Original Article

Comparison of Intracesarean Versus Delayed Vaginal Insertion of Copper T380A in Females after Delivery at Term

Sadia Irum[1], Nasira Tasnim[2], Sobia Irum[3]

[1]Senior Registrar, Shifa International Hospital, Islamabad,
[2]Professor, Department of Obstetrics & Gynae, Pakistan Institute of Medical Sciences, Islamabad,
[3]Medical Officer, Civil Hospital Sanghar

Correspondence: Dr. Sadia Irum
Senior Registrar, Shifa International Hospital, Islamabad
dr.sadiairum@gmail.com

Abstract

Objective: To compare the frequency of expulsion rate with intra-cesarean versus post-partum vaginal insertion of Copper T380A in females after delivery at term

Methodology: The study was conducted at Unit- II, MCH centre, Department of Obstetrics & Gynecology, PIMS, Islamabad from 13th January 2016 to 12th July 2016. It was a randomized controlled trial. A total of 200 females of age 20-40 years of any parity, presenting for delivery at term undergoing cesarean section were included. In group A, Copper-T-380A (Cu-T-380A) IUCD was placed during cesarean section and in group B, IUCD was placed after 6 weeks of delivery through vaginal route. After 3 months females were undergone ultrasonography for confirmation of the presence or absence of IUCD inside the uterus.

Results: The mean age of women in group A was 29.71±4.72 year and in group, B was 29.64±4.87 year. Expulsion rate in group-A (intra-cesarean insertion) was seen in 2(2.0%) and post-partum vaginal insertion of Copper T380A was seen in 9(9.0%) females with p-value of 0.030.

Conclusion: Expulsion rate is less after intra-cesarean insertion compared to postpartum vaginal insertion of Copper T380A in females after delivery at term.

Keywords: Intrauterine Devices, Intra-Cesarean.

Cite this article as: Irum S, Tasnim N, Irum S. Comparison of Intracesarean Versus Delayed Vaginal Insertion of Copper T380A in Females after Delivery at Term.J Soc Obstet Gynaecol Pak.2020; Vol 10(4):255-259.

Introduction

Pakistan ranks with low reproductive health metrics among the poorest most populated countries worldwide.[1] Family planning can avoid nearly one-third of maternal fatalities most 10% of infant mortality,[2] particularly if the duration is longer than two years. Cu-t is a type of reversible contraceptive that is used worldwide and one of the most effective forms of birth control.[3] More than 25 years have passed since the last Dalkon Shield was adopted, but the legacy of pelvic infections and convictions have been able to tarnish the image of all other DUIs. While several carefully planned, large-database medical trials have since demonstrated the safety of all IUDs for women at low risk of sexually transmitted diseases, 99% of the women in the United States have no use of the IUD.[3]

However, since very few women use IUDs, a large number of obstetricians/gynecologists and family practitioner may not have a single IUD implant. Notwithstanding scientific evidence to the contrary, myths about IUD's risk of infection, ectopic pregnancy, responsibility and action mechanism persist. No increased incidence of PID or ectopic pregnancies in

Authorship Contribution: [1]Conceptualization of study design, article writing, [2]Final approval of the study, [3]data interpretation

Funding Source: none
Conflict of Interest: none

Received: Aug 26, 2020
Accepted: Feb 14, 2021

copper users is recorded in research studies. Recent information also describes the main mode of action of the IUD as fertilization prevention.[3-4] In 1976, Lippes and colleagues[3] first reported that an emergency contraceptive IUD containing copper was used. Obviously, the introduction of post-coital does not interfere with sperm capacities or migration; it is also very possible that the IUD is an anti-implant contraceptive for post-coital use.

If the copper functions as a toxic agent for an early embryo, whether the inflammation produces an atmosphere for implantation or both, is not well known. Irrespective of the exact action mechanism, a copper-containing IUD seems to be very successful, with only 1 failure in 879 cases recorded in world literature.[4] The copper-containing IUD can be inserted for post-coital contraception up to 7 days after unprotected intercourse.[5-8] It is 4 days longer than the hormonal process window and provides a workable option for women delayed in treatment. However, this approach is only useful for a woman who is a successful IUD applicant and expects to use IUD regularly. An IUD would not be a fair option for a wife who is a victim of an emergency procedure, a new husband, or a multiple partners.[7-8]

During the 10-year lifespan of the T 380A IUD there will be less than 1 per 100 yearly pregnancy rates. The 10-year cumulative rate is 2.1 per 100 females over 10 years; there have been no reporting of pregnancies after 8 years. This compares to the average incidence for 10 years of pregnancy, which is 1.9 per 100 women in total with active sterilization.[7] Several sterilization approaches (spring clip and bipolar coagulation) had combined levels of abortions that were higher than copper IUD 10 years ago. Considering the initial costs and the treatment expenses of unintended pregnancies and side effects, a recent comparison of 15 contraception methods over 5 years has shown that the IUD of copper is the most economic. Indeed, after only two years of use the Copper IUD became the most economical tool.[7]

Post-partum IUCD insertion medical eligibility requirements are set within 48 hours after delivery or four weeks after birth[6] which is called post-partum IUCD insertion and interval insertion respectively.[9] However, its drawbacks, such as the possibility of accidental removal, may emerge from the immediate post-partum IUD insertion, which can be inacceptable in many studies. The rates of expulsion were lower recently recorded with changes to the insertion technology.[10-11]

One study has reported that in females with intra-cesarean insertion of IUCD, the expulsion rate was nil after 3 months (0%) while in females who had IUCD insertion after 6 weeks of delivery, expulsion was observed in 5.95% cases. The difference was found to be significant (p=0.027).[12] Another study has reported that in females with intra-cesarean insertion of IUCD, the expulsion rate was 2.43% after 3 months while in females who had post-partum vaginal insertion, expulsion was observed in 0.0% cases.[13]

Rationale of this study was to compare the expulsion rate with intra-cesarean versus postpartum vaginal insertion of Copper T380A in females after delivery at term. PPIUCD is a newly introduced method for effective pregnancy and birth control by reducing the chances of conception. During cesarean section, IUCD can be easily and properly placed in uterus while it is open. Since there was variation in the literature,[12-13] so to see whether intra-cesarean insertion of IUCD is more beneficial than late insertion (after 6 weeks), we planned to conduct this to compare the frequency of expulsion rate with intra-cesarean and delayed insertion of IUCD. This will help us make some practical recommendations in our routine practice guidelines to adopt that particular method of IUCD.

Methodology

The study was conducted at Unit- II, MCH centre, Department of Obstetrics & Gynecology, PIMS, Islamabad from 13th January 2016 to 12th July 2016. It was a randomized controlled trial. The inclusion criteria was patients of age 20-40 years of any parity, presenting for delivery at term (gestational age >36 weeks on antenatal record) undergoing cesarean section. The exclusion criteria was females with other systemic problems like hypertension (BP≥140/90mmHg), diabetes mellitus (BSR>186mg/dl), deranged LFTs (ALT>40IU, AFSTF>40IU), and RFTs (serum creatinine>1.2mg/dl), known congenital or acquired uterine anomaly including fibroids that distort the uterine cavity (on USG & medical record), current or recent pelvic infection (medical record and clinical examination), undiagnosed genital tract bleeding (on clinical examination) and risk for PPH and PROM for >18 hours (on clinical examination).

A sample size of 200 cases; 100 cases in each group was calculated with 80% power of test, 5% level of

significance, and taking an expected percentage of expulsion i.e. 0% IUCD insertion during cesarean section and 5.95% with insertion of IUCD after 6 weeks of delivery.[12] Demographic profile (name, age, parity, and contact) was also noted. Then females were randomly divided into two groups by using the lottery method. In group A, Copper-T-380A (Cu-T-380A) IUCD was placed during cesarean section and in group B, IUCD was placed after 6 weeks of delivery through vaginal route. Then females were followed-up in OPD on monthly basis for 3 months. After 3 months females underwent ultrasonography for confirmation of presence or absence of IUCD inside the uterus (as per operational definition). The expulsion was measured by using ultrasonography for confirmation of the presence of IUCD after 3 months of insertion of IUCD.

SPSS v25.0 was used to input and analyze the data. For the quantitative variable like age, mean and standard deviation were measured. For qualitative variables such as parity and dismissal, frequency and percentage were measured. A value of p-value 0.05 was considered significant. Statistics for age and gender to deal with impact transition have been stratified. The Chi-square test was used to compare stratified groups after stratification. A value of p-value 0.05 was considered significant.

Results

Age range in this study was from 20 to 40 years. In group-A, 63(63.0%) patient had ages between 20-30 years and 37(37.0%) between 31-40 years. In group-B, 62(62.0%) patient had ages between 20-30 years and 38(38.0%) between 31-40 years. In group-A, 77(77.0%) patient had parity <3 and 23(23.0%) had >3 and in group-B, 61(61.0%) patient had parity <3 and 39(39.0%) had >3.

Expulsion rate in group-A patients (intra-cesarean insertion) was seen in 2(2.0%) and post-partum vaginal insertion of Copper T380A was seen in 9(9.0%) females with p-value of 0.030, which is statistically significant. According to stratification of expulsion rate concerning age groups in both groups, no statistically significant difference showed among different age groups. According to stratification of expulsion rate with respect to parity groups in both groups, no statistically significant difference showed among different parity groups.

Table I: Comparison of frequency of expulsion rate with intra-cesarean versus post-partum vaginal insertion of Copper T380A in females after delivery at term (n=200)

Expulsion	Groups		Total	p-value
	Intra-cesarean	Vaginal insertion		
Yes	2	9	11	0.030
	2.0%	9.0%	5.5%	
No	98	91	189	
	98.0%	91.0%	94.5%	
Total	100	100	200	
	100.0%	100.0%	100.0%	

Table-II: Stratification of expulsion rate with respect to age groups

Age of patients (years)	Group A (n=100)		Group B (n=100)		p-value
	Expulsion rate		Expulsion rate		
	Yes	No	Yes	No	
20-30	01 (1.59%)	62 (98.41%)	05 (8.06%)	57 (91.94%)	0.090
31-40	01 (2.70%)	36 (97.30%)	04 (10.53%)	34 (89.47%)	0.174

Table-III: Stratification expulsion rate with respect to parity

Parity	Group A (n=100)		Group B (n=100)		p-value
	Expulsion rate		Expulsion rate		
	Yes	No	Yes	No	
≤3	01 (1.30%)	76 (98.70%)	05 (8.20%)	56 (91.80%)	0.048
>3	01 (4.35%)	22 (95.65%)	04 (10.26%)	35 (89.74%)	0.409

Discussion

The intrauterine contraceptive device (IUCD) and contraceptive implant are safe and highly effective for most females, including adolescents. The success of IUCD in reducing unintended pregnancy and abortion rates could be extended if initiated immediately postpartum, with additional effect on reduction of unintended and short-interval pregnancy.[14-15]

Immediate placement of a long-acting reversible contraceptive, such as IUCD or an implant, results in higher use rates. In the USA, however, most insurance reimbursement policies for delivery-related care do not allow separate billing for postpartum IUCD or implants prior to discharge.[16]

Immediate post-partum insertion of IUDs appeared safe and effective, though direct comparisons with other insertion times were lacking. Advantages of immediate

post-partum insertion include high motivation, assurance that the woman is not pregnant, and convenience. However, expulsion rates appear to be higher than with interval insertion.[17]

An important study of the Copper T 380A by Celen et al[18] monitored 235 women with a follow up rate at 12 months of 78%. The expulsion rates at 6 weeks, 6 months, and 12 months were 5.1%, 7.0%, and 12.3%, respectively. However, this study included both vaginal deliveries and cesarean deliveries, and the published expulsion rates are not stratified by method of delivery.

The average age of the patients (28.0±6.41 year) was close to those found in the literature. It varied from 20 to 40 years old. In Morison *et al*.[19] study, the average age in Kenya was 23 years old and 31 years old in Mali. The social realities of our different countries could account for these differences.[19] The profile of our patients was that of an illiterate and low in-come married woman.

Many trials suggest that the chances of the expulsion of intra-uterine contraceptive devices were higher in vaginal deliveries than cesarean section.[20] Although, rate of expulsion fluctuates significantly in different studies, without clear evidence regarding the factors that lead to expulsion.[20] One study found that, IUCD expulsion rate was highest in post-vaginal delivery group (12%) as compared to intra-cesarean (0%).[21] While another study found that expulsion rate was more in post-placental insertion group i.e. 13.2% while among intra-caesarean group it was 6.8%.[22]

A recent study conducted in one of the largest hospitals of Pakistan in Lahore tested the aptitude of women towards practicing contraception which showed that almost all the women having basic level of education were aware of the existing methods of contraception but only about half of them actually practiced those methods and the rest of the women did not use it for various reasons amongst which the top most being the fear of side effects.[23] Frequency of c-section was 49.5% and vaginal as 50.5%.[24]

In this study, expulsion rate in group-A (intra-cesarean insertion) was seen in 2(2.0%) and post-partum vaginal insertion of Copper T380A was seen in 9(9.0%) females with p-value of 0.030. One study has reported that in females with intra-cesarean insertion of IUCD, the expulsion rate was nil after 3 months (0%) while in females who had IUCD insertion after 6 weeks of delivery, expulsion was observed in 5.95% cases. The difference was found to be significant (p=0.027).[12] Another study has reported that in females with intra-cesarean insertion of IUCD, the expulsion rate was 2.43% after 3 months while in females who had post-partum vaginal insertion, expulsion was observed in 0.0% cases.[13]

Conclusion

This study concluded that expulsion rate is less after intra-cesarean insertion compared to postpartum vaginal insertion of Copper T380A in females after delivery at term. So, we recommend that intra-cesarean insertion of Copper T380A in females after delivery at term should be used as a best time for insertion in order to decrease the expulsion rate.

References

1. Ataullahjan A, Mumtaz Z, Vallianatos H. Family planning, Islam and sin: Understandings of moral actions in Khyber Pakhtunkhwa, Pakistan. Social Sci Med. 2019;230:49-56.
2. Chola L, McGee S, Tugendhaft A, Buchmann E, Hofman K. Scaling up family planning to reduce maternal and child mortality: the potential costs and benefits of modern contraceptive use in South Africa. PLoS One. 2015;10(6):0130077.
3. Curtis KM, Peipert JF. Long-acting reversible contraception. New Engl J Med. 2017;376(5):461-8.
4. Schubert FD, Bishop ES, Gold M. Access to the copper IUD as post-coital contraception: results from a mystery caller study. Contraception. 2016;94(5):561-6.
5. Goldstuck ND, Cheung TS. The efficacy of intrauterine devices for emergency contraception and beyond: a systematic review update. Int J Women's health. 2019;11:471.
6. Casper RF. Progestin-only pills may be a better first-line treatment for endometriosis than combined estrogen-progestin contraceptive pills. Fertility and sterility. 2017;107(3):533-6.
7. Sanders JN, Higgins JA, Adkins DE, Stoddard GJ, Gawron LM, Turok DK. The impact of sexual satisfaction, functioning, and perceived contraceptive effects on sex life on IUD and implant continuation at 1 year. Women's Health Issues. 2018;28(5):401-7.
8. Gbaranor BK, Barinua-Gbaranor NP, Orupabo CD, Kalio DG, Okpara PE. Determinants of Delayed Desired Conception among Reproductive Women of Port Harcourt. IOSR-JDMS. 2020;19(3):60-5.
9. Carr BR, Thomas MA, Gangestad A, Eisenberg DL, Olariu A, Creinin MD. Conception rates in women desiring pregnancy after levonorgestrel 52 mg intrauterine system (Liletta®) discontinuation. Contraception. 2021;103(1):26-31.
10. Curtis KM, Tepper NK, Jatlaoui TC, Berry-Bibee E, Horton LG, Zapata LB, Simmons KB, Pagano HP, Jamieson DJ, Whiteman MK. US medical eligibility criteria for contraceptive use, 2016. Morbidity and Mortality Weekly Report: Recommendations and Reports. 2016;65(3):1-03.

11. Zafar Z, Habib H, Kols A, Assad F, Lu ER, Schuster A. Reinvigorating postpartum intrauterine contraceptive device use in Pakistan: an observational assessment of competency-based training of health providers using low-cost simulation models. BMC medical education. 2019;19(1):1-0.
12. Blumenthal P, Shiliya N, Neukom J, Chilambwe J, Vwalika B, Prager S, et al. Expulsion rates and satisfaction levels among immediate postpartum IUD users in peri-urban Lusaka, Zambia. Contraception. 2012;84(3):320.
13. Lucksom PG, Kanungo BK, Sebastian N, Mehrotra R, Pradhan D, Upadhya R. Comparative study of interval versus postpartum Cu-T insertion in a central referral hospital of North East India. Int J Reprod Contracep Obstet Gynecol. 2015;4(1):47-51.
14. Trussell J, Henry N, Hassan F, Prezioso A, Law A, Filonenko A. Burden of unintended pregnancy in the United States: potential savings with increased use of long-acting reversible contraception. Contraception. 2018;87(2):154-61.
15. Peipert JF, Madden T, Allsworth JE, Secura GM. Preventing unintended pregnancies by providing no-cost contraception. Obstetrics and gynecology. 2017;120(6):1291.
16. Aiken AR, Creinin MD, Kaunitz AM, Nelson AL, Trussell J. Global fee prohibits postpartum provision of the most effective reversible contraceptives. Contraception. 2014;90(5):466.
17. Goldstuck ND, Steyn PS. Insertion of intrauterine devices after cesarean section: a systematic review update. International journal of women's health. 2017;9:205.
18. Celen S, Möröy P, Sucak A, Aktulay A, Danişman N. Clinical outcomes of early post-placental insertion of intrauterine contraceptive devices. Contraception. 2004;69:279–82.
19. Morrison CS, Murphy L, Kwok C, Weiner DH. Identifying appropriate IUD candidates in areas with high prevalence of sexually transmitted infections. Contraception. 2007;75:185-92.
20. Whitaker AK, Chen BA. Society of Family Planning Guidelines: Post-placental insertion of intrauterine devices. Contraception. 2018;97(1):2-13.
21. Chhari A, Zutshi V, Sharma R, Batra S. Comparison of post placental IUD with interval IUD. Int J of Reprod, Contracept, Obstet and Gynecol. 2015;4(4):1090-3.
22. Goyal A, Wadhwani R. Comparative study of IUCD inserted intracesarean and after vaginal delivery. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2018;7:20-25.
23. Asghar S, Homayun A, Awan F. The future of post-placental intrauterine contraceptive device (PPIUCD) in Pakistan. Pak J Med Health Sci. 2016;10(1):320-2.
24. Thiam OC, Cissé MK, Ndiaye P, Thiam M, Tendeng JN, Gueye M, Oumansour M, Niang AA, Moreau JC. The intra-uterine device (IUD) of the immediate postpartum a comparative study between the caesarean IUD and the IUD inserted after a natural delivery. Clinical Obstetrics, Gynecology and Reproductive Medicine. 2014;1:87-92.