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ORIGINAL RESEARCH

A comparative study of IUCD insertion in postpartum and intracearean

Dr. Prerna Priyadarshini[1], Dr. Usha Kumari[2], Dr. Neena Agarwal[3]

[1]Senior Resident, Department of Obstetrics and Gynaecology, Government Medical College and Hospital, Purnea, Bihar, India
[2]Professor and Head of Department, Department of Obstetrics and Gynaecology, Nalanda Medical College and Hospital, Patna, Bihar, India
[3]Assistant Professor, Department of Obstetrics and Gynaecology, Patna Medical College and Hospital, Patna, Bihar, India

Corresponding Author: Dr. Prerna Priyadarshini
Email:drprernapriyadarshini@gmail.com

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ABSTRACT
Background: The population in India has been growing rapidly; world population is also a major problem with more than 6.3 billion living on this earth and 26 children born every second.The intrauterine device (IUD), being a reversible and effective contraception method, is the most widely used worldwide.
Aims and objectives: A comparative study of IUCD insertion in postpartum and intracearean
Materials and Method: The study was a prospective Interventional analytical study looking for comparative study of Post-Partum IUCD insertion in women having normal vaginal delivery and the women undergoing caesarean section in terms of menorrhagia, infection , expulsion, anemia, string visibility and removal.
Results: The maximum number of women in each group were between 21 to 25 year with mean ± SD being 22.94±3.13, t (A, B) 0.06 ($p > 0.05$) in IPP group. Mean age 22.98±3.03 was in EPP group and in Intracaesarean it was 22.73±2.85. Haemoglobin level at different time interval and correlated with each other groups were having p value > 0.05. It shows that the value is statistically not significant. At 6 months, most common complication was irregular bleeding per vaginum. It was about 18% in ICS group, 14% in EPP group and 12% in IPP group. Missing string rate at 6 months in different group was 20% in ICS group. It was 9 in EPP group and only 6 cases in IPP group, out of 50 cases in each group of normally delivered women. USG results indicate that the most of missing IUCD in cases of ICS were found to be in utero was 20%. While in IPP and EPP group it was absent, as most probably it was expelled out. IUD present was significantly higher in ICS type ($p < 0.001$).
Conclusion: To conclude, Post-Partum IUCD is a convenient, safe and effective method of post- partum family planning and more and more women should be counselled for accepting this method.
Keywords: IUCD, Post-Partum, Intracaesarean, USG, ICS

Introduction

The population in India has been growing rapidly, world population is also a major problem with more than 6.3 billion living on this earth and 26 children born every second.[1] Family planning is important not only for population stabilisation, but it has increasingly been realised that family planning is central to improving maternal and newborn survival and health. India accounts for more than 20% of global maternal and child deaths, most of them preventable.[2] The common reasons for unmet needs are unsatisfactory services, a lack of information, and fear about the side effects of contraceptive methods. Studies showed that pregnancies taking place within 24 months of previous birth have a higher risk of adverse outcomes like abortion, premature labour, postpartum haemorrhage, low birth weight babies, foetal loss, and maternal death.[3,4] The recommended interval before attempting the next pregnancy is at least 24 months in order to reduce the risk of adverse maternal, perinatal, and infant outcomes.[4,5] Postpartum IUDs provide a high level of efficacy in the absence of systemic metabolic effects, and on-going motivation is not required to ensure efficacy once the device has been placed.[6]

Aim and Objectives: The present study was to compare the safety, efficacy and complications of post placental and intracaesarean insertion of intrauterine contraceptive device.

Materials and Method

The study was a prospective Interventional analytical study looking for comparative study of Post-Partum IUCD insertion in women having normal vaginal delivery and the women undergoing caesarean section in terms of menorrhagia, infection, expulsion , anemia, string visibility and removal. The total number of cases in each group i.e. women having normal delivery and women having caesarean section comprised of 100 each. Among normally delivered women 50 had immediate post placental IUCD insertion and 50 women had IUCD inserted

within 48 hrs. The study was conducted at Department of Obstetrics and Gynaecology, Nalanda Medical College and hospital, Patna, Bihar, India. Keeping power (1-beta error) at 80% and confidence interval (1-alpha error) at 95%, the minimum sample size required was 60 cases; therefore, we included 200 (more than the minimum required number of cases) cases in the present study.

Inclusion Criteria

- Patients to give written informed consent
- Available for follow up.

Exclusion Criteria:

- Patients not give written informed consent
- Allergy to copper, Fever during labour and delivery, Who had active STD or other lower genital tract infection or are at a high risk for STD, Women who had rupture of membrane for greater than 24 hours prior to delivery and HIV positive were excluded from the study.

Eligible pregnant women for Post-Partum IUCD insertion were selected at the time of ANC in OPD, during early labour, on the first post-partum day and prior to scheduled caesarean section in labour room emergency of Department of Obstetrics and Gynaecology, Nalanda Medical College and hospital, Patna, Bihar, India, through counseling, history taking and clinical examination including pelvic examination and follow up at 6 week and up to 6 months after Post-Partum IUCD insertion was done. Study was carried out from December 2011 to June 2013. 100 Eligible pregnant women were selected for each group delivered vaginally and undergoing caesarean section. Parturient planning to stay in the area for at least 6 months post-partum so that they could conveniently return for follow up. Those who had not turned up for follow upto 6 months were followed up with telephone were included in this study.

Methodology

During post placental Period and within 48 hours of delivery:-

Women's record was checked & it was confirmed that the women or their husband had given the consent for Post-Partum IUCD insertion. Sterilized instruments required for Post-Partum IUCD was taken, with proper aseptic and antiseptic precaution perineum, labia and vaginal walls were inspected for lacerations. Examination was done to confirm no PPH, no clots inside vagina. sim's speculum was inserted into the vagina and posterior wall of vagina was retracted. Cervix was gently cleaned with antiseptic solutions. The anterior lip of the cervix was gently grasped with the sponge holding forceps up to the first lock. The IUCD in the sterile package was grasped with the kelly's forceps using no-touch technique. It was held just on the edge of the Kelly's forceps so that it could be easily released from the instruments when forceps was opened. Without touching with the walls of vagina IUCD grasped with Kelly's forceps was introduced into the uterine cavity. When the kelly's forceps was in the uterine cavity left hand was moved to the women's abdomen and uterus was pushed upward. The kelly's easily reached to the fundus. The sponge holding forceps was removed. The kelly's forceps was gently moved upwards towards the fundus. On reaching the fundus kellys's forceps was opened and IUCD was released at the fundus. In the opened form kelly's forceps was taken to lateral wall of the uterus and taken out slowly from the uterine cavity. The women were observed for one hour for pulse, B.P. any excessive vaginal Bleeding. They were allowed for immediate breast feeding to the baby. Information regarding date of insertion & type of IUCD inserted was written on the admission chart & also on the discharge ticket. Woman was informed about the normal post-partum symptoms and also any warning signs related to puerperium and Post-Partum IUCD.

During Intracaesarean :-

Women undergoing caesarean section were also counselled and their consent was taken. During insertion the IUCD was held between the middle and the index fingers of the hand and it was passed through the uterine incision. On reaching the fundus, the hand was slowly withdrawn. Care was taken for proper placement of the IUCD. The string was pointed towards the cervix. Proper care was taken during closure of the uterine incision, so that the string of the IUCD couldn't get embedded into the suture. All the women having Post-Partum IUCD inserted were called at 6 week for follow up. They were examined and also pelvic examination was done for the visibility of the strings. The strings in some patients were long, were cut short. In some patients strings were not visible, they were asked for ultrasonography for confirmation of IUCD in utero. Few patients came with complain of prolonged lochial discharge. Women were counselled that they need not worry for that and conservative medical treatments were given. Women complaining of abnormal excessive vaginal bleeding were managed conservatively by medical methods. In women who had irregular varginal bleeding not controlled by medical treatment, the Post-Partum IUCD was removed with proper aseptic and antiseptic precaution.

Women who were unable to come for visit was followed up by their telephone. Women were also asked to come for follow up at 6 months and examined at 6 months.

Statistical analysis

Continuous data, expressed as the mean ± SD, were compared using the 'Z' test. For qualitative data, X2 (Chi-square) test was applied. The level of significance was taken as P>0.05 - not significant.

Results

Table 1: Total Number of cases in follows up at six weeks and six months

Group	No. of cases	No. at 6 weeks	No. at 6 months
IPP	50	48	38
EPP	50	46	32
ICS	100	96	92

IPP = Immediate Postpartum, EPP= Early Postpartum, ICS= Intracaesarean Section

Table 1, show that the total number of cases in each group i.e. women having normal delivery and women having caesarean section comprised of 100 each. Among normally delivered women 50 had immediate post placental IUCD insertion and 50 women had IUCD inserted within 48 hour of delivery. The no. of women followed up in IPP group at 6 week was 48 and at 6 months were 38. In EPP group only 46 women came for follow up at 6 week and 32 women at 6 months. In cesarean group 96 came for follow up at 6 week and 92 at 6 months.

Table 2: Age distribution by groups

Age (years)	IPP (A), n=50		EPP (B), n=50		ICS (C), n=100	
	Number	%	Number	%	Number	%
< 20	9	18	7	14	15	15.0
21-25	24	48	28	56.0	53	53.0
26-30	17	34	14	28.0	32	32.0
>30	0	0.0	1	2.0	0	0.0
Total	50	100	50	100.0	100	100.0
Mean Age in years (Mean ±SD)	22.94±3.13		22.98±3.03		22.73±2.85	
't' value	(A,B) 0.06		(B,C) 0.50		(C,A) 0.41	
p	> 0.05		> 0.05		> 0.05	

IPP = Immediate Postpartum, EPP= Early Postpartum, ICS= Intracaesarean Section

The maximum number of women in each group were between 21 to 25 year with mean ± SD being 22.94±3.13, t (A, B) 0.06 (p > 0.05) in IPP group. Mean age 22.98±3.03 was in EPP group and in Intracaesarean it was 22.73±2.85. Most of the women had two living children. In IPP group, 30 women had two living children, 10 were primipara and 10 were having three or more children. In EPP group 26 were primipara, 18 had 2 living children and 6 had 3 or more children. In ICS group 23 cases had one living children, 65 had 2 living children and 12 had 3 or more living children. The maximum number of cases in the entire group belonged to low socioeconomic status. Regarding socioeconomic status it was found that among 50 cases 36 were of low socioeconomic group in IPP, 30 in EPP and 68 in ICS group. 14 in IPP, 20 in EPP and 32 in ICS group were of Lower middle socioeconomic status.

Table 3: Mean value of Haemoglobin (Hb) in the women of different groups at different point of time

Group	Statistical constants	Hb at admission	Hb at 6 weeks	Hb at 6 months
IPP (A)	N	50	48	38
	Range	9-12	9-11.80	9-12
	Mean	10.54	10.30	10.47
	S.D.	0.79	0.75	0.90
	S.E. of mean	0.11	0.11	0.15
EPP (B)	N	50	46	32
	Range	9-12	9-11.80	9-12
	Mean	10.47	10.41	10.69
	S.D.	0.89	0.74	0.91
	S.E. of mean	0.13	0.11	0.16
ICS (C)	N	100	96	92
	Range	9-12	9-12	9-12
	Mean	10.58	10.30	11
	S.D.	0.89	0.74	0.83
	S.E. of mean	0.09	0.08	0.09

Haemoglobin level at different time interval and correlated with each other groups were having p value > 0.05. It shows that the value is statistically not significant.

Table 4: Showing complications at 6 weeks in different groups

Complication	IPP		EPP		ICS	
	No.	%	No.	%	No.	%
Bl	11	22	7	14	19	19
Bl + Inf.	0	0	0	0	1	1
Inf.	2	4	0	0	0	0
No	35	70	39	78	76	76
Lost	2	4	4	8	4	4
Total	50	100	50	100	100	100

$x^2_{2\,=\,1.20}\ p{>}0.05$

Bl=Bleeding; Dys= Dysmenorrhea; Inf= Infection

The above table 4, shows different complications in cases with Post-PartumIUCD insertion at 6 weeks. Most common type of complication in my study was bleeding per vaginum, which was 19% in ICS group, 14% in EPP group and 22% in IPP group. Some patients had also complained of abnormal vaginal discharge. It was found in 4% cases of IPP groups. In ICS groups in 1% case excessive bleeding and associated infection was present at 6 weeks.

Table 5: Showing complications at 6 months in each group

Complications	**IPP**		**EPP**		**ICS**	
	No.	%	No.	%	No.	%
Bl	6	12.0	7	14.0	18	18.0
Bl + Dys.	1	2.0	0	0.0	2	2.0
Bl + Inf.	1	2.0	0	0.0	1	1.0
Dys.	1	2.0	0	0.0	1	1.0
Inf.	2	4.0	1	2.0	0	0.0
Inf. + dys.	0	0.0	1	2.0	0	0.0
No	27	54.0	23	46.0	70	70.0
Lost	12	24.0	18	36.0	8	8.0
Total	50	100.0	50	100.0	100	100.0

$x^2_{2\,=\,14.60,}\ p{>}0.001$

Bl=Bleeding; Dys= Dysmenorrhea; Inf= Infection

At 6 months, most common complication as shown by above table was irregular bleeding per vaginum. It was about 18% in ICS group, 14% in EPP group and 12% in IPP group. Dysmenorrhea and abnormal vaginal discharge also seen in cases of 2% and 4% respectively in IPP group. In ICS it was 1% each.

Table 6: Showing missing string at 6 weeks and at 6 months in different groups

Missing string	At 6 weeks ($x^2_{2\,=\,2.21,}\ p{>}0.05$)			At 6 months ($x^2_{2\,=\,1.56,}\ p{>}0.05$)		
	IPP (n=50)	EPP (n=50)	ICS (n=100)	IPP (n=50)	EPP (n=50)	ICS (n=100)
No	42(84%)	37(74%)	74(74%)	32 (64%)	23 (46%)	72(72%)
Yes	6(12%)	9(18%)	22(22%)	6 (12%)	9(18%)	20(20%)
Lost	2(4%)	4(8%)	4(4%)	12 (24%)	18(36%)	8(8%)

The above table 6, shows the percentage of missing string at 6 weeks in different groups was 22% in ICS group, 12% in IPP group and 18% in EPP group whereas Missing string rate at 6 months in different group was 20% in ICS group. It was 9 in EPP group and only 6 cases in IPP group, out of 50 cases in each group of normally delivered women.

Table 7: Showing USG results at 6 weeks

USG (IUCD)	**IPP**		**EPP**		**ICS**	
	Number	%	Number	%	Number	%
Present	0	0	0	0	20	20
Absent	6	12	9	18	2	2
No USG	42	84	37	74	74	74

USG results as shown in above table 7, indicate that the most of missing IUCD in cases of ICS were found to be in utero which was 20%. While in IPP and EPP group it was absent, as most probably it was expelled out. IUD present was significantly higher in ICS type ($p < 0.001$).

Table 8: Showing USG results of women at 6 months

USG (IUCD)	IPP		EPP		ICS	
	Number	%	Number	%	Number	%
Present	0	0	0	0	15	15
Absent	6	12	9	18	5	5
No USG	32	64	23	46	72	72

$x^2_{2 = 1.56,\ p>0.05}$

According to USG done for missing string, 15% in ICS group had their IUCD in utero; while in normally delivered cases all these case had their Post-PartumIUCD expelled out (Table 9).

Table 9: Showing Expulsion of IUCD at 6 weeks and at 6 months in different groups

Expulsion	At 6 weeks ($x^2_{2 = 2.85,\ p<0.01}$)			At 6 months ($x^2_{2 = 11.91,\ p<0.01}$)		
	IPP (n=50)	EPP (n=50)	ICS (n=100)	IPP (n=50)	EPP (n=50)	ICS (n=100)
No	42(84%)	37(74%)	94(94%)	32 (64%)	23 (46%)	87(87%)
Yes	6(12%)	9(18%)	2(2%)	6 (12%)	9(18%)	5(5%)
Lost	2(4%)	4(8%)	4(4%)	12 (24%)	18(36%)	8(8%)

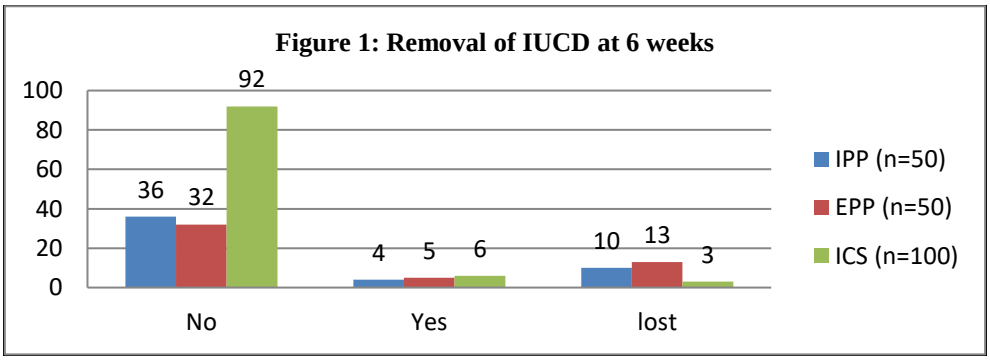
Expulsion rate as shown by above table at 6 weeks was about 18% in EPP group, 12% in IPP group and only 2% in ICS group. Expulsion (A,C) $t = 2.08$ $p < 0.05$, (B,C) $t = 2.85$, $p < 0.01$. At 6 months the expulsion of Post-partum IUCD in each group. It was 5% in ICS group, while 15% in normally delivered cases. The p values for these figures were < 0.01 which is statistically significant (Table 9).

Table 10: Showing number of patients seeking removal of IUCD at 6 weeks and at 6 months in study 'participants'

Removal	At 6 weeks ($x^2_{2 = 1.50\ p>0.05}$)			At 6 months ($x^2_{2 = 6.69,\ p>0.05}$)		
	IPP (n=50)	EPP (n=50)	ICS (n=100)	IPP (n=50)	EPP (n=50)	ICS (n=100)
No	36(72%)	32(64%)	92(92%)	26 (52%)	18 (36%)	82(82%)
Yes	4(8%)	5(10%)	2(2%)	6 (12%)	5 (10%)	5 (5%)
Lost	10(20%)	13(26%)	6(6%)	18 (36%)	27 (54%)	13(13%)

The above table no.12 and figure 1, 2 shows that the patients asking for removal of IUCD at 6 weeks was found to be more in normally delivered group than in caesarean group. It was only 2% in inracaesarean group. But in normally delivered group it was about 8%. The number of patients seeking removal of IUCD in IPP group was maximum which was12% and It was minimal in Intracaesarean group with its value only 5%. In EPP group the removal of IUCD at 6 month was 10%. There was no uterine perforation in any of the groups.

Figure 1: Removal of IUCD at 6 weeks



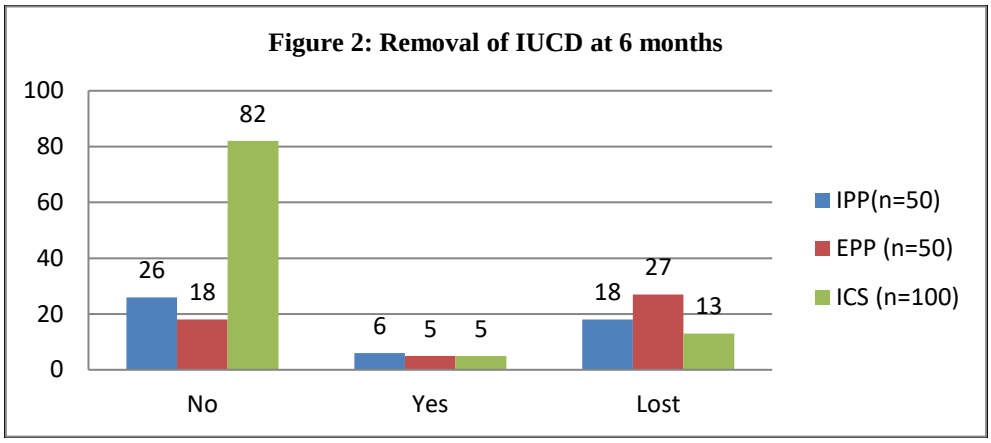


Table 11: Showing number of patients with continuation of postpartum IUCD in each group

Continuation	IPP		EPP		ICS	
	No.	%	No.	%	No.	%
No	12	24	14	28	9	9
Yes	26	52	18	36	82	82
Lost + Exp.	12	24	18	36	9	9
Total	50	100	50	100	100	100

$x_2^2 = 18.78,\ p>0.01$

The continuation as shown by above table was maximum with ICS group having 82% continuation. It was less for normally delivered women with about only 44% cases.

Discussion

The Postpartum IUCD is a highly effective, long-acting, reversible, cost-effective, and easily accessible family planning method that is safe for use by most postpartum women, including those who are breast-feeding. The majority of cases in our study, who accepted IUCD belong to the age group of 21–25 years. This indicates that younger women accepted Postpartum IUCD more, realising the effectiveness of Postpartum IUCD as an effective spacing method. In present study most frequent follow up was in intracaesarean group. In normal delivery cases 94% women were followed up at 6 week while only 70% women had their follow up at 6 month. But in intracaesarean group 96% were in follow up at 6 week and 92% at 6 month. A study by clenset al.[7] in 2004, the percentage of women returned for follow up at 6 week was 94%. In another study of Clens BA et al.[8] in 2010, 88% women came for follow up. In study of Celenset al.[9] in 2011 follow up rate was 100% in ICS type of Post-PartumIUCD. The maximum no. of women was in the age group 21-25 years in both the group. Meanage in group A was 22.94±3.13 years, in group B was 22.98±3.03 years and in group C was 22.73±2.85 years. In present study, in different group it was 36% for primipara, 48% cases had two living children and 16% had more than 2 living children. In Intracaesarean group 23% was primipara, 65% was having 2 living children and only 12% cases had more than 2 living children. The literatures on age and parity distribution among Post-Partum IUCD group have not been found much more. Maximum number of patients belonged to low socioeconomic group in both the group. 66% for vaginally delivered group and 68% cases were in intracaesarean group. 34% cases were of Lower-Middle socioeconomic group among vaginally delivered cases, while 32% cases were in intracaesarean group. The mean value of Hb in the women of different groups at different point of time was 10.54±0.79, 10.30±0.75, 10.47±0.90 for IPP group; 10.47±0.89, 10.41±0.74, 11.00±0.83 for Intracaesarean group. On comparative study among different group, the p value was > 0.05 which showed it statistically not significant. The complications with Post-Partum IUCD at 6 weeks in each group. It showed that incidence of irregular or excessive vaginal bleeding was more in intracaesarean group, while infection was more in IPP group of women. In intracaesarean group 19 cases out of 100 had irregular or excessive bleeding while in normally delivered group 18 cases out of 100 had excessive bleeding. Complication at 6 months was bleeding per vaginum more common in intracaesarean group. In IPP group 12% cases had excessive bleeding, in EPP group 14% cases had excessive and irregular bleeding while in intraceaserean group it was found in 18% cases. There were very few cases of dysmenorrhea equally distributed in both the groups.
In study of Khatun HA[10] in 2009, excessive bleeding was 4.17%. In study of Lopez et al.[11]in 2010, irregular vaginal bleeding was 24.9%.In study of Welkoviset al.[11] in 2003, there was no irregular or excessive bleeding in any case. Infection was least in intracaesareangroup, immediate postplacental group had more infection which was 4%. In a study of Welkovic S et al.[12] infection in Post-PartumIUCD user was 3.4%. In study of Hayer JL et al.[13] in 2007, there was no evidence of infection.In a study done by Welkovicset al.[12] on infection after post-

placental IUD insertion, there were 5 cases of endometritis among the 145 subjects with post placental IUD which was about 4%. In current study the missing string was more common in intrasaesarean group which was 22% cases at 6 weeks and 20% cases at 6 months. It was found in 15% cases in normally delivered group at 6 weeks and 6 months. In Ultrasonography it was found that most of the missing string in cases of intracaesarean group was coiled in-utero while in normally delivered group it was found to be expelled out. The expulsion rate of Post-PartumIUCD in different groups at 6 weeks showed that the expulsion was higher in normally delivered group than in intraceaserian group. It was only 2% in intraceaserean group and 15% in normally delivered at 6 weeks. The expulsion was in 5% cases of intraceaserean group and 15% cases of normally delivered group at 6 months. For IPP and intraceasarean group $t = 2.08$ & $p < 0.05$ while for EPP and intracaesarean group $t = 2.85$ and $p < 0.01$, these values shows that expulsion is significantly associated with normal delivery group than intracaesarean group. A number of studies have been conducted regarding expulsion of Post-Partum IUCD in different groups. However different studies had different percentage of expulsion. In study of Clenset al[7] in 2004 expulsion rate was 12.3%. In study of Bonilla Rosales et al.[14]in 2005, expulsion rate was 16%. In study of Letti Muller et al.[15] in 2005, expulsion after vaginal delivery was 27.8% and post caesarean was 0%. In study of Recalde Roger Lara et al.[16] in 2006 expulsion rate was 7.7%.In study of Hayes J et al.[13] in 2007 expulsion was 10.5%. In study of Akkuzuet al.[17] in 2009 expulsion was 52.6%. In a study of Kappa N Curtis et al.[18] in 2009, the expulsion was low in ICS type than IPP or EPP type of Post-Partum IUCD insertion. By Chen BA et al.[8] study in 2010, expulsion was 24%. Expulsion in study of Lopez et al.[11] in 2010, was 4.5% in intracaesarean group of Post-Partum IUCD insertion. In current study, the removal of Post-Partum IUCD at 6 week and 6 months in both the groups. It was 2% in intracasearan group, 8% in IPP and 10% in EPP group at 6 week. At 6 months it was 12%, 10% and 5% in IPP, EPP & ICS group respectively. It was comparable with the studies found in previous literature. There was 12.5% removal in study of Khatun H.A in 2009.[10]In study of Celen S et al.[9] in 2011, removal was 8.2%.In study of Ricalde Roger Lara et al.[16]in 2006 removal for bleeding was 4.8% and for non-medical cause was 4.9%. In current study, there was no uterine perforation in any of the groups. The continuation was maximum with intraceasarean group in which out of 100, 82 cases had continued their Post-PartumICUD but it was less for normally delivered group with only 44% cases. In study of Celen S et al.[7] in 2004, continuation was 87.6%. It was 82.6 in study of Ricalde Roger Lara et al.[16] in 2006. In study of Lapez – Frajan JA et al.[11] in 2010 continuation was 90%. Lower continuation was also shown by some workers.

Limitations of the study: Small sample size and short duration of the study

Conclusion

We found that Post-Partum IUCD is a convenient, safe and effective method of post- partum family planning and more and more women should be counselled for accepting this method. Further studies are also required to support the widespread use of Post-Partum IUCD.

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