



# Postpartum Intrauterine Contraceptive Device (PPIUCD) Versus Interval Intrauterine Contraceptive Device (IUCD) Complications: Which is better?

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## ABSTRACT

**Introduction:** Intrauterine Contraceptive Device (IUCD) is an effective mode of contraception. But its timing of insertion remained debateable. Studies has shown that Postpartum Intrauterine Contraceptive Device (PPIUCD) is associated with less complications as compared to interval IUCD. But controversial results have been noted. This study aims to compare intricacy & efficacy of PPIUCD Vs interval IUCD. **Aims & Objectives:** To compare the complications of postpartum versus interval intrauterine device insertion (Copper T) in females seeking contraception in teaching hospital of Lahore. **Place and duration of study:** The six months study was conducted in Department of Obstetrics & Gynecology, Shaikh Zayed Medical Complex, Lahore from 15-3-2018 to 15-9-2018. **Material & Methods:** In this Randomized controlled trial 200 women were enrolled and divided into 2 groups. In group A, IUCD (Copper T) was implanted within 10 minutes of delivery of placenta (PPIUCD). In group B, IUCD (Copper T) was implanted after 6 weeks of delivery (Interval IUCD) and both groups were asked to follow up for 6 months and present in case of any complication. Data was analyzed using SPSS version 21. **Results:** In this study, the frequency of bleeding was (Group-A: 12% & Group-B: 18%, p-value=0.235), per vaginal discharge (Group-A: 4% & Group-B: 9%, p-value=0.152), abdominal pain (Group-A: 4% & Group-B: 14%, p-value=0.013), pelvic inflammatory disease (Group-A: 5% & Group-B: 11%, p-value=0.118) and IUCD removal (Group-A: 9% & Group-B: 14%, p-value=0.268) was higher in Group-B patients. However, expulsion rate was observed to be higher in Group-A patients (8% Vs 3% in Group B). **Conclusion:** Based on this study, it can be analyzed that Postpartum Intrauterine Contraceptive Device (PPIUCD) is more effective than Interval IUCD in terms of lower bleeding, PV discharge, pelvic inflammatory disease, abdominal pain and IUCD removal.

**Key words:** IUCD, PPIUCD, Complications, Postpartum, Interval, Contraception.

## INTRODUCTION

The current fertility rate of Pakistan is 3.6 Live Births per Woman.<sup>1</sup> Birth spacing is a significant modality improving both maternal mortality and morbidity.<sup>2</sup> Family planning is a powerful tool especially in areas where growth rate is increasing, and contraception prevalence is low.<sup>3</sup> In current era, the chance for providing optimal postpartum family planning services has been improved. Intrauterine device (IUD) insertion in postpartum period immediately is a safe contraceptive approach which has been supported by many international authorities. The timing to insert Intrauterine Contraceptive Device (IUCD) is particular due to multiple complications associated with it. The ideal time for inserting IUCD is soon after delivery or within 6 weeks postpartum.<sup>4</sup>

Postpartum intrauterine contraceptive devices (PPIUCD) have been included in many national family planning programs, but contentment of women adopting PPIUCD, and its intricacy rates need further characterization.<sup>5</sup> In the past, women were suggested family planning 6 weeks after delivery but now it has been contemplated that immediate postpartum period (within 48 hours of delivery) is an optimal time to address family planning needs in hospital setting and reduce hospital visits.<sup>6</sup>

Study done in India has compared complications of both PPIUCD Vs Interval IUCD and showed that bleeding (3.3 vs. 5.3%), Vaginal discharge (2.7 vs. 4%), Pelvic inflammatory disease (0 vs. 1.2%) were lower in PPIUCD group, while abdominal pain (2.7 vs. 2%), expulsion (6.6 vs. 2%) were higher in PPIUCD group. However, removal rates were equal in both groups (6 vs. 6%). There is no gross

difference in complications in both groups. But still, author concluded that PPIUCD has better efficacy, safety, and feasibility.<sup>7</sup>

This study aims to evaluate the efficacy and complications of postpartum versus interval IUCD insertion (Copper T) in females undergoing delivery. Controversial data has been reported in literature. Limited Literature shows the extent of problem in local population. This study will help in promoting quality long term family planning service by providing sufficient data in local setting.

## **MATERIAL AND METHODS**

Randomized Control Trial was done in a 6 month period i.e. 15-3-2018 to 15-9-2018 after approval from Hospital Ethical Committee at Department of Obstetrics and Gynecology, Shaikh Zayed Hospital, Lahore

PPIUCD and interval IUCD (Copper T) services were offered to all admitted obstetric patients (age between 20 to 40 years), before and after delivery at term. Women with structural deformities of uterus and local infections were excluded. Those who opted for procedure and gave informed consent were included in the study. Total selected subjects were 200, taken through non-probability consecutive sampling technique and divided into two groups by Lottery method. In group A, IUCD was implanted at time of delivery within 10 minutes of delivery of placenta. In group B, IUCD was implanted after 6 weeks of delivery. Then females were followed-up in OPD for 6 months. During 6 months, females were advised to present in case of complications including bleeding, PV discharge, abdominal pain, pelvic inflammatory disease or expulsion. Females were also advised to present in OPD if they wanted to remove the device. All this information was recorded through pre-designed proforma.

### **Statistical analysis:**

Data was analysed using SPSS version 21. Quantitative variables like age were presented as mean  $\pm$  Standard Deviation. Qualitative variables like parity, mode of delivery, bleeding, PV discharge, abdominal pain, pelvic inflammatory disease or expulsion and device removal was presented as frequency and percentage. Both groups were compared for complications by using chi-square test. P-value $\leq$ 0.05 was considered as significant. Data was stratified for age, parity and mode of delivery. Post-stratification, chi-square test was applied with P-value $\leq$ 0.05 considered as significant.

## **RESULTS**

In this study Table-1 represents socio-demographic characteristics of respondents i.e. age of patient, parity status, and mode of delivery.

Table-2 represents complications such as: bleeding, discharge PV, abdominal pain, pelvic inflammatory disease, expulsion rates and IUCD removal in treatment groups. No significant difference was seen for bleeding in both treatment groups. i.e., Group-A: 12% & Group-B: 18%, p-value=0.235. Frequency of discharge PV was higher in Group-B as compared to Group-A patients, but it was not statistically significant. i.e., Group-A: 4% & Group-B:9%, p-value=0.152. Abdominal pain was significantly higher in Group-B as that of Group-A patients. i.e., Group-A: 4% & Group-B:14%, p-value=0.013. Frequency of pelvic inflammatory disease was higher in Group-B patients, but it was not statistically significant. i.e., Group-A: 5% & Group-B: 11%, p-value=0.11. Expulsion rate was higher in Group-A (8%) when compared with Group-B (3%). p-value=0.121. No significant difference was seen for IUCD removal in both treatment groups. i.e., Group-A: 9% & Group-B: 14%, p-value=0.268.

Table-3 represents age of patients, parity status and mode delivery associated with complications faced by women. Women who were 20-30 years of age, among them discharge PV was significantly higher in Group-B and expulsion was significantly higher in Group-A. Contrary to those women with age group 31-40 years pain abdomen & pelvic inflammatory disease were significantly higher in Group-B patients. Other outcome variables did not show any statistically significant difference in both treatment groups. In women with parity 1-2 discharge PV and expulsion was significantly higher in Group-B and in Group-A respectively. However, for women with parity 3-4 bleeding and abdominal pain was significantly higher in Group-B. Women who had delivery through Lower Segment Cesarean Section (LSCS) and Spontaneous Vaginal delivery (SVD), no significant difference was seen for outcome variables in both treatment groups.

Socio-demographic Characteristics of Respondents (N=200)			
Respondents socio-demographic characteristics	PPIUCD (n=100)	Interval IUCD (n=100)	Total
<b>Age of women</b>			
20-30	39	56	95
31-40	61	44	105
Mean	29.52	29.71	
Standard Deviation	6.53	5.85	
<b>Parity status of Women</b>			
1-2	49(49%)	39(39%)	88
3-4	51(51%)	61(61%)	112
<b>Mode of Delivery</b>			
LSCD	51(51%)	52(52%)	103
SVD	49(49%)	48(48%)	97

Table-1: Socio-demographic characteristics of respondents

Complications faced by respondents (N=200)					
Complications	PPIUCD (n=100)	Interval IUCD (n=100)	Total	Chi-Square Test	p-value
<b>Bleeding</b>					
Yes	12(12%)	18(18%)	30	1.412	0.235
No	88(88%)	82(82%)	170		
<b>Discharge PV</b>					
Yes	4(4%)	9(9%)	13	2.057	0.152
No	96(96%)	91(91%)	187		
<b>Pain Abdomen</b>					
Yes	4(4%)	14(14%)	18	6.105	0.013
No	96(96%)	86(86%)	182		
<b>Pelvic Inflammatory Disease</b>					
Yes	5(5%)	11(11%)	16	2.446	0.118
No	95(95%)	89(89%)	184		
<b>Expulsion Rate</b>					
Yes	8(8%)	3(3%)	11	2.405	0.121
No	92(92%)	97(97%)	189		
<b>IUCD removal</b>					
Yes	9(9%)	14(14%)	23	1.228	0.268
No	91(91%)	86(86%)	177		

Table-2: Complications faced by women

Age, parity status and mode of delivery associated with complications faced by respondents (N=200)																		
Complications	Age of patients						Parity Status						Mode of Delivery					
	20-30 Years			31-40 Years			1-2 Parity			3-4 Parity			LSCS			SVD		
	PPIUCD	Interval IUCD	p-value	PPIUCD	Interval IUCD	p-value	PPIUCD	Interval IUCD	p-value	PPIUCD	Interval IUCD	p-value	PPIUCD	Interval IUCD	p-value	PPIUCD	Interval IUCD	p-value
Bleeding	5 (9.8%)	8 (15.7%)	0.373	7 (14.3%)	10 (20.4%)	0.424	9 (18.4%)	6 (15.4%)	0.712	3 (5.9%)	12 (19.7%)	0.033*	6 (11.8%)	10 (19.2%)	0.296	6 (12.2%)	8 (16.7%)	0.536
Discharge PV	2 (3.9%)	8 (15.7%)	0.046*	2 (4.1%)	1 (2%)	0.558	1 (2%)	5 (12.8%)	0.046*	3 (5.9%)	4 (6.6%)	0.883	2 (3.9%)	4 (7.7%)	0.414	2 (4.1%)	5 (10.4%)	0.228
Pain Abdomen	2 (3.9%)	3 (5.9%)	0.647	2 (4.1%)	11 (22.4%)	0.007	3 (6.1%)	6 (15.4%)	0.154	1 (2%)	8 (13.1%)	0.031*	3 (5.9%)	8 (15.4%)	0.118	1 (2%)	6 (12.5%)	0.047*
Pelvic inflammatory disease	3 (5.9%)	2 (3.9%)	0.647	2 (4.1%)	9 (18.4%)	0.025*	3 (6.1%)	5 (12.8%)	0.278	2 (3.9%)	6 (9.8%)	0.226	4 (7.8%)	7 (13.5%)	0.356	1 (2%)	4 (8.3%)	0.161
Expulsion occurred	6 (11.8%)	0 (0%)	0.012*	2 (4.1%)	3 (6.1%)	0.646	6 (12.2%)	0 (0%)	0.024*	2 (3.9%)	3 (4.9%)	0.799	7 (13.7%)	2 (3.8%)	0.076	1 (2%)	1 (2.1%)	0.988
IUCD Removal	5 (9.8%)	8 (15.7%)	0.373	4 (8.2%)	6 (12.2%)	0.505	5 (10.2%)	5 (12.8%)	0.701	4 (7.8%)	9 (14.8%)	0.255	5 (9.8%)	8 (15.4%)	0.394	4 (8.2%)	6 (12.5%)	0.483

Table-3: Age, parity status and mode of delivery associated with complications faced by women.

### DISCUSSION

During the postpartum period women are found to be highly motivated to accept contraception.<sup>8,9</sup> Postpartum IUCD insertion is an ideal approach not to be missed in developing countries like ours where delivery considers to be the only time when a healthy woman comes into direct contact with health care providers and the chance of returning afterwards for family planning is uncertain. It doesn't intermeddle with breastfeeding, convenient

for both women and their health care providers, associated with less side effects than interval insertion and allows highly effective contraception during her stay in hospital.<sup>8</sup>

In this study frequency of bleeding (Group-A: 12% & Group-B: 18%, p-value=0.235), discharge PV (Group-A: 4% & Group-B: 9%, p-value=0.152), abdominal pain (Group-A: 4% & Group-B: 14%, p-value=0.013), pelvic inflammatory disease and IUCD removal was higher in Group-B patients. However, expulsion rate was observed to be higher

in Group-A patients. Gupta A et al. in his study showed that bleeding (3.3 vs. 5.3%), PV discharge (2.7 vs. 4%), Pelvic inflammatory disease (0 vs. 1.2%) were lower in PPIUCD group, while abdominal pain (2.7 vs. 2%), expulsion (6.6 vs. 2%) were higher in PPIUCD group. However, removal rates were equal in both groups (6 vs. 6%). There is no difference in complications in both groups. But still author concluded that PPIUCD has better efficacy.<sup>7</sup> Results of this study are partially in line with the findings of Gupta A et al. as in this study in PPIUCD group; bleeding, Discharge PV and pelvic inflammatory disease was lower as compared to Interval IUCD. However abdominal pain and IUCD removal rates were also lower in PPIUCD group the only parameter which showed higher frequency for PPIUCD group was expulsion rate.

Lucksom PG et al. in his study also showed that expulsion rate was 0% in PPIUCD while 5.95% in interval group ( $P < 0.05$ ), but removal rate was 1.25% in PPIUCD and 10.71% in interval group.<sup>10</sup> Results of our study doesn't correspond with the findings of Lucksom PG et al. as in this study expulsion rate was higher for PPIUCD but regarding IUCD removal the similar finding was seen in this study as reported by Lucksom PG et al. that IUCD removal was higher among women who underwent interval IUCD. i.e., PPIUCD: 9% & Interval IUCD: 14%.

Gupta A et al. in his study showed that expulsion rate was comparatively higher in PPIUCD (6.6% v/s 2.0%:  $p$  value  $< 0.05$ ). Percentage of IUCD removal was almost similar in both groups (5.6% v/s 6.0%) but bleeding as one of the significant cause of removal was more in interval group (11.11% v/s 88.8%).<sup>7</sup> Gupta A et al. findings regarding higher frequency of expulsion rate for PPIUCD was similar to this study however he reported IUCD removal rate was similar in both treatment modalities which is contrary to the findings of our study as in this study IUCD removal rate was higher for women who underwent interval IUCD.

Srivastava S et al. in study showed that bleeding (4.3 vs. 17.5%), Pelvic inflammatory disease (1.1 vs. 5.3%), abdominal pain (2.9 vs. 12.2%), and removal rates (3.4 vs. 8.8%) were lower in PPIUCD but expulsion (2.3 vs. 0.9%) were higher in PPIUCD group.<sup>11</sup> Srivastava S et al. findings also support the results of our study as the same trend was seen for bleeding, pelvic inflammatory disease, abdominal pain, removal rates and expulsion rate as reported by Srivastava S et al.

Cochrane Database Systemic Review, 2010 evaluated the efficacy and feasibility of post-partum IUCD insertion.<sup>12</sup> In this review, all randomized

controlled trials that involved immediate postpartum insertions of an IUCD were included. The review concluded that post-partum insertion of IUCDs appeared to be safe and effective. However, expulsion rates appeared to be higher in post-partum than with interval insertion like our study. Similarly, a systematic review of IUCD insertion during the postpartum conducted by Nathalie Kappa et al. concluded that immediate IUCD insertion was safe as compared to interval insertion because it showed lower expulsion rates when compared to delayed postpartum insertion but with higher rates than interval insertion.<sup>13</sup>

## CONCLUSION

PPIUCD seems to be more effective than Interval IUCD in terms of less intricacy including lower risk of bleeding, Discharge PV, pelvic inflammatory disease, abdominal pain and IUCD removal. These results will help us to improve our practice especially in local settings and enable us to counsel the pregnant females for PPIUCD instead of interval IUCD.

## REFERENCES

1. World meter. Pakistan Population 2020; Available from: <https://www.worldometers.info/demographics/pakistan-demographics/#tfr>
2. Shakya S, Pokharel PK, Yadav BK. Study on birth spacing and its determinants among women of Kirtipur Municipality of Kathmandu District. *International Journal of Nursing Education*. 2011 Jan 1; 3(1).
3. Ahmed S, Li Q, Liu L, Tsui AO. Maternal deaths averted by contraceptive use: an analysis of 172 countries. *Lancet*. 2012;380(9837):111-25
4. Washington CI, Jamshidi R, Thung SF, Nayeri UA, Caughey AB, Werner EF. Timing of postpartum intrauterine device placement: a cost-effectiveness analysis. *Fertility and sterility*. 2015 Jan 1; 103(1):131-7.
5. Kumar S, Sethi R, Balasubramaniam S, Charurat E, Lalchandani K, Semba R, Sood B. Women's experience with postpartum intrauterine contraceptive device use in India. *Reproductive health*. 2014 Dec; 11(1):1-6.
6. Bano Z, Memon S, Khan FA, Shahani MJ, Naz U, Ali SN. Comparative analysis of postpartum IUDC versus interval IUCD insertion: a study conducted in a tertiary care hospital in Karachi, Pakistan. *International Journal of Research in Medical Sciences*. 2020 Jun; 8(6):2213.

7. Gupta A, Verma A, Chauhan J. Evaluation of PPIUCD versus interval IUCD (380A) insertion in a teaching hospital of Western UP. *Int J Reprod Contracept Obstet Gynecol.* 2013; 2(2):204-48.
8. Sonalkar S, Kapp N. Intrauterine device insertion in the postpartum period: a systematic review. *The European Journal of Contraception & Reproductive Health Care.* 2015 Jan 2; 20(1):4-18.
9. Çelen Ş, Möröy P, Sucak A, Aktulay A, Danişman N. Clinical outcomes of early postplacental insertion of intrauterine contraceptive devices. *Contraception* 2004; 69(4):279-82.
10. Lucksom PG, Kanungo BK, Sebastian N, Mehrotra R, Pradhan D, Upadhya R. Comparative study of interval versus postpartum Cu-T insertion in a central referral hospital of North East India. *Int J Reprod Contracept ObstetGynecol.* 2015; 4(1):47-51.
11. Srivastava S, Bano I, Ishrat N. Evaluation of PPIUCD versus Interval IUCD Insertion. *Int J Sci Res* 2015; 5(7):1780-2.
12. Grimes DA, Lopez LM, Schulz KF, Van Vliet HA, Stanwood NL. Immediate post-partum insertion of intrauterine devices. *Cochrane Database of Systematic Reviews.* 2010(5).
13. Kapp N, Curtis KM. Intrauterine device insertion during the postpartum period: a systematic review. *Contraception* 2009; 80(4):327-36.

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