

Original Research Article

Comparative analysis of postpartum IUDC versus interval IUCD insertion: a study conducted in a tertiary care hospital in Karachi, Pakistan

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ABSTRACT

Background: To compare the effectiveness of postpartum intrauterine contraceptive device (PPIUCD) with interval IUCD in terms of effectiveness, expulsions, bleeding pain and other complications at Tertiary care Hospital.

Methods: Current study was conducted among 224 women, at Gynaecology and Obstetrics of Reproductive Health Services-A (RHS-A) Centre of Jinnah Post Graduate Medical center, Karachi, for a period of Six months. Approval from Ethical committee and informed consent was taken from women and her husband before starting the study. The WHO medical eligibility criteria for contraceptive use (MEC) were followed and IUCD was inserted in 112 women in PPIUCD group and in 112 women in interval IUCD group. These cases were followed at 15 days, 6 weeks and 6 months. Results of PPIUCD group were compared with interval IUCDs group. Data was analyzed by using SPSS version 18.0. Continuous variables like age, parity, hemoglobin level were analyzed as mean±standard deviation. Frequencies and percentages were calculated for infection, expulsion, bleeding per vagina and effectiveness. Chi-square was applied to assess the difference between the categories. p value <0.05 was taken as significant.

Results: The two groups were identical in mean ± SD age, parity, residence and baseline hemoglobin level. PPIUCD (Group-A) was more effective i.e., 87.5% as compared to interval IUCD (Group-B) i.e., 83.9%. Pain, PID, bleeding and expulsion of IUCD were more prevalent with interval IUCD (Group-B) than PPIUCD (Group-A) patients. Stratified analysis showed that age, parity & mean baseline hemoglobin were non-significant effect modifiers on the effectiveness among the two groups.

Conclusions: Postpartum IUCD use was found to be a safe, simple, inexpensive and reversible procedure with higher chances of retention for a longer period. Additionally, there is decreased risk of complications and lower expulsion rates when compared with interval IUCD.

Keywords: Effectiveness, Interval, Intrauterine contraceptive device, Postpartum

INTRODUCTION

Family planning is powerful tool that reduce maternal mortality, particularly where population growth rate is

high and contraceptive prevalence is low.¹ The current outburst of population in Pakistan is 184.5 million and has an annual growth rate of 2.4%, and if it will continue then Pakistan will become fifth most populous country in

the world by the year 2050.^{2,3} In Pakistan contraceptive knowledge is satisfactory, i.e., 96% among adult population, still the contraceptive prevalence rate (CPR) is only 35% and the use of long-term contraceptives such as IUCD is only about 2%, with 20% unmet need of family planning services.⁴⁻⁶ Due to significant increase in institutional deliveries across the country, opportunities for providing quality postpartum family planning services has also been increased. Intrauterine device (IUD) insertion in the immediate postpartum period is a safe contraceptive approach which is also supported by the Centers for Disease Control and Prevention (CDC), American College of Obstetricians and Gynecologists (ACOG), and Association of Women's Health, Obstetric, and Neonatal Nurses.⁷ During the postpartum period women are found to be strongly motivated and receptive to accept family planning methods so this is the ideal time to counsel them to begin contraception.⁸ Unmet need is especially high in women in the postpartum period and access to safe and effective contraceptive services is needed for a woman to prevent unwanted/ mistimed pregnancy.^{9,10} Previously, the women were recommended for postpartum family planning after 6 weeks of delivery but now it is considered that immediate postpartum period (within 48 hours of delivery) is an ideal time to address family planning needs, because the health-care centre provides a convenient setting for inserting the IUCD and reduce the need of several visits.¹¹ The postpartum insertion of an IUCD, support the woman to receive a long acting reversible contraceptive particularly to those who have limited access to medical care.¹² This is the most cost effective method of contraception today and is accepted worldwide.¹³⁻¹⁵ The timing of IUCD insertion is very important due to expulsion, bleeding and displacement as well as uterine perforations. The ideal time to insert IUCD is soon after delivery or within 6 weeks of delivery as she returns for a routine postpartum care visit.¹⁶ Postpartum IUCD (PPIUCD) insertion is the technique of placing an IUCD (up to 48 hours but preferably) within 10 minutes of placental delivery while interval insertion of IUCD is at any time between pregnancies at or after 4th week postpartum or completely unrelated to the pregnancy.^{9,17} Present study was conducted with the aim to compare the effectiveness of postpartum intrauterine contraceptive device (PPIUCD) with interval IUCD in terms of effectiveness, pain, expulsions, bleeding and other complications at Tertiary care Hospital.

METHODS

The present study was conducted after approval from CPSP and Ethical Review Committee of JPMC hospital, at Gynaecological and Obstetrical ward and Reproductive Health Services Centre-A, (RHS-A), Jinnah Postgraduate Medical Centre (JPMC), Karachi, Pakistan from 1st June 2018 to 30th December 2018. PPIUCD and interval IUCD services were offered to all admitted obstetric patients (age between 18 to 40 years), before and after delivery. Those who opt for procedure and gave informed

consent were included in the study. Strict inclusion and exclusion criteria were adopted as per WHO MEC (medical eligibility criteria).¹⁸ Total selected subjects were 224, who were divided into two groups. Group- A, PPIUCD group (112 patients), IUCD were implanted with ten minutes of delivery (both normal delivery and caesarean section) by the trained obstetrician using a Kelly's placental forceps, and those who received IUCD within 48 hours of delivery (immediate PPIUCD) were also included in this group. In Group- B, interval IUCD group (112 patients), the IUCD was inserted anytime of a woman's menstrual cycle that were medically fit and not pregnant, within six months of delivery. Data was recorded on predesigned performa. These cases were followed at 15 days, 6 weeks and 6 months. Results of PPIUCD group were compared with interval IUCDs group. Data was analyzed by using SPSS version 18.0. Continuous variables like age, parity, hemoglobin level were analyzed as mean±standard deviation. Frequencies and percentages were calculated for infection, expulsion, bleeding per vagina and effectiveness. Effect modifiers were controlled through stratification of age, parity to see the effect of these on outcome variable. Chi-square was applied to assess the difference between the categories. p value <0.05 was taken as significant.

RESULTS

Effectiveness of postpartum IUCD (PPIUCD) insertion with interval IUCD insertions was compared by using single blinded randomized controlled trial in 224 women at Gynecological ward. There were two groups each comprising of 112 patients viz; Group-A were inserted PPIUCD while Group-B were inserted Interval IUCD. There was no significant difference in demographics of Group: A and Group: B. Mean age of group A and B patients was 27.74±6.26 and 27.58±6.01 years respectively. In Group-A group the mean parity was 2.08±0.96 children; while in Group-B the mean parity was 1.93±1.00 children. (Table 1) Mean baseline hemoglobin was 10.99±1.02 mg/dL in Group-A while it was 11.14 mg/dL in Group-B. At six months follow-up of all patients the mean hemoglobin in Group-A increased up to 11.07±1.05 mg/dL while it decreased in Group-B to 10.89±1.07 mg/dL. However, the difference was statistically insignificant (Table 1).

Table 1: Baseline descriptive statistics.

Variable	Group A	Group A	P value	
Age (years)	27.74±6.26	27.58±6.01	0.925	
Parity	2.08±0.96	1.93±1.00	0.778	
Hemoglobin	Baseline	10.99±1.02	11.14±11.14	0.598
	@6 weeks	10.43±0.70	10.37±0.78	0.955
	@12 weeks	11.07±1.05	10.89±1.07	0.621

p value <0.05 considered as significant difference

Regarding the effectiveness of IUCD at two different times of insertion it was found that PPIUCD (Group-A) was more effective i.e.; 87.5% as compared to interval IUCD (Group-B) i.e. 83.9%. (Table 2). Side effects were similar in both groups, Expulsion 7.1% and 15.2%, pain 73.2% and 75.9%, PID 5.4% and 14.3%, bleeding in 5.4% and 10.7% in group A and Group respectively. Bleeding and expulsion of IUCD were more common in Group-B as compared to Group-A patients. Furthermore, the stratified analysis showed that age was not an effect modifier of effectiveness of IUCD, effectiveness slightly increase with increasing age in both groups but, it was statistically insignificant ($p > 0.05$) (Table 3), also with better hemoglobin levels there was increase in effectiveness of IUCD in both groups, but these findings were also statistically non-significant ($p > 0.05$), whereas the parity was an effect modifier of the effectiveness of

IUCD among the two groups. Overall the effectiveness of IUCD increases slightly with increasing parity among group-A patients but decreased slightly with increasing parity among group-B patients. The findings were insignificant ($p > 0.05$) (Table 4).

Table 2: Effectiveness of postpartum IUCD and interval IUCD shown at final follow up at 6 months.

	Effective	Ineffective	Total	P value
Group-A (PPIUCD)	98 (87.5%)	14 (12.5%)	112 (100%)	0.567
Group-B (Interval IUCD)	94 (83.9%)	18 (16.1%)	112 (100%)	

p value <0.05 considered as significant difference.

Table 3: Effect of maternal age on effectiveness among two groups of IUCD insertion.

Age category in years	IUCD		Total	p value
	Effective	Ineffective		
PPIUCD	Up to 20	11 (84.6%)	2 (15.4%)	0.921
	21-30	55 (87.3%)	8 (12.7%)	
	31-40	32 (88.9%)	4 (11.1%)	
	Total	98 (87.5%)	14 (12.5%)	
Interval IUCD	Up to 20	15 (78.9%)	4 (21.1%)	0.303
	21-30	50 (89.3%)	6 (10.7%)	
	31-40	29 (78.4%)	8 (21.6%)	
	Total	94 (83.9%)	18 (16.1%)	

p value <0.05 considered as significant difference

Table 4: Effect of parity on effectiveness among two groups of IUCD insertion.

Parity (Number of children)	IUCD		Total	p value
	Effective	Ineffective		
PPIUCD	1 to 2	68 (86.1%)	11 (13.9%)	0.359
	3-4	30 (90.9%)	3 (9.1%)	
	Total	98 (87.5%)	14 (12.5%)	
Interval IUCD	1 to 2	72 (85.7%)	12 (14.3%)	0.269
	3-4	22 (78.6%)	6 (21.4%)	
	Total	94 (83.9%)	18 (16.1%)	

p value <0.05 considered as significant difference

DISCUSSION

The control of the fertility and gap between childbirth are very crucial for health and prosperity of a mother, a family and the entire nation overall. For this purpose prerequisite of family planning procedures is very important. The long acting, reversible and safer family planning methods and counseling during the postpartum period are very important as it will ensure their use and continuation that ultimately increase the contraceptive awareness and utilization. The prevention of unplanned

and unwanted pregnancies via the provision of family planning counseling and methods; could help prevent 20-35% of maternal deaths and around 20% of child deaths.¹⁹

Intrauterine contraceptive device is very effective method of family planning. It can be inserted at any time during menstrual cycle as well as just after the delivery of fetus. Insertion of IUCD in postpartum period has additional advantages of safety due to blunt insertion technique, and certainty of non-pregnancy of woman. A woman is

highly motivated to accept a family planning method during the postpartum period because this is the best time when a woman is in contact with the health care facility who is counseling to opt for contraception.⁸ The effectiveness and safety of the two different time period of IUCD was compared in current randomized controlled trial in two groups of women of reproductive age. These groups were not significantly different regarding age, parity and hemoglobin levels.

The current study found that PPIUCD was more effective i.e.; 87.5% than interval IUCD i.e.; 83.9%. Other previous studies reported effectiveness of PPIUCD was 83.37%, 84.76% and 81.6%.²⁰⁻²² Hence, we can say that our findings are in comparison with other studies and the PPIUCD is very effective method of contraception. In the current study; the expulsion or voluntary withdrawal by the women in PPIUCD group was only 7.1% while among interval IUCD group was 15.2% at follow-up of 3 months.

These results are in accordance with previously reported results, as Celen S, et al, reported expulsion occurred in 17.6% cases of PPIUCD in their study where CuT-380A was inserted within 10 min of removing the placenta (PPIUCD); however the expulsion rate with PPIUCD was about 10.5% in other previous study.^{22,20} However, Fernandes JAH, et al, found that the PPIUCD expulsion rate was 32% when IUCD was inserted after vaginal delivery while there were no expulsions in those submitted to cesarean sections, it was assumed from the study that IUCD inserted via vaginal route may not be placed properly like those which occur with direction position of IUCD in caesarean cases.²³

In present study, the age was an effective modifier of effectiveness of IUCD in both groups, the effectiveness increased with increasing age, however this was not a significant difference ($p > 0.05$). Pain and bleeding were common complication of IUCD insertion within 6 months. 75.9% in Interval IUCD group and 73.2% PPIUCD group women complained for some degree of pain after insertion. However the intensity of pain was low and majority of women did not want the removal of IUCD. Pain was also reported by 26.3% and 43.80% women in previous similar studies.^{21,24}

Furthermore, the bleeding was reported by 5.4% women of PPIUCD group in current study, whereas other researcher reported 10.5% cases had bleeding in PPIUCD group.²⁰ In this study the Interval IUCD group showed to have 10.7% bleeding complications which indicate that PPIUCD has lesser complications than interval IUCD. Current study also identified the fact that parity affects the effectiveness of IUCD and increasing parity also increases the effectiveness of PPIUCD whereas increased parity decreases the effectiveness of interval IUCD. We did not find any comparative study of this aspect.

We had used Cu T380 IUCD in our study as it is being provided by the Government in all public sector hospitals as well as the RHS-A centre which had collaborated in this study. In an Egyptian study it was found that both the Cu T380 IUCD and Multiload 375 IUCD are safe and effective as a pre-discharge family planning method when inserted during the early postpartum period as PPIUCD.²⁵ Overall; PPIUCD is safe and effective method of contraception when compared with interval IUCD insertion.²⁰ If women are offered and counselled properly, there may be a good acceptance rate for PPIUCD. We also found that if PPIUCD is offered to women with proper counseling there is good acceptance, increased effectiveness and longer retention of IUCD.

CONCLUSION

Postpartum application of the IUCD was found to a safe, simple and inexpensive procedure with higher chances of retention for a longer period. Additionally, there is decreased risk of complications and lower expulsion rates when compared with interval IUCD. No doubt IUCD insertion at any time is effective but PPIUCD insertion is safer and more effective.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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