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# Post-Partum Contraception: Evaluating Effectiveness of Depot Medroxyprogesterone Acetate (DMPA) Administered within 48 Hours of Elective Caesarean Section

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## ABSTRACT

***Objective:*** To evaluate the feasibility of intramuscular (IM) Depot Medroxyprogesterone Acetate (DMPA) as post-partum contraception after elective caesarean section.

***Study Design:*** Quasi experimental study

***Place and Duration Study:*** Combined Military Hospital Kharian Cantt Pakistan, from Jun 2022 to Jul 2023.

***Methodology:*** Women who chose to participate in the study were then given three monthly doses of DMPA. They were followed up at 3, 6, 9, and 12 months. The primary outcome measures were side effects and satisfaction with the contraceptive injection at 3, 6, 9, and 12 months and the secondary outcomes were frequency of unplanned pregnancy and continuation with DMPA at 12 months.

***Results:*** Out of 197 women only 68(34.4%) were willing for postpartum contraception, received DMPA 48 hours after caesarean section. Age of the enrolled women range between 22-39 years and 70.0% have parity of 3 or more. At 12 months half (49.0%) of the enrolled women were satisfied. The continuation rates with the contraceptive injection were 95.0%, 93.1%, 85%,84.8% at 3, 6, 9 and 12 months. There was no unplanned pregnancy during 12 months of study period.

***Conclusion:*** The study provides evidence that routinely offering women, undergoing elective caesarean section, DMPA single injection every 3 months, provides a promising post-partum contraceptive method with good patient's satisfaction and continuity rates. Administration of DMPA postnatally can effectively prevent unintended pregnancies in the first year postpartum.

**Keywords:** Contraceptive Agents, Contraceptive Effectiveness, Depot Medroxyprogesterone Acetate, Family Planning Practice, Unplanned Pregnancy.

***How to Cite This Article:*** *Parveen S, Nosheen J, Anwar R, Khanum F, Nisa Z, Butt MN. Post-Partum Contraception: Evaluating Effectiveness of Depot Medroxyprogesterone Acetate (DMPA) Administered within 48 Hours of Elective Caesarean Section. Pak Armed Forces Med J 2025; 75(6): 1214-1218. DOI: https://doi.org/10.51253/pafmj.v75i6.11686*



## INTRODUCTION

The global average caesarean section (CS) rate has increased by 12.4% between 1990 and 2014, from 6.7% to 19.1%.[1] This represents an average annual increase of 4.4%. Projections suggest that by 2030, 63.4% of women in Eastern Asia will give birth by Caesarean Section.[2]

World Health Organization highlighted in 2017, 56% of pregnancies in (Low Middle-Income Countries) LMICs were unplanned leading to 303,000 maternal deaths and 5.2 million child deaths.[3] Hence, WHO encourages strategies to strengthen informed voluntary family planning programs for women during antenatal care, labour and delivery, postnatal care, immunization, and child health care.[4] Family planning can help to reduce the risk of maternal and neonatal mortality by reducing the number of abortions and unplanned pregnancies.[5] Postpartum contraception is the range of temporary reversible options used to prevent unplanned and closely spaced pregnancies in the first 12 months after childbirth and hence is an essential part of healthcare services.[6] There is a need to ensure that women immediately after childbirth should have access to accurate information on family planning practices. Women, for cultural reasons, may not be sexually active in the immediate postpartum period and may rely on lactational amenorrhea during exclusive breastfeeding.[7]

Effective postpartum contraception use relies on adaptation of the services that can be safely initiated immediately postpartum (or before discharge from the hospital). Long-acting reversible contraceptives (LARC), are the most effective, not user-dependent, reversible, and return to fertility is rapid after discontinuation8.It involves insertion of postpartum intrauterine devices (IUDs) or provision of single

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*Received: 21 Feb 2024; revision received: 24 Oct 2024; accepted: 25 Oct 2024*

injection of DMPA at three monthly intervals. Several studies have shown that intrauterine device (IUD) insertion after caesarean is associated with low rates of complications and high continuation rates.[9]

Moreover, Medroxyprogesterone Acetate, is a progesterone containing LARC method. Best practices for contraceptive clinical care, the Centres for Disease Control and Prevention (CDC) recommends use of Depo-Provera immediately postpartum, stating that the advantages of using Depo-Provera outweigh its risks any time in the postpartum period.[10] This study, intends determining whether it would be feasible to offer all women, undergoing an elective caesarean section, a choice to receive intramuscular DMPA postpartum contraception, before being discharged from the hospital. The study also aims to assess the acceptability, satisfaction rate, continuation rates, and its effectiveness in reducing the risk of unplanned pregnancy.

## METHODOLOGY

The Quasi experimental study was conducted at Combined Military Hospital Kharian Cantt Pakistan, from June 2022 to July 2023, after approval of the Ethical Review Committee (ERC-20/OBS/2022). The sample size for this study was not determined based on a priori hypothesis; (presumptive theory). Only those women who consented, during the study period, for postpartum contraception were enrolled. Pregnant women at 36 weeks having antenatal follow up, during the month of June 2022, planned for elective Caesarean section (CS), were informed and counselled about postpartum contraception. They were offered use of injection DMPA (Depot Medroxyprogesterone Acetate) intramuscular within 48 hrs after caesarean section. Detailed information and counselling about the risks, benefits, and possible side effects of DMPA was provided.

**Inclusion Criteria:** All pregnant women who consented to participate in study and were scheduled to have an elective CS for the month of June and July 2022 and followed up 3 monthly intervals for 12 months.

**Exclusion Criteria:** Pregnant women for elective C-section with known or suspected history of breast cancer, acute liver disease or jaundice, deranged liver function tests, thromboembolism, and previous history of sensitivity to DMPA were excluded from the study.

Verbal and written consent taken about what to expect after the injection. After caesarean section the enrolled women who chose to participate were given a single injection of DMPA dose 1, before being discharged from the hospital. Client's instruction card with the three-monthly follow up appointment date of DMPA given to the women. The women were followed up with the evaluation team (family planning midwife, obstetrics and gynaecology trainee) at 3, 6, 9 and 12 months to determine physical side effects, level of satisfaction and continuation trend with the contraceptive injection DMPA. For all women who missed follow up appointment, were contacted on phone to obtain any further information about the missed, repeat DMPA dose, as well as any side effects. Data collected only on the women who consented for postpartum contraception and got DMPA contraceptive injection during the month of June and July 2022 and the presented data in the study is from those women who have completed 12 months of follow-up.

The primary outcome measures were the frequency of side effects with the contraceptive injection at 3, 6, 9, and 12 months. The secondary outcomes were satisfaction rate, continuation rate and the frequency of unplanned pregnancy with contraceptive injection during the study period. The level of maternal satisfaction was measured on a visual analogue scale, with scores ranging from 0 (unsatisfied) to 10 (satisfied).

Statistical package for social sciences (SPSS) version 24.0 was used for the data analysis. The collected data was analysed by computing frequency and percentages for categorical variables including age, parity, breastfeeding practices and body mass index. Frequencies were noticed for the secondary outcome measures such as contraceptive satisfaction level, contraceptive continuation rate and unplanned pregnancies during the study period. The independent samples t-test and chi-square test were applied to explore the inferential statistics. The *p*-value lower than or up to 0.05 was considered as significant.

## RESULTS

During the study period 234 women were scheduled for caesarean section. 37 women were excluded from study due to deranged liver function tests and positive hepatitis B surface antigen and anti-Hepatitis C antibody. Out of remaining l97, only 68(34.4%) women who are willing for postpartum contraception given a single shot contraceptive DMPA

within 48 hours after caesarean section. Hence frequency of acceptance was 34% for injectable contraceptive DMPA. 57.4% of the women were having age range between 22-30years and (42.6%) were 31-39 years. Out of study population 70.6% were having parity of 3 or more (Table-I).

**Table-I: Socio-Demographic Characteristics of the Study Participants (n=68)**

| Variables | n (%) |
|---|---|
| **Age (years)** | |
| 22-30 | 39(57.4%) |
| 31-39 | 29(42.6%) |
| Parity | 1(1.5%) |
| 3-4 | 48(70.6%) |
| >4 | 19(27.9%) |
| **Body Mass Index (Kg/m²)** | |
| 21-25 | 25(36.8%) |
| 26-30 | 43(63.2%) |
| **Breast-feeding** | |
| Yes | 56(82.4%) |
| No | 18(17.6%) |

During the study period follow up, the commonest side effects recorded were amenorrhoea and abnormal vaginal bleeding. Amenorrhoea was experienced by 2(2.9%) women at 3 months, 9(13.2%) at 6 months, 12(17.6%) at 9 months, and 19(27.9%) at 12 months. However, out of 68 women included in the study, no side effects were observed in 58(85.2) at 3months,47(69.1%) at 6 months,37(54.4%) at 9 months and 23(33.8%) at 12 months follow up respectively. The information on distribution of side effects during study period is shown in Figure.

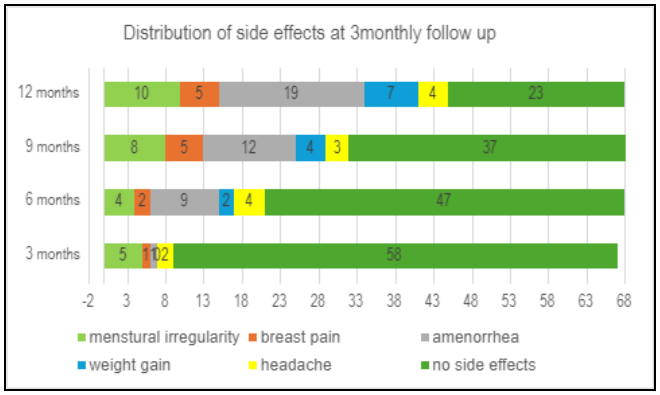


**Figure: Side Effects at 3 Monthly Follow Up of the Study (n=68)**

During follow up, the satisfaction rates with contraceptive injection were found to be 97%, 83.8%,77.9%,72% at 3, 6 and 9 and 12 months respectively. While, 69.1% women were willing for the continuation of contraceptive injection at 12 months follow up as shown in Table-II, unintended pregnancy occurred during the study period.

## DISCUSSION

One in thirteen women can conceive within 1 year of delivery or miscarriage.[11,12] Provision of LARC immediately postpartum appears to be an attractive option to mothers, and could be an important strategy to prevent unintended pregnancy and short inter-pregnancy intervals.[13,14]

This current study aimed to investigate the feasibility of routinely offering all women who were undergoing an elective caesarean section the opportunity to have postpartum contraceptive injection before being discharged from hospital. and to assess uptake, complications, continuation rates and acceptability. At the enrolment stage in our study, only 34% patients initially accepted for injectable contraceptive DMPA. The satisfaction is one of the most important factors for acceptability and continuation of the contraception. At 12 months follow up, in our study, 72% were satisfied while the continuation rate was found to be 69.1%. In another study the continuation rate was only 36% at 12 months follow up.[15] Menstrual problems were the commonest side effect during the study period and amenorrhea was found in 13.2% at 6 months after second dose of DMPA, these findings were in contrast to Samal where amenorrhea occurred in 65% of the women.[16] During 12 months of study duration no pregnancy was reported. In a similar study it was found that adolescent women who choose DMPA for postpartum contraception are significantly less likely to become pregnant within 1 year of delivery as compared to oral contraceptive pills.[17]

DMPA has no effect on milk production and breastfeeding as 82.4% of women in our study continued breastfeeding their infants. This is similar to a comparative study of postpartum mothers, who were given DMPA even after delivering preterm infants, there was no effect on breastfeeding practices.[18]

We need to investigate on the knowledge gaps on postpartum contraceptive methods at the level of healthcare providers and women seen in outpatient departments for various healthcare services.[19] There are perceptions about the side effects of contraceptive use. It is one of the most important reasons behind unmet need for family planning practices and more

**Table- II: Secondary Outcomes Measures in the Study Participants (n=68)**

| Variables | | Three Monthly Follow Up of the Study Population | | | | | |
|---|---|---|---|---|---|---|---|
| | | At Start | At 3 Months | At 6 Months | At 9 Months | At 12 Months | *p*-Value |
| Continuation rate | Yes | 68(100) | 67(98.5) | 60(88.2) | 58(85.3) | 47(69.1) | 0.382 |
| | No | 0 | 1(1.5) | 8(11.8) | 10(14.7) | 21(30.9) | |
| Satisfaction rate * | Yes | 68(100) | 66(97.0) | 57(83.8) | 53(77.9) | 49(72.0) | 0.213 |
| | No | 0 | 2(2.9) | 9(16.1) | 15(22.1) | 19(27.9) | |

**Satisfaction rate Measured on a Visual Analogue Scale 0 (unsatisfied) to 10 (satisfied)*

qualitative studies should be conducted. Larger and more rigorous studies should be planned on the use of DMPA as an immediate post-partum contraceptive in order to formulate strategies to present early unplanned pregnancies.

## CONCLUSION

The study provides evidence that routinely offering women, undergoing elective caesarean section, DMPA single injection every 3 months, provides a promising post-partum contraceptive method with good patient's satisfaction and continuity rates. It can effectively prevent unintended pregnancies in the first year postpartum.

**Conflict of Interest:** None.

**Funding Source:** None.

### Authors Contribution

Following authors have made substantial contributions to the manuscript as under:

SP & JN: Conception, study design, drafting the manuscript, approval of the final version to be published.

RA & FK: Data acquisition, data analysis, data interpretation, critical review, approval of the final version to be published.

ZN & MNB: Conception, data acquisition, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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