Expulsion rate of immediate versus early postpartum intrauterine device insertion after vaginal delivery: A cross sectional study*

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ABSTRACT

Background: Progressively increasing population of the country leads to unmet needs for responsible parenthood. This is reflective to reproductive age women with unplanned pregnancies which may consequently lead to maternal morbidity and mortality and adverse perinatal outcomes. Provision of family planning methods is implemented. One of the temporary methods of Long Acting Reversible Contraception (LARC) is Intrauterine Contraceptive Device (IUD). The effectiveness is similar to tubal sterilization with its perfect use. However, one of the drawbacks is dealing with its expulsion which affects its efficacy.

Objective: The study determined the expulsion rate between Immediate and Early postpartum IUD insertion after vaginal delivery. Expulsion rate was evaluated during the following periods: prior to discharge, after 4 weeks, after 12 weeks and 24 weeks post-insertion.

Methodology: This was an Observational Cross Sectional Study conducted for a year designed to collect data among patients who had IUD insertion after vaginal deliveries in a 6-month period of follow up. Sample size was computed using epi info 7.0. Finite Population Collection was derived to meet the population size available which resulted to 159 participants. Randomization was initiated to classify between immediate and early IUD insertion. Expulsion was observed during follow up at the family planning center of the institution

Results: This data showed no direct correlation in the expulsion rates between early and immediate postpartum IUD insertion. The expulsion rate was 6.25% for Immediate and 5.55% for Early IUD insertion respectively. There were no expulsion observed beyond 12 weeks post insertion. Relationship between early/immediate IUD insertion and expulsion rate was investigated using Chi square test.

Conclusion: Improved education and heightened awareness among reproductive aged women would initiate higher acceptance of IUD during postpartum period. Proper and improved technique of IUD insertion during postpartum period may decrease expulsion rate hence promoting better utilization of this family planning method.

Keywords: Early postpartum IUD, Immediate postpartum IUD, Intrauterine Contraceptive Device (IUD)

INTRODUCTION

Provision of ethically and medically safe, legal, accessible, affordable, non- abortifacient, effective and quality reproductive health care services is one of the policy implemented in the country which may alleviate the demands of our increasing population and problems of poverty.

Philippine population is estimated to be more than 100 million which is equivalent to 1.38% of the total world population. The country ranks 12th in the list of highest countries by population.[1]

Reproductive health services offer a variety of family planning methods to maternal population which may correspond to a particular need and number of children. Philippine Demographic and Health Survey 2013 showed that reproductive age women from ages 15 to 49, 55.1% used contracepton.[2] Methods used are inclusive of temporary and permanent forms based on the necessity

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of a family planning acceptor.

For future plans of pregnancy and improved birth spacing, provision of Long Acting Reversible Contraception (LARC) is recommended. One of which is the Copper Intrauterine Device (TCu IUD) which imposes better family planning method especially in developing countries.[3] However, only 3.5% of women use IUD in the country as method of choice.[2] It is suggested among women who aim for temporary birth control with longer interval years of succeeding pregnancies.

Copper IUD initiates an inflammatory process from its active substances to the luminal fluids of genital tract which are toxic for spermatozoa. It promotes inhibition of sperm transport into upper genital tract and inhibition of ovum transport making it more difficult for sperm to cross the vagina into the uterus and possibility of fertilization becomes less likely.[4] It is coitus-independent, reversible and effective form of contraception with immediate contraceptive action which may be as effective as tubal sterilization.[3] It may be utilized for up to 10 year-duration but has proven effective up to 12 years.[4] Postpartum IUD differs from the timing of administration which may either be during Post Placental or Interval Period.

Post Placental Intrauterine Contraceptive Device (PPIUCD) insertion is further classified as Immediate or Early Post Placental and Intracesarean Period. Immediate PPIUCD insertion is defined as placement of an IUD within 10 minutes after placental delivery while Early PPIUCD insertion is done 10 minutes to 48 hours after placental delivery during spontaneous vaginal birth while Intracesarean Period is defined as IUD insertion after placental delivery during Cesarean Section. Interval or Delayed IUD insertion is done at 6 weeks postpartum. Postpartum IUD follow up can be made at four to six weeks, ten weeks and six months thereafter to check for IUD placement.[5] An abdominal X-ray or ultrasound is requested in the absence of expulsion with no string observed during the course of follow up to verify proper IUD placement or malposition.[6]

IUD insertion during postpartum period is associated with less discomfort and puerperal women may have increased motivation for contraception.[7] Given the benefits of this family planning method, Rapid Expansion of PPIUCD is practiced in India convened by Maternal and Child Health Integrated Program and Support for International family Planning Organization program had a total of 83,690 users as of February 2010 to 2013 with its advocacy for better birth spacing and strengthening institutional trained personnel for the practice of postpartum IUD insertion.[8] Compared with sterilization, IUD is simpler, less expensive, and immediately reversible.[9] With proper technique and optimum time of IUD insertion, benefits offered by this family planning method among reproductive age women would entail promotion to heighten acceptance and providing a perfect use of of 99.4%.[4]

This study determined an effective timing of postpartum IUD insertion. This may contribute for the standardization of postpartum IUD insertion. This study tried to determine a possible way to decrease maternal mortality during childbirth which is a widely debatable topic today, contraception.

GENERAL OBJECTIVE

To determine the expulsion rates between immediate and early post placental IUD insertion after Vaginal Deliveries.

Specific Objectives

1. To determine the number of postpartum IUD acceptors as their family planning method among those who delivered vaginally.
2. To compare the expulsion rate between immediate and early IUD insertion:
    a. prior to discharge
    b. after 4 weeks
    c. after 12 weeks
    d. after 12 weeks

SIGNIFICANCE OF THE STUDY

With the use of long term reversible contraception in the form of Intrauterine Device, desired number of children and promotion of proper birth spacing can be achieved.

Optimum time of insertion during postpartum period may be implemented which may contribute to standardized IUD insertion during the postpartum period given the sufficient time provided for each family planning acceptor.

Counselling about the benefits of this family planning method may be improved during antenatal and postpartum care.

Heightened awareness can be succeeded among the general population since there was only one local data published in the country in 1985 regarding postpartum IUD insertion. Training for health care providers may also be promoted towards Post-Partum Intrauterine device insertion with the advocacy of responsible parenthood.

METHODOLOGY

Research Design

This was an Observational Cross Sectional Study conducted for a year designed to collect data of expulsion rates among patients who had IUD insertion after vaginal

deliveries for a follow up of 6-month period. Randomization of patients was initiated to classify among immediate and early IUD insertion after vaginal deliveries provided that consent was signed prior to family planning procedure. Expulsion rate was observed during follow up at the family planning center of the institution.

Inclusion Criteria

Participants who were interested using post-partum copper releasing IUD were identified after counselling and screening by the obstetrician provided that the following are met:

1. Informed and signed consent were provided prior to enrolment of the study
2. Admitted patients who delivered vaginally.

Exclusion Criteria

Exclusion criteria of the study are as follows:

1. Allergy to Copper-T or any of the components of the IUD
2. Unresolved pelvic inflammatory disease
3. Congenital uterine anomaly or no previously documented normal anatomic structures.
4. Submucous myoma, any obstruction that may affect IUD insertion and cervical pathology such as cervical intraepithelial neoplasia or carcinoma.
5. Suspected of possible chorioamnionitis and premature rupture of membranes for more than 18 hours.
6. IUD insertion more than 48 hours after delivery.

Sampling Scheme

In reference with the total number of postpartum IUD users published on 2013 in India for Rapid Expansion of PPIUCD, sample size was computed using epi info 7.0 with confidence interval of 95%. Deduced from this data and the number of family planning acceptors in this tertiary institution, Finite Population Collection was derived to meet the population size available for data collection which was 159 participants.

Data Collection

Data sheet with the general information of the patient was used with informed and signed consent. A copper containing IUD and two skilled and certified health care providers were required for the performance of the procedure.

Pregnant women in labor recruited in the study after admission were screened based on the exclusion and inclusion criteria. Participants interested in using postpartum copper releasing IUD were identified after being counselled by the obstetrician. Informed and signed consent were provided prior to enrolment of the study. Data sheet inclusive of the following: demographic information, obstetrics, gynecologic and medical history were filled up. Randomization of patients was done via draw lots which determined to which group they were to be assigned. Postplacental Copper IUD insertion was done aseptically by a trained and certified nurse and midwife using the technique shown in.

Assessment for expulsion was done prior to discharge, 4 weeks, 12 weeks and 24 weeks thereafter. Follow up was done at the family planning center of the institution and was facilitated by the researcher.

Patients who failed to follow up were considered drop outs of the study for the expulsion of IUD within the specified time frame. Schematic diagram of the Data Collection is shown in.

RESULTS

There were 159 patients enrolled. They were randomized and grouped as immediate or early IUD insertion. There were 15 participants who were lost to follow-up hence excluded from the study. Shown in Table 1, total 144 pregnant patients had consented to postpartum IUD insertion and to be involved in the study. Mean age of family planning acceptors was 28 years old and mean interval between pregnancies was 4 years.

Table 1: Demographic characteristics of the 144 patients consulted in the institution.

Characteristics	Mean (Min-Max)
Age	28.14 (18-34)
Interval	4.49 (1-11)

Respondents were grouped based on their gravidity and demographic data as shown in Table 2. Majority of the participants were Multigravid which showed 92.37% (133) and Primigravid were 7.63% (11).

Majority of the respondents were urban dwellers which accounted for 65.3% (94) and those who were residing in the rural areas recruited in the study were only 34.5% (50).

Least among the recruited participants were those who had finished elementary level which was 13.2% (19) and majority of the participants had at least finished high school which accounted for 35.4% (51) followed by those who had Vocational studies which was 33.3% (48) and College education accounted for 18.1% (26). More than half of the population, 58.3% (84) never used any form of contraception. Other family planning method previously used were as follows: COC: 21.5% (31); DMPA: 16% (23); Implanon: 0.7% (1); Barrier: 0.7% (1); and IUD: 2.8% (4).

Table 2: Demographic characteristics of the 144 patients consulted in the institution.

Characteristics	No. of Respondents (%) (N=144)
Gravidity	
Primigravid	7.63% (11)
Multigravid	92.37% (133)
Residence	
Rural	34.7% (50)
Urban	65.3% (94)
Educational Attainment	
Elementary	13.2% (19)
High School	35.4% (51)
College	18.1% (26)
Vocational	33.3% (48)
Method	
None	58.3 %(84)
COC	21.5% (31)
DMPA	16% (23)
Implanon	0.7% (1)
Barrier	0.7% (1)
IUD	2.8%(4)

Of 5,337 patients who underwent normal vaginal delivery during the duration the study period, only 144 (2.69%) of the family planning acceptors had their follow up.

Comparison of expulsion rates between immediate and early IUD insertion were done during the following specified period of time: prior to discharge, after 4 weeks, after 12 weeks and after 24 weeks.

Shown in Table 3 is the relationship between early/immediate IUD insertion and expulsion rate was investigated using Chi square test. Preliminary analyses were performed to ensure no violation of the assumption and all expected cells are above 5. There was no relationship between early or immediate insertion of IUD and rate of expulsion. [Continuity Correction=0.379 n= 114, P>0.05].

Table 3: Expulsion rate of IUD compared to immediate and early placement.

Characteristics	Adherence		
	Frequency (Positive-Negative) (N=144)		P value
Expulsion	**10 min**	**10-48 hrs**	
Yes	6.25% (9)	5.55% (8)	0.439
No	36.80% (53)	51.39% (74)	
*P value </= 0.05			

As shown in Figure 1, Chi-Square test for independence was used to explore the relationship of early or immediate post IUD insertion with regard to expulsion rate among the 144 participants who consulted in the institution. The results revealed no association among variables: Prior to discharge [Continuity Correction=0.009 n= 114, P>0.05]; upon discharge [Continuity Correction=0.027 n= 114, P>0.05], after 4 weeks [Continuity Correction=0.179 n= 114, P>0.05]; After 12 weeks [Continuity Correction=0.139 n= 114, P>0.05] and After 24 weeks [Continuity Correction=0.002 n= 114, P>0.05].

The expulsion rate was 6.25% for Immediate and 5.55% for Early IUD insertion respectively. This data might indicate that there is no direct correlation either patient had early or immediate IUD insertion with regard to expulsion rate. Expulsion was observed during earlier periods of follow up and no expulsion was noted after 12-week-period.

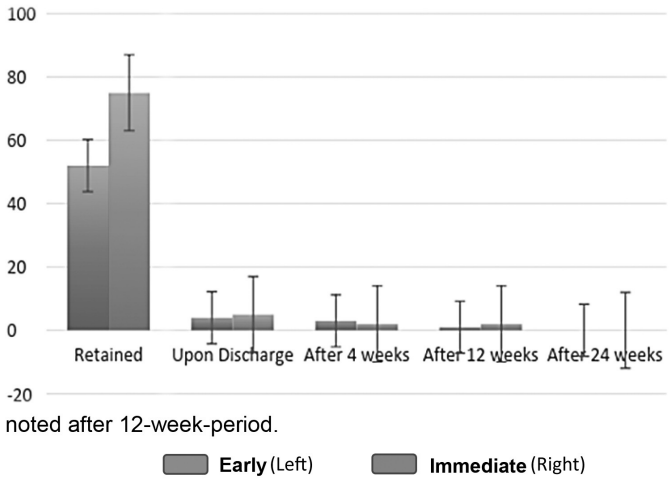

Figure 1: Expulsion of Early versus Immediate post placental IUD insertion upon discharge, after 4 weeks, after 12 weeks an after 24 weeks

Association of the gravidity and parity was further classified to check for higher expulsion. Chi square was used to determine if there is an association with gravidity and expulsion IUD to those who expelled within 10 minutes of IUD insertion. There was no noted association within the group with a computed p value of 0.262. However, this maybe due to the limited number of data present within this study. Upon looking at the raw data, more Multipara[8] patient expelled as compared to those primipara[1].

DISCUSSION

Findings and interpretation

Global community experienced resurgence of interest in postpartum intrauterine device contraception thus program expansion progressed on 2006.[10] Postpartum family planning provides benefits to maternal

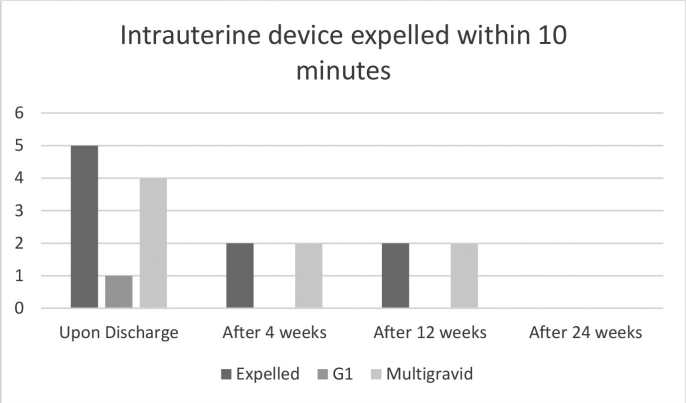

Figure 2: Expulsion of Immediate IUD insertion between Primipara and Multipara upon discharge, after 4 weeks, after 12 weeks an after 24 weeks

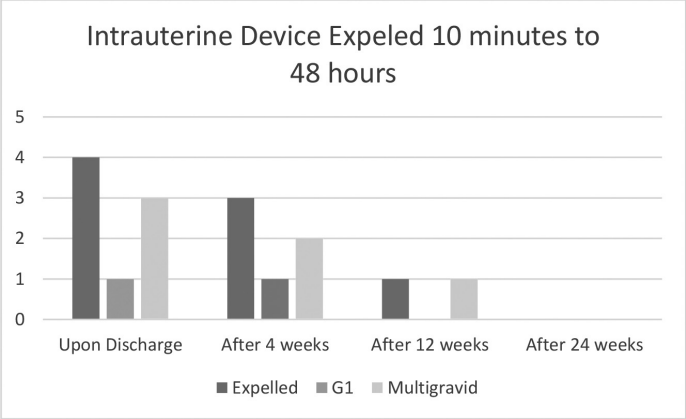

Figure 3: Figure 2: Expulsion of Early IUD insertion between Primipara and Multipara upon discharge, after 4 weeks, after 12 weeks an after 24 weeks

and child health and towards birth spacing with the use of Intrauterine Device.[10]

The probability that most of the acceptors were multigravida may be discuss, however conclusion cannot be made at the moment. Correlation between gravidity of the patients and the IUD acceptance cannot be computed because only 11 out of the 159 who signed the consent is primigravid and assumptions would be violated.

Proper family planning education should be initiated in the rural areas whose uptake of such contraception is only 34.7% in this study. This method should be taught to all women of reproductive age especially the marginalized since they must have had at least attained high school level in this study for the acceptance towards this family planning method thus awareness can be heightened since 58% never used contraception. Timing of contraceptive administration during postpartum period may be given importance since women who delay getting intrauterine contraception may experience an unintended pregnancy or may never return for the insertion. They may also become pregnant prior to the planned post-partum visit. [11]

Differences in results and conclusions in relation to other studies

Cochrane reviews also showed high expulsion rates among post placental groups but most of the studies published were carried decades ago. Since then, various advancements have been tried to decrease expulsion rates and improve PPIUCD acceptance. PPIUCD insertions via different routes (vaginal or caesarean) may have different outcomes at follow-up.[13]

One of the researches conducted by Neja J. on 2013, participants in the post- placental and delayed groups who received IUDs. Retained IUD at 6 months was 43 of 51 (84.3%; 95% CI 71.4–93.0) and 39 of 51 (76.5%; 95% CI 62.5–87.2), respectively (P=.32). Immediate post-partum IUD insertion is an effective, safe and even better means of contraception when compared with that of delayed insertion. Therefore, postpartum IUD insertion in general has better retention rate. However, Postpartum IUD insertion following vaginal deliveries can be done within 10 minutes after placental delivery or 10 minutes up to 48 hours.

Comparative study by UN-POPIN report in 1996 stated that at 6-month- cumulative-expulsion rate was 9% for immediate compared with 37% for insertions between 24 and 48 hours after delivery.[13] Postpartum IUD insertion within 10 minutes postplacental delivery was demonstrably has a high retention rate in a study done by Stuart et. al. Expulsion rate was not very high and it can be reduced with practice.[12] In recent studies by Kittur and Kabadi and Hooda et al, using similar technique and timing (within 10 minutes of placental delivery) of postpartum IIUD and trained providers resulted in similar fewer expulsions (5.23%).[13]

Likewise, in this study, it showed a 6.25% expulsion rate for immediate postpartum IUD insertion.

Some studies such as Gupta et al (2013) however, found no failure at 6 months of follow up in both immediate insertion and delayed insertion group in removal of IUD.[14]

This study showed 5.55% expulsion rate for early post placental IUD insertion. Therefore, no association was noted between Immediate and Early Postpartum IUD insertion as to their expulsion.

Postpartum Family planning that include PPIUCD has been used in several countries to reinvigorate family planning especially in light of maternal and child health benefits. In general, recent programmatic experience demonstrated a lower expulsion rate of 2 to 6%.[10] In this study, expulsion rate is 5 to 6% hence it is within the acceptable limits.

With the high level of acceptance despite low levels of awareness, the government needs to develop strategies to increase public awareness of the PPIUCD through different media sources and strategically planned programs.[15] IUD is also better achieved by enhanced and proper technique of insertion to meet its optimum effect hence health care providers in the country may be trained to increase better services among family planning acceptors.

Strength and Weakness of the Study

Drop-out rate in this study is 9.43%. It is possible that patients might have chosen to visit another local health facility for consultation nearer to their respective areas or was not able to meet the scheduled dates for this particular study. There were some not elucidated areas in the study due to relatively small sample size in some areas of the study.

CONCLUSION

PPIUCD as long acting reversible contraceptive is an effective way to facilitate better birth spacing among reproductive age Filipino women.

Both Immediate and Early Postpartum IUD insertion showed high retention rates which can be achieved through properly trained health care providers for performance of such procedures. Ample time allotted for the family planning acceptors for those who haven't had prenatal check-up and no definitive plans of family planning which may be given benefit with same efficacy. In this study, there were no association of the expulsion rate for both immediate and early postpartum IUD insertion which could therefore equally achieve the benefits of this family planning method.

RECOMMENDATION OF THE STUDY

Enhanced data collection and adequate research studies should be done to address lack of data to address Millennium developmental goal 4. Thus, there are limited researches made to address this global problem which is now turning into an epidemic.

Counselling and follow up could be enhanced before delivery and postpartum visits respectively to address other factors of acceptance and other risk for possible expulsion which were not included in the study.

Larger population is recommended to determine the relation between the two variables, IUD as method of choice and gravidity. Further researches may be done to check the significance in correlation to other routes and timing of IUD insertion such as intracesarean insertion and delayed IUD insertion respectively. ■

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