

A Clinical Analysis on Intra-Uterine Contraceptive Devices in Patients Undergoing Caesarean Sections

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Abstract: *Background:* Provision of IUCD in the immediate postpartum period offers effective & safe method for spacing & limiting births. Due to the fear of perforation & infection, most health care providers are reluctant in IUCD insertion. Initiating IUCD use during caesarean has the added advantage of eliminating a 6 week postpartum waiting period. This study evaluates the safety, efficacy, expulsion, continuation & complication of postpartum IUCD. *Methods and Materials:* it was a hospital based prospective observational study on patients who have accepted IUCD devices following caesarean section at term with haemoglobin 9g % along with written informed consent for a study period of 6 months & followed up for 3 months. *Results:* Majority of the PPIUCD Insertion were in the age group 20-29 years with maximum acceptance among multiparous mostly in emergency LSCS. During follow up, patients had complications out of which bleeding is the most common. Highest rate of expulsion (6.9%) was seen between 2 weeks to 6 weeks with continuation rate 79.31% & failure rate 0%. *Conclusion:* Our study found a good acceptance of PPIUCD among patients undergoing emergency caesarean section. Intra caesarean IUCD insertion in multiparous women is safe and effective, with low expulsion & high continuation rates.

Keywords: intrauterine contraceptive device, caesarean section, expulsion, complication, removal

1. Introduction

The increased institutional deliveries are the opportunities to provide women easy access to immediate PPIUCD services [1]. The popularity of immediate post-partum IUCD insertion in countries as diverse as China, Mexico, and Egypt support the feasibility of this approach. PPIUCD has a huge potentiality and abundant scope in India and if widely used it will have a strong impact on population control and will prevent unplanned pregnancy and its sequelae [1]. India was the first country in the world to have launched a National Programme for family planning in 1952 [2]. So, the Ministry of Health and Family Welfare, Govt. of India introduced PPIUCD service in 19 states of India in 2010 [1][3]. Total number of IUCD insertion during the session 2020-21 in India is 30.86 lakh. Out of that, total number of IUCDs used in Assam in 2020-21 is 16, 505 [4].

Most women do not desire a pregnancy immediately after a delivery and hence are unclear about contraceptive usage in postpartum period. This results in unplanned and undesired pregnancies, which in turn increases induced abortion rates and consequently maternal morbidity and mortality. Continuation of these pregnancies is also associated with greater maternal complications and adverse perinatal outcomes [5][6].

An intrauterine contraceptive device (IUCD) is a long acting, reversible, non-hormonal and effective method of contraception with immediate effect. It is the most widely used method of contraception with approximately 127million users worldwide [2][7]. Intra caesarean IUCD insertion leads to increase access to postpartum IUCDs, because it does not require a separate postpartum visit. PPIUCD is a suitable method, free from risk, can be

removed at any time. It can be given immediately after childbirth and can be used up to 10 years just like a permanent method relieving the worries and anxieties of future conception. American College of Obstetrics & Gynecology (ACOG) supports immediate postpartum long-acting reversible contraceptive (LARC) insertion (i.e., intrauterine contraceptive device before hospital discharge) as a best practice, recognizing its role in preventing rapid repeat and unintended pregnancy [8][9]. As PPIUCD insertion is done immediately after childbirth, so concern may arise regarding some complications like expulsion, infection etc.

In India, Copper T 380A is being supplied free of cost by the government, to all health centers. This device is a proven highly effective and reversible spacing method of interval contraception, with effective protection for 10 years. However, the device has not attained much popularity due to the myths and misconceptions amongst the general public and health care personnel [8][9]. The efficacy of intra caesarean IUCD insertion without any added risk of infectious morbidity has also been reported by various studies [8][10][11][12]. This technique offers the obstetrician an opportunity to insert the IUCD into the uterus under vision, thus obviating the fear of perforating the uterus during the procedure. However, despite the reported safety and efficacy, obstetricians are still hesitant to implement the advantages of IUCD to women undergoing operative delivery [8][10].

2. Materials and Methods

This is a prospective observational hospital-based study carried out in the Department of Obstetrics and Gynecology at Assam Medical College and Hospital, Dibrugarh, Assam

for a period of 1 year to all women who have accepted intra-caesarean intra uterine contraceptive devices during the study period July 2021 to June 2022.

Sample Size: Considering 95% confidence interval with absolute precision of 7% and that expulsion rate of 3.7%^[13], the sample size was calculated to be 29.

Objectives

- 1) To study the safety, efficacy, expulsion and continuation rates of intra caesarean IUCD insertion.
- 2) To determine the complication rates following intra caesarean intrauterine contraceptive device insertion.
- 3) To determine the proportion of women who had accepted the postpartum intrauterine contraceptive device insertion in relation to age, parity and mode of caesarean section.

Inclusion Criteria:

- Patient giving written informed consent
- Delivering by caesarean at term gestation
- Hemoglobin 9g%
- Willing for follow up

Exclusion Criteria:

- Patient not giving written informed consent
- Who had active STDs or other lower genital tract infection or are at a high risk for STD
- Ruptured membranes for more than 18 hours before delivery
- Known Uterine abnormalities such as uterine myomas
- Unresolved postpartum hemorrhage
- Adherent placenta
- Features of chorioamnionitis

3. Methodology

- 1) Those women who have accepted intra-caesarean intrauterine contraceptive devices will be included in the study
- 2) Informed consent will be taken from all the participants
- 3) Cases will be taken for study for a period of six months and cases shall be followed up and evaluated for up to three months

Technique of Intracaesarean Intrauterine Contraceptive Device Insertion

The insertion of an intrauterine contraceptive device will be done either manually or using ring forceps. Aseptic precautions are critical to prevent infections during post-caesarean insertion of the IUCD. The provider should hold the IUCD between the middle and index fingers of the hand and pass it through the uterine incision. Once it is placed at the fundus, the hand should be slowly withdrawn, noting whether the IUCD remains properly placed.

- 1) The strings can be pointed towards the cervix but should not be pushed through the cervical canal. This is to prevent uterine infection by contamination of the uterine cavity with vaginal flora and to prevent displacement of the IUCD from the fundus by drawing the strings downward towards the cervical canal.

- 2) Care should be taken during the closure of the uterine incisions so that the strings of the IUCD do not get included in the suture. Later, after insertion, an IUCD card showing the type of IUCD and the date of insertion will be prepared. She will be informed about the IUCD side effects and normal postpartum symptoms. Women will be informed to return for IUCD follow-up at the outpatient department at 6 weeks and 3 months.

She will be advised to come back if she has noticed any of the following symptoms:

- 1) Foul smelling vaginal discharge
- 2) Lower abdominal pain
- 3) Fever
- 4) Symptoms of pregnancy
- 5) Suspicion of expulsion of IUCD

The women will be evaluated for safety, efficacy and complications at 6 weeks and 3 months from the time of IUCD insertion.

Counselling will be done regarding the possibility of irregular bleeding patterns and cramping pain in the first 3 months.

Ethical Committee Clearance

Ethical clearance was obtained from the Institutional Ethics Committee, Assam Medical College and Hospital, Dibrugarh to carry out this study. All patients were given information outlining the experimental approach and they signed a consent form prior to entering the study.

4. Result

In this study, the highest rate of acceptance was among the age group of 20-29 years (65.56%), as this is the most fertile and reproductive age group, which is comparable with other studies done by Katheki G et al^{[2][14]}, where most acceptance falls under 21–25 years (50.8%) and in a study by R Doley^[2], the highest acceptance was in the 21–25 age group (43.86%). Similar observations were made in a study by Nirja^{[2][15]}, where the majority belonged to the 20–25 age group (50.3%), whereas in a study by Maluchuru S et al.^{[2][16]} from Guntur, the highest rate of acceptance was among the 30-39 age group (27.67%). As more patients are younger, it might be because of completion of family in early age in India. Also in India, more people marry during their youth, so there is a short interval between marriage and childbirth.

Table 1: Age Distribution

Age Group (in years)	Number (n)	Percentage (%)
<20	7	24.14
20–29	15	51.72
30–39	5	17.24
≥40	2	6.9
TOTAL	29	100
Mean ± S.D.	25.06 ± 5.20 years	

Table 2: Parity Distribution

Gravida	Number (n)	Percentage (%)
Primi	10	34.48
Multi	19	65.52
Total	29	100

In our study, the highest patient acceptance was seen among the multiparous (65.52%) compared to the primiparous (34.48%), similar to the study by Shukhla M. et al.^{[2][17]}, where the acceptance was higher in multiparous (68.33%). Borthakur S et al.^{[2][18]}, GMCH Assam; and Grimes et al.^[19] also found higher acceptance among multipara. Goswami G et al.^{[2][20]} also found higher acceptance (48%) among multipara. In a study by Nirja^{[2][15]}, multiparous women constituted the majority (73.3%), while primiparous women constituted 26.7%. Maluchuru S et al.^{[2][16]}, Gautam R et al.^[21] and Vidyarama R et al.^[22] found a higher acceptance in primipara, which were 15.42%, 71.91%, and 15.47% respectively. In a study by Somila^[13], major acceptance was among the primiparous (40.9%).

Table 3: Reason for Acceptance

Reason for Acceptance	Number (n = 29)	Percentage (%)
Long Term	17	58.62
One Time Procedure	28	96.55
Safe	20	68.97
Reversible	28	96.55
Fewer Clinical Visits	0	0
No Influence in Breast Feeding	16	55.17
Non Hormonal	6	20.69

Table 4: Type of LSCS

Type of LSCS	Number (n)	Percentage (%)
Emergency	20	68.97
Elective	9	31.03
TOTAL	29	100

In our study, the acceptance rates among emergency LSCS patients and elective LSCS patients were 68.97% and 31.03%, respectively, indicating that emergency patients contributed more to intrauterine contraceptive device insertion. In a study based on observations by Gautam R et al.^{[2][21]} (LSCS: 36.09%, including both emergency and non-emergency cases) and Jairaj S et al.^[2] Telangana (LSCS: 43.9%, NVD: 6.3%), it was found that caesarean section patients accepted copper T insertion more than vaginal delivery. Borthakur S et al.^{[2][18]} found more than 50% acceptors among patients undergoing caesarean sections. In a study by Nirja^[15], caesarean sections had a higher percentage of acceptance (80.6%) because of the better spacing after caesarean sections.

In our study, the most common reason for acceptance was a one-time procedure and its reversibility (96.5%), followed by a long-term action (58.62%). In a study by Despande^[23], the major reasons for acceptance were long-term effects (23.4%) and safety (22.01%). In a study by Anila^[24], the most common reason to accept was its long action (68.5%), followed by reversibility (29.6%).

In our study, bleeding was the most common complication (12.22%). It is similar to Gautam R et al.^{[2][21]}, who found bleeding to be the most common complication (19%). In a study by R. Doley^[2], missed thread was the most common complication (15.12%), and in a study in Central India by Kanhere AV et al.^{[2][25]}, expulsion was the most common complication (22%). In the Nirja^[15] study, 16 percent of the patients had menorrhagia at the end of one year. In our study, 1 patient (3.45%) got infected and was treated with antibiotics. Similarly in a study by Vishwakarma^[26], local infection (1.3%) was seen at 6 weeks follow-up period, which responded well to antibiotic therapy.

Table 5: Complication at 2-6 Weeks

Complications	Number (n = 29)	Percentage (%)
Pain Abdomen	2	6.9
Bleeding	5	17.24
Expulsion	2	6.9
Strings Not Visible	3	10.34
Infection	1	3.45
Pregnancy	0	0
Uterine Perforation	0	0
No complications seen	16	55.17

In our study, the most common reason for removal was bleeding (6.9%), followed by pain in the abdomen (3.45%). Maluchuru S et al.^{[2][16]} found bleeding (27.27%) and pressure from family (27.27%) to be the most common reasons for removal. In a study by Goswami G et al.^{[2][20]}, the significant reason for IUCD removal was pressure from the husband and other family members. In a study by Runjun^[2], the most common reason for removal was bleeding (42.11%), followed by pressure from family (17.54%). In a study by Ajit Nayak et al.^[27], the common reason for removal was bleeding (39.33%), followed by family pressure (28.26%).

In our study, the highest expulsion (6.9%) was seen between 2 weeks and 6 weeks after insertion of PPIUCD. Similar observations were found by Maluchuru S et al.^{[2][16]}, where the highest expulsion was in between 7 days and 4 weeks, which was 2.5% respectively. Similarly, in Katheki G et al.^[14], the expulsion rate was 10.5%. In El Beltagy et al.^[28] study, the expulsion rate was high at 6 weeks (8.1% and 5.4%) in both CuT380 and Multiload 375 users. In a study by Nirja^[15], there were no expulsions in the caesarean group, followed by three expulsions in vaginal delivery.

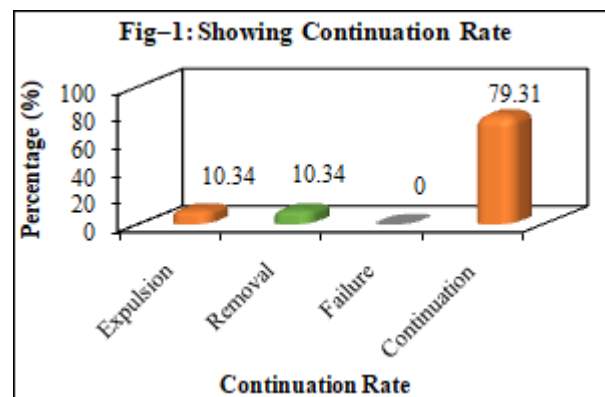


Table 6: Reasons for Removal

Reasons for Removal	Number (n = 29)	Percentage (%)
Number of patients continued	23	79.31
Expulsion	3	10.34
Pain Abdomen	1	3.45
Bleeding	2	6.9
Changes in Menstrual Cycle	0	0
Pressure from Family	0	0
Others (String Problem)	0	0

In our study, 23 patients (79.31%) willingly continued copper T at the end of the 3-month follow-up period, and there were no cases of failure. In a study by Lara R et al.^[29], the continuation rate was 77.1% and 82.6% for post placental insertion of copper T 380 A and copper T375%. In a study by Singal^[10], continuation rate was 91% and failure rate was 0.67% showing 2 cases of pregnancy per 100 women per year. In a study by Nirja^[15], there was no failure rate.

5. Conclusion

The IUCD is a long-acting, reversible contraceptive and family planning method suitable for all women undergoing caesarean sections.

Today, caesarean section rates are rising at a rapid pace in all countries, including India. Intra-caesarean IUCD insertion has an advantage due to the fact that it is easier to reach the uterine fundus during caesarean section under direct vision without causing much improper placement. This protects the woman from pregnancy even if she does not attend the follow-up.

In our study, we found that patients undergoing caesarean sections have an expulsion rate of 10.34% and a high continuation rate of 79.31%; there were no cases of any failure. Hence, it can contribute significantly to introducing and increasing the use of IUCD during caesarean sections as a long-acting reversible contraceptive in the Indian population. IUCD insertion during caesarean section with proper placement in the uterine cavity using long placental forceps can help in reducing complications and expulsion.

The Government of India needs to develop various strategies to increase awareness among people through different media sources. Family planning counselling should be an integral part of all antenatal services. Early follow up after IUD insertion is essential to detect spontaneous expulsions and should be integrated with Mother and Child Health care services. It is important to arrange training on IUCD insertions in order to increase knowledge and skills among the health care providers. This will help in further reducing the expulsion rate. The expulsion rate can be reduced with proper practice, and removal can be decreased with appropriate counselling, assurance, and treatment of the cause.

6. Future Scope

The limitation of the study was the small sample size, and therefore the results may not be applicable to all women

undergoing intra-caesarean copper T insertion. A larger sample size is needed for further study to get the appropriate results.

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