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Assessment Effect of Post Puerperal and Immediate Post Placental Intrauterine Contraceptive Devices Insertion after Cesarean Delivery on Women's Health

Aziza Ibrahim Mohamed[1], Inaam Hassan Abd Elati[2], Eman Nabil Ramadan[3]
Lecturer of Maternal and Newborn Health Nursing, Faculty of Nursing, Benha University, Egypt, (1)
Department of Maternity, Gynecology & Obstetric Nursing, Faculty of Nursing, Port Said University, Egypt (2)
Lecturer of Community Health Nursing,Faculty of Nursing, Benha University, Egypt(3)

Abstract: *The intrauterine device (IUD) is one of the most widely used contraceptive methods in the world. Immediate post placental IUD insertion is relatively more comfortable, safe, and does not interfere with breastfeeding. The aim of this study was to assess effect of post puerperal and immediate post placental insertion of intrauterine contraceptive devices after cesarean delivery on women's health. A descriptive studydesign was used in this study. Setting: post partum and outpatient clinic units at three different hospitals.*

Participants: *A convenient sample of 440 postpartum women underwent cesarean delivery. 252 of them were found inserting IUD after puerperal period. While 188 of them were found inserting IUD immediately post-placental during caesarean delivery; they were recruited into immediate post placental group Method: Data were collected from March, 2013 till May, 2014. Post puerperal participants firstly were interviewed after insertion of IUD at the outpatient clinics. While, immediate post placental participants were firstly interviewed immediate post cesarean delivery at the postpartum units at the selected hospitals settings. Both groups' participants were followed at first, third and sixth month after IUD insertion. Physical and ultrasound also were performed during each follow up visit.*

Results: *There was no significant difference between immediate post placental and post puerperal IUD insertion groups regarding their base line characteristics ($p>0.05$) at different time of follow up. There was a significant difference between both regarding backache , abdominal pain and pelvic infection..Conclusion: Immediate post placental caesarean IUD insertion is highly effective contraceptive methods without significantly increasing the risk of adverse effects. Nurses should have a role in counselling women regarding immediate post placental IUD insertion during their antenatal care visits.*

Keywords: *Intrauterine device, post puerperal IUD insertion, post placental IUD insertion*

I. Introduction

The intrauterine device (IUD) is one of the most widely used contraceptive methods all over the world. More than 150 million women use IUD, mainly in emerging countries, particularly in Southeast Asia and in the Middle East because it is effective, safe and convenient contraceptive method for many women(1)

There are two ways used in IUD insertion, in the postpartum period, immediate post-placental IUD insertion, in which the insertion of IUD occurs within ten minutes after placenta delivery and after the pureperium (after puerperal or interval period) (2).Intrauterine device insertion during cesarean section was first introduced in 1967 by Zerzavy by suturing the IUD to the posterior uterine fundus(3) .Research in China and Belgium introduced post-placental IUD insertion technique during cesarean delivery with placed an IUD as high as possible in the fundus without suturing the fundus wall. Previous studies stated that, IUD insertion during cesarean section is a safe and easy method(4,5)

Recent evidence supports post placental insertion of IUD, However, the incidence of expulsion is increased over interval insertion, with the most commonly cited rates as 5% after interval insertion and 12% after post placental insertion. Immediate post placental insertion is preferred by the majority of postpartum mothers for many reasons that include, place and time are suitable for them, avoid the discomfort related to interval insertion, decrease incidence of unwanted pregnancy, it does not interfere with breastfeeding in the early postpartum period(6,7)

Significance of the study: In the immediate post delivery period, the women are highly motivated and need an effective method for contraception so; the child can be brought up with a relaxed mind without the worry of unintended pregnancy. On the other hand, without an effective contraception in the first six weeks, woman may be accidentally pregnant. Hence, the mother prefers to insert IUD during cesarean delivery. It is essential that nurses provide women with accurate, evidence-based information relating to the IUD along with information on all contraceptive methodsavailable in order to ensure informed choice. Immediate post-partum IUD insertion may have disadvantages as well as it have advantages. So, the present study aimed to assess effect of post puerperal and immediate post placental intrauterine contraceptive devices insertion after cesarean delivery on women's health.

Aim of the study: The aim of this study was to assess effect of post puerperal and immediate post placental insertion of intrauterine contraceptive devices after cesarean delivery on women's health.

Research Question: What are the effects of post puerperal and immediate post placental IUD insertion on women's health?

II. Material And Methods

2.1. Research design

A descriptive study design was used in this study to fulfil the aim of the study and answer the research question.

2.2. Setting

This study was carried out at post partum and outpatient clinic units at three different hospital settings; these hospital were Kalioub general hospital, Benha university hospital, and Benha teaching hospital /Egypt.

2.3. Study sampling

A convenient sample of 440 postpartum women with previous cesarean delivery were recruited in the current study,188 women of them were found inserting IUD immediately post-placental during caesarean delivery, they recruited into immediate post placental group. While 252 of them were found inserting IUD after pureperium (6 weeks after cesarean delivery) they recruited into post puerperal group.

2.3.1 Inclusion criteria

- Woman Para one and two.
- Previous cesarean delivery.
- Free from any medical disorders or postpartum complications.
- Willing to participate in the study.

2.4 Outcomes measurements and tools

Pelvic infection was considered to be evaluated in women with purulent discharge, cervical tenderness or uterine tenderness.IUD expulsion was described as the presence of the IUD out of the uterine cavity. Two tools were used in the current study to collect the necessary data.

2.4.1 Structured Interviewing schedule sheet

It was developed by the researcher; it was consisted of two parts:

Part 1: general characteristics data such as; age, educational level, residence ……etc.

Part 2: obstetric history such as; parity, type of cesarean section…..etc.

2.4.2 Medical Record Sheet

It was developed by the researcher to records data about bleeding, abdominal pain, back ache, vaginal discharge, pelvic infection and ultrasound report regarding presence of intrauterine contraceptive devices. Pelvic infection was considered to be evaluated in women with purulent vaginal discharge, cervical tenderness or uterine tenderness.IUD expulsion was described as the presence of the IUD out of uterine cavity (ultrasound report).

2.4.3 Content validity and reliability

Content validity was tested by five experts in the field of maternity nursing and obstetric medicine. The questionnaire was modified according to the panel judgment on clarity of sentences and appropriateness of content. Reliability of study tool was done using Cronbach's Alpha it was (0.897).

2.5 Data collection procedure

Data were collected from the beginning of March, 2013 till the beginning of May, 2014. Post puerperal participants firstly were interviewed after insertion of IUD at the outpatient clinics. While, immediate post placental participants were firstly interviewed immediate post cesarean delivery at the postpartum units at the selected hospitals settings. The aim of the study was explained to all participants and written consent was obtained from each participant. Both groups participants were followed at first, third and sixth month after IUD insertion, they were followed at the outpatient clinic of the selected hospitals .Both groups were followed at first, third and sixth month after first meeting at outpatient clinic units. During each follow up visit physical and ultrasound examination were performed to verify the presence of IUD, and check signs of infection.

Time of follow up	Benha university hospital **N**=170		Kalioub general hospital N=150		Benha teaching hospital N=120		Total sample size
	Post puerperal	Post Placental	Post Puerperal	Post placental	Post puerperal	Post-placental	
First month	97	73	85	65	70	50	440
Third month	97	73	85	65	70	50	440
Six month	92	71	82	61	66	48	420

2.6. Data analysis

Data analysis was performed using IBM SPSS statistical software version 15. The data were explored. Descriptive statistics with mean and standard deviation (SD) for continuous variables and frequency for categorical variables were analyzed.Statistical significance and association were assessed using chi-square test, independent (t) test to compare mean scores between study and control group. A significant level value was considered when $p \leq 0.05$ and A highly significant level value was considered when $p \leq 0.001$.

2.7. Ethical considerations

This study was conducted under the approval of the Scientific Research Ethics Committee, Faculty of Nursing, Benha University. Participants were given explanations about the purpose of the study, and they were also informed that they could withdraw from the study at any time before the completion of the study. Participants who agreed to complete in this study were asked to sign a consent form. Confidentiality of participants' information was assured and the data were accessed only by the investigators involved in the study.

III. Results

3.1. Response rate:

A total of 420 (95.4%) out of 440 postpartum woman was completed the study. with 20 (4.6%) declining to complete the study. In the immediate post placental IUD insertion group, eight postpartum women were discontinued their participation in the 3rd month follow up. The reason for the discontinuation was the expulsion of IUD. While, on the post puerperal IUD insertion group, twelve women were discontinued their participation in the 3rd month follow up. The reason for discontinuation of three of them was expulsion of IUD, and the job of nine of them.

3.2. Baseline characteristics

The baseline characteristics and the obstetrical history of the participants are shown in table 1 and 2. The mean age of the participants was25.88±4.450, with age ranging from 20 to 34. 56.1% of them were resided in rural settings. 83.6% of them were housewives. 59.6%&52.2% of them had no previous experience of using IUD. All of participants were sign an informed consent regarding IUD insertion. In addition, only 29.3% of them had counselling regarding IUD during antenatal care. There was no significant difference in the baseline data between immediate post placental and post puerperal IUD insertion groups regarding their base line characteristics ($p>0.05$).

3.3. Outcomes of post puerperal and post placental IUD insertion at one month follow up after IUD insertion.

Intrauterine device related problems were encountered by participants after one month of IUD insertion are shown in table (3). Excessive irregular bleeding was found among 57.5% & 55.9% of both post puerperal

and post placental groups respectively, back ache was found among 64.3 % & 42.0% of them, abdominal pain was found among 48.0 % & 59.6 % of them, pelvic infection was confirmed among 32.9 % & 22.9% of women and finally, IUD was confirmed clinically in all participants at first assessment that done after one month of IUD insertion. There was a significant difference regarding backache , abdominal pain and pelvic infection ,while there was no cases of IUD expulsion.

3.4. The effects of post puerperal and post placental IUD insertion at 3rd month follow up after IUD insertion.

After three months of IUD insertion in both post puerperal and post placental groups, IUD related complication were declined than during the first month as shown in table (4),specifically among post placental group as; excessive irregular bleeding was found among 35.3%& 23.4% of them respectively ,back ache was found among 54.4 & 34.0% of them, abdominal pain was found among 48.0 % & 59.6 % of them, and pelvic infection was confirmed among 39.3 % & 22.9% of them. On the other hand, IUD was not confirmed clinically in 4.3% of post placental group as compared with 1.2% of post puerperal group. There was a statistically significant difference in IUD related complication between post puerperal and post placental group during three months after IUD insertion.

3.5 Outcomes of post puerperal and post placental IUD insertion at 6th month follow up after IUD insertion.

During the 6th month follow up, IUD related problems were decreased among participants in both post placental and post puerperal groups as shown in table (5). Excessive irregular bleeding was found among 31.3% &21.7% of them respectively, and there was a statistically significant difference between post puerperal and post placental group regarding bleeding after IUD insertion. Back ache was found among 33.3 % & 24.4% of them, abdominal pain was found among 47.5 % & 31.1 % of them. Pelvic infection was confirmed among 37.5 % &16.7% of them .On the other hand, IUD was not confirmed clinically in 2.2% of post placental group as compared with none of post puerperal group. There was a statistically significant difference in IUD related complication between post puerperal and post placental group during six months after IUD insertion.

Table (1): base line characteristics of the participants (n=440).

General Characteristics	Total No. % or Mean ±SD		Post-puerperal group No. %or Mean ±SD (n= 252)		Post-placental group No. %or Mean ±SD (n= 188)		P value
Age in years	25.88±4.450		25.74±4.513		26.07±4.367		0.437*
Educational level							0.384
Read and write	78	17.7	45	17.9	33	17.6	
Secondary education	181	41.1	97	38.5	84	44.7	
University education	181	41.1	110	43.7	71	37.8	
Residence							0.501
Rural	247	56.1	138	54.8	109	58.0	
Urban	193	43.9	114	45.2	79	42.0	
Occupational condition							0.270
Working	72	16.4	37	14.7	35	18.6	
House wife	368	83.6	215	85.3	153	81.4	
Body weight	75.08±13.75		74.94±14.68		75.28±12.44		0.792*
Height	163.07±8.07		163.26±8.77		162.80±7.04		0.541*
Body mass index	28.23±5.47		28.14±5.82		28.36±4.975		0.676*

Note: Chi-square test was used for other variables. * P-Value indicated by independent t test

a. No statistics are computed because Consent for IUD insertion is a constant. * *p-Value indicated significance difference**.**

Table (2):Distribution of women under study according to their obstetrical history (n= 440).

General Characteristics	Total NO.= (440)		Post-puerperal group (N= 252)		Post-placental group (N= 188)		P value
Parity							0.330
Para (1)	199	45.2	119	47.2	80	42.6	
Para (2)	241	54.8	133	52.8	108	57.4	
Previous IUD							0.988
No	274	62.3	157	62.3	117	62.2	
Yes	166	37.7	95	37.7	71	37.8	
Type of cesarean delivery							0.749
Elective	177	40.2	103	40.9	74	39.4	

Emergency	263	59.8	149	59.1	114	60.6	
Counseling regarding IUD during antenatal care							0.279
Yes	129	29.3	79	31.3	50	26.6	
No	311	70.7	173	68.7	138	73.4	
Consent for IUD insertion							.a
Yes	440	100.0	252	188	100.0	100.0	
No	0	0.0	0	0.0	0	0.0	
Previous unplanned pregnancy							0.002**
Yes	278	63.2	175	69.4	103	54.8	
No	162	36.8	77	30.6	85	45.2	

Note: Chi-square test was used for other variables. * P-Value indicated by independent t test

a. No statistics are computed because Consent for IUD insertion is a constant. * *p-Value indicated significance difference.

Table (3): First month outcomes of both post puerperal and immediate post placental IUD insertion groups (n= 440).

Variable	Post-puerperal group(N=252)		Immediate post-placental group (N=188)		P value
	No	%	No	%	
First month after IUD insertion					
Excessive irregular Bleeding at first week	145	57.5	105	55.9	0.724
Bach ache	162	64.3	79	42.0	0.000**
Abdominal pain	121	48.0	112	59.6	0.020*
Pelvic infection	83	32.9	43	22.9	0.021*
IUD expulsion	0	0.0	0	0.0	.a

Table (4): Third month outcomes of both post puerperal and immediate post placental IUD insertion groups (n= 440).

Variable	Post-puerperal group(N=252)		Immediate post-placental group (N=188)		P value
	No	**%**	**No**	**%**	
3rd month follow up					
Excessive irregular Bleeding	89	35.3	44	23.4	0.007*
Bach ache	137	54.4	64	34.0	0.000**
Abdominal pain	92	36.5	86	45.7	0.051
Pelvic infection	99	39.3	33	17.6	0.000**
IUD expulsion	3	1.2	8	4.3	0.042

Table (5): Six month outcomes of both post puerperal and immediate post placental IUD insertion groups (n= 420).

Variable	Post-puerperal group (N=240)		Post-placental group (N=180)		P value
	No	**%**	**No**	**%**	
6th month follow up					
Excessive irregular Bleeding	75	31.3	39	21.7	0.029.*
Bach ache	80	33.3	44	24.4	0.048*
Abdominal pain	114	47.5	56	31.1	0.001**
Pelvic infection	90	37.5	30	16.7	0.000**
IUD expulsion	0	.0	4	2.2	0.020*

IV. Discussion

Intrauterine device insertion during early postpartum period is the most effective reversible contraceptive methods for many mothers because the contraception motivation is high and it doesn't interfere with breast feeding. was to assess effect of post puerperal and immediate post placental insertion of intrauterine contraceptive devices after cesarean delivery on women's health.

The present study findings revealed that, the major problem in the immediate post placental IUD insertion was the higher rate of IUD expulsion, as total expulsion rate was found to be 6.4% among immediate post placental group as compared with 1.2% among post puerperal. The majority of the expulsion was identified during the 3rd month and the 6thmonth follow up.These findings are supported by a study of Kittur et al (2012), who shows that, the expulsion rate was 5.23% and they

were concluded that, the expulsion rates after PPIUCD would be minimal if it was inserted by a trained provider and placed at the fundus[8]. Moreover, Chen (2010) was examined immediate post-partum versus delayed insertion of the levonorgestrel-releasing IUS. Expulsion by six months was more likely for the immediate group than the delayed insertion group (23.5% vs4.4%), (OR 6.77; 95% CI 1.43to 32.14). The two groups were similar in pregnancy (none found) and in use at six months (84% & 77%) respectively[7].

Regarding pelvic infection, as a complication of IUD insertion, the present study was revealed that, there was a statistically significant difference between immediate post placental and post puerperal groups, as the incidence of pelvic infection was higher among post puerperal group than among immediate post placental group during different times of assessment and follow up. These finding is consistence with previous findings of celen et al (2011) [9]; Eroglu et al (2006) [5], but lower than that reported by Bhutta et al (2011) who were concluded that, immediate post placental IUD insertion during cesarean section provides adequate protection against pregnancy, with no increased risk of infections.

This may be attributed to that post puerperal participants resuming their sexual life after pureperium that make them risk for pelvic infection , also immediate post placental participants recently had a complete course of antibiotic that decrease the incidence of their risk to have pelvic infection[6].

On the other hand, these findings are contradicted with studies were carried out by Lara et al (2009); Shukla and Chandrawati (2011), which added that, there was no significant difference for the risk of infection between women who had immediate IUD insertion during caesarean delivery compared with women who had delayed IUD insertion .[10,11]

Concerning the outcome measurements of IUD insertion, the present study was pointed out that, there was statistically significant difference between two groups regarding excessive bleeding and abdominal pain especially during first, third and sixth month follow up schedule; the incidence of excessive bleeding and abdominal pain were found to be high among post puerperal group than among immediate post placental group. This attribute may be related to that increase incidence of pelvic infection among post puerperal participants, which is mainly associated with severe abdominal pain and excessive blood loss. This in congruence with the findings of Welkovic et al who were studied post-partum bleeding and infection after post-placental IUCD insertion, and they found no difference in the incidence of excessive bleeding.[12]. In addition these findings are in accordance with El Beltagy et al(2011) .[13] who were studied a prospective randomized control trial enrolled 300 recently normally delivered females (within 48 hrs.) in El-Shatby.

The expulsion rates were relatively high for both IUDs, amounting to 15% in Cu T380 compared to 14.9% in Multiload 375 insertions. The early postpartum insertion of IUDs (i.e. relatively within 48 h after delivery and before hospital discharge) would be suitable because the cervix is patulous and the lochia will mask any bleeding associated with the IUD insertion . The results of this study indicated that, at 6 weeks, the Cu T380 IUD menstruating users were more complaining of menorrhagia and metrorrhagia than were the Multiload 375 IUD menstruating users. However, at 6 months, the bleeding abnormalities were higher among the Multiload 375 IUD menstruating users than the Cu T380A IUD menstruating users.

In relation to incidence of perforation or misplaced as a complication of IUD insertion ,the present study findings support that, immediate post placental is an ideal time for IUD insertion and there was no cases of perforation or misplaced IUD in the present study .these findings are in the same line with Arshad et al(2014) [14]. who were added that, there was no cases of perforation, misplaced IUCD or any other major complications were found.

V. Conclusion

Based on the results of the present study, it can be concluded that:

Immediate post placental caesarean IUD insertion is highly effective contraceptive methods without significantly increasing the risk of adverse effects such as perforation, bleeding, pain, and infection and convenient for both women and health providers. Nurses should have a role in counselling women regarding immediate post placental IUD insertion during their antenatal care visits.

VI. Recommendation

Based on the findings of the present study, the following recommendations were suggested: Immediate post placental IUD insertion is safe and effective family planning contraceptive methods. Further study to evaluate effect of immediate IUD insertion after normal vaginal delivery. Evaluate patient's acceptance, satisfaction regarding immediate post placental IUD insertion.

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