ORIGINAL ARTICLE

COMPARISON OF INTRAUTERINE CONTRACEPTIVE DEVICE INSERTION AFTER NORMAL VAGINAL DELIVERY VERSUS INTRA CESAREAN

DR ABIDA SAJID[1], SUMAIRA ANAM KHAN[2], ARHAM SAJID[3], AQSAM SAJID[4]
[1]Associate Professor, Department of Obstetrics and Gynecology, King Edward Medical University, Lahore, [2]Consultant Gynaecologist, THQ Hospital, Silanwali, Sargodha, [3]4th Year MBBS student, Shalimar Medical & Dental College, Lahore, [4]Postgraduate Resident, Sheikh Zayed Hospital, Lahore

ABSTRACT

Background: The contraceptive devices (IUCD) subdermal implants are safe and very effective for achieving spacing between children in majority of adults women and teenagers. The benefit of IUCD in reducing unwanted and unplanned pregnancy could be stretched out if placed immediately after delivery, with added effect of increased inter pregnancy interval. Immediate insertion of IUDs after delivery appeared effective, safe and potent, nevertheless differentiation with other insertion times were deficient.

Objectives: To determine the frequency of mode of delivery (SVD/c-section) in women consenting for PPIUCD during antenatal period and to compare the frequency of expulsion of intrauterine contraceptive device (Copper T 380A) insertion after normal vaginal delivery versus intra cesarean. The study was conducted at Gynae Unit-V, Lady Aitchison Hospital, KEMU, Lahore. August 20, 2022, to February 20, 2023. Cross-sectional study design.

Methods: Sum of 162 women. who fulfilled the inclusion criteria were enrolled. Route of delivery was recorded. IUCD was inserted by a special kind of instrument, Kelly's forceps after vaginal delivery, while intra caesarean Cu T 380A was placed manually at the fundus of uterus and leaving the IUCD thread without trimming it. Meticulous asepsis measures were taken during insertion in groups. All study participants were advised to follow-up for 3 months. Complications like expulsion were noted as per operational definition after 3 months. The collected information was entered and analyzed through SPSS v25.0. Data were stratified for age, education, socio-economic status, parity and gestational age to address the effect modifiers. Post-stratification, both groups were compared by using chi-square test for expulsion for each stratum. A p-value ≤ 0.05 was considered as significant.

Results: In our study, 162 participants desirous of CuT 380A insertion after delivery were enrolled. The age range in this study was between 20 to 40 years with a mean age of 28.0±6.41 years. According to mode of delivery distribution, 78(48.1%) had had vaginal delivery, while 84(51.9%) had c-section. Among 162 patients, overall, 27(16.7%) had expulsion, while according to comparison of expulsion with mode of delivery, 18(23.1%) patients with vaginal delivery and 9(10.7%) with c-section had expulsion rate.

Conclusion: The placing IUCD post-caesarean had an acceptable expulsion rate and there was no increase in the side effects rate compared to the IUCD in normal vaginal delivery. Therefore, one can conclude that the post-caesarean IUCD is as effective as the IUCD immediately following normal delivery

Key Words: Postpartum Intrauterine Contraceptive Device, Insertion, C-section, Normal Vaginal Delivery, Expulsion.

How to cite this article: Sajid DA, Khan SA, Sajid A, Sajid A. Comparison of Intrauterine Contraceptive Device Insertion After Normal Vaginal Delivery Versus Intra Cesarean. Pak Postgrad Med J 2024;35(2): 55-59

DOI: https://doi.org/10.51642/ppmj.v35i02.696

Correspondence to: *Abida Sajid, Associate Professor, Department of Obstetrics and Gynecology, King Edward Medical University, Lahore, Pakistan*

Email: *drsajidrafi@gmail.com*

INTRODUCTION

The methods of contraception mean to avoid unplanned pregnancy either permanently or temporarily.[1] Postpartum period is a very serious and acute phase when a female requires special ideal health facilities, as

complications can occur in this time. In developing countries, for many females' parturition is the only period when they come in close contact with the healthcare provision system. Also, during this period, females are susceptible to unintentional conception before they return to consult for any type of contraception.[2, 5]

Most non-breastfeeding women start to ovulate and become sexually active around six weeks postpartum which puts them at significant risk of unintended pregnancy.[3,5] Intrauterine contraceptive devices (IUCDs) are long-acting reversible ways to avoid the pregnancy. Immediate postpartum intrauterine contraceptive (PPIUCD) placement following delivery of placenta is an alternative option to delayed placement of IUCD after six weeks or more interval. [4,5,6]

Many studies have been conducted to find the efficiency and protection of IUCDs placed immediately in postpartum period and the outcome of PPIUCD placement was compared in normal vaginal delivery and caesarean sections.[4] Currently in Pakistan, government has ensured the provision of postpartum intrauterine contraceptive devices (PPIUCDs) free of cost at national level to provide effective family planning. With very little literature available to defend its use it is the need of the hour to assess the usefulness of this easily accessible, reversible and cost-effective contraceptive method.[2]

With significantly less failure (i.e. <1 per 100 cases) during the first year of insertion, CuT-380A is the most efficacious contraceptive method to avoid unwanted pregnancy in the postpartum period. Insertion of intra-uterine contraceptive device during postpartum period proposes an efficacious and harmless way to achieve adequate birth spacing and avoid unintended pregnancy.2 The majority trials reported that the possibility of expulsion of intrauterine contraceptive devices were more in postpartum insertion when compared with interval intrauterine contraceptive device (IUCD) insertion, either placed vaginally or during cesarean section.5

Most trials indicate the probability of falling out of intra-uterine contraceptive devices were more in vaginal births than cesarean section. Although the rate of expulsion varies significantly in various studies, the factors responsible for the expulsion were not found clearly. [5] One study carried out in India showed that, IUCD expulsion rate was far up in post-vaginal delivery group (12%) in contrast to intra-cesarean (0%).[6] Whitaker AK et al; reported in their results that expulsion rate was increased in post-placental insertion group i.e. 13.2% in contrast to intra-caesarean group it was 6.8%.[7]

In research carried in one of the hospitals of Lahore, Pakistan, evaluate the liking of women towards practicing contraception imply that nearly all the women with basic level of education were aware of the existing methods of contraception but only about half of them practiced those methods and the remaining did not use it for various reasons. The reasons for not using these methods were fear of side effects, lack of permission from husband and in- laws.[8,9,11] As far as mode of delivery is concerned frequency of c-section was 49.5% and vaginal as 50.5%.[12]

Considering the high rate of unplanned conception in low-income countries like, Pakistan especially in postpartum ladies, reliable, potent, long-acting contraception such as intrauterine contraceptive device (IUCD) in post-partum period is required. Limited or no local research is available. The present study is designed to appraise the productiveness of immediate post-partum IUCD insertion in women delivering vaginally or by caesarean section.

OBJECTIVES

To find out the frequency of mode of delivery (SVD/C-section) in women consenting for PPIUCD during antenatal period

To compare the frequency of expulsion of intrauterine contraceptive device (Copper T) insertion following vaginal delivery versus intra caesarean

OPERATIONAL DEFINITIONS

C-section: It was done if fetal distress (abnormal CTG/meconium-stained liquor) or failure to progress on portogram.

Timing of insertion after normal vaginal delivery: IUCD was implanted within 48 hours of delivery.

Timing of insertion Intra cesarean: Cu T was set in the uterine cavity manually and IUCD thread was left in lower uterine segment without trimming it.

Expulsion: Labeled if there was no IUCD present at site of insertion detected on ultrasound after 3 months of insertion.

METHODS

Study Setting: It has been conducted at Gynae Unit-V, Lady Aitchison Hospital, KEMU. Lahore.

Study Duration: August 20, 2022, to February 20, 2023

Study Design: Cross-sectional study

Technique of sampling: Non-probability consecutive sampling

Size of sample: A sample size of 162 cases was obtained with 8% margin of error with 95% confidence level and taking expected percentage of c-section as 49.5%.[9]

SAMPLE SELECTION

Inclusion Criteria:

Pregnant females of age 18-40 years
Gestational age >37 weeks as per LMP
Desirous of CuT 380A insertion (antenatal period)
Any parity

Exclusion Criteria:

Pregnancy with urinary tract infection (>10 pus cells on urine complete examination)
Multiple gestation (on USG)
Females with uterine dehiscence, chorioamnionitis, endometriosis or fibroids (on USG)
Morbidly obese females (BMI>35kg/m^2)
Female with urinary tract infection (on clinical examination)
Pre-labor rupture of membranes for more than18 hours
Abnormal uterine cavity due to fibroid uterus or congenital malformation (diagnosed on ultrasound)

Total 162 women who meet the inclusion criteria were taken from the antenatal ward and labor room of Gynae Unit-V, Lady Aitchison Hospital, KEMU, Lahore. Prior permission from the hospital ethical committee was taken. Consent for postnatal intrauterine contraceptive (PPIUCD) placement was obtained.

Baseline information including name, age, parity and gestational age was also obtained. Age, parity and gestational age were treated as effect modifiers and data were stratified on the basis of these variables. Mode of delivery was recorded. IUCD was fitted by Kelly's forceps following vaginal delivery, and intra caesarean Cu T was placed manually within uterine cavity close to fundus. The thread was left in the lower uterine segment without trimming.

Meticulous asepsis measures adopted during the procedure in groups. All participants were told to come for follow-up for 3 months. Complications like expulsion were noted as per operational definition after 3 months. All information and data were gathered and proforma filled.

STATISTICAL ANALYSIS PLAN

The data was analyzed through SPSS v25.0. Mean and standard deviation was calculated for age, gestational age and parity. Frequency and percentage were calculated for expulsion and parity. Both groups (vaginal delivery and intra caesarean), were compared by using the chi-square test for expulsion. A p-value ≤0.05 was considered as significant. Data were stratified for age, education, socio-economic status, parity and gestational age to direct the effect modifiers. Both groups (vaginal delivery and intra caesarean), were compared by using chi-square test for expulsion for each stratum. A p-value ≤0.05 was considered as significant.

RESULTS

In this study, 162 participants desirous for CuT 380A insertion after delivery were enrolled. The participants' age ranges from 20 to 40 years with a mean age of 28.0±6.41 years. Most of the participants 114(70.4%) were in the 20-30 years of age group, while 48(29.6%) were in the 31-40 years of age group.

According to gestational age distribution, 108(66.7%) had gestational age between 37-39 weeks, while 54(33.3%) had gestational age between 40-42 weeks.

The majority of the patients 90(55.6%) were multiparous, while 72(44.4%) patients were nulliparous/primiparous.

According to socio-economic status distribution, 48(29.6%) had low income, while 72(44.4%) and 42(25.9%) had middle income and high income respectively.

According to the educational status distribution, 24(14.8%) were illiterate, while 54(33.3%) and 84(51.9%) were middle and matric or above respectively.

According to mode of delivery distribution, 78(48.1%) had had vaginal delivery, while 84(51.9%) had c-section.

Among 162 patients, overall, 27(16.7%) had expulsion, while according to comparison of expulsion with mode of delivery, 18(23.1%) patients with vaginal delivery and 9(10.7%) with c-section had expulsion rate

Table-1: Frequency distribution of mode of delivery

Mode of delivery	Frequency	Percent
Vaginal delivery	78	48.1%
C-section	84	51.9%
Total	162	100.0%

Table-2: Frequency distribution of expulsion

Expulsion of IUCD	No of participants	Percentage
Yes	27	16.7%
No	135	83.3%
Total	162	100.0 %

Table-3: Comparison for expulsion rate with mode of delivery

Expulsion	Mode of delivery		Total	p-value
	Vaginal Delivery	C-section		
Yes	18	9	27	0.035
	23.1%	10.7%	16.7%	
No	60	75	135	
	76.9%	89.3%	83.3%	
Total	78	84	162	
	100.0%	100.0 %	100.0%	

Table-4: Stratification of expulsion with respect to parity

Parity	Expulsion		Total	p-value
	Yes	No		
Nulliparous/ Primiparous	21	51	72	0.0001
	29.2%	70.8%	100.0%	
Multiparous	6	84	90	
	6.7%	93.3%	100.0%	
Total	27	135	162	
	16.7%	83.3%	100.0%	

DISCUSSION

The intrauterine contraceptive device (IUCD) and implant are secure and potent for achieving child spacing in most of adult women including teenagers. The success of IUCD in reducing unplanned pregnancy could be amplified when put in place immediately postpartum resulting in prolong-inter pregnancy interval.[30, 31, 2, 5. 6]

Placement of a long-acting contraceptive device, such as IUCD or an implant, immediately after delivery is a frequently used method for client satisfaction and cost effectiveness. It also reduced the number of visits of patients to the health facility. In the United States, the majority of health insurance compensation companies do not pay extra charges for postpartum IUCD or implants before discharge.[14,17,28,29]

Immediate post-partum insertion of IUDs seems safe, efficient, and potent method nevertheless differentiation with other insertion times were deficient. Benefits of immediate postpartum insertion include women's satisfaction, incitement and confidence that the woman is protected against pregnancy. Yet frequency of expulsion looks more in contrast with interval insertion.[34]

In a significant investigation conducted by Celen and colleagues (reference 30), 235 women were monitored following the Copper T 380A placement, with a follow-up rate of 78% at the 12-month mark. The study revealed expulsion rates of 5.1%, at 6weeks, 7.0% at 6 months, and 12.3% at12 months. Notably, it should be acknowledged that the study encompassed two modes of delivery but reported expulsion rates did not differentiate between the two methods of delivery.30

The calculated results by us manifest, mean age of the participants was 28.0±6.41 years, a figure consistent with those reported in existing literature, which typically ranges from 20 to 40 years. For instance, Morison et al. found age of 23 years in Kenya and 31 years in Mali, reflecting the diverse community-based practices in different areas around globe. The demographic profile of our patient cohort predominantly comprised illiterate, low-income married women.

Numerous trials have indicated a higher risk of intrauterine contraceptive device (IUCD) expulsion following vaginal deliveries compared to cesarean sections. Nevertheless, expulsion figures vary significantly in literature, with unclear proof regarding the contributing elements. For example, one study reported an expulsion rate of 12% for normal delivery cases compared to 0% for intra-cesarean cases, while others found rates of 13.2% and 6.8%, respectively, for post-placental insertion and intra-caesarean groups.

A recent study conducted in a major hospital in Lahore, Pakistan, assessed women's attitudes towards contraception. While nearly all women with basic education were aware of contraceptive methods, only half utilized them due to concerns about side effects, lack of knowledge, agency, communication gaps, limited availability, and cultural barriers. Cesarean section frequency accounted for 49.5% of deliveries, with vaginal deliveries comprising the remaining 50.5%. Implementing policies such as post-placental intrauterine copper-T insertion could potentially mitigate unintended pregnancies at minimal cost.

CONCLUSION

The insertion of an intrauterine contraceptive device (IUCD) post-caesarean demonstrated bearable expulsion rate, without rising in side effects compared to IUCD insertion following normal vaginal delivery. This suggests that post-caesarean IUCD placement is comparably effective to immediate postpartum IUCD insertion.

CONFLICT OF INTEREST: None

FUNDING: No source of funding for the study.

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