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## Efficacy of Immediate Insertion of an Intrauterine Contraceptive Device during Cesarean Section in Comparison with Late Insertion after the Puerperium

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### ABSTRACT

**Background:** Postpartum period is one of the critical times when a woman needs special optimal health services as complication rates are quite high during this period and also the women are vulnerable to unintended pregnancy.

**Aim of the work:** To evaluate and compare between intrauterine device (IUD) (pregna T Cu 380A) insertion at the cesarean section and after puerperium in terms of expulsion rate, pain, and amount of bleeding.

**Patients and methods:** This was prospective study, conducted at the Department of Obstetrics and Gynecology of El Hussein University hospital and El Sayed Galal hospital, on 200 women who were scheduled for elective cesarean section, divided into 2 groups: (Group A): included 100 women who agreed to insert immediate post placental IUD during the C/S delivery, (Group B): included 100 women who chose to insert IUD after puerperium as a control group.

**Results:** Regarding IUDs in group I, 85% patients were retained, 15% were expelled. Regarding IUDs in group II, 92% patients were retained, 8% were expelled. There was no significant difference between the groups. The only significant difference between two groups is difficulty during IUD insertion, otherwise there are no significant difference regarding expulsion, abnormal bleeding, pain and other adverse events.

**Conclusion:** Based on our finding we conclude that, Post placental intra caesarean Copper T 380A insertion during the C/S delivery is safe and effective, bypass causes of difficult IUD insertion after puerperium with low expulsion rate; so it can be considered a standard procedure.

**Keywords:** Intrauterine device; Contraception; Puerperium Delivery; Expulsion; Postpartum.

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### INTRODUCTION

Because breast-feeding women have limited contraception choices, the postpartum period is particularly prone to unwanted pregnancy. At the same time, ovulation in non-breastfeeding or non-exclusive breast-feeding women is very unpredictable. This is a great time to start contraceptive essence women are very encouraged to do so at this time, and it is also efficient for both women and health care professionals.<sup>1</sup>

If used properly, family planning may avoid approximately one-third of maternal fatalities and 10% of infant fatality, particularly if the deliveries are spaced more than two years apart.<sup>2</sup>

Cu-T is a kind of long-acting reversible contraception that is used all over the globe and is one of the most efficient methods of birth control.<sup>3</sup>

Post-placental intrauterine device (IUD) placement, defined as IUD placement within 10 minutes after delivery of the placenta, is an attractive strategy for increasing availability to postpartum IUDs since it does not need a separate postpartum visit.<sup>4</sup>

The immediate post insertion of intrauterine devices (IUDs) following caesarean birth is safe and accepted, and it might help to overcome a significant obstacle to long-term effective contraception.<sup>5</sup>

During caesarean delivery (CD), both immediately insertion of an intrauterine contraceptive device (IUCD) and tubal ligation may be done, however IUCDs offer some potential benefits.<sup>6</sup>

Copper T-380A IUDs may be successfully inserted intraoperatively by incision at the moment of cesarean delivery.<sup>7</sup>

Although full expulsions are less likely to be misclassified, partial expulsion may or may not

involve malposition IUDs with uncertain clinical relevance.<sup>7</sup>

Immediate intra-caesarean IUD insertion after placental delivery provides changeable and efficient long-term contraceptive that does not interfere with lactating.<sup>8</sup> It may also eliminate the pain associated with normal insertion, and lochia will hide any insertion blood. The lady is known to be not pregnant, thus contraception will be a key priority for her.<sup>9</sup>

The goal of this research was to evaluate and compare the expulsion rate, discomfort, and quantity of haemorrhage after IUD (pregnant T Cu 380A) insertion at the caesarean section vs. after puerperium, in order to suggest or not recommend IUD insertion at the caesarean section instead of after puerperium.

### PATIENTS AND METHODS

This was a prospective trial including 200 women who were planned for an optional caesarean section and were separated into two groups at the Department of Obstetrics and Gynecology of El Hussein University Hospital and El Sayed Galal Hospital: (Group I): 100 women consented to have an immediate post-placental IUD inserted during a C/S birth; (Group II): 100 women decided to have an IUD inserted after puerperium as a control group.

**Inclusion Criteria:** Pregnant women between the ages of 18 and 40 who are planning an elective cesarean delivery at a gestational age of 37 to 40 weeks and are looking for contraception after birth.

**Exclusion Criteria:** History of menorrhagia or extreme dysmenorrhea, history or existing of pelvic inflammatory disorder (ex: puerperal sepsis, purulent cervicitis), ruptured membranes for more than 24 hours prior to delivery, patients with bleeding abnormalities, structural uterine abnormality or large uterine fibroids distorting anatomy, history of past IUD expelling or removal for problems, history of ectopic pregnancy, and ante- or intrapartum hemorrhage.

Every patient was exposed to:

full history taking:

Personal history.

Menstrual (Gynecological) history.

Obstetric History.

Present history of chronic diseases and medication.

Past history of HTN, DM, Bleeding disorders.

History of allergy to any medication.

Surgical history of operation, laparoscopic interference, treatment of hirsutism by Laser.

**Post placental IUD Insertion:** Immediately after the recommendation of a cesarean delivery, all women were given the option of IUD insertion at surgery, and their questions regarding this type of contraceptives were explained. Women who signed a written informed consent form and consented to participate in Group 1 were included.

**After Puerperium IUD Insertion:** Women who decided to put an IUD 6 weeks following a caesarean section had been involved in group 2 after sign a written informed consent. The insertion process generally took between five minutes and fifteen minutes. The procedure was difficult for some women.

**Follow up:** After 6 weeks of IUD insertion, the two groups were followed up to ensure the normal IUD position and to exclude any complications.

Those women were undergo:

Gynecological examination: Vulvar examination, vaginal examination, and bimanual examination.

Transvaginal sonography at the hospital: Transvaginal ultrasonography at 6 weeks after IUD insertion. If a patient had pelvic discomfort, fever, severe hemorrhage, or an abnormal vaginal discharge; they were encouraged to call a physician immediately. Sonography was performed transvaginally using a real-time sector scanner and a high-frequency (5/7.5 MHz) endovaginal probe.

**Primary outcome:** Successful placement, subsequent expulsion.

**Secondary outcome:** Bleeding, pain and other adverse events.

**Statistical Analysis:**

Using SPSS 22.0 for Windows, all data were gathered, tabulated, and statistically evaluated (SPSS Inc., Chicago, IL, USA). Utilizing the Shapiro Walk test, the normal distribution of the data was examined. Frequencies and relative percentages were utilized to depict qualitative data. As shown, the Chi square test ( $\chi^2$ ) and Fisher exact were employed to quantify the variance between qualitative data. For parametric data, quantitative data were represented as mean  $\pm$  SD (Standard deviation), and for non-parametric data, as median and range. For parametric and non-parametric measures, respectively, the Independent T test and the Mann Whitney test were employed to compute the variance between quantitative variables in two groups. P value was chosen to  $< 0.05$  for statistically substantial findings and  $< 0.001$  for highly substantial results.

### RESULTS

At the Department of Obstetrics and Gynecology at El Hussein University Hospital and El Sayed Galal Hospital, prospective research of 200 women who were scheduled for an optional cesarean delivery was conducted. The 200 women were randomly divided into two groups: Group I: included 100 women who agreed to insert immediate post placental IUD at the C/S delivery. The mean age was 30.58, the mean BMI was 27.64, the mean gravidity was 2.86, and Group II included 100 women who chose to insert IUD after puerperium as a control group. The mean age was 31.02, the mean BMI was 28.31, the mean gravidity was 2.97.

		Group I (n=100)	Group II (n=100)	T	p
Age (years)		30.58 ± 6.04	31.02 ± 5.33	.546	.586
Mean ± SD					
BMI (kg/m <sup>2</sup> )		27.64 ± 3.86	28.31 ± 4.67	1.11	.270
Mean ± SD					
Gravidity		2.86 ± 1.15	2.97 ± 1.26	Z	.621
Mean ± SD				.719	
Education	High	52 (52%)	58 (58%)	χ <sup>2</sup>	.394
	Low	48 (48%)	42 (42%)	.727	

**Table 1:** Socio demographic characteristics among the investigated groups

There was no statistically substantial variance in the groups according socio demographic data (Table 1).

	Group I (n=100)	Group II (n=100)	χ <sup>2</sup>	P
<b>Abnormal bleeding</b>	24(24%)	19 (19%)	2.24	.134
<b>No abnormal bleeding</b>	76 (76%)	81 (81%)	3.912	.191
<b>Pain</b>	24 (24%)	17 (17%)	1.5	0.22
<b>No pain</b>	76 (76%)	83 (83%)	1.5	0.22

**Table 2:** Abnormal bleeding and pain distribution of the two investigated groups.

There was no substantial variation in the groups according abnormal bleeding. Regarding group I 24% of the patients presented with abnormal bleeding while only 19% in group II. Also, there was no substantial variation in the groups according pain. Regarding group I 24% of the patients suffered from pain while only 17% in group II suffered from pain (Table 2).

	Group I (n=100)	Group II (n=100)	χ <sup>2</sup>	P
<b>PID</b>	6 (6%)	3 (3%)	1.05	0.306
<b>No PID</b>	94 (94%)	97 (97%)	1.05	0.306
<b>Endometritis</b>	2 (2%)	1 (1%)	.338	.561
<b>No endometritis</b>	98 (98%)	99 (99%)	.338	.561

**Table 3:** Pelvic inflammatory disease (PID) and endometritis distribution of the two investigated groups.

There was no substantial variation in the groups according PID. Regarding group I, 6% of the patients presented with PID while only 3% in group II presented with PID. Also, there was no substantial variation in the groups according endometritis. Regarding group I, 2% of the patients presented with endometritis while only 1% in group II presented with endometritis (Table 3).

	Group I (n=100)	Group II (n=100)	χ <sup>2</sup>	P
<b>Retained</b>	85 (85%)	92 (92%)	2.40	0.120
<b>Expulsed</b>	15 (15%)	8 (8%)	2.41	0.121

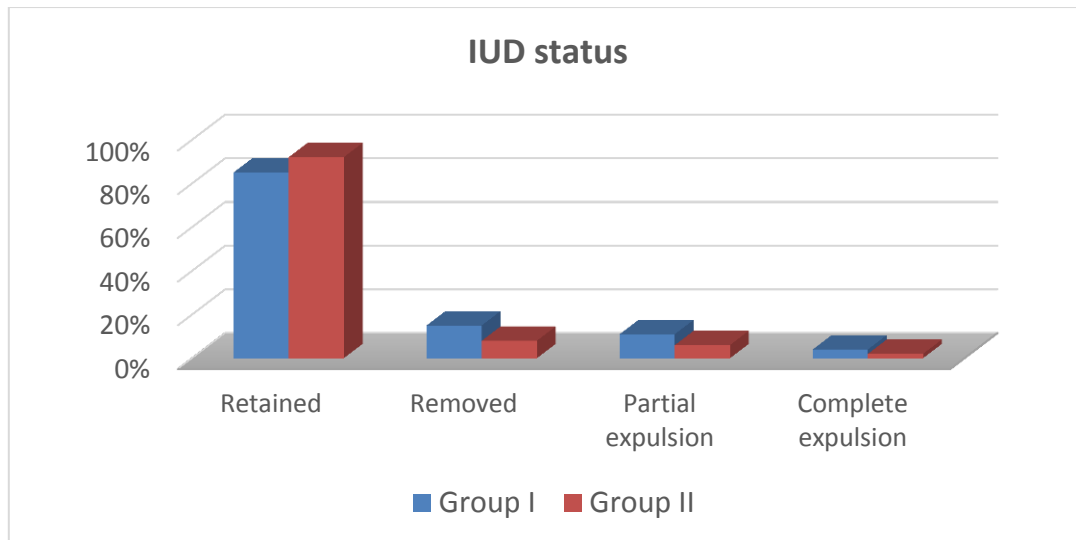
**Table 4:** IUD status distribution of the two investigated groups.

There was no substantial variation in the groups. Regarding IUDs in group I, 85% patients were retained, 15% were Expulsed. Regarding IUDs in group II, 92% patients were retained, 8% were expulsed (Table 4).

	Group I (n=100)	Group II (n=100)	χ <sup>2</sup>	P
<b>Partial expulsion</b>	11 (11%)	6 (6%)	1.61	.205
<b>Complete expulsion</b>	4 (4%)	2 (2%)	.687	.407

**Table 5:** Types of expulsion of the two investigated groups

There was no substantial variation in the groups. Regarding IUDs in group I, 11% of IUDs were partially expulsed while 4% were completely expulsed. Regarding IUDs in group II, 6% of IUDs were partially expulsed while 2% were completely expulsed (Table 5).



**Fig. 1:** IUD status distribution of the two investigated groups.

Thus, the only substantial variation in the two groups is difficulty during IUD insertion, otherwise there are no significant difference regarding expulsion, abnormal bleeding, pain and other adverse events (Figure 1).

## DISCUSSION

In the current study our results in studying the Basal characteristics of included subjects in study groups revealed that, there was no substantial variation among the included subjects regarding age, BMI, Gravidity and Education ( $p > 0.05$ ).

In accord, recent research attempted to analyze and compare the expulsion rate, discomfort, and quantity of bleeding following IUD (Pregna T Cu 380A) insertion during cesarean delivery and after puerperium. Elkholy et al.<sup>1</sup> reported that, In terms of age, gravidity, and prenatal care, there was no substantial variation across the two groups evaluated.

Another study by Singal et al.<sup>8</sup> A total of 300 primiparous women received postpartum intra caesarean insertion of Copper T 380A to investigate the clinical result (safety, effectiveness, expulsion, and continuation rates) of post-placental Copper T 380A insertion in primiparous women having cesarean surgery. The ladies in the research had an average age of  $23.12 \pm 2.42$  years.

Our research revealed that, there is a substantial variation between two groups regarding difficulty during insertion ( $p = 0.001$ ), in group I no difficulty during IUD insertion while (10%) suffered from difficult insertion in group II. Causes of difficult IUD insertion after puerperium were extreme ante flexed or retroflexed uterus, painful placement and vasovagal response.

Hubacher et al.<sup>10</sup> reported that the insertion process can cause pain due to the application of the tenaculum to the cervix to stabilize the uterus and facilitate traction for styling the cervical canal, passing the uterine sound, advancing the inserter tube through the cervix, and irritation of the endometrial cavity when the device is used. S2 to S4 parasympathetic neurons influence cervical discomfort, whereas T10 to L1 sympathetic fibers innervate the uterine fundus.

Leia raphaelidis et al.<sup>11</sup> concluded that The IUD has been proved to be the favored alternative for women searching for dependable long-term contraceptive, despite the fact that the installation technique may sometimes be challenging owing to severe anteverted or retroverted uterus, severe pain, and vasovagal attack.

Çelen et al.<sup>12</sup> concluded that the use of a post-placental IUD offers various benefits. It offers rapid contraception without interfering with breastfeeding and may reduce insertion pain.

Our findings revealed that there was no substantial variation in abnormal bleeding across the groups ( $p > 0.05$ ), in group I (24%) of the patients presented with abnormal bleeding while only (19%) with abnormal bleeding in group II.

In agreement with our result Welkovic et al.<sup>13</sup> studied There was no change in the prevalence of severe bleeding following the placement of a post-placental IUD. Similarly, was the result by Elkholy et al.<sup>1</sup> who showed that, Between the two groups, there were no statistically substantial variations in the amount of bleeding or the length of days before bleeding stopped.

Our findings revealed that there was no substantial differences in pain levels across the groups ( $p > 0.05$ ), in group I (24%) of the patients suffered from pain while only (17%) suffered from pain in group II. Similarly, was the result by Elkholy et al.<sup>1</sup> who showed that, there was no statistical substantial changes in postoperative pain between both groups

The current research discovered that there is no substantial distinction in the groups in terms of PID. In group I, 6% of the patients had PID, while only 3% of the patients in group II had PID ( $p$ -value = 0.306). Hubacher<sup>14</sup> noted that, according to the best data, the risk of PID between IUD users is very limited. Although investigations have demonstrated that the insertion process elevate the risk of PID,

prophylactic antibiotic treatment seems to be warranted since PID rates are low, even in the first month. According to new studies, any relationship between IUD usage and later infertility is less definite.

Also, the current findings revealed that there was no substantial variation in the groups in terms of endometritis; in group I, 2% of the patients had endometritis, while only 1% of the patients in group II had endometritis. Leviet al.<sup>5</sup> reported that, After post-placental insertion, the risk of infection is minimal, and randomized investigations have revealed no variation in infection rates depending on insertion date.

Regarding IUDs in group I, 85% patients were retained, 15% were Expulsed. Regarding IUDs in group II, 92% patients were retained, 8% were removed. Regarding the types of expulsion in group I, 11% were partially expelled while 4% were completely expelled; in group II, 6% were partially expelled while 2% were completely expelled. There is no substantial variation between the two studied groups ( $p > 0.05$ ).

In agreement with our study was a recent study results by Elkholy et al.<sup>1</sup> noted that, There was no statistically substantial change in the effectiveness of IUD (Pregna T Cu 380A) insertion at cesarean delivery and after puerperium in terms of IUD expulsion.

Bhutta et al.<sup>15</sup> Noted that, in all, 129 women had their IUDs removed, with a cumulative expulsion rate of 10.68 percent at the end of six months. The cumulative expulsion rate for immediately post insertion was 9% after six months, compared to 37% for insertions done between 24 and 48 hours after birth, according to four multisite trials in the UN-POPIN study.

Eroglu et al.<sup>16</sup> A total of 268 women involved in the trial, with the following TCU 380A IUD insertions: The full expulsion rate was greater in the EP (14%) and IPP (11%) groups than in the INT (3.6%) group in 84 IPP (less than 10 min), 46 EP (10 min to 72 h), and 138 INT (over 6 weeks). Partial expulsion resulted in 37.2 percent of the EP women, 15.9 percent of the IPP women, and 1.5 percent of the INT women at the 8th-week follow-up visit, and the distinction in the EP, IPP, and INT groups was substantial ( $p < 0.05$ ) during the 8th-week and 6th-month follow-up visits.

In a prospective cohort research done by Levi et al.<sup>17</sup> of After the placenta was delivered, a copper T380A IUD was placed into the endometrial cavity via the incision in 90 women having cesarean birth. There were no expulsions among the 43 returned women for their 6-week follow-up appointments (48 percent).

Çelen et al.<sup>12</sup> reported that, ejection of an IUD has a significant impact on its safety and effectiveness. Partially ejected IUDs should be removed as soon as possible since their contraceptive effectiveness is unknown and they might create difficulties in rare cases. The 6- and 12-month accumulated rates of ejection in the current research were 10.6 and 17.6

per 100 women, respectively, with roughly one-third of the participants experiencing total ejection.

## CONCLUSION

Based on our finding we conclude that, post-placental intra caesarean Copper T 380A insertion at the C/S delivery is safe and effectiveness, bypass causes of difficult IUD insertion after puerperium with low expulsion rate; so, it can be considered a standard procedure.

Conflict of interest : none

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