

Research Article

Comparative Evaluation of Postpartum Versus Interval Intrauterine Contraceptive Device Insertion: Safety, Continuation and Clinical Outcomes

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ABSTRACT

Background: The postpartum period provides an important opportunity to initiate effective contraception, particularly in women who may have limited access to subsequent family-planning services. Intrauterine contraceptive devices (IUCDs) provide long-acting, reversible contraception; however, outcomes may vary according to the timing of insertion.

Objective: To compare the safety, continuation, complications, and acceptability of postpartum and interval IUCD insertion.

Methods: This prospective hospital-based comparative study included 968 women, with 484 each in the postpartum and interval IUCD groups. CuT380A and Multiload 375 devices were used. Participants were followed at approximately 6 weeks and 6 months. Complications, expulsion, removal, continuation, and satisfaction were assessed. Categorical variables were compared using chi-square or Fisher's exact test, with $p < 0.05$ considered statistically significant.

Results: At the first follow-up, continuation was significantly higher in the postpartum group than in the interval group (95.0% vs 86.8%; $p < 0.01$). At the second follow-up, continuation remained significantly higher with postpartum insertion (91.7% vs 81.8%; $p < 0.01$). At 6 months, irregular bleeding, vaginal discharge and lower abdominal pain were less frequent in the postpartum group, whereas spontaneous expulsion was higher.

Conclusion: Postpartum IUCD insertion was associated with high continuation and satisfaction rates and represents an effective and feasible contraceptive option, although appropriate counselling and follow-up for expulsion are important.

Keywords: Postpartum IUCD, Interval IUCD, Contraception, Continuation Rate, Expulsion, Family Planning.

INTRODUCTION

India continues to face a substantial need for effective family-planning services, particularly during the postpartum period. Short intervals between successive pregnancies may adversely affect maternal and neonatal outcomes, making appropriate birth spacing an important component of reproductive healthcare. A considerable proportion of births in India occur at intervals shorter than the recommended birth-to-birth interval, while unmet need for contraception remains an important barrier to optimal pregnancy spacing.[1,2] The postpartum period therefore represents an

important opportunity to provide effective contraception to women who may otherwise have limited access to family-planning services. The intrauterine contraceptive device (IUCD) is a highly effective, long-acting and reversible method of contraception. Copper-bearing IUCDs provide prolonged contraceptive protection without requiring regular user compliance and are therefore particularly useful in settings where access to repeated healthcare services may be limited.[3] The CuT380A has been incorporated into the National Family Planning Programme in India and provides long-term contraceptive protection. Postpartum

IUCD insertion also offers the advantage that pregnancy can be reliably excluded at the time of insertion and women may be particularly motivated to initiate contraception following delivery.[1,4]

Immediate postpartum IUCD insertion has several practical advantages. The device can be inserted shortly after placental delivery or during caesarean section, thereby avoiding the need for an additional hospital visit. It provides contraception before discharge and may help address the substantial unmet need for postpartum family planning.[5] Furthermore, postpartum insertion is considered convenient for both women and healthcare providers and does not adversely affect breastfeeding.[3,6] Appropriate antenatal or postpartum counselling may further improve awareness and acceptance of this method.

Despite these advantages, the timing of IUCD insertion may influence clinical outcomes. Immediate postpartum insertion has been associated with a higher risk of expulsion compared with conventional interval insertion, and expulsion may be affected by insertion technique, fundal placement, type of device and provider experience.[7] Other concerns include abnormal bleeding, pelvic pain, vaginal discharge, infection, missing strings and the subsequent need for device removal.[3,8]

Interval insertion, generally performed after the postpartum period, permits insertion after uterine involution and has traditionally been widely used. However, women asked to return later for contraception may fail to attend follow-up services, resulting in missed opportunities for effective family planning. Postpartum insertion may overcome this limitation by integrating contraception with institutional delivery services. Previous studies comparing postpartum and interval IUCD insertion have demonstrated variations in expulsion, complications and continuation, emphasizing the importance of evaluating these approaches in different clinical settings.[4,7,9]

The continuation rate is particularly important in evaluating the effectiveness and acceptability of an IUCD programme. Discontinuation may occur because of pain, bleeding, expulsion, infection or personal reasons. Appropriate insertion technique, counselling and follow-up can facilitate early identification and management of complications and potentially improve continuation.[3,8] Follow-up after insertion also permits assessment of string visibility, device position, expulsion and

symptoms suggestive of pelvic infection or abnormal bleeding.

Although postpartum IUCD services are increasingly incorporated into family-planning programmes, comparative evidence regarding postpartum and interval insertion in the Indian tertiary-care setting remains relevant for clinical decision-making and counselling. Therefore, the present study was undertaken to compare postpartum and interval IUCD insertion with respect to safety, complications, continuation and acceptability and to assess clinical outcomes during follow-up.

MATERIALS AND METHODS

Study Design and Setting

This hospital-based prospective comparative study was conducted in the Department of Obstetrics and Gynecology, SMS Medical College and attached group of hospitals, Jaipur. The study population consisted of women attending the antenatal outpatient department and family planning outpatient department who were willing to undergo insertion of an intrauterine contraceptive device (IUCD).

Study Population and Sample Size

A total of 968 women were included and divided into two groups:

- Postpartum group: 484 women undergoing postpartum IUCD insertion.
- Interval group: 484 women undergoing interval IUCD insertion.

The calculated sample size was 484 participants in each group at 80% study power and an alpha error of 0.05, based on previously reported continuation rates of 88.23% in the postpartum group and 81.81% in the interval group.

Eligibility Criteria

Women willing to provide consent for IUCD insertion were considered eligible. Women undergoing either caesarean section or normal vaginal delivery were included in the postpartum group. Participants were required to be in a mutually stable monogamous relationship and willing to return for scheduled follow-up visits.

Women were excluded in the presence of insertion between 48 hours and 6 weeks postpartum, chorioamnionitis, prolonged rupture of membranes for more than 18 hours, unresolved postpartum haemorrhage, puerperal sepsis, known uterine malformation, evidence of an active sexually transmitted infection, manual removal of the placenta, or a history of menorrhagia.

Pre-Insertion Assessment and Counselling

All participants underwent detailed history taking and general and physical examination to identify contraindications to IUCD insertion, particularly evidence of infection. Women were counselled regarding the procedure and potential problems associated with IUCD use, and written informed consent was obtained.

IUCD insertion was performed under aseptic precautions using the no-touch technique. The required equipment included a sterile IUCD pack, sterile gloves, povidone-iodine-soaked cotton balls, Sim's speculum, vulsellum, sponge-holding forceps, Kelly's forceps, uterine sound and long scissors.

IUCD Insertion Procedure

For interval insertion, the woman was placed in the lithotomy position after emptying her bladder. Pelvic examination was performed to determine the size and position of the uterus and to exclude adnexal pathology or abnormal mucopurulent discharge. After cleaning and draping, the cervix was visualized using a Sim's speculum and held with a vulsellum or sponge-holding forceps. Uterine sounding was performed to assess uterine position and length. The IUCD was loaded using the no-touch technique and advanced through the cervical os into the uterine cavity. The device was then released using the withdrawal technique.

In the postpartum group, insertion was performed using the technique described in the study protocol to achieve appropriate fundal placement. Postplacental insertion following vaginal delivery was performed using Kelly's forceps, whereas during caesarean section the IUCD was placed manually at the uterine fundus.

Post-Insertion Counselling

Following insertion, all women were counselled regarding expected side effects and possible complications. They were instructed regarding checking of IUCD threads and advised to remain alert for spontaneous expulsion.

Participants were instructed to report to the hospital if they developed irregular or excessive bleeding, abdominal pain, dyspareunia, abnormal vaginal discharge, foul-smelling

lochia, missing IUCD threads, or a sensation of the IUCD within the vagina.

Follow-Up and Outcome Assessment

Two follow-up assessments were planned. In the postpartum group, the first visit was scheduled at 6 weeks after insertion. In the interval group, the first follow-up was performed after the first menstrual period or at 6 weeks, whichever occurred earlier. The second follow-up assessment was performed at 6 months.

At each visit, women were evaluated for lower abdominal cramps or pain, menstrual irregularities, excessive or abnormal vaginal discharge, expulsion and removal of the IUCD. Speculum examination was performed to assess the IUCD threads and to identify abnormal vaginal discharge or excessive bleeding. Pelvic examination was performed to evaluate evidence of pelvic inflammatory disease (PID).

If IUCD threads were not visible, gentle probing of the cervix was performed to identify curled strings. Ultrasonography was performed when the threads could not be identified to confirm the presence and position of the IUCD. When required, abdominal and pelvic radiographs were used to exclude perforation.

The principal clinical outcomes evaluated during follow-up included irregular bleeding per vaginum, vaginal discharge, lower abdominal pain, PID, urinary tract infection (UTI), missing threads and spontaneous expulsion. Continuation of IUCD use, reasons for removal and participant satisfaction were also assessed at the scheduled follow-up visits.

Statistical Analysis

Data were entered into Microsoft Excel and analysed using SPSS version 20.0. Continuous variables were summarized as mean and standard deviation, while categorical variables were expressed as frequencies and percentages. The unpaired Student's *t*-test was specified for comparison of continuous variables, while the chi-square test and Fisher's exact test were used for categorical variables, as appropriate. A *p*-value <0.05 was considered statistically significant.

RESULTS

Table 1. Baseline Characteristics of the Study Groups

Characteristic	Interval group (n=484)	Postpartum group (n=484)	p-value
Age ≤20 years	44 (9.1%)	45 (9.3%)	0.087*

Age 21–25 years	152 (31.4%)	152 (31.4%)	
Age 26–30 years	255 (52.7%)	270 (55.8%)	
Age 31–35 years	28 (5.8%)	17 (3.5%)	
Age >35 years	5 (1.0%)	0	
Literate	432 (89.3%)	452 (93.4%)	<0.05
Housewife	453 (93.6%)	447 (92.4%)	0.450
Lower socioeconomic status	261 (53.9%)	262 (54.1%)	0.997
Primipara	369 (76.2%)	344 (71.1%)	0.068

Table 2. Immediate Outcomes Following IUCD Insertion

Outcome	Interval group (n=484)	Postpartum group (n=484)	p-value
Provider perceived insertion as easy	464 (95.9%)	472 (97.5%)	0.450
Immediate complications	39 (8.1%)	25 (5.2%)	0.366
Continuation	445 (91.9%)	469 (96.5%)*	<0.01
Satisfied	392 (81.0%)	437 (90.3%)	<0.01

Table 3. Complications At First Follow-Up

Complication	Interval group, n (%)	Postpartum group, n (%)	p-value
Irregular bleeding P/V	23 (5.2)	11 (2.3)	<0.05
Vaginal discharge	21 (4.7)	13 (2.8)	0.11
Lower abdominal pain	17 (3.8)	10 (2.1)	0.132
PID	21 (4.7)	13 (2.8)	0.1244
UTI	33 (7.4)	17 (3.6)	<0.05
Missing thread	11 (2.5)	9 (1.9)	0.56
Spontaneous expulsion	6 (1.3)	14 (3.1)	<0.05

Table 4. Complications At Second Follow-Up

Complication	Interval group (n=420)	Postpartum group (n=460)	p-value
Irregular bleeding P/V	16 (3.8%)	7 (1.5%)	<0.05
Vaginal discharge	15 (3.6%)	5 (1.1%)	<0.05
Lower abdominal pain	14 (3.3%)	5 (1.1%)	<0.05
PID	12 (2.9%)	9 (2.0%)	0.513
UTI	15 (3.6%)	13 (2.8%)	0.529
Spontaneous expulsion	5 (1.1%)	13 (3.1%)	<0.05

Table 5. Continuation and satisfaction during follow-up

Outcome	Interval group	Postpartum group	p-value
Continuation at first follow-up	420/484 (86.8%)	460/484 (95.0%)	<0.01
Satisfaction at first follow-up	420/484 (86.8%)	460/484 (95.0%)	<0.05
Continuation at second follow-up	396/484 (81.8%)	444/484 (91.7%)	<0.01
Satisfaction at second follow-up	396/484 (81.8%)	444/484 (91.7%)	<0.01

DISCUSSION

The present study compared postpartum and interval IUCD insertion among 968 women, with 484 participants in each group. The principal findings demonstrated that postpartum IUCD insertion was associated with significantly higher continuation and satisfaction rates during follow-up. Several complications, including irregular bleeding, vaginal discharge, and lower abdominal pain, were less frequent in the postpartum group at the second follow-

up, although spontaneous expulsion was more frequent following postpartum insertion.

In the present study, the majority of IUCD acceptors were aged 26–30 years, accounting for 52.7% of women in the interval group and 55.8% in the postpartum group. Previous studies have similarly reported greater acceptance of IUCDs among younger women, particularly those aged 25–30 years.[10] Primiparous women constituted 76.2% of the interval group and 71.1% of the postpartum

group. Comparable findings have been reported in earlier studies, with a substantial proportion of postpartum IUCD acceptors being primigravida or women early in their reproductive life.[11]

Complications were assessed at both follow-up visits. At the first follow-up, irregular bleeding occurred in 5.2% of the interval group compared with 2.3% of the postpartum group, while UTI occurred in 7.4% and 3.6%, respectively. Vaginal discharge, lower abdominal pain, and PID were also numerically less frequent in the postpartum group. At the second follow-up, irregular bleeding occurred in 3.8% of the interval group compared with 1.5% of the postpartum group, vaginal discharge in 3.6% versus 1.1%, and lower abdominal pain in 3.3% versus 1.1%, respectively. Previous comparative studies have also documented bleeding, lower abdominal pain, and pelvic infection following both postpartum and interval IUCD insertion, although their reported frequencies have varied.[12,13]

Spontaneous expulsion was an important outcome in the present study. According to the study tables, expulsion at the first follow-up occurred in 1.3% of women in the interval group and 3.1% in the postpartum group. At the second follow-up, the corresponding rates were 1.1% and 3.1%, respectively. Previous studies have similarly identified expulsion as an important concern following postpartum insertion, with rates varying according to the timing and technique of IUCD placement.[7]

Continuation was one of the major outcomes evaluated in this study. At the first follow-up, continuation was significantly higher in the postpartum group than in the interval group (95.0% vs 86.8%; $p < 0.01$). This difference persisted at the second follow-up, when continuation rates were 91.7% and 81.8%, respectively ($p < 0.01$). Previous studies have reported postpartum IUCD continuation rates of 81.6% at 6 months and 62% at 12 months.[8] Another study reported 6-month continuation rates ranging from 87% to 94% according to the timing of IUCD insertion.[9]

Satisfaction also remained significantly higher among women undergoing postpartum insertion. At the first follow-up, 95.0% of women in the postpartum group were satisfied compared with 86.8% in the interval group. At the second follow-up, satisfaction was 91.7% and 81.8%, respectively. The higher satisfaction and continuation observed following postpartum insertion may be related to the convenience of initiating contraception at

the time of institutional delivery and avoiding a separate visit for contraceptive initiation. Nevertheless, appropriate counselling regarding possible expulsion, bleeding, pain, and the need for follow-up remains important.

The present study included a relatively large sample with equal numbers of women in the two groups and assessed clinically relevant outcomes at two follow-up visits. However, the study was conducted at a single tertiary-care institution and follow-up was limited to six months. Longer follow-up would provide additional information regarding long-term continuation, delayed complications, contraceptive failure, and subsequent removal.

CONCLUSION

Postpartum IUCD insertion was associated with significantly higher continuation and satisfaction than interval insertion during the six-month follow-up. Although postpartum insertion showed a higher frequency of spontaneous expulsion, several other complications, particularly irregular bleeding, vaginal discharge and lower abdominal pain, were less frequent at the second follow-up. Postpartum IUCD insertion can therefore provide an effective and feasible option for long-acting reversible contraception when accompanied by appropriate counselling, correct fundal placement and follow-up.

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