ORIGINAL ARTICLE

Short-Term Outcomes of Immediate Postpartum Intrauterine Device Insertion

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ABSTRACT

Objective: To determine the short-term outcomes of intrauterine contraceptive device insertion performed immediately after childbirth.

Study Design: Descriptive case series.

Place and Duration of Study: The department of Obstetrics & Gynaecology, Shahida Islam Medical and Dental College (SIMDC), Lodhran, from April 23, 2021 to October 22, 2021.

Materials and Methods: One hundred and fifty women were selected by non-probability consecutive sampling. The patients requiring post-partum contraception and fulfilling selection criteria were included in the study after informed consent. Follow up was done for 3 months after insertion of IUCD and complications such as expulsion, vaginal discharge, menstrual irregularities and lost string, were recorded on a pre-designed proforma. The SPSS version 27.0 was used for data analysis. Women's age, BMI and parity were analysed as mean and standard deviation. Complications of insertion of IUCD were recorded as frequency and percentage. Chi-square test was applied to check post stratification statistical significance. The *p* value ≤ 0.05 was considered statistically significant.

Results: The mean age of the women was 26.79 ± 4.48 years. Thirty-nine (26%) women delivered vaginally and 111 (74%) women by caesarean section. The mean body mass index of women was 26.16 ± 5.44 kg/m^2. Seventeen (11.3%) females had menstrual disturbance, 24 (14.7%) had vaginal discharge, 47 (31.3%) reported with lost string and 10 (6.7%) with IUCD expulsion. Out of these reported complications, only vaginal discharge demonstrated a statistically significant association (p = 0.013).

Conclusion: The postpartum IUCD insertion is safe and effective method of contraception, with minimal complications such as expulsion, vaginal discharge, menstrual irregularities and lost string, none of which are life threatening.

Key Words: *Contraception, copper IUCD, expulsion, insertion, postpartum, PPIUCD (postpartum intrauterine contraceptive device).*

Introduction

Family planning during the postpartum period is a crucial component of maternal and reproductive health. Historically, emphasis has been placed on interval contraception, often overlooking the risk of unintended pregnancies soon after childbirth. Most couples express the desire to delay the next pregnancy following delivery. Howe, a significant proportion of couples lack adequate awareness or access to contraception, which contributes to unplanned pregnancies within short intervals.[1]

It is estimated that a substantial number of women conceive within 18 months of childbirth, [2] and globally, millions of pregnancies are classified as unintended each year, many of which result in induced abortion.[3] In countries like Pakistan, despite the availability of family planning services, contraceptive uptake remains suboptimal, ranging from 16–46%, and only about 32% of couples report using a family planning method. [4] In Sub-Saharan Africa and other low-income settings, only 25% of the population uses contraception, further exacerbating the rate of unplanned pregnancies. [5]

The postpartum period presents an ideal opportunity for initiating contraception, as couples are often more receptive to family planning during this time. While contraception is conventionally started at the six-week postnatal visit, many women

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miss follow-ups later due to their busy schedule, which makes them vulnerable to early, unintended pregnancies. Recognizing this, various global health bodies have emphasized the importance of integrating contraceptive counselling and services into the immediate postpartum period.[6,7,8]

The postpartum intrauterine contraceptive device (PPIUCD) is a significant advancement in immediate postpartum contraception. It can be inserted within 10 minutes to 48 hours after placental delivery and offers several advantages: it is long-acting, reversible, safe during breastfeeding, and provides immediate and effective protection against pregnancy and is associated with high continuation rates when properly inserted.[2]

Despite these benefits, the global uptake of PPIUCD remains inconsistent. This is due to a range of barriers, including sociocultural beliefs, limited public awareness, and inadequate provider training. Financial constraints and access issues also play a critical role, with around 17% of women citing such reasons for non-use of contraception.[9,10] While the method is globally endorsed, there remains limited local data on the short-term outcomes of PPIUCD use from Pakistan, especially concerning expulsion rates, lost strings, bleeding irregularities, infection, and patient satisfaction in low-resource settings. Most exiting research focuses on long-term outcomes or lacks context-specific findings.[4]

To address this gap, we conducted a study to evaluate the short-term clinical outcomes of IUCD insertion immediately following childbirth. Furthermore, the aim was to contribute to the evidence-based guide for future implementation strategies, that could provide training in similar contexts.

Materials and Methods

This descriptive case series study was conducted in the Obstetrics and Gynaecology Department of Shahida Islam Medical and Dental College, Lodhran, over six months duration starting from April 23, 2021 to October 22, 2021, after obtaining approval from the ethical review committee (ERC letter no. SIMC/H.R./7250/21).

The sample size was calculated using 95% confidence level, a 6% margin of error, and an expected copper IUCD expulsion rate of 12%.[13] A total of 150 patients were enrolled through non-probability consecutive sampling, after obtaining verbal informed consent outlining the benefits and potential risks of the procedure.

Married women aged 20–35 years, admitted for either caesarean section or normal vaginal delivery, requiring postpartum contraception were included in the study.

Exclusion criteria included fever >100°C, vaginal infections, membrane rupture >24 hours, uterine anomalies on ultrasound, manual placenta removal, and primary postpartum haemorrhage (>500 ml in vaginal delivery, >1000 ml in caesarean section).

The IUCD insertion was followed by monthly assessments for three months, with complications recorded on a structured proforma by the researchers. The proforma's internal consistency was assessed with a Cronbach's alpha of 0.82, indicating good reliability. The age, body mass index (BMI), parity, mode of delivery and complications of PPIUCD, such as expulsion, vaginal discharge, menstrual irregularities and lost string, were recorded. Lost thread and abnormal vaginal discharge were confirmed on per speculum examination and ultrasound was done to confirm the presence of copper IUCD in the uterus.

Data was analysed by using SPSS version 27.0. The age, body mass index (BMI), and parity were expressed as mean ± standard deviation, while qualitative variables (IUCD insertion complications) were reported as frequencies and percentages. Post-stratification statistical significance was analysed using the Chi-square test. The p value ≤ 0.05 was considered statistically significant.

Results

The distribution of the females based on their age, BMI, parity and mode of delivery is shown in Table I, in terms of mean ± SD and percentages. The short-term complications including menstrual disturbance, vaginal discharge, lost strings and expulsion of IUCD are shown in Table II and III.

The mean age of women was 26.94 ± 4.48 years. Regarding parity, 67 women (44.7%) were para 1 while 83 (63.3%) were para ≥ 2. The mode of delivery was vaginal in 39 (26%) females and 111 women (74%) were delivered by caesarean section. The mean BMI was 26.16 ± 5.45 kg/m^2.Vaginal discharge was seen more frequently in the group in whom

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PPIUCD was placed vaginally as compared to caesarean section and was statistically significant (*p* value = 0.013).

Regarding complications 17 (11.3%) females had menstrual disturbance (17.9 % in those who delivered vaginally and 10 % with caesarean section), 22 (14.7%) had vaginal discharge (2.6% v/s 18.9%), 47 (31.3%) reported with lost string and 10 (6.7%) had expulsion of IUCD 7.7% v/s 6.3 %).

Discussion

This study evaluates short-term outcomes of PPIUCD insertion. The findings include menstrual disturbances in 11.3% (p=0.130), vaginal discharge in 14.7% (p=0.013), lost IUCD strings in 31.3% (p=0.129), and expulsion in 6.7% (p=0.765). These outcomes reinforce that while PPIUCD is an effective and reversible contraceptive option and only the vaginal discharge may influence user continuation and satisfaction.

The expulsion rate in this study was 6.7%. This aligns

Table I: Demographic Variables (n=150)

Demographic Variables	Subgroups	Number of patients (n=150)	Percentage (%)	Mean±SD
Age in years	20-29	106	70.66 %	26.49 ± 4.48
	30-35	44	29.33 %	
BMI (kg/m^2)	Under Weight	18	12 %	26.16 ± 5.44
	Normal	45	30 %	
	Overweight	39	26 %	
	Obese	48	32 %	
Parity	Primipara	67	44.66%	1.55 ± 0.50
	Multipara	83	55.33%	
Mode of delivery	Vaginal delivery	39	26%	1.74 ± 0.44
	C section	111	74%	

Table II: Short Term Complications (n=150)

		Menstrual Disturbance		Vaginal Discharge		Lost strings		Expulsion of IUCD	
		Yes (n=17)	No (n=133)	Yes (n=22)	No (n=128)	Yes (n=47)	No (n=103)	Yes (n=10)	No (n=140)
Age in years	20-29 (n=106)	12 (11.3%)	94 (88.7%)	16 (15.6%)	90 (84.9%)	32 (30.2%)	74 (69.8%)	6 (5.7%)	100 (94.3%)
	30-35 (n=44)	5 (11.4%)	39 (88.6%)	6 (13.6%)	38 (86.4%)	15 (34.1%)	29 (65.9%)	4 (9.1%)	40 (90.9%)
	p value	0.155		0.426		0.961		0.533	
BMI (Kg/m2)	Under Weight (n=18)	1 (5.6%)	17 (94.4%)	1 (5.6%)	17(94.4%)	6 (33.3%)	12 (66.7%)	1 (5.6%)	17 (94.4%)
	Normal (n=45)	9 (20.0%)	36 (80.0%)	8 (17.8%)	37 (82.2%)	15 (33.3%)	30 (66.7%)	5 (11.1%)	40 (88.9%)
	Over weight (n=39)	4 (10.3%)	35 (89.7%	4 (10.3%)	35 (89.7%)	11 (28.8%)	28 (71.8%)	2 (5.1%)	37 (94.9%)
	Obese (n=48)	3 (6.3%)	45 (93.8%)	9 (18.8%)	39 (81.3%)	15 (31.3%)	33 (68.8%)	2 (4.2%)	46 (95.8%)
	p value	0.155		0.426		0.961		0.533	

*The *p* value ≤ 0.05 was considered statistically significant .

Table III short Term Complications

		Menstrual Disturbance		Vaginal Discharge		Lost string		Expulsion	
		Yes (n=17)	No (133)	Yes (n=22)	No (n =128)	Yes (n=47)	No (n=103)	Yes (n=10)	No (n=140)
Parity	**Primi (n=67)**	7 (10.4%)	60 (89.6%)	11 (16.4%)	56 (83.6%)	24 (35.8%)	43 (64.2%)	5 (7.5%)	62 (92.5%)
	Multi (n=83)	10 (12.0%)	73 (88.0%)	11 (13.3%)	72 (86.7%)	23 (27.7%)	60 (72.3%)	5 (6.0%)	78 (62.5 %)
	P value	0.759		0.586		0.287		0.725	
Mode of delivery	**Vaginal (n=39)**	7 (17.9%)	32 (82.1%)	1 (2.6%)	38 (97.4%)	16 (41.0%)	23 (59.0%)	3 (7.7%)	36 (29.3%)
	C section (n=111)	10 (9%)	101 (91%)	21 (18.9%)	90 (81.1%)	31 (27.9%)	80 (72.1%)	7 (6.3%)	104 (93.7%)
	P value	0.130		0.013*		0.129		0.765	

*The *p* value ≤ 0.05 was considered statistically significant.

with Dorairajan *et. al.,*[11] who reported a 5% expulsion rate, and is lower than Nahas *et. al.,*[12] who noted 8.5% and Ashraf *et. al.,*[13] who reported 11%. Our comparatively lower rate could be due to 74% of insertions performed during caesarean delivery, allowing direct visualisation and precise fundal placement. Like the findings of Levi *et. al.,*[14] caesarean-based insertions tend to result in fewer expulsions than vaginal insertions, likely due to more controlled insertion conditions.

In our study, 31.3% of participants experienced missing IUCD strings. This finding aligns with a multicenter study conducted across six countries, which reported missing strings in 29% of cases, with a higher incidence following caesarean deliveries compared to vaginal deliveries.[15] Similarly, a study by Gurney *et. al.,*[16] found that 23.5% of women had no visible strings at six weeks postpartum after vaginal delivery. The higher incidence of missing strings in caesarean deliveries may be due to the difficulty in ensuring proper string placement during surgery. Adequate training in string management and follow-up techniques, such as ultrasound localization, can mitigate concerns.[17]

Menstrual disturbances occurred in 11.3% of patients. This is in line with the study by Mishra *et. al.,*[18] which observed menstrual irregularities in 13.3% of PPIUCD users. A study conducted in Pakistan reported menstrual irregularities in 30.1% of PPIUCD users. The lower rate in our study could be due to differences in patient populations, insertion techniques, or reporting methods.[19] These symptoms are typically due to local endometrial inflammation caused by the copper ions, as supported by Che *et. al.,*[20] who noted changes in cervical mucus and suppression of the endometrial lining. Variability may stem from baseline differences in menstrual patterns or from cultural perceptions of normal bleeding.

Vaginal discharge was reported in 14.7% of participants. Similar findings were documented by Pati *et. al.,*[20] who found vaginal discharge in 13% of PPIUCD users. However, higher rates (up to 19%) were reported by Singh *et. al.,*[21] in a community-based Indian study. Differences may be due to variations in hygiene practices, insertion techniques, or patient education on normal versus pathological discharge. It is important to distinguish physiological discharge from infection-related symptoms, which require prompt assessment.

Our high caesarean delivery rate (74%) likely contributed to reduced expulsion rates, consistent

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with findings from Levi *et. al.,*[14] and Grimes *et. al.,*[23] who showed lower expulsions when IUCD was inserted during caesarean section. Visual confirmation of placement and uterine closure over the IUCD minimise chances of malposition and expulsion.

Our study observed an expulsion rate of 6.7%. This finding aligns with a recent systematic review and meta-analysis, which reported that IUD expulsion rates vary by delivery method: 14.8% for vaginal deliveries and 3.8% for caesarean deliveries.[23] Similarly, a prospective observational study found that patients who delivered vaginally were 4.23 times more likely to experience IUD expulsion compared to those who had caesarean sections.[24] The higher expulsion rates associated with vaginal deliveries may be due to uterine contractions and anatomical changes postpartum. In contrast, caesarean deliveries allow for direct visualization and placement of the IUD at the fundus, potentially reducing expulsion risk.

Pre-insertion counselling plays a vital role in patient satisfaction and continuation. Raghuwanshi *et. al*.,[25] stressed antenatal counselling as essential to reduce anxiety and improve acceptance of potential side effects. Additionally, early follow-up ensures identification of complications such as expulsion or infection. Training clinicians to check device positioning via ultrasound at six weeks can further improve retention.

The study was limited by a short follow-up period and lack of hormonal IUCD comparison.

Consistency with regional studies supports generalisability, while minor variations emphasise the ongoing need for clinician training, patient counselling, and postpartum follow-up.

Conclusion

The postpartum IUCD insertion is safe and effective method of contraception, with minimal complications such as expulsion, vaginal discharge, menstrual irregularities and lost string, none of which are life threatening.

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CONFLICT OF INTEREST

Authors declared no conflicts of Interest.

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DATA SHARING STATEMENT

The data that support the findings of this study are available from the corresponding author upon request.