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Original Research Article

Outcome of immediate postpartum intrauterine contraceptive device in caesarean versus vaginal insertion: a comparative study

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ABSTRACT

Background: Immediate Postpartum Intrauterine Contraceptive device is a novel approach to contraception which integrates Maternal - Child health and family planning services. It is a postpartum method which provides long term reversible contraception to women before discharge from the delivery setting. More research is needed in the field of PPIUCD to enhance awareness and acceptance in the community. This study is designed to compare the safety and efficacy of PPIUCD inserted at cesarean versus vaginal delivery.
Methods: This is a prospective study conducted at Sree Avittom Thirunal Hospital, Govt. Medical College, and Kerala – A tertiary care teaching institution. A total of 126 patients with cesarean or vaginal deliveries had PPIUCD insertions and they were followed up for a period of one year. The outcome measures analyzed were safety measures – menstrual irregularities, vaginal discharge, pelvic infection and perforation and efficacy measures - failure, expulsion and removal. Data are expressed in frequency and percentage. Chi square test was used for comparison and P value <0.05 was considered significant.
Results: The study shows that PPIUCD is an effective intervention in both cesarean and vaginal delivery with no significant differences in safety and efficacy depending on the route of insertion. There was no case of perforation or failure and no significant risk of infection in either group. Spontaneous expulsion occurred in two cases inserted by vaginal route. Missing string incidence is high in the cesarean group compared to vaginal insertion.
Conclusions: PPIUCD is a safe effective and convenient method of contraception and should be encouraged in both vaginal and cesarean deliveries.

Keywords: Intra uterine contraceptive device, Intra cesarean, Post placental, Postpartum contraception

INTRODUCTION

Optimal birth spacing and birth control are issues that caught the attention of global reproductive health services. Multiple studies show that adverse maternal and perinatal outcome is related to closely spaced pregnancies. Approximately 27% births in India occur <24 months after a previous birth and another 34% between 24 – 35 months.[1] 61% of births in India occur at intervals shorter than the recommended birth-to- birth interval of 36 months. The study shows that 65% of women in the first year postpartum have an unmet need for family planning. Postpartum period is a highly vulnerable period for unintended pregnancy as there are limited contraceptive options for breastfeeding mothers. Moreover return of ovulation is highly unpredictable in those not on exclusive breastfeeding. So immediate postpartum is the ideal time to begin contraception as women is strongly motivated at this time.

Government of India has launched several programs which emphasizes on promotion of adequate birth spacing. In India where government is promoting institutional deliveries, also creates opportunities for

providing quality postpartum family planning services. Intra uterine contraceptive devices have been used by women in India for decades. It is an ideal method for spacing births. Returning to postpartum services after delivery can present multiple challenges to mother who have competing demands. Taking advantage of immediate postpartum period for family planning acceptance overcomes multiple barriers of service provision. Postpartum IUCD is a method for obtaining long term reversible contraception before returning home.

The concept of immediate postpartum insertion of IUCD was revisited by the Ministry of Health and Family Welfare in collaboration with Jhpiego an international nonprofit health organization. The IUCD used is Copper T 380 A, same as that for interval insertion. The advantage of its use in the immediate postpartum period are convenience and integration of services, certain that she is not pregnant at the time of insertion, highly motivated for a reliable spacing method, negligible risk of uterine perforation because of thick uterine wall and reduced perception of initial side effects like bleeding and cramping as she enters into lactational amenorrhea.

The main limitation in the early years of its introduction was the increased risk of spontaneous expulsion. The rates varied widely from 10 to 14%. Meticulous attention to the correct insertion technique has significantly lowered the rate of expulsion in later years.

More studies are needed to address the misconceptions and negative attitudes which are still an issue at the community level. This study is conducted to examine the factors associated with acceptability according to their sociodemographic and obstetric characteristics and to analyze the safety and efficacy of PPIUCD inserted at cesarean and vaginal delivery and thereby improve the client satisfaction and continuation rates.

METHODS

After antenatal counselling, 126 patients who were willing to participate in the study were enrolled. Written informed consent was taken at the onset of labor. Vaginal or caesarean insertion of PPIUCD was done depending on their mode of delivery. Outcome measures were analyzed at follow up visits scheduled at 6 weeks 6 months and 1 year after insertion

The WHO medical eligibility criteria was the scientific foundation for client assessment and selection.[2]

Category 1: Immediate post placental - within 10 mts of placental delivery.

Immediate postpartum <48 hours after delivery

During caesarean section

Category 2: No conditions

Category 3: Between 48 hrs and 6 weeks postpartum

Chorioamnionitis

Prolonged rupture of membranes >18 hours

Category 4: Puerperal sepsis

Unresolved PPH

Inclusion criteria

Women delivering vaginally or by cesarean section having received counseling for PPIUCD contraception and given written informed consent.

Patients admitted directly to labour room in early labour were also counseled and included in the study.

Exclusion criteria

Patients belonging to MEC category 3 and 4.

IUCD used was Copper T 380 A. Only doctors trained for insertion according to the national training programme were involved in the study. The correct fundal placement with long curved Kelly's placental forceps was highly emphasized. AMTSL was performed as routine. Post insertion counselling was given before discharge. This included IUCD client card showing type of IUCD, date of insertion and date of review, advice regarding side effects like irregular vaginal bleeding, foul smelling vaginal discharge, uterine cramping, fever and spontaneous expulsion. She was advised follow up at six weeks, six months and one year after insertion.

At follow up, outcome measures were studied in terms of safety, efficacy and missing strings. These outcomes were compared for vaginal and caesarean insertions.

RESULTS

A total of 126 women were enrolled in the study for PPIUCD, out of which 10 were excluded belonging to MEC category 3 and 4. PPIUCD was inserted in 116 participants. Out of which 58 were intra cesarean insertions and a comparable group of another 58 for vaginal insertions. 6 patients (5.17 %) were lost to follow up.

Majority of participants belonged to 20-25 years of age (50.3%) and were from rural areas (80.3%). Middle socio economic group (70.7%) constituted the majority and 85.4% were primary or secondary school educated. Higher education group and professionals constituted only 14.6% showing the need for increased public awareness in order to convince the higher social strata. Evaluation of their clinical profile revealed that multi paras constituted the majority (73.3%), while primi paras were very reluctant for PPIUCD (26.7%). Among the

primis, those undergoing caesarean had a higher percentage of acceptance 80.6%, probably because of better spacing advantage after a caesarean section. Acceptance was better when counselled in early labour (56%) compared to antenatal counselling (44%).

Table 1: Socio demographic profile of acceptors.

	Frequency N=116	Percentage %
Age (Years)		
<19	4	3.4
20-25	58	50
26-30	37	31.8
31-35	13	11.2
>35	4	3.4
Educational status		
No formal education	0	0
Primary	27	23.3
Secondary	72	62.1
Higher education	17	14.6
Socio economic status		
Lower	25	21.5
Middle	82	70.7
High	9	7.8
Residence		
Rural	93	80.2
Urban	23	19.8
Religion		
Hindu	89	76.7
Christian	12	10.3
Muslim	15	12.9

Table 2: Obstetric profile of acceptors.

	Frequency N=116	Percentage %
Parity		
Primi para	31	26.7
Multi Para	85	73.3
Gestational age		
Term	87	75
Preterm	29	25
Time of counselling		
Antenatal	51	44
Early labour	65	56
Postnatal’	0	0
Route of insertion		
Post placental (in 10mts)	58	50
Postpartum (in 48 hrs)	0	0
Intra caesarean	58	50

Follow up clinic attendance of PPIUCD were 110 (94.83%). 16 patients (14.7%) had menstrual problems in the form of irregular spotting and dysmenorrhoea, but only 5 patients (4.3%) had persistent menorrhagia at the end of one year. 3 patients (2.7%) had fever at 6 weeks follow up which was attributed to UTI, mastitis and LRTI. No further episodes of fever at subsequent reviews. There was no case of puerperal sepsis or pelvic inflammatory disease. Vaginal discharge noticed by 2 patients was diagnosed as normal leucorrhoea and candidiasis which responded to reassurance and antifungal treatment respectively. There was no case of uterine perforation or IUCD failure in our study. 2 cases of expulsion occurred in the vaginal delivery group prior to six weeks follow up – could be due to improper fundal placement or string entangled in the Kellys forceps causing downward displacement . Beyond 6 weeks there was no spontaneous expulsion. Two patients insisted on removal at one year follow up due to persistent menorrhagia not relieved by tranexamic acid and husband’s pressure for IUCD removal.

Table 3: Comparison of parity and route of insertion.

Parity	CS	%	Vaginal	%	Total no.	%
Primi	25	43.1	6	10.3	31	26.7
Multi	33	56.9	52	89.7	85	73.3
Total	**58**	**100.0**	**58**	**100.0**	**116**	**100.0**

$\chi^2 = 15.892$; df = 1 P value = <0.001

Missing strings at follow up was a matter of concern for the patients. This was high in the caesarean group (48.5%) compared to vaginal delivery group (25 %). This difference was statistically significant (p value 0.02). There was no increase in appearance of string over time.

Table 4: Complications at follow up sessions.

Total no. - 110	6 wks		6 months		1 year	
	No	**%**	**No**	**%**	**No**	**%**
Menstrual irregularities	0	0	14	12.7	16	14.4
Menorrhagia	0	0	7	6.35	5	4.3
Fever	3	2.7	0	0	0	0
Vaginal discharge	1	0.9	3	2.7	2	1.8
Expulsion	2	1.8	0	0	0	0
Missing string	40	36.3	39	35.45	39	35.45
Perforation	0	0	0	0	0	0
Failure	0	0	0	0	0	0
Removal	0	0	0	0	2	1.8

There is no significant association between menstrual complaints and route of insertion. Missing string was significantly higher in the caesarean group (P value: 0.02) compared to vaginal insertion.

Majority of the clients were satisfied with PPIUCD insertion (65.7%) with only 4.5% unsatisfied with the procedure. There is no significant association between client satisfaction and route of insertion.

Table 5: Comparison of menstrual complaints and route of insertion.

Menstrual complaints	Vaginal N -55		Cesarean N - 55		Total		χ^2	P value
	N	%	N	%	N	%		
6 weeks	0	0	0	0	0	0		
6 months	8	14.3	6	11.1	14	12.7	0.249	0.617
1 year	9	16.4	7	13	16	14.7	0.252	0.616

Table 6: Comparison of fever with route of insertion.

Fever	Vaginal N -55		Caesarean N - 55		Total		χ^2	P value
	N	%	N	%	N	%		
6 weeks	3	5.3	0	0	3	5.3	2.974	0.085
6 months	0	0	0	0	0	0		
1 year	0	0	0	0	0	0		

Table 7: Comparison of vaginal discharge and route of insertion.

Vaginal discharge	Vaginal N - 55		Caesarean N - 55		Total		χ^2	P value
	N	%	N	%	N	%		
6 weeks	1	1.8	0	0	1	1.8	0.974	0.324
6 months	2	3.6	1	1.9	3	2.7	0.306	0.58
1 year	1	1.8	1	1.9	2	1.8	0.000	0.99

Table 8: Comparison of missing string and route of insertion.

Missing string	Vaginal N -56		Caesarean N - 54		Total	
	N	%	N	%	N	%
Yes	14	25	26	48.15	40	36.36
No	42	75	28	51.85	70	63.63
Total	56	100.0	54	100.0	110	100

$\chi^2 = 5.404$; df = 1; P = 0.020

Overall evaluation of the study shows that PPIUCD is demonstrably safe and effective long term contraception. There is no significant difference in safety and efficacy depending on the route of insertion. In fact, ease of insertion at caesarean and lower risk of expulsion makes it a very attractive option for those undergoing caesarean section.

DISCUSSION

Helping couples understand their risk of unplanned pregnancy and ensuring that high quality postpartum family planning services are available to them is the objective of an ideal contraceptive counseling. Linking maternal child health and family planning services is critical to achieve healthy spacing of pregnancy (HSP). This led to the revival of post-partum IUCD in 2010. As part of the national training programme, we at SAT hospital, Government Medical College, Kerala conducted the study on the clinical and sociodemographic profile of acceptors and the efficacy and safety of PPIUCD inserted by vaginal and caesarean routes.

Table 9: Client satisfaction and type of insertion.

Satisfaction score	Vaginal N -55		Caesarean N - 55		Total	
	N	%	N	%	N	%
Not satisfied	2	3.63	3	5.45	5	4.5
Un sure	15	26.8	16	29.1	31	27.9
Satisfied	34	16.7	31	56.4	65	58.6
Very satisfied	4	7.1	4	7.1	8	7.1

$\chi^2 = 2.362$; df = 3; p value: 0.670

The study showed that maternal age is an important factor in contraceptive acceptance. A study by Usha Ram et al have shown that the unmet need for family planning is alarmingly high among those aged 20-24 years (15%) for spacing and over 6% for limiting method.[3] Our study showed that 50 % of the acceptors belonged to 20 – 25 years of age showing the need to catch them young for proper spacing and limiting of births .In a study published by a teaching institution in Nigeria showed the model age group of clients was 25-29 years (32.5%) among 852 IUCD acceptors.[4]

In the present study, acceptance of PPIUCD was more common among multiparas (73.3%) compared to primis (26.7%). According to Rivero-Fuentes et al women's' preference of beginning contraception is influenced by their knowledge about post-delivery return of fertility, limitations of LAM and resumption of sexual activity (40% in <3 months and 90% by one year) hence focus should be on young primiparas who are reluctant to return for interval contraception.[5]

Majority of participants accepted the method when they were given information during early labour (65%) compared to antenatal counseling (44%). Those patients who were willing to accept during the antenatal period become reluctant later as they are more exposed to rumors and myths regarding copper T. Many studies have shown that when the husband is involved in counseling and decision making the acceptance and continuation rates were higher. A randomized prospective study conducted by Smith et al in antenatal clinics in China, Scotland and South Africa in which some women received information on contraception in antenatal care and some did not, found no difference in subsequent contraceptive use.[6] Another study by Mohammed. SA et al to evaluate factors affecting acceptance found the same rate during antenatal and post-partum counseling.[7] However; providing key essential messages at all contact points during the maternity cycle will increase the proportion of women who received the information and are able to make an informed decision.

Copper IUDS are often associated with an increased amount of menstrual bleeding. Pareek and Gandhi reported an excessive bleeding rate of 6.6% with cesarean insertions.[8] Shukla et al indicated a higher incidence of menorrhagia (27.2%) with use of Copper T 200 as interval insertion.[9] While Gupta et al observed bleeding in only 4.3% PPIUCD cases using Copper T 380A.[10] Difference in types of IUCD could possibly explain the different rates of bleeding problems. The present study showed no significant association of menstrual complaints with the route of insertion and significant menorrhagia at the end of one year was only 4.3%.

Women with IUCDs are more apprehensive regarding the symptom of vaginal discharge. In women reporting with symptoms of unusual discharge actual infection was extremely low on clinical evaluation. A multicentric study from India reported an overall infection rate of 4.5% with PPIUCD.[11] Welkovic et al compared the infection rate among IUCD users and non-users and found no difference.[12] Present study showed only 1.8% vaginal discharge and there was no significant association between vaginal discharge and route of insertion.

Expulsion rates of immediate PPIUCD showed controversial results. There is debate whether difference in expulsion rates are related to the time of insertion, type of IUCD, technique of insertion and skill and expertise of service provider. Expulsion of PPIUCD usually occurs in the first few months after insertion. A study by Eroglu K et al expulsion rates are higher with postpartum insertion (within 48 hrs of delivery) than immediate post placental insertion (within 10 minutes of placental delivery).[1,3] UN POPIN report stated 6 month cumulative expulsion rate of 9% for post placental compared with 37 % for postpartum insertions.[14]

Gupta et al reported lower expulsions after cesarean insertions than vaginal delivery. In the present study we had no expulsion in the cesarean group while 2 cases of expulsion occurred in the vaginal delivery group.[10] Still we have a commendable IUCD continuation rate of 98%. This has emphasis on the correct fundal placement of the device and avoiding downward displacement both during vaginal and cesarean insertions.

In the present study, there was no case of perforation or failed IUCD as the uterine wall is thick after delivery and uterine perforation is unlikely to occur during post-partum period.

One of the main observations at follow up was the missing strings. Turan et al reported missing string rate in interval IUCD insertion to be 15.6%.[16] But there was limited literature regarding missing strings in PPIUCD insertion. Present study showed the significantly high occurrence of missing strings with postpartum IUCD (34.5%). This was significantly higher with cesarean placements than with vaginal insertions (48.5% versus 25%). However ultrasound done showed PPIUCD insitu and counseling and reassurance encouraged them to continue with the device.

CONCLUSION

IPPIUCD is an effective safe and convenient method of contraception which can be integrated with maternal child health services ensuring an appropriate long term reversible family planning method before returning home. It is an effective intervention in both cesarean and vaginal deliveries with no significant difference in safety and efficacy depending on the route of insertion. A relatively higher incidence of expulsion after vaginal insertion can be taken care of by trained personals with emphasis on the immediate post placental timing of insertion and principles of fundal placement using long placental forceps.

Misconceptions and negative attitudes related to IUCD should be addressed through community based activities and government strategies to increase public awareness through different media sources. It is important to arrange training programmes for health providers to increase knowledge and skills on IUCD insertion. This will further promote PPIUCD use and aid in reduction of expulsion rates. Sharing positive experiences from satisfied PPIUCD users is another way of promoting the programme. Obstetricians rather than family planning medical officers have a crucial role to play in

implementing the programme as counselling is exclusively done in the antenatal and early intrapartum period. PPIUCD is therefore a strong weapon in the family planning armamentarium and should be encouraged in both vaginal and caesarean deliveries.

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REFERENCES

1. Family Planning Needs during Extended Post-Partum Period in Asia: USAID/ACCESS 2009.
2. Postpartum IUCD reference manual, Family Planning Division. Ministry of Health and Family Welfare, Government of India, New Delhi, India, 2010.
3. Usha Ram, Ph.D. Associate Professor, Dept. of Public health and Mortality Studies, International Institute for Population Sciences, MUMBAI– paper presentation in the International Conference on Family Planning, November 15-18, 2009 at Munyonyo, Uganda.
4. Barbara Deller for Elaine Charurat, Postpartum IUCD (PPIUCD): opportunities for a languishing innovation. 2007.
5. Rivero-Fuentes, Estela. 2008: Original data analysis of data sets from the Dominican Republic, Haiti and Nicaragua used in Quuiteroetal. 2007.
6. Smith KB. Is postpartum contraceptive advice given antenatal of value? Contraception. 2002;65(3):237-43.
7. Mohamed SA, kamel MA, Shaaban OM, Salem HT. Acceptability for the use of postpartum intrauterine contraceptive devices. Med Princ Pract. 2003;12(3):170-5.
8. Parikh V, Gandhi AS. Safety of Copper T as contraceptive After Cesarean Section. J Indian Med Assoc. 1989-87:113-5.
9. Shukla M, Qureshi S. Post-placental intrauterine device insertion – a five year experience at a tertiary care center in North India. Indian Journal of Medical Research. 2012;136(3):432-5.
10. Gupta A, Verma A, Chauhan J. Evaluation of PPIUCD versus interval IUCD 380 A insertion in a teaching hospital of Western UP. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2013;2:204-8.
11. Sood B, Asif R. Revitalization of postpartum IUCD (PPIUCD) services: experience from India. Contraception. 2012;86(2):184-5.
12. Welkovic S, Costa L. Post-partum bleeding and infection after post-placental IUD insertion: Contraception. 2001;63(3):155-8.
13. Eroglua K, Akkuzu G. Comparison of efficacy and complication of IUD insertion in immediate post placental and early postpartum period with 1 year follow up. Contraception. 2006;74:376-81.
14. United Nations population Information Network (POPIN). UN population division. Department of Economic and Social Affairs with Support from UN Population Fund. Network Intrauterine devices. Family Health International. 1996;16(2).

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