International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Zainab N et al. Int J Reprod Contracept Obstet Gynecol. 2024 Oct;13(10):2863-2868
www.ijrcog.org
pISSN 2320-1770 | eISSN 2320-1789

DOI: https://dx.doi.org/10.18203/2320-1770.ijrcog20242824

Original Research Article

Single rod subdermal implant: acceptance and problems associated with it at a tertiary care centre in Southern Rajasthan

Noorani Zainab*, Radha Rastogi, Syed Nikhat

Department of Obstetrics and Gynaecology, RNT Medical College Udaipur, Rajasthan, India

Received: 23 August 2024
Revised: 16 September 2024
Accepted: 17 September 2024

***Correspondence:**
Dr. Noorani Zainab,
E-mail: zee.noorani96@gmail.com

ABSTRACT

Background: The government of India expanded the contraceptive basket under national family planning program by the inclusion of subdermal contraceptive implants (single rod) in the year 2023. In our institute, RNT medical college and attached hospitals, Udaipur, the insertion and use of the implant, after adequate training sessions, began in September 2023. Since then, there has been slow, but sure acceptance of the Implant as a contraceptive. This study aims to provide demographic data of its users, data of the follow up, and the problems encountered by users as well as data on early removal of implant and the reasons for it.
Methods: This is a prospective cohort study, conducted at the department of obstetrics and gynaecology at RNT medical college and attached hospitals, Udaipur. Study conducted from September 2023 to July 2024 time period.
Results: The implant was introduced in our institute as a contraception option in September 2023. No particular trend could be detected with regard to numbers of insertion of the implant. The mean age of the users is 27.9±11.3 years, with majority of its users belonging to the age group of 25-29 years and maximum number of insertions happened immediately post-partum, before the patient was discharged from hospital. The mean number of living children was 2. A majority of women had 2 living children at the time of insertion (regardless of parity).
Conclusions: Large number of women are accepting of the implant as a method of contraception. From our findings, limited though they may be, we conclude that the average user of the implant is a woman between 25-29 years of age with two living children. The biggest problem, we face at present, is lack of follow up.

Keywords: Contraception, Implant, Implanon, Family planning

INTRODUCTION

Over 60% of India's total population are of reproductive age. Nearly half of the births are not properly spaced (less than 36 months apart).[1] A nation such as India faces continuous unfulfilled requirements for family planning and contraception after childbirth. In 2019, the national institute of research and reproductive health found that the subdermal single rod Implant was cost-effective in their study on long-acting reversible contraceptives in India. Consequently, in 2023, the government of India included it in the national family planning program's contraception options.[2]

The implant, which has been studied for more than thirty years, is categorized as LARC-long-acting reversible contraception. It advanced from 6 rods (containing levonorgestrel-Norplant) to just one rod (containing etonogestrel-Implanon NXT) over time.[3]

Etonogestrel (ENG; 68 mg) is the main component. Following the placement of the implant, etonogestrel is quickly absorbed into the bloodstream, with ovulation prevention beginning within one hour to one day. It shows varying release rates over time. By 5-6 weeks after insertion, the recommended daily dosage is 60-70 mcg,

decreasing to 30-40 mcg after 2 years and 25-30 mcg after 3 years. Its primary mechanism is to prevent ovulation. Moreover, it increases the density of the cervical mucus to stop sperm from reaching the upper reproductive tract and reduces the thickness of the endometrium to create an unfavorable environment for implantation. The concentration that inhibits ovulation (>90 pg/ml) is achieved within one hour to one day, the highest serum concentration (472-1270 pg/ml) is reached within two weeks, and the concentration gradually decreases to 156 pg/ml by the end of three years. After removal, it quickly drops to 20 pg/ml within four days, allowing fertility to return promptly.[4] The implant is a highly effective form of contraception, with Implanon typically showing a pearl index of less than 1.0, often ranging from 0.1 to 0.2. This implies that less than 1 out of every 1,000 women who use the implant for a year would have an unintended pregnancy, showing its high effectiveness in preventing pregnancy.[5]

It can be fully reversed with a quick return to fertility, making it a good option for women who can't use contraceptives containing estrogen. It's also safe for women with high blood pressure, diabetes, or organ damage[6]. It is safe for breastfeeding women because it does not impact the amount, quality, or content of breast milk. It also has no impact on the infant, allowing for immediate initiation post birth.

One of the primary symptoms involves alterations in menstrual cycle. Similar to other progestin-only options, women may encounter variations in their menstrual bleeding, such as irregular bleeding, extended/heavy bleeding (over 8 days or double the usual amount), or absence of menstruation. These changes are short-lived and benign and menstrual bleeding pattern goes back to normal when the method is stopped. Additional impacts consist of migraines, stomach discomfort, skin blemishes, fluctuation in weight, sensitivity in the breasts, feelings of light-headedness, changes in emotional state, and feelings of sickness.[7]

It can be placed at any point during the month if used as an interval method (with additional method when needed) and right after abortion or giving birth, and it is safe for breastfeeding. The only condition is that pregnancy has been definitively ruled out in the woman.

It is placed in the upper arm, specifically in the arm that is not dominant. The patient is scheduled for check-up appointments six weeks and twelve weeks after the insertion. The implant is taken out three years after it was inserted.

METHODS

This is a prospective cohort study, conducted at the department of obstetrics and gynaecology RNT medical college and allied hospitals, Udaipur, during the period from September 2023 to July 2024.

Inclusion criteria

All women seeking contraception post abortion, post-delivery and interval were offered the cafeteria approach and chose the newly introduced implant as their choice of contraception. Data regarding their age, number of living children, date of insertion, time of insertion and date of follow up were noted. After successful insertion of implant, they were given an Implant card, having information about date of insertion, removal and date of follow up. They were also counselled about the possible side effects and how to deal with them. They were then asked to come for follow up on the designated dates. During their follow up visits, they were asked about changes in menstruation, pain and other side effects. If the woman wanted to have her implant removed, the reason for early removal was noted.

Method of insertion

Once all requirements for placement are met, the patient is directed to lay down with their forearm resting behind their head, their ear in contact with the wrist. The medial epicondyle has been recognized. By using a measuring scale, a point is indicated at a distance of approximately 8 to 10 cm from the epicondyle.[8] A different point, identified as point A, is located approximately 4 cm below the original point. Another point is added 4 cm away from point A horizontally. Both points are situated beneath the sulcus where important nerves and blood vessels pass through. Then, a betadine swab is used to clean the area, followed by injecting 1% lignocaine to create a wheal at the point of insertion and continuing along the insertion track up to 5 cm to cover the length of the implant. After that, we slowly remove the needle while injecting the rest of the local anaesthetic into the injection site. Once we have made sure the area is completely numb, we can then proceed with inserting the implant. First, ensure that the implant is present in the applicator before holding the applicator at the dotted area. Next, we take off the needle cover by moving it sideways following the arrow, away from the needle. Using our free hand, we pull the skin near the insertion point using our thumb and index finger, then we pierce the skin with the needle at a 30° angle and only insert it up to the needle's bevel.[9] While imagining the needle, the applicator is placed horizontally parallel to the skin's surface, lifting the skin with the needle to ensure subdermal placement. We extend the needle completely towards the marker, ensuring that it is fully inserted under the skin. While retaining the applicator in place, we release the purple slider on the plunger by gently pushing it down and sliding it backwards until it comes to a full stop. After that, we take out the applicator and confirm the existence of the implant in the women's arm right away by feeling the area. We also request that the client avoid touching the puncture site while feeling the length of the implant. Force is exerted on the location of the puncture. If there is no bleeding, a clean gauze is placed on top. A tight pressure bandage is wrapped around it.[10]

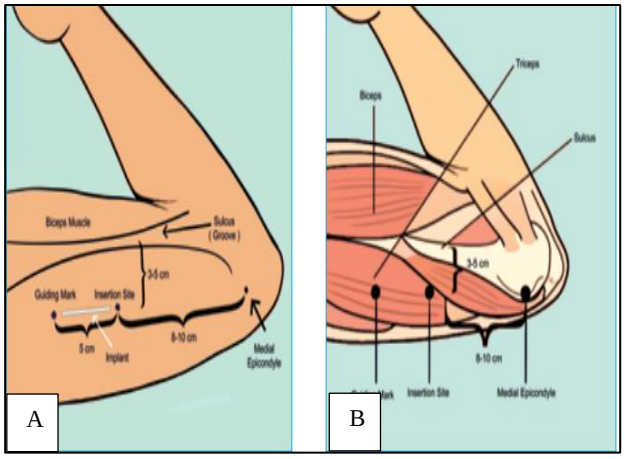

Figure 1 (A and B): Site of implant insertion - Surface marking for the implant's insertion and site of the implant's insertion in relation to internal structure inside the upper arm.

RESULTS

Monthly distribution of data

The implant insertion was started in our institute as a contraception option in September 2023. The following figure shows monthly distribution of insertions of implant from September 2023 to July 2024. No particular trend could be detected with regard to numbers of insertion of the implant. Maximum number of implants were inserted in March 2024 and least in December 2023. The mean monthly insertion is roughly 23 implants per month.

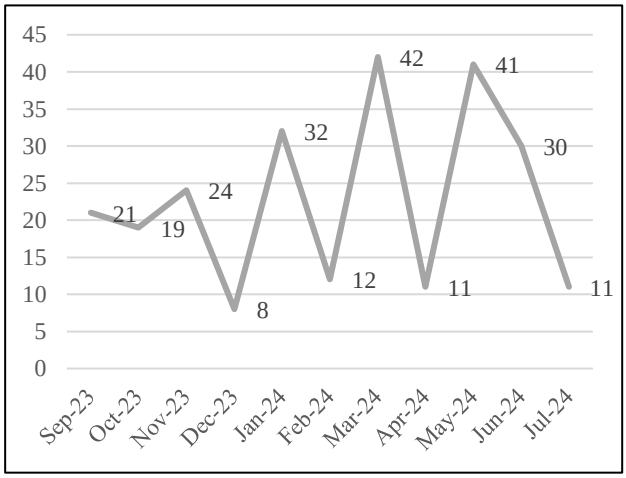

Figure 2: Monthly distribution of implant insertion.

Age

The age-wise distribution of users of the implant are tabulated below. Mean age of the users is 27.9±11.3 years, with majority of its users belonging to age group of 25-29 years, 88 out of total 251 insertions (35.06%), and the least number of women belonging to 45-50 years, accounting for single insertion of implant out of 251 (0.4%).

Table 1: Age-wise distribution of users of the implant.

Age (in years)	N	Percentage (%)
<20	6	2.39
20-24	66	26.29
25-29	88	35.06
30-34	65	25.90
35-39	17	6.77
40-44	8	3.19
>45	1	0.4

Timing of insertion

Maximum number of insertions happened immediately post-partum, before the patient was discharged from hospital, 162 out of 251 (65%), followed by interval insertion and least number of insertions were post-abortion, 41 out of 251 (16%).

Table 2: Timing of insertion.

Timing	N	Percentage (%)
Interval	48	19
Post-abortion	41	16
Post-partum	162	65

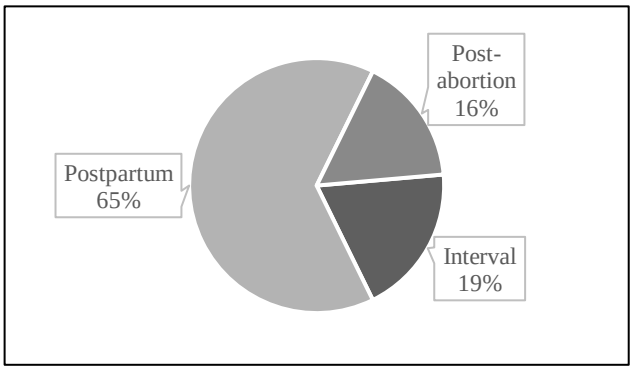

Figure 3: Timing of insertion of the implant.

Living children

The mean number of living children was 2. A majority of women had 2 living children at the time of insertion (regardless of parity), accounting for 44.22% (111) insertions, followed by 1 living child (28.29%) (71), 3 children (50) (19.92%), and 10 women, accounting for 3.99% of insertions had more than 3 children. 3.59% of women had no living children at the time of insertion.

Table 3: Number of living children and insertion.

Number of living children	N	Percentage (%)
0	9	3.59
1	71	28.29
2	111	44.22
3	50	19.92
>3	10	3.99

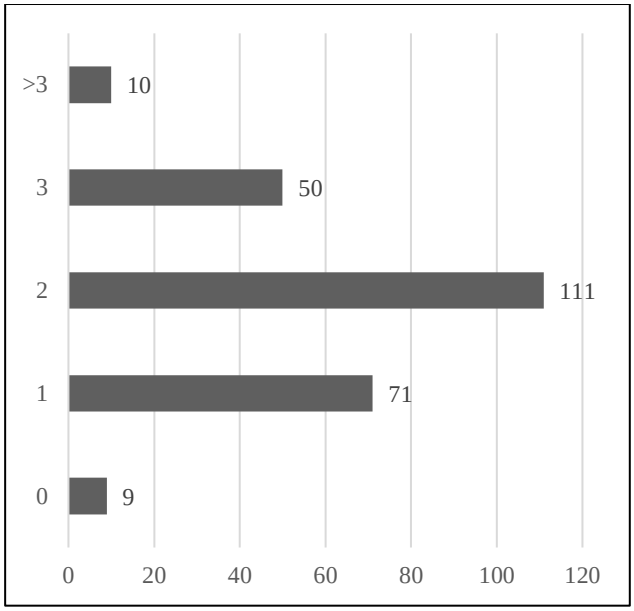

Figure 4: Distribution of insertion of implants with number of living children.

Follow up-1st visit

The first follow up after insertion of the Implant is at 6 weeks, i. e., 1 ½ months after insertion. Bearing this in mind, the expected number of follow up visits was 240 patients. However, only 74 patients came for follow up-a mere 30.8% of the expected number of visits for 1st follow up.

Follow up-2nd visit

The second follow up visit post-insertion of the implant is at 12 weeks, or roughly 3 months after. With this in mind, the expected number of second follow up visits was 169. However, no patients came for second visit.

Complications

Menstrual changes

The 74 women came for follow up on or around their designated date (maximum of two months after insertion instead of 6 weeks after insertion for first visit). Of these women, 6 women (8.1%) reported changes in menstruation. Out of these 6, 2 women had irregular cycles with intermenstrual spotting since insertion, 1 patient complained of irregular cycles, 2 had continuous spotting and 1 complained of prolonged periods. These women account for 2.39% of total number of insertions.

Others

Out of the 74 women who came for follow up, only 1 (1.3%) reported additional complaint, that is pain at the site of insertion. No other complaints were recorded. This accounted for 0.39% of total insertions.

Therefore, a total of 7 women out of the 74 who reported for follow up had complaints after insertion of the Implant, and of these, the majority of complaints were that of menstrual changes. These findings are summarized in the table below:

Table 5: Complications/complaints post insertion of the implant.

Complication	Number of women	Percentage (%)	Percentage of total insertions (%)
Menstrual changes	6	8.1	2.39
Pain at insertion site	1	1.3	0.39
No complaints	67	90.6	97.22

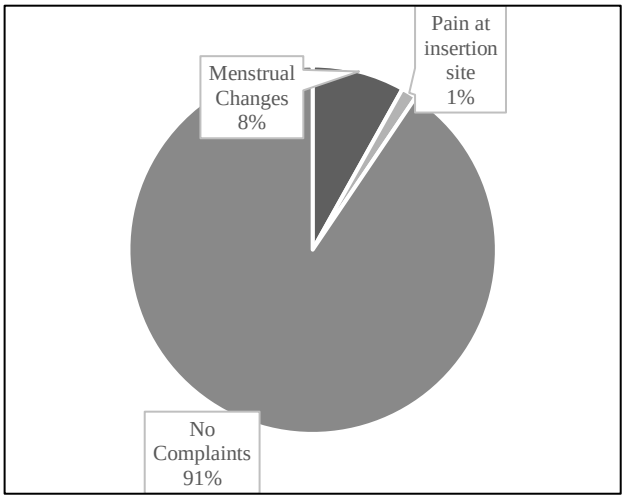

Figure 5: Complaints post-insertion of the implant.

Removal

Out of the 251 implants inserted, 7 women had the implant removed at the first visit. One woman cited pain at insertion site and the other 6 complained of menstrual changes as mentioned above.

Thus, 2.7% of implants were removed earlier than the date of removal.

DISCUSSION

Seeing the results above, it becomes clear that a large number of women are accepting of the Implant as a method of contraception. From our findings, limited though they may be, we conclude that the average user of the Implant is a woman between 25-29 years of age with two living children.[11]

The biggest problem, we face at present, is lack of follow up. One of the best features of the implant is the 'insert-

and-forget' nature of it.[12] There is no schedule of pills to be taken, threads to be checked or back up contraception to be used in case of failure of adherence to a particular method. However, this very 'insert-and-forget' feature leads to loss to follow up, thus limiting the data we have with regards to the problems faced by women post insertion. Another reason could be lack of adequate counselling leading to failure of follow up. The former problem presents with no answer, but the latter can be solved by stressing the importance of follow up.[13]

Majority of women had no complaints post-insertion, and of those that did, menstrual change was the commonest one, leading, ultimately, to earlier removal of the implant. These findings tell us that, again, counselling plays an important role, and while we cannot stop the changes in menstruation, we can inform the women and provide adequate timely management so as to prevent earlier removal of the implant.[14] Pain at insertion site could likely be a result of improper insertion technique. This can be minimized by proper training with regards to insertion.

We must remember the early removal of implant is in itself, not a problem. It is the risk of pregnancy during the time the woman is without contraception that is the problem.

The introduction of the Implant is a step in right direction-both for the government (in terms of cost-effectiveness), and for the women of the country. While the acceptance is slow, it is surely rising.[15] Effective, easy to use contraception, that is widely accessible lightens the already heavy load of women's health conditions that is borne by the country. With increasing training programs, adequate counselling and follow up, the Implant will surely prove to be a boon to Indian women.[16]

Limitations

The data on follow up is inadequate to make a note of the impact of the implant as well as the problems faced by the women following it's insertion. Larger data may impact on results.

CONCLUSION

Recently, there has been a shift in the use of contraception, with a focus on developing new methods that cater to the needs of users. The advancement of synthetic polymers has led to the creation of sustained-release delivery systems that continuously release small amounts of hormones over a long period of time. Long term contraceptives have the benefit of not requiring patients to pay close attention to them, as well as being reliable without requiring strict compliance. Drawbacks consist of reliance on skilled healthcare staff to begin and terminate treatment, the need for minor surgical procedures for implant insertion and removal, and instances of irregular bleeding. large number of women are accepting of the Implant as a method of contraception. From our findings, limited though they may be, we conclude that the average user of the Implant is a woman between 25-29 years of age with two living children. The biggest problem, we face at present, is lack of follow up.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Office of the Registrar General and Census Commissioner (India). India Sample Registration System Statistical Report 2020. New Delhi: Office of the Registrar General and Census Commissioner (India). 2022.
2. Joshi B, National Institute for Research in Reproductive Health, Indian Council of Medical Research. Health Technology Assessment of Long-acting Reversible Contraceptives in India. New Delhi: HTAIn. 2018.
3. Bennink HJ. The pharmacokinetics and pharmacodynamics of Implanon, a single-rod etonogestrel contraceptive implant. Eur J Contracept Reprod Health Care. 2000;5(2):12-20.
4. Warren C, Cox M, Hughes R, Schreiber C. Etonogestrel implant (Implanon) for contraception: a systematic review. Contraception. 2010;81(3):220-30.
5. Shiferaw M, Kassahun W, Zawdie B. Anthropometric indices, blood pressure, and lipid profile status among women using progestin-only contraceptives: comparative cross-sectional study. BMC Women's Health. 2021;21:34.
6. Moray KV, Chaurasia H, Sachin O. A systematic review on clinical effectiveness, side-effect profile and meta-analysis on continuation rate of etonogestrel contraceptive implant. Reprod Health. 2021;18(1):4.
7. Brito MB, Ferriani RA, Quintana SM, Diogenes Yazlle MEH, De Sá MFS, Vieira CS. Safety of etonogestrel contraceptive implant during breastfeeding: a randomized controlled trial. The Lancet. 2007;370(9601):295-302.
8. Varney SJ, Guest JF. Relative cost effectiveness of Depo-Provera, Implanon, and Mirena in reversible long-term hormonal contraception in the U.K. Pharmacoeconomics.2004;22(17):1141-51.
9. AMCP Dossier for Implanon. Roseland, NJ: Organon USA, Inc. 2006.
10. Agrawal A, Robinson C. Spontaneous snapping of an Implanon in two halves in situ. J Fam Plann Reprod Health Care. 2003;29:238.
11. Lakha F, Glasier AF. Continuation rates of Implanon in the UK: data from an observational study in a clinical setting. Contraception. 2006;74:287-9.
12. Gezginc K, Belci O, Karatayli R, Colakoglu MC, Colakoglu MC. Contraceptive efficacy, side effects of implanon(R) Eur J Contracep Reprod Health Care. 2007;12:362-5.

13. WHO Model Lists of Essential Medicines. Available at: http://www.who.int/groups/expert-committee-on-selection-and-use-of-essentialmedicines/essential-medicines-lists. Accessed on 12 January, 2024
14. Jain R, Muralidhar S. Contraceptive methods: needs, options and utilization. J Obstet Gynaecol India. 2011;61(6):626-34.
15. Joshi R, Khadilkar S, Patel M. Global trends in use of long-acting reversible and permanent methods of contraception: seeking a balance. Int J Gynaecol Obstet. 2015;131(1):S60-63.
16. Arora N, Choudhary S, Raghunandan C. Young women opting for tubal sterilization in rural India: reasons and implications. J Obstet Gynaeco. 2010;30(2):175-8.

Cite this article as: Zainab N, Rastogi R, Nikhat S. Single rod subdermal implant: acceptance and problems associated with it at a tertiary care centre in Southern Rajasthan. Int J Reprod Contracept Obstet Gynecol 2024;13:2863-8.