contraception maximum for 10 years (Copper 380A).

Insertion of IUCD in post-partum period have various benefits over interval insertion. Advantage includes high motivation with surety the woman being not pregnant. Postpartum insertion avoids discomfort during interval insertion and insertion related bleeding will be masked by lochia.[11] Main purpose of this study was to compare risk and complication of PPIUCD in both vaginal and cesarean delivery groups and to assess the safety, feasibility, efficacy, expulsion, removal and continuation rate of postpartum IUCD insertion in both groups.

MATERIALS AND METHODS

A hospital based prospective study done on obstetric and gynecology department at government district hospital Sawaimadhopur, Rajasthan, India during one year period. All eligible women fulfilling the inclusion criteria (post-partum mothers of any age and parity within 48 h of delivery) were enrolled for study. Mothers >48 h post-partum, history of chorioamnionitis or prolonged rupture of membrane >18 h, unresolved PPH, HIV not on antiretroviral therapy, high risk of Chlamydia and gonorrhea infection, known pelvic tuberculosis, diabetes, and heart disease who were excluded for PPIUCD insertion were enrolled in the study. Clients who did not wish PPIUCD were also excluded.

According to mode of insertion total mother was divided into two groups. Group A was where PPIUCD is inserted after placental expulsion in vaginal delivery. Group B was where PPIUCD is

ISSN (O): 2687-5365; ISSN (P): 2753-6556

placed after placental removal and before uterine wall closure in caesarean section. The mothers were explained about the benefits and side effects of IUCD and other available methods of contraception as cafeteria approach during antenatal period.

Method of Insertion: For post placental vaginal insertion i.e. group A, required a long placental forceps. The instrument was inserted up to the fundus of the uterus, and the IUCD was released. Fundal placement of IUCD is the most important step to reduce expulsion of IUCD. Negotiation of the angle between upper and lower uterine segment is a challenge during insertion. Keeping the hand on the uterine fundus and making the uterine axis straight helps in negotiating the angel. For intracaesarean insertion i.e. Group B, the IUCD was introduced through the uterine incision during caesarean section and placed at the uterine fundus. This was done manually regular ring forceps, since it was not necessary to use a long instrument to reach the fundus. After the placenta was removed, we inserted IUCD and then closed the uterine incision. We never attempted to pass the strings of the IUCD through the cervical os before closure of the uterus as this will displace the IUCD and leave it lower down the uterine cavity. Both groups were advised to follow up at 6 weeks and 3months after discharge (may contacted through phone) and also advised to come back any time if any complaints like excessive bleeding, unbearable lower abdominal pain with or without chill- rigor and fever, foul smelling vaginal discharge etc. Percentage was used for statistical analysis. All data obtained from the PPIUCD register, delivery register and used ratio, proportion & percentage.

Table 1: Sociodemographic profile & Obstetric profile of acceptors

Parameters		No of patients	Percentage
Age in years	<19	4	3.33%
	20-25	68	56.66%
	31-35	38	31.66%
	>35	10	8.33%
Education	No formal education	7	5.83%
	Primary	26	21.66%
	Secondary	75	62.5%
	Higher education	12	10%
Socio-economic status	Lower	30	25%
	Middle	90	75%
Residence	Rural	100	83.33%
	Urban	20	16.66%
Parity	Primipara	28	23.33%
	Multipara	92	76.66%
Gestational age	Term	94	78.33%
	Preterm	26	21.66%
Time of Counselling	Antenatal	50	41.66%
	Early labour	67	55.83%
	Postnatal	3	2.5%
Root of Injection	Post placental (in 10 min.)	58	48.33%
	Postpartum (in 48 hours)	2	1.66%
	Intra-caesarean	60	50%

Table 2: Comparison of menstrual complaints and route of insertion

Parameters		Vaginal (N=60)	Caesarean (N=60)	Total No (%)	P value
Menstrual complaints	6 weeks	0 (0)	0 (0)	0 (0)	>0.05
	6 months	10 (16.66%)	7 (11.66%)	17 (14.16%)	
	1 year	11 (18.33%)	8 (13.33%)	19 (15.83%)	
Fever	6 weeks	4 (6.66%)	0 (0)	4 (3.33%)	-
	6 months	0 (0)	0 (0)	0 (0)	
	1 year	0 (0)	0 (0)	0 (0)	
Vaginal discharge	6 weeks	1 (1.66%)	0 (0)	1 (0.83%)	-
	6 months	3 (3.33%)	1 (1.66%)	4 (3.33%)	
	1 year	1 (1.66%)	1 (1.66%)	2 (1.66%)	

Table 3: Comparison of parity and missing string between vaginal and caesarean deliveries

Parameters		Vaginal (N=60)	Caesarean (N=60)	Total No (%)	P value
Parity	Primi	7 (11.66%)	25 (41.66%)	32 (26.66%)	<0.001*
	Multi	53 (88.33%)	35 (58.33%)	88 (73.33%)	
Missing stung	Yes	10 (16.66%)	36 (60%)	46 (38.33%)	0.003
	No	50 (83.33%)	24 (40%)	74 (61.66%)	

RESULTS

In current study total number of deliveries were 1200 in this institute during one-year period, out of that 74% was vaginal birth and 26% was caesarean birth respectively. Total 120 mother accepted PPIUCD though 785 mother were willing for this device.

ISSN (O): 2687-5365; ISSN (P): 2753-6556

The majority of participants belonged to 20-25 years of age (56.66%). The Middle socio-economic group (75%) constituted the majority and 85.4% were primary or secondary school educated (table 1). Evaluation of their clinical profile revealed that multipara constituted the majority (76.66%), while primipara was very reluctant for PPIUCD (23.33%) (table 1). Among the primies, those undergoing caesareans had a higher percentage of acceptance 41.66% probably because of better spacing after a caesarean section. Acceptance was better when counselled in early labour (55.83%) compared to antenatal counselling (41.66%) (table 2).

3.33% of patients had fever at 6-week menstrual problems in the form of irregular spotting and dysmenorrhea, but only 5% of patients had to follow up which was attributed to urinary tract infection (UTI), mastitis and lower respiratory tract infection (LRTI). No further episodes of fever at subsequent follow-up were noted. There was no case of puerperal sepsis or pelvic inflammatory disease. Vaginal discharge noticed by 2 patients was diagnosed as normal leucorrhoea and candidacies which responded to reassurance and antifungal treatment respectively. There was no case of uterine perforation or IUCD failure in our study. There was no significant association between menstrual complaints and route of insertion. The missing string was significantly higher in the caesarean group (p=0.003) compared to vaginal insertion (table 4).

DISCUSSION

The IUCD is cost effective, easily accessible, highly effective, long acting, reversible, safe family planning method in post-partum period which is highly vulnerable period as there are limited contraceptive options available in the breast-feeding women. Postpartum period is potentially an ideal time to start contraception as women are more strongly motivated at this time, which also has the advantage of being convenient for both women and health-care providers.[12] Early and repeated counselling of contraception during each antenatal visit was started from our PP Unit by all category of service care provider.

PPIUCD is emerging as a good option for contraception with the help of counselling on family planning immediately after the postpartum period. In developing countries like India, delivery is the only occasion when healthy women come in contact with health care providers, and they may never return seeking contraception guidance, so IUCD insertion during this period may be the best scope to limit fertility rate.[13]

The present study revealed that maternal age is a key factor in the acceptance of contraception. We found that majority of the women who accepted contraception were of 20-25 years of age (56.66%). Another study from Kolkata by Halder et al including 200 women found that in both groups (vaginal insertion and intra-caesarean), acceptance of PPIUCD was highest among the age group between 21–25 (44 %) followed by 25–30 years (23 %).[14] Hence focus should be on young primiparas who are reluctant to return for interval contraception.

In the present study, it was found that the majority of participants accepted the method when they were informed during early labour (55.83%) compared to antenatal counselling (41.66%). Those patients who were willing to accept during the antenatal period become reluctant later as they are more exposed to rumours and myths regarding copper T. Involvement of the husband in counselling increased the acceptance rate for PPIUCD as revealed in previous studies. In a similar series by Smith et al where women who received information on contraception did not have any significant difference in contraceptive use as compared to those who did not receive such information.[15] Providing key essential messages at all contact points during the maternity cycle will increase the proportion of women who received the information and can make an informed decision.

Using copper IUCDs is often accompanied by an increased amount of menstrual bleeding. Halder et al reported bleeding among 10 % of mothers in each vaginal group and 5 % of mothers in the intra-caesarean group.[14] But bleeding was irregular, mild, and on and off in 6.6 % in post- placental insertion, 10 % in immediate post-partum insertion and 2 % in intra-caesarean insertion.[14] In a similar study by Pareek and Gandhi found bleeding rates to be 6.6% with caesarean insertion.[16] In a similar series by Shukla et al found an increased incidence of menorrhagia with the use of copper T 200 as interval insertion. This should be noted that the difference in types of IUCD used could explain the different rates of bleeding problems.[17] In the present study we did not find any significant association between menstrual complaints with the route of insertion.

The present study showed only 1.66% vaginal discharge and there was no significant association between vaginal discharge and route of insertion. In agreement with to present study Welkovic et al compared the infection rate among IUCD users and non-users and found no difference.[18]

There is debate whether a difference in expulsion rates is related to the time of insertion. Type of IUCD, technique of insertion and skill and expertise of service provider. Expulsion of PPICD usually occurs in the first few months after insertion. Halder et al reported an expulsion rate of 4 % in the vaginal group and 2 % in the intra-caesarean group.[14] Celen et al reported that the 1-year cumulative expulsion rate with copper T was 12.3 % in the early post-placental insertion of IUCD.[19]

In the present study, there was no case of perforation or failed IUCD as the uterine wall is thick after delivery and uterine perforation is unlikely to occur during the postpartum period.

One very important observation made in the present study during follow-up was the missing strings. In a

ISSN (O): 2687-5365; ISSN (P): 2753-6556

report by Halder et al, missing strings were complained about by 16 % of mothers in the vaginal group and 30 % of mothers in the intra-caesarean group.[14] There is limited evidence regarding the missing strings in PPIUCD insertion.

CONCLUSION

In current study the postpartum contraceptive intrauterine device acceptance among the vaginal birth group was higher than caesarean birth group. Most important cause for this acceptance was team work of health care provider of PP unit and indoor unit. PPIUCD is an effective safe and convenient method of contraception which can be integrated with maternal child health services ensuring an appropriate long-term reversible family planning method before returning home. PPIUCD is therefore a strong weapon in the family planning armamentarium and should be encouraged in both vaginal and caesarean deliveries.

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ISSN (O): 2687-5365; ISSN (P): 2753-6556