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Complications Following Immediate Postpartum Intrauterine Contraceptive Device Insertion among Pregnant Women

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Abstract: *Immediate Post Partum Intra Uterine Contraceptive Devices (PPIUCD) insertion provide immediate contraception, prevents repeat unintended pregnancies, reduces side effects like menstrual problems, lower abdominal pain and cramps during insertion. It is more approachable in our country where delivery may be the only time when a healthy woman comes in contact with health care personnel. Despite all the advantages of, numerous complaints and complications have been encountered with PPIUCD insertion. So, the aim of the study was to evaluate the complaints and complications following immediate post partum intra uterine contraceptive devices (IUCDs) insertion and to determine the removal and continuation rates of PPIUCD insertion.* ***Methodology:*** *This study was conducted among fifty married pregnant women. The immediate postpartum intrauterine contraceptive device (Cu – T 380A) was inserted and the patients were counselled for checking the IUCD thread regularly and were advised to visit outpatient department for follow up after 6 week and at 3 months or any time if any complaints and complications arose. In each follow up, women were asked for checking of thread, history of missing string, spontaneous expulsion, pain abdomen, excessive bleeding, any infection, fever, any vaginal discharge etc.* ***Results:*** *At 6 weeks follow up period, 25 (50%) of the participants had presented with complaints and complications. After three months 5 (10%) of the participants had presented with complaints and complications and 45 (90%) of the participants had no complaints and complications. The commonest complaints at follow up after 6 weeks of PPIUCD insertion was of pain abdomen (20%) followed by heavy bleeding (18%), missing string (8%) and threads comes out (4%). At follow up after three months of PPIUCD insertion pain abdomen was still the predominant complaints (8%) followed by missing string (2%).* ***Conclusion:*** *Immediate postpartum contraceptive device insertion was safe and effective method of postpartum family planning, the complaints and complications were more in early period after insertion which has decreased at 3 months follow up. Insertion of PPIUCD was safe and effective and had high continuation rate (86%) with no failure (0%).*

Key Words: *Immediate Postpartum, IUCD, LSCS, PPIUCD, PROM.*

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I. Introduction

Intrauterine Contraceptive Devices (IUCD) comes close to the ideal contraceptive in being almost 100% effective, readily reversible with rapid return of fertility.[1] IUCD is safe and effective in women of any reproductive age. These offer superior contraceptive efficacy, plus non-contraceptive benefits that can improve quality of life in many women. Its use reduces the incidence of combined maternal mortality and morbidity and child mortality.[2]

Immediate Post Partum Intra Uterine Contraceptive Devices (PPIUCD) insertion deserves great attention as it can provide immediate contraception and prevents repeat unintended pregnancies.[3] It has distinct advantages of ease insertion, availability of skilled personnel and appropriate facilities. It has convenience for the women, as the side effects like menstrual problems, lower abdominal pain and cramps gets masked with the after pains of delivery and may prevents from accidental conceive during post partum period.[4] It is more approachable in our country where delivery may be the only time when a healthy woman comes in contact with health care personnel.[5]

Despite all the advantages of PPIUCD insertion, numerous side effects, adverse effects and complications have been encountered with PPIUCD insertion. Medical emergencies like vasovagal attack, bradycardia, anaphylaxis and epileptic seizure may occur at the time of PPIUCD insertion.[6] A moderate amount of discomfort and pain is associated with intrauterine placement of the PPIUCD during insertion regardless of timing after delivery or technique.[7] The earliest or immediate adverse effects are associated with apparent or

silent uterine perforation during IUD insertion.[8] Depending on the degree of disharmony, severe cramping pain resulting in abnormal bleeding and partial or complete expulsion of the IUD[9], changes in the menstrual bleeding and bleeding irregularities, infections (less than 1%)[1,9,10], IUCD string problems[11], misplaced IUCD[12], perforation[13] were the commonest complications with PPIUCD insertion immediately or during the follow up period.

So, the aim of the study was to evaluate the complications following immediate post partum intra uterine contraceptive devices (IUCDs) insertion (including both vaginal and caesarean section) and to determine the removal and continuation rates of PPIUCD insertion.

II. Materials and Methods

This study was conducted among fifty married pregnant women (above 18 years of age) with a formal consent from the participant and Institutional Ethics Committee. The study was conducted at Command (Eastern Command) Hospital, Kolkata for a period of 2 years (from January 2014 to December 2016. The women with obstructed labour, manual removal of placenta, unresolved post partum haemorrhage, chorioamnionitis, premature rupture of membrane (PROM) > 18 hours, extensive genital trauma, any uterine abnormalities and congenital anomalies, fever during or after labour (temperature $>38^0$ c), allergic to copper, Wilson's and any haemorrhagic diseases, undiagnosed abnormal uterine bleeding and any pelvic inflammatory diseases were excluded from the study.

The immediate postpartum intrauterine contraceptive device (Cu – T 380A) was inserted either by normal vaginal delivery or during lower segment caesarean section (LSCS) following standard procedures of immediate PPIUCD insertion for normal vaginal delivery and intraceasarean insertion. After insertion the participants were observed for any immediate complications. They were counselled for checking the IUCD thread regularly. During discharge, they were examined and were advised to visit outpatient department for follow up after 6 week and at 3 months. The women were then explained regarding potential adverse effects, care and further follow up visits and are then discharged. If any complaints or complication arose, then they were asked to visit any time or immediately irrespective of the schedule follow up periods.

In each follow up in outpatient clinic, women were asked for checking of thread, history of missing string, spontaneous expulsion, pain abdomen, excessive bleeding, any infection, fever, any vaginal discharge etc. During each follow up visit physical (per abdomen, per vaginum and per speculum) and ultrasonographic examinations were performed. Per abdomen examination was performed to check uterine involution and per vaginum and per speculum examinations were performed to check IUCD thread and any signs of infection. Transvaginal ultrasonography was done to confirmed proper intrauterine IUCD placement and if threads of IUCD were not visible and there were no history of spontaneous expulsion. If IUCD threads were long, they were cut 2 cm from external os.

If IUCD was spontaneously expelled or removed due to any complaint or complications then the participants were offered another IUCD (Cu –T 380A) or were offered to receive family planning clinical services for opting other methods of contraception. Interventions were provided to the participants presented with complaints or complications or side effects and assured by counselling. All women who did not return for their 6 weeks and 3 months follow up visit on schedule date they were contacted by phone and reminded about their scheduled follow up visit to attend immediately. All the observations were recorded in master chart for analysis by Statistical Package for the Social Science (SPSS) software version (20.0).

III. Results and Observations

In the present study, 50 pregnant women were counselled and accepted for immediate postpartum IUCD insertion. Following the insertion participants were observed for any immediate complications till 48 hours. During the discharge, all women were asked to attend follow up clinics after 6 weeks and 3 months where the side effects, adverse effects and continuation encountered by them were evaluated.

The complications of post partum intra uterine contraceptive devices (IUCD) insertion were evaluated among 50 pregnant women who had attended both the follow up visits at 6 week and after 3 months of PPIUCD insertion. The mean age of the participants was 25.24 ± 3.82 years (19 to 32 years). Failure of PPIUCD insertion was nil (Failure Rate = 0%) as none of the participants had presented with further pregnancy after six (06) weeks and three (03) months follow up period.

During the follow up after six weeks of PPIUCD insertion, 45 of the participants (90%) were found to have Cu – T in situ and 5 (10%) were with missing string by manual examination but while observed by ultrasonography, 46 of the participants (92%) were with Cu – T in situ and 4 (8%) were with missing string. So, spontaneous expulsion was observed in four (8%) participants. The follow up after three months of PPIUCD insertion, 98% (45 out of 46 participants with IUCD after 6 weeks follow up) of the participants were found to have Cu – T in situ manually and 2% (1 out of 46 participants with IUCD after 6 weeks follow up) had missing string. Similar observations were found by Ultrasonographic Examination. The spontaneous Expulsion at three

months follow up was with one (2%) participant. The cumulative spontaneous expulsion after three months follow up period was 5 (10%) of the participants.

80% of the spontaneous expulsion was observed at 6 weeks follow up period which had reduced to 20% while observed at 3 months follow up period. From these observations it could be inferred that spontaneous expulsion is more during the early period after Post Partum Intrauterine Contraceptive Device (PPIUCD) insertion in younger age group. With gradual passage of time, spontaneous expulsion decreases.

Table 1: Complaints / Complications among study population after Insertion of PPIUCD (n = 50).

Time and Period of Complaints/ Complications	Presence of complaints/complications		Total
	Yes Percentage (%)	No Percentage (%)	
After Immediate Insertion	0 (0%)	50 (100%)	50 (100%)
During follow up at 6 weeks	25 (50%)	25 (50%)	
During follow up at 3 months	5 (10%)	45 (90%)	

At 6 weeks follow up period, 25 (50%) of the participants had presented with complaints and complications and 25 (50%) of the participant visited with no complaints. After three months 5 (10%) of the participants had presented with complaints and complications and 45 (90%) of the participants had no complaints and complications.

Table 2: Showing types of Complaints and Complications among Individuals during the Follow up Periods after insertion of PPIUCD (n=50).

Sl No.	Complaint/s or Complication/s	Follow Up Period	
		At 6 Weeks Percentage (%)	At 3 Months Percentage (%)
1.	Pain Abdomen	10 (20%)	4 (8%)
2.	Heavy Bleeding	9 (18%)	0 (0%)
3.	Missing String	4 (8%)	1(2%)
4.	Threads comes out	2 (4%)	0 (0%)
5.	Infection	0 (0%)	0 (0%)
Total		25 (50%)	5 (10%)

The commonest complaints at follow up after 6 weeks of PPIUCD insertion was of pain abdomen (20%) followed by heavy bleeding (18%), missing string (8%) and threads comes out (4%). At three months follow up of PPIUCD insertion pain abdomen was still the predominant complaints (8%) followed by missing string (2%). No individual presented with heavy bleeding, threads coming out. No individual had presented with infection. Complaints had reduced by 40% from six weeks follow up to after three months follow up.

Table 3: Showing the presence and absence of actions taken for complaints and complications among Individuals during the Follow up Period after PPIUCD insertion (n=50).

Follow Up Period (n = 50)			
At 6 Weeks Action Taken Percentage (%)		At 3 Months Action Taken Percentage (%)	
Yes	No	Yes	No
21 (42%)	29 (58%)	4 (8%)	46 (92%)
Total = 50 (100%)		Total = 50 (100%)	

After six week follow up period, most of the cases, no action were required (58%). The participants presented with complaints and complications were 25 (50%) and actions taken for the complaints and complications were in 21 (42%) participants. This was less as there were 4 (8%) participants who had presented with spontaneous expulsion of Intra-uterine contraceptive device for which no action was required.

Similarly, after three months follow up 05 (10%) participants presented with complaints and complications. But 01 (2%) participants presented with spontaneous expulsion. So the action taken for complaints and complications was found to be less (8%) in respect to the complaints and complications presents.

Various actions had been taken for the participants presented with the complaints and complications during both the follow up period (after 6 weeks and after 3 months). These are depicted in the following table:

Table 4: Showing the types of actions taken for the participants presented with complaints and complications during the Follow up Period (n=50).

Sl No.	Actions taken	Follow Up Period	
		At 6 Weeks [in percentage (%)]	At 3 Months [in percentage (%)]
1.	Analgesic	10 (20%)	4 (8%)
2.	Mefenamic acid and Tranexamic acid	9 (18%)	0 (0%)
3.	Spontaneous Expulsion – No action, only counselling done for using other contraceptive device	4 (8%)	1 (2%)
4.	Cutting of Thread	2 (4%)	0 (0%)
Total		25 (50%)	5 (10%)

Table 5: Showing the causes of Removal of PPIUCD (n = 2) during the Follow up Period.

Removal of PPIUCD		Number of removal during follow Up Period		Total Percentage (%)
		At 6 Weeks [in percentage (%)]	At 3 Months [in percentage (%)]	
Causes of removal of PPIUCD	Pain abdomen	0 (0%)	1 (2%)	1 (2%)
	Heavy bleeding	1 (2%)	0 (0%)	1 (2%)
Total		1 (2%)	1 (2%)	2 (4%)

In the present study, two (02) or (4%) of the participants of Cu – T was removed due to pain abdomen and heavy bleeding. One Cu – T was removed due to heavy bleeding at six weeks follow up visit and another one was removed due to pain abdomen at three months follow up visits. Both the follow up periods had similar incidence for removal of Cu – T.

Table 6: Showing the continuation of PPIUCD after 3 months follow up period (n = 50).

Sl no.	Parameters	At 06 weeks follow up (%)	At 03 months follow up (%)	After 03 months (%)
1.	Spontaneous Expulsion of Cu – T	4 (8%)	1 (2%)	5 (10%)
2.	Removal of Cu – T	1 (2%)	1 (2%)	2 (4%)
3.	Continuation of Cu – T	45 (90%)	43 (86%)	43 (86%)

IV. Discussion

Increase in the institutional delivery by introducing Janani Suraksha Yojana (JSY) and Janani Shishu Suraksha Karyakaram (JSSK), the women were provided with an opportunity for IUCD insertion which is particularly important for the women with limited access to medical care and requires special and integrated health care services for both woman and new born.[14] Immediate postpartum IUCD insertion can play a significant role in providing birth space as a reversible effective contraception without having any effect on the health of the baby.[15]

In the present study, all the participants (100%) had attended both the follow up visits at 6 weeks and after three months. Review reported 100% follow up with PPIUCD insertion and intraceasarean insertion with Cu-T 380A.[16] This was contrary with immediate PPIUCD insertion where the follow up rates declined at 6 weeks (51%) to 6 months (14 %).[17]

In the present study, 50% of the participants presented with complaints and complications at 6 weeks follow up which was decreased to 10% at 3 months follow up period and 90% of the participants were free from any side effects, adverse effects or any complication.

17% of the participants reported no occurrence of any adverse effects.[2] The main side effects reported by participants were abdominal pain and cramps after insertion, changes in the menstrual bleeding pattern and expulsion.[2,14,18,19,20,21,22] Other complications were missing IUD strings, string causing discomfort, infection, uterine perforation, removal and contraceptive failure.[20] In the present study, the main side effects at 6 weeks follow up were pain abdomen (20%), heavy bleeding (18%), missing string (8%), spontaneous expulsion (4%). At 3 month follow up period the complaints reduced. The presenting complications decreased from 6 weeks follow up to three months follow up period. It was observed similar with the study of Mohamed AI et al.[23] where complications were decreased from first months to three months of IUD insertion.

Pain abdomen was found to be reduced from first follow up visit to third month follow up visit.[15] In the present study, pain abdomen was observed among 20 % of the participants complaining at 6 week follow up which was reduced to 8% at three months follow up. The women complained of lower abdominal pain after 1 week of insertion and were counselled that it might be due to involution of uterus or due to caesarean section. Most of the women got relieved with analgesic.[24] In the present study, all the participants presented with pain abdomen were counselled and was given analgesic at 6 weeks as well as 3 months follow up period.

The main side effects of immediate PPIUCD usage were prolonged or excessive bleeding, abdominal pain during menstruation. Bleeding might be heavy during the initial phases for 2 to 3 menstrual cycles.[17] Bleeding might reduced from first follow up visits to third month follow up[15] which was found to be similar in

the present study. Proper counselling with mefenamic acid and tranexamic acid could relieve the symptoms.[6,17] Similarly 18% of the participants presented with the complaint of heavy bleeding at 6 weeks follow up were managed. At 3 months follow up visit, none of the participants (0%) was presented with heavy bleeding in the present study.

Visibility of the string was definitive in ensuring correct IUD placement.[25] The threads not visible on speculum examination could be confirmed by ultrasonographic location of IUD.[6] Lost string was observed among 16% of those inserted PPIUCD during 4 to 6 week follow up. The Strings were found at cervical canal among 14% of the cases.[14] In the present study, missing string was found in less cases (10%) at 6 weeks follow up which was confirmed by ultrasonographic examination where 8% of the participants were found with missing string. In the present study, 92% of the IUD strings were visualised by ultrasonography at 6 weeks follow up which can be comparable with the position of Cu – T in-situ among 94.78% participants.[26]

Missing string was the first sign of perforation in approximately 80% of cases after IUCD insertion.[11] Ultrasound could be done immediately for confirmation and helped in decreasing the incidence of uterine perforation. Perforation was rare (0 – 1.2 cases per 1000 insertions).[27] No uterine perforations were observed in the studies conducted by various authors.[4,5,15,16,17,18,19,20,24,26,28] It was similar in the present study where no cases of perforation was observed.

IUD did not cause pelvic inflammatory diseases. The risk of infection among the users was less than 1%. There was a slightly increased risk of pelvic inflammatory diseases in the first 20 days of post insertion.[1,10,29] In the present study, there was no cases of infection as found in literature.[4,5,14,16,20]

Expulsion of an IUCD was an important factor for its safety and efficiency.[16] In the present study, the spontaneous expulsion had occurred among 8% of the participants during 6 weeks of insertion which was reduced to 2% after 3 months follow up. In the present study, 4% of the participants were presented with threads coming out at 6 weeks of follow up and the threads were cut for all the participants. The visible thread outside the external os could be trimmed to 2 cms.[11]

Removal for bleeding and pain was uncommon.[30] In the present study, 2 participants (4%) had removed the IUD due to heavy bleeding (2%) at 6 weeks follow up which was compared to be very less in the study conducted by Grimes D et al.[30] At 3 months follow up, 2% of the participants removed IUCD due to pain abdomen which might be a common reason for IUD removal.[6] The most common side effects for removal of PPIUCD were heavy bleeding and pain abdomen in the present study which was similarly observed by Kumar S et al.[14,18] The cumulative removal (4%) in the present study after 3 months follow up could be compared with the 5.5% removal of IUD with postplacental insertion.[14]

Immediate post partum contraceptive device was highly effective contraception during the puerperium.[30] Failure rates with IUCD use were consistently low and the most likely cause of IUCD failure was expulsion.[31] The failure rate with copper IUD was 0.8% at one year and a 10 years pregnancy rate was 1.9%.[32] In the present study, pregnancy due to IUD contraceptive failure was 0% which was found to be similar with various studies in the literature.[4,14,16,17,20,24,28] No cases of ectopic pregnancy had occurred[21] which was found to be similar with our study.

IUD has the highest 12 months continuation and satisfaction rates among reversible contraceptive methods among the women to use the IUD with appropriate counselling and were eligible to receive.[33] Main reasons for discontinuation were pregnancy, preventing excessive menstrual bleeding, spontaneous expulsion and changing to another method, infection prevention.[20] In the present study, the reason for discontinuation among 14% of the participants was due to spontaneous expulsion (10%), removal of IUD (4%). The continuation rate after three months follow up visit was 86% which was found to be comparable with the study conducted by Mangla M et al. (82.45%).[19] Insertion of PPIUCD was safe and effective and had high continuation rate (86%) with no failure (0%)

V. Conclusion

The introduction of Intrauterine Contraceptive Devices (IUCDs) in Family Planning Programme provided opportunity to the women for using IUCD (Copper – T 380A) as a long acting reversible method of contraception with other health benefits. Though immediate postpartum contraceptive device insertion was safe and effective method of postpartum family planning, the complaints and complications were more in early period after insertion which has decreased at 3 months follow up. With the limited access of medical care to the pregnant women, insertion of PPIUCD was a unique opportunity for long acting reversible contraception. PPIUCD insertion was with high safety and efficacy and with less complication during and after delivery and during the follow up periods.

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