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Post-placental insertion of the intrauterine device after cesarean delivery versus delayed insertion: A randomized controlled trial

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ABSTRACT

Objectives: One particularly effective method of long-acting, reversible, and reasonably priced contraception for spacing out pregnancies is the intrauterine device (IUD), especially in areas with poor access to medical facilities. Alongside contraceptive implants, IUDs are known to offer high satisfaction rates among users. For postpartum contraception, IUD insertion immediately after placental delivery, following either vaginal or abdominal delivery, is considered feasible. Additionally, insertion within 48 hours of delivery is also a viable option. To compare the post-placental insertion (PPIUD) of an IUD among women who had a cesarean birth against those who planned for interval IUD installation 6 weeks postpartum in terms of expulsion rate and patient compliance.

Materials and Methods: This randomized controlled trial involved 97 patients who were recruited from an outpatient clinic and received the intervention of IUD insertion. It was carried out at the Tertiary Care Hospital's Obstetrics and Gynecology Department at Ain Shams University Maternity Hospital from July 2022 to March 2024.

Results: There were no statistically significant difference between the studied groups regarding age, body mass index, parity and history of previous IUD use. None of the cases in either group experienced failed insertion or perforation during insertion. Pelvic pain, dyspareunia and abnormal bleeding in month-6 follow-up were significantly less frequent in PPIUD group. None of the cases in either group experienced perforation, pelvic inflammatory disease or pregnancy in month-6 follow-up. IUD removal, expulsion and failure by month-6 were non-significantly more frequent in PPIUD group. Also, there were no statistically significant difference between the study groups regarding baseline and month-6 hemoglobin. Hemoglobin significantly less reduced in PPIUD. Patient satisfaction in month-6 was significantly higher in PPIUD group.

Conclusion: PPIUD of the IUD following cesarean delivery is a safe, simple, efficient, and practical method of contraception that can replace delayed IUD insertion because of its immediate and sustained contraceptive benefit, patient comfort, convenience, and lower incidence of side effects. As such, it qualifies for popularization as a first-line contraceptive agent in eligible patients.

Keywords: Cesarean delivery; intrauterine device; post-placental insertion

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INTRODUCTION

Egypt's population reached about 100 million people in the early 2020s. The population of Egypt has increased by about 30 million in the last 15 years.[1] If desired, contraceptive alternatives should be started as soon as possible after delivery.[2] This is because recurrent pregnancy rates during the first year of childbirth can range from 10-44%, with greater rates among high-risk adolescents.[3,4]

In non-lactating women, ovulation occurs at an average of 39 days postpartum, but it can occur as early as 25 days, putting postpartum women at risk of unwanted and short-interval pregnancy.[3] Women who have a cesarean section may be more likely to resume sexual activity sooner than women who had vaginal deliveries.[5] At least 70% of pregnancies occur unintentionally in the first year after giving birth. Between 40% and 57% of women report having unprotected intercourse before their normal 6-week postpartum visit.[3]

Preterm delivery, low birth weight, and small for gestational age are among the risks associated with infants born from short-interval pregnancies.[6] It has been discovered that using a very efficient form of contraception results in better interpregnancy intervals.[4,7] It is advised by the World Health Organization (WHO) to wait at least 24 months before trying to get pregnant again.[8]

Pregnancy during breastfeeding is common in Egypt and lactational amenorrhea method isn't enough to prevent unintended pregnancy.[9] Long-acting reversible contraception (LARC) started after delivery reduces the number of quick repeat pregnancies, and post-placental intrauterine device (PPIUD) implantation right away is both safe and economical.[8]

The American Academy of Pediatricians and the American College of Obstetricians & Gynecologists advise intrauterine devices (IUDs) as a first-line method of contraception. IUD usage immediately after giving birth is often advantageous over the dangers, according to the Centers for Disease Control and Prevention's U.S. Medical Eligibility Criteria for Contraceptive usage, which does not impose any limits on use.[6]

Because many women have low postpartum visit follow-up rates, especially those who are most at risk of short interpregnancy intervals, scheduling LARC in the early postpartum period is also appealing. 10-40% of women do not show up for the postpartum appointment.[10] Postpartum may be the best time for women to use IUDs, particularly if they would otherwise struggle with access, motivation, or adverse effects. Randomized studies included in a Cochrane Review suggested that post-placental IUD implantation was both safe and effective.[11]

Immediate PPIUD implantation is an interesting technique for extending access to postpartum IUDs because it requires no extra postpartum appointment.[6]

Aim of the Work

The purpose of this study was to compare the PPIUD of an IUD in women who had a cesarean birth versus those who planned for interval IUD installation 6 or more weeks postpartum in terms of expulsion rate and patient compliance.

MATERIALS AND METHODS

From July 2022 to March 2024, 97 patients were recruited from an outpatient clinic and received IUD insertion as the intervention in this randomized controlled trial, which was carried out at a Tertiary Care Hospital in the Gynecology and Obstetrics Department at Ain Shams University Maternity Hospital (ASUMH). The trial was approved by the ethical committee (approval number: MD 240/2022, date:16/9/2022) and the patients provided informed consent.

Women who recruited from outpatient clinic and received the intervention of IUD insertion, divided into two groups: Group (A) (PPIUD group): Fifty women who had immediate post-placental IUD insertion.

Group (B) (delayed insertion group): Fifty women who had delayed IUD insertion at the 6th week postpartum visit**.**

Pregnant women who planned to deliver by caesarean section in ASUMH with age between 18-40 years old were included in the study. While, women who refuse to use an IUD as a method of contraception and would rather use other methods, as well as those with conditions listed in Category 3 or 4 for Cu-IUD in the Medical Eligibility Criteria for Contraceptive Use WHO-2015, intrapartum complications and anemia patients were not allowed to participate in the study.

According to a classification based on a population supplemented with iron, the following levels are classified as anemic: hemoglobin (g/dL) and hematocrit (percentage) levels below 11 g/dL and 33%, respectively, in the first trimester; 10.5 g/dL and 32%, respectively, in the second trimester; and 11 g/dL and 33%, respectively, in the third trimester.[12]

All women underwent history taking, examination, and investigations to determine eligibility based on inclusion and exclusion criteria.

Following protocol approval by the ethics committee of the Department of Obstetrics and Gynaecology, Faculty of Medicine Ain Shams University, pregnant women who intended to have an elective caesarean section at ASUMH were recruited from the antenatal clinic. Counseling was provided on several postpartum

contraceptive techniques, including immediate PPIUD and delayed IUD placement. All participants provided informed written permission prior to enrollment in the trial, after which the goal, potential risks, and complications were discussed.

Alternatively, eligible patients were randomly assigned to one of two groups: Patients who underwent an immediate post-placental IUD implantation are in Group (A) (PPIUD group). Patients in Group (B) (delayed insertion group) had their IUDs inserted later than planned during their sixth week postpartum appointment.

• **Type of IUD:** Model TCu 380 A with safe load® Pregna.

• **Group A (PPIUD group):** cesarean section was performed by experts in post-placental IUD insertion as follows:

1) The uterus became hemostatic after the placenta was removed, and then the IUD was implanted. The uterine incision was started to close, and then the IUD was manually positioned near the top of the uterine fundus. The threads were manually inserted softly into the lower uterine region before the uterine incision was closed. Once this was done, the incision around the uterus could be closed. During the puerperal phase, the strings naturally passed through the cervix.

2) Ring forceps would be used to expand the cervix from above if it was closed. Ring forceps can be used to insert strings through the cervix. If this was carried out, the resident would double-check before sealing the uterine incision to ensure the IUD was still at the fundus. Strings can be trimmed at a follow-up visit.

3) To be sure the IUD was placed correctly, an ultrasound was performed following the cesarean section.

• **Group B (control group) (delayed insertion group):** Expert supervisors performed the cesarean section, and then contacts were made to arrange for delayed IUD insertion at the sixth week postpartum appointment, as follows: Procedure: Qualitative beta human chorionic gonadotropin done before doing procedure. Prepare the IUD before beginning the process, insert the vaginal speculum, and then prepare the vaginal wall with betadine. Apply the tenaculum to the anterior cervical location, then insert and withdraw the uterine sound. Insert the IUD according to the package directions, and then cut threads 2-3 cm from the cervical os. An ultrasound was conducted to ensure the IUD was properly implanted.

• **Follow-up:** Follow-up visits will be undertaken at 6 months after insertion (questionnaire, ultrasound).

Outcome Measures: The study primary outcomes were expulsion rate and patient Compliance; assessed by a questionnaire with scoring system, at 6 months. While the secondary outcomes were Bleeding pattern, pain/dyspareunia, pelvic inflammatory disease (PID) requiring hospitalization: By history taking. Perforation and failure rate: By history taking and ultrasound.

Statistical Analysis

The acquired data was coded, tabulated, and statistically analyzed with IBM SPSS version 22.0 and Microsoft Office Excel 2007. Descriptive statistics were calculated for quantitative data using minimum and maximum ranges, mean ± standard deviation for normally distributed data, and number and percentage for qualitative data. Then proper statistical analysis were performed. *P*-values <0.050 were considered significant, otherwise non-significant.

RESULTS

In the enrollment stage, it is needed to assess 121 cases for eligibility, from them 21 were excluded, 13 for non-meeting inclusion criteria and 8 declined to participate. The randomized 100 cases were allocated in the study groups (50 in each). In PPIUD group all the 50 allocated cases received the allocated intervention, then 4 cases were lost in month-4 follow-up, for that 50 cases were analyzed at intervention and only 46 cases in month-4. In Delayed group only 47 allocated cases received the allocated intervention, then 3 cases were lost in month-4 follow-up, for that 47 cases were analyzed at intervention and only 44 cases in month-4 (Figure 1). Table 1 reveals that there is no statistically significant difference between the study groups in terms of age, body mass index (BMI), parity, and previous IUD usage. Table 2 revealed that none of the patients in either group had failed insertion or perforation

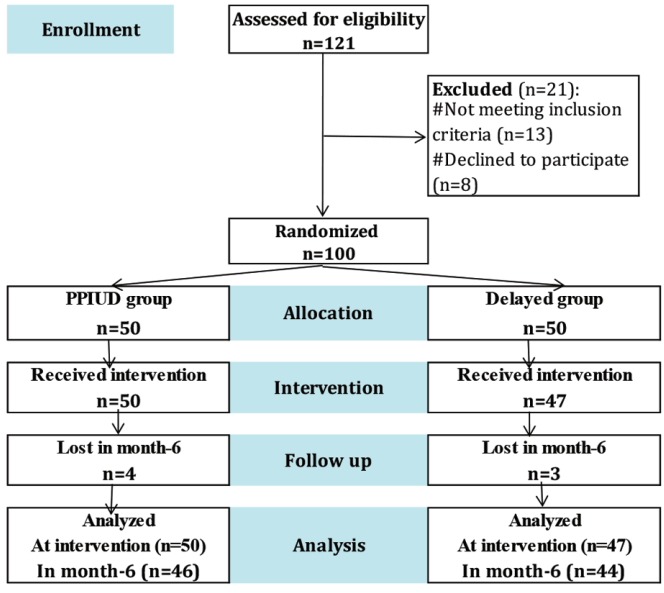

Figure 1. Flow chart of the studied cases
PPIUD: Post-placental insertion

during insertion. Table 3 showed that: Pelvic pain, dyspareunia and abnormal bleeding in month-6 follow-up were significantly less frequent in PPIUD group. None of the cases in either group experienced perforation, PID or pregnancy in month-6 follow-up. Table 4 showed that: IUD removal, expulsion and failure by month-6 were non-significantly more frequent in PPIUD group. Table 5 showed that: No statistically significant difference between the study groups regarding baseline and month-6 hemoglobin. Hemoglobin significantly less reduced in PPIUD. Hemoglobin significantly decreased in either group. Table 6 showed that: Patient satisfaction in month-6 was significantly higher in PPIUD group.

DISCUSSION

This study aimed to assess the expulsion rate and patient compliance with IUD implantation six weeks or more postpartum in women who had cesarean delivery against those who intended for interval IUD installation.

A total of 97 patients who were recruited from an outpatient clinic and received the intervention of IUD insertion participated in this randomized controlled trial from July 2022 to March 2024 at the tertiary care hospital's obstetrics and gynecology department at ASUMH.

In this study, 121 cases had their eligibility evaluated, and 100 patients were randomly assigned to the PPIUD group or the delayed insertion group. Out of all the eligible patients, 8 women declined to take part in the trial, and 13 patients were removed from the study due to inclusion requirements.

Out of the 100 randomized cases, 50 were assigned to the PPIUD group and 50 to the delayed group. All 50 cases in the PPIUD group received the allocated intervention initially. However, during the month-4 follow-up, 4 cases were lost, (resulting in the analysis of 50 cases at the intervention stage) and only 46 cases at month-4.

Table 1. Demographic characteristics between the studied groups

Vatiables		PPIUD group (total=50)	Delayed group (total=47)	*p*-value
Age (years)	Mean ± SD	28.8±4.4	29.6±3.5	^0.333
	Range	21.0-38.0	19.0-37.0	
BMI (kg/m²)	Mean ± SD	28.8±2.2	28.4±1.8	^0.230
	Range	23.1-34.3	23.8-31.9	
Parity (n, %)	Primi	13 (26.0%)	13 (27.7%)	#0.854
	Multi	37 (74.0%)	34 (72.3%)	
Previous IUD use		12 (24.0%)	10 (21.3%)	#0.749

BMI: Body mass index, ^: Independent t-test. #: Chi-square test, SD: Standard deviation, PPIUD: Post-placental insertion, IUD: Intrauterine device

Table 2. Insertion findings between the studied groups

Vatiables	PPIUD group (total=50)	Delayed group (total=47)	*p*-value
Failed insertion	0 (0.0%)	0 (0.0%)	NA
Perforation	0 (0.0%)	0 (0.0%)	NA

NA: Not applicable, PPIUD: Post-placental insertion

Table 3. Month-6 findings between the studied groups

Findings	PPIUD group (total=46)	Delayed group (total=44)	*p*-value	Relative effect Relative risk 95% CI
Pelvic pain	4 (8.7%)	11 (25.0%)	#**0.038***	0.35 (0.12-1.01)
Dyspareunia	6 (13.0%)	14 (31.8%)	#**0.032***	0.41 (0.17-0.97)
Abnormal bleeding	3 (6.5%)	10 (22.7%)	#**0.029***	0.29 (0.08-0.97)
Perforation	0 (0.0%)	0 (0.0%)	NA	NA
PID	0 (0.0%)	0 (0.0%)	NA	NA
Pregnancy	0 (0.0%)	0 (0.0%)	NA	NA

NA: Not applicable, PID: Pelvic inflammatory disease, #: Chi-square test. *: Significant. Relative effect: Effect in PPIUD group relative to that in delayed group, PPIUD: Post-placental insertion, CI: Confidence interval

Table 4. IUD removal, expulsion and failure between the studied groups				
Findings	**PPIUD group (total=46)**	**Delayed group (total=44)**	***p*-value**	**Relative effect Relative risk 95% CI**
Removal	1 (2.2%)	0 (0.0%)	§0.999	NA
Expulsion	4 (8.7%)	1 (2.3%)	§0.361	3.83 (0.44-32.91)
Failure	5 (10.9%)	1 (2.3%)	§0.203	4.78 (0.58-39.33)

NA: Not applicable, PID: Pelvic inflammatory disease, §: Fisher's Exact test, Relative effect: Effect in PPIUD group relative to that in delayed group, CI: Confidence interval, PPIUD: Post-placental insertion, IUD: Intrauterine device

Table 5. Baseline and month-6 hemoglobin (gm/dL) between the studied groups					
Time		**PPIUD group (total=46)**	**Delayed group (total=44)**	**^*p*-value (groups)**	**Relative effect Mean ± SE 95% CI**
Baseline	**Mean ± SD**	12.3±0.9	12.1±1.0	0.552	0.1±0.2
	Range	10.2-13.9	10.1-13.8		-0.3-0.5
Month-6	**Mean ± SD**	12.0±1.0	11.8±1.0	0.282	0.2±0.2
	Range	9.9-14.0	9.5-13.4		-0.2-0.6
¤Change	**Mean ± SD**	-0.2±0.3	-0.4±0.3	**0.005***	0.2±0.1
	Range	-0.8-0.5	-1.1-0.2		0.1-0.3
△*p*-value (times)		**<0.001***	**<0.001***		

¤Chage= Month-6 - baseline, negative values indicate reduction. ^: Independent t-test. △: Paired t-test, *:Significant. SE: Standard error, Relative effect: Effect in PPIUD group relative to that in delayed group, CI: Confidence interval, PPIUD: Post-placental insertion

Table 6. Patient satisfaction (Likert scale 0-10) in month-6 among the studied groups				
Masures	**PPIUD group (total=46)**	**Delayed group (total=44)**	**^*p*-value**	**Relative effect Mean ± SE 95% CI**
Mean ± SD	8.8±2.3	7.6±3.2	**0.035***	1.3±0.6
Range	0.0-12.0	3.0-12.0		0.1-2.4

^: Independent t-test, *: Significant, SE: Standard error. Relative effect: Effect in PPIUD group relative to that in delayed group, CI: Confidence interval, PPIUD: Post-placental insertion

In the delayed group, only 47 out of the allocated cases received the intervention initially. Subsequently, 3 cases were lost during the month-4 follow-up, leading to the analysis of 47 cases at the intervention stage and only 44 cases at month-4.

One of the biggest issues facing the health care system in third-world nations like Egypt is patient dropout. Patients with low socioeconomic position, low levels of education, and limited access to medical facilities sometimes place insufficient emphasis on health-related concerns. This issue also surfaced when patients were placed in the group with the delayed IUD.[13]

The results of the current study showed that there was no statistically significant difference in age, BMI, parity, or history of prior IUD usage between the groups under examination (*p*-values =0.333, 0.230, 0.854, 0.749).

The most worrying post-insertion complications of IUD are menorrhagia, dysmenorrhea and acute abdomen, which may have life-threatening consequences.[5]

At time of insertion, our study results reported no cases in either group, experienced failed insertion or perforation during insertion. However, after 6 months of insertion, our study results revealed that pelvic pain, dyspareunia and abnormal bleeding during follow-up, were significantly less frequent in PPIUD group (*p*-value= 0.038, 0.032, 0.029)

In agreement with our findings, Tawfik et al.[14] conducted a prospective study that enrolled 300 women to compare between PPIUD during cesarean section versus delayed IUD (DIUD) insertion and showed a significant difference in bleeding and back pain in 6 weeks follow-up. As bleeding and pain were more evident in DIUD group in comparison to PPIUD group (33.3%

vs. 21.3% respectively, p=0.03) for bleeding and (46.7% vs. 34% respectively, p=0.02) for pain.

These findings agreed with a study conducted by Khurshid et al.[13] which compared PPIUD versus DIUD; they also reported a higher incidence of pain at 6 weeks follow-up in DIUD in comparison to PPIUD (16.3% vs. 8.7% respectively, p=0.02) and bleeding was more evident in DIUD group in comparison to PPIUD (15.4% vs. 5.09% respectively, p=0.007), and no cases were reported with PID in either group.

Menorrhagia caused by intrauterine contraceptive devices (IUCD) has been explained by a number of mechanisms, including increased endometrial prostaglandins, which in turn cause increased capillary permeability and vascularity with decreased platelet activity, and the induction of an inflammatory response by IUCD, which increases the production of nitric oxide, a powerful vasodilator. It has been suggested that faulty angiogenesis might cause other vascular abnormalities as well. For example, abnormal vasculature can have poor contractility and hemostatic dysfunction as a result of abnormal angiogenesis, which can result in severe bleeding and reduced uterine artery vascular impedance.[15]

Regarding complications, our study results reported that none of the cases in either group experienced perforation, PID or pregnancy in month-6 follow-up. Moreover, by the month-6 follow-up, occurrences of IUD removal, expulsion, and failure were observed to be non-significantly more frequent in the PPIUD group.

In agreement with our results, Tawfik et al.[14] reported no significant difference between the 2 groups regarding infection occurrence (p>0.05). Moreover, expulsion rate was higher in PPIUD (4%) in comparison to DIUD group (1.3%), However, this difference was statistically insignificant. Also, there was insignificant difference between both groups regarding pregnancy rate on top of the IUD (p=0.7).

These findings were in concordance with another study of Elsokary et al.[16] that reported an expulsion rate of 1.96% in DIUD in comparison to 4.17% in PPIUD, with no significant difference between the 2 groups (p=0.5). Also, they reported insignificant difference between the 2 studied groups as regards pregnancy on top of the IUD.

In a prospective study conducted by Al Safty et al.[17], higher expulsion rates were reported. Specifically, in the PPIUD group, 85% of patients were retained, while 15% were expelled. In comparison, among patients in the DIUD group, 92% were retained, and 8% were expelled. But when it came to expulsion rates, there was no statistically significant difference between the studied groups.

Our findings are supported by Khurshid et al.[13] report that there were no incidences of pelvic infection or perforation in either group. This is also in line with previous authors' reports that there were no cases of perforation in postpartum intrauterine contraceptive device insertion.[18-20] When compared to the delayed IUD group, the PPIUD group's side-effect profile was generally better, particularly during the first six weeks and six months of use.[13]

The findings of Levi et al.[5] who evaluated the immediate post-placental IUD insertion at cesarean delivery, are consistent with our findings. They enrolled 90 patients undergoing cesarean delivery and followed up at 6 weeks and 12 months postpartum. They reported no unintended pregnancies or acute IUD-related complications, and they suggested that the immediate PPIUD of Copper IUD was a safe and effective procedure.

On the other hand, 1000 patients were included in a parallel-group randomized controlled study by Bayoumi et al.[21], which compared the IUD placement during puerperal and post-placental periods in women who were having cesarean sections. A larger sample size, long-term patient follow-up up to 12 months after insertion, low participant attendance at follow-up visits, and data suggesting that women from disadvantaged social and economic backgrounds are more likely to miss postpartum visits could all potentially account for the higher expulsion rates observed in the post-placental group.[16-22] It's unclear if variations in expulsion are caused by the kind of IUD, the insertion technique, the time of insertion, or the provider's training and experience. Furthermore, during the follow-up at 6 and 12 months following implantation, no significant pelvic discomfort was noted.[21]

Furthermore, Whitaker et al.[23] examined the expulsion following PPIUD in comparison to delayed insertion after 4-6 weeks and found a statistically significant difference.

Regarding Hemoglobin level, our study results revealed that there was no statistically significant difference between the study groups regarding baseline and month-6 hemoglobin levels. However, hemoglobin change was significantly less reduced in the PPIUD group compared to the Delayed group (p-value =0.005). Notably, hemoglobin levels significantly decreased in both groups over the study period (p-value <0.001).

Only limited data are available regarding assessment of patients' satisfaction in both groups of the study. Consequently, our results assessed the patients' satisfaction in month-6 using Likert scale (0-10) and revealed that pelvic pain was significantly more frequent in delayed insertion group. Consequently, patients' satisfaction was significantly higher among PPIUD group at 6 months after insertion (p-value =0.035).

de Albuquerque et al.[24] corroborated our findings, indicating a high level of satisfaction among women with the post-caesarean IUD at the 6-week visit (92.4%). Furthermore, all of these women expressed their willingness to recommend the method to others. Even after 6 months post-insertion, 86.9% of participants remained satisfied with the method.

These findings corroborate those of earlier research by Levi et al.[5], which showed that after six months, 80% of the women had reported being "happy" or "very happy" with their IUD, and 47% of them had not requested to have their IUD removed. Nobody who used an IUD said they were "unhappy" with it.

Furthermore, Tawfik et al.[14] noted that there was an insignificant difference between the two groups (p=0.09) in the overall satisfaction rates for DIUD and PPIUD, which were 88.9% and 83.1%, respectively. Similarly, Elsokary et al.[16] reported that the satisfaction rate of cases with IUD was high in both groups with 90.20% and 91.67% in immediate and delayed insertion groups respectively. However, those studies followed up the patients up to 12 months after insertion.

In contrast to our results, Bayoumi et al.[21] reported no statistically significantly difference between the studied groups after one year of continuous use regarding satisfaction with IUD insertion with (p-value =0.14) which is not in harmony with our results.

This suggests that inserting the IUD immediately after placental expulsion is more comfortable and largely symptom-free for patients. Any potential discomfort is likely masked by the postpartum uterine contractions, while any spotting is concealed by lochia. Notably, further cervical dilation was unnecessary for any patients in the PPIUD group, making the procedure quicker, easier, and more comfortable for the patient.[13]

Considering that most women will resume sexual activity by the sixth week postpartum, the immediate postpartum period presents an opportune time to initiate contraception. This period coincides with a high level of motivation among women to postpone subsequent pregnancies.[25] Providing effective long-acting contraception before discharge from the hospital is particularly relevant in countries with socioeconomic and demographic characteristics similar to Egypt. In Egypt, women commonly experience short interpregnancy intervals, with a significant proportion having had three previous cesarean sections, placing them at increased risk of complications.[26]

This study suggests that post-placental IUD insertion is a promising contraceptive method for long-acting, reversible, and cost-effective pregnancy spacing. The findings contribute to the growing evidence that providing LARC during delivery can enhance the uptake of effective contraception.[5]

The strength points of this study

Firstly, it is randomized controlled clinical trial. Secondly, a speculum examination and ultrasound were used to evaluate the IUD's location, allowing for descriptions of the many situations that may arise following post-placental IUD implantation. Thirdly, analysis of satisfaction was carried out using the standard Likert scale, which is the most reliable tool for assessment of satisfaction.

Study Limitations

A few noteworthy study limitations include that the sample size was less than in prior research, and the study was not multicentric since Bayoumi et al.[21] included a total of 1000 patients, which increases the possibility of publication bias. Another drawback is that the study's external validity was diminished because it was restricted to a single site and its target group was not well-represented.

CONCLUSION

PPIUD of the IUD following cesarean delivery is a safe, simple, efficient, and practical method of contraception that can replace delayed IUD insertion because of its immediate and sustained contraceptive benefit, patient comfort, convenience, and lower incidence of side effects. Therefore, among patients who meet the eligibility requirements, it can be used as a first-line contraceptive drug. It can be used in conjunction with maternal-child health services to ensure that, prior to hospital release, patients are satisfied and have access to the appropriate long-term reversible contraception.

ETHICS

Ethics Committee Approval: The study was conducted at the Department of Obstetrics and Gynaecology, Ain Shams University Gynaecology and Obstetrics Hospital (ASUMH) Tertiary Hospital and ethics committee approval was received (approval number: MD 240/2022, date: 16/9/2022)

Informed Consent: Retrospective study.

FOOTNOTES

Contributions

Surgical and Medical Practices; F.M.E.; R.M.A.; A.R.M.R.; M.O.S.; A.G.A.; A.G.E.; Concept: F.M.E.; R.M.A.; A.R.M.R.; M.O.S.; A.G.A.; A.G.E.; Design: F.M.E.; R.M.A.; A.R.M.R.; M.O.S.; A.G.A.; A.G.E.; Data Collection or Processing: F.M.E.; R.M.A.; A.R.M.R.; M.O.S.; A.G.A.; A.G.E.; Analysis or Interpretation: F.M.E.; R.M.A.; A.R.M.R.; M.O.S.; A.G.A.; A.G.E.; Literature Search: F.M.E.; R.M.A.; A.R.M.R.; M.O.S.; A.G.A.; A.G.E.; Writing: F.M.E.; R.M.A.; A.R.M.R.; M.O.S.; A.G.A.; A.G.E.

DISCLOSURES

Conflict of Interest: No conflict of interest was declared by the authors.

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