Early Removal of the Etonogestrel Contraceptive Implant and Associated Factors Among Users at the Urban Family Planning Clinic in Siriraj Hospital, Bangkok, Thailand

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ABSTRACT

Objective: To study the rate and reasons for the early removal of etonogestrel contraceptive implants and associated factors at the family planning clinic in Siriraj Hospital.

Materials and Methods: This retrospective cohort study was conducted between May 2015 and December 2019 and contained 1,030 women who received the etonogestrel contraceptive implant. The medical records of demographic characteristics and clinical factors i.e., implant insertion date, implant removal date, reason for implant removal, contraceptive use before implant insertion and after implant removal, documented bleeding pattern and acceptability, were identified.

Results: The mean age of participants was 28.6 ± 6.9 years. About 21% of women (218/1030) prematurely discontinued their etonogestrel implant. A desire to become pregnant was the most common reason for early removal of the etonogestrel implant (32%). Meanwhile, the most common side-effect contributing to early removal was unscheduled bleeding. The associated variables of early etonogestrel implant removal were low BMI (p-value = 0.021) and unacceptability of bleeding pattern at one year (p-value < 0.001) and two years (p-value < 0.001) after insertion.

Conclusion: Early etonogestrel implant discontinuation rate was remarkable and the main reasons for it include a desire to become pregnant and bleeding side effects. Moreover, a lower BMI and unacceptability of bleeding problems also increased the likelihood of early removal of this contraceptive method.

Keywords: Etonogestrel implant; contraceptive method; one rod contraceptive implant; implant removal; implant discontinuation (Siriraj Med J 2021; 73: 399-405)

INTRODUCTION

Family planning plays an essential role in women's health by reducing the mortality rate of unsafe abortions and undesired pregnancies. Today, various methods of modern contraception focus on techniques that have proven to be effective and are widely used.[1] For example, long-acting reversible contraceptives (LARCs) are birth control methods that provide effective contraception long-term without requiring user action. Contraceptive methods that fall under LARC include intrauterine devices (IUDs) and subdermal contraceptive implants.[2] The etonogestrel contraceptive implant (Implanon NXT®) is a single-rod progestin-only device containing 68 mg of etonogestrel preloaded in a 4-cm soft plastic stick.[3] It

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provides protection for three years and its mechanism is based on ovulation inhibition and an increase in the viscosity of the cervical mucus.[4]

Although the three-year etonogestrel contraceptive implant is effective and popular among users, common side effects include unscheduled bleeding, weight gain, acne, headache and loss of libido. These side effects are all possible reasons for the early discontinuation of this contraceptive method.[5] In developing countries, removal of the etonogestrel implant in the first year (13%-28% of all cases depending on the area of study) is common even though these women are still in need of contraception.[6-9] Various studies have noted that women may insist on the early removal of the etonogestrel implant for a variety of reasons. For example, some studies have noted that unscheduled bleeding and other side effects are common reasons for early removal.[10-12] In fact, unscheduled bleeding was the most frequently cited reason for early removal of implants in a large multicenter trial in seven countries.[13] To solve this problem, counseling women on expected bleeding patterns might improve the longevity of implantable progesterone contraceptives. Furthermore, a low body mass index was also associated with early discontinuation of implants in a prior study,[9,14] however, these studies failed to identify sociodemographic predictors or associated factors of early discontinuation.[14-16] Moreover, most studies only had a follow-up period of one year.[6-9] with only a few studies maintaining a three-year follow-up period in a small population group.[17]

Although there are several studies about long-acting reversible contraceptives in Thailand[18-20], published data on the discontinuation rate of etonogestrel implants and associated factors are insufficient. Moreover, Siriraj Hospital provides family planning services and reproductive healthcare for many women. This study aimed to investigate the rate and reasons for early removal of etonogestrel implants and associated factors in large sample size and long-term period. Accordingly, this study will be expedient to determine the current practice of etonogestrel implant discontinuation and findings from this study will also be helpful in improving the reproductive healthcare system.

MATERIALS AND METHODS

This retrospective cohort study was conducted after the Ethics Committee of SIRB (Si 406/2020(IRB2)) approved the study. This study enclosed women who received an etonogestrel contraceptive implant removal at the family planning clinic, Siriraj Hospital between May 2015 and December 2019. In Siriraj Hospital, it is common platform at our institution to provide contraceptive counselling and appropriate instruction regarding the chosen method. The etonogestrel implant available in Thailand during the study period was Implanon NXT®, a single-rod progestin-only device containing 68 mg of etonogestrel preloaded in a disposable applicator and approved by the US FDA for a duration of three years of use.

First, medical records of women who had an etonogestrel implant inserted during the study period were identified. The investigators did not exclude women based on the indication of implant use. Regarding preciseness, two investigators reviewed each medical chart and discrepancies noted were normalized through discussion amongst all investigators. The authors recorded the following parameters from each medical record: sociodemographic characteristics, reproductive and obstetric history, utilization past contraceptive history, implant insertion & removal date, reason for requesting removal, documented bleeding pattern and acceptability. Bleeding patterns, which were recorded at the one year, two year, and three year visit was assorted as either regular bleeding or unscheduled bleeding. Documented bleeding complaints were ascertained by reviewing the charts and classified as acceptable or unacceptable.

The primary outcome was an early removal rate of the etonogestrel implant. "Early removal" was defined as removal of etonogestrel implant within 36 months of insertion. Furthermore, a medical record documented implant removal as early discontinuation either at our institution or any other outside clinic within 36 months after implant insertion. Last but not least, secondary outcomes and associated factors for early removal were also documented.

The data was analyzed using the SPSS software package (SPSS version 18.0; IBM). The demographic data and descriptive statistics were presented as percentage and Mean ± SD while the association between variables and implant discontinuation status was identified by a Chi-square test and Fischer's exact test. A p-value <0.05 was considered statistically significant.

RESULTS

A total of 1,030 women with records of etonogestrel implant insertion during the study period were assembled. The mean age of the participants was 28.6 ± 6.9 years and the majority of women in this study were married and/or parous women. The mean BMI was 23.2 ± 4.7 kg/m^2. and the most recently used method of contraceptives was oral contraceptive pills (35.3%). Also, at least 15% of the women had never used any contraceptive method (Table 1).

TABLE 1. Sociodemographic characteristics of participants.

Characteristics	n (%) (N=1030)
Gravidity	
Nulligravid	113 (11)
Gravidity = 1	558 (54.2)
Gravidity ≥ 2	359 (34.8)
Parity	
Nulliparous	155 (15)
Parity = 1	617 (60)
Parity ≥ 2	258 (25)
BMI	
< 25 kg/m^2	693 (67.3)
≥ 25 kg/m^2	337 (32.7)
Marital status	
Married	933 (90.6)
Single	69 (6.7)
Divorced	28 (2.7)
Recent contraceptive method	
Hormonal method	
Oral contraceptive pills	364 (35.3)
DMPA	168(16.3)
3-year Implant	70 (6.8)
5-year Implant	42 (4.1)
Emergency contraceptive pills	28 (2.7)
Progestin only pills	6 (0.6)
Non-hormonal method	
Male condom	141 (13.7)
Cu-IUD	24 (2.3)
Withdrawal	17 (1.6)
Others	16 (1.6)
Never use	154 (15.0)

About 21% of women (218/1,030) recorded early etonogestrel implant discontinuation (within three years following implant insertion (Table 2)). Among them who had early implant removal, the most commonly cited reason was an intention of becoming pregnant (32.1%), bleeding disturbances (22.5%) and weight gain (12.8%) (Table 3). The "others" parameter in Table 3 includes loss of libido, mood changes, desire for male contraception and a desire for tubal sterilization. For most women in early removal group, the contraceptive method post etonogestrel implant removal was oral contraceptive pills. Moreover, 44% of the women who had used etonogestrel implants until the end desired to have it reinserted after removal.

The authors conducted contemplation to explore the factors associated with etonogestrel implant removal before three years. The associated variables of early etonogestrel implant removal were BMI (p-value = 0.021) and acceptability of bleeding patterns at one year (p-value < 0.001) and two years (p-value < 0.001) after insertion (Table 4). Gravidity, parity and marital status had no relation or impact on the decision to have the etonogestrel implant removed. As mentioned previously about BMI, the authors noticed that a low BMI was associated with early removal of etonogestrel implants (OR = 1.71; p-value < 0.05).

TABLE 2. Duration of etonogestrel implant use at the time of removal.

Duration	n (%) (N=1030)
Early removal	218 (21.2)
< 6 months	17 (1.7)
6 months to 1 year	54 (5.2)
> 1 year to < 2 years	69 (6.7)
≥ 2 years to < 3 years	78 (7.6)
No early removal (≥ 3 years)	812 (78.8)

TABLE 3. Reasons for early removal of etonogestrel implant.

Reason	n (%) (N=218)
Wish to become pregnant	70 (32.1)
Bleeding disturbance	49 (22.5)
Weight gain	28 (12.8)
Acne	23 (10.6)
Separation	23 (10.6)
Dizziness	16 (7.3)
Headache	14 (6.4)
Insertion site problem	5 (2.3)
Others	26 (11.9)

DISCUSSION

Our study shows important data and useful insights about the patterns of etonogestrel implant use and reasons for early removal among users in Thailand. The study also provides the trends in usage as information from all users requesting removal was collected and not just from those who requested early removal of the device. The population in this study was on average around twenty-eight years of age and had a normal BMI which is representative of the Thai population.

In our study, 21% of etonogestrel implant users had their implant removed within three years of insertion. The result was lower than studies in other developing countries.[21-22] This discrepancy might be due to sample size, timing of the study, socio-cultural differences, and the government's role in minimizing early removal of etonogestrel implant. The desire to become pregnant was the most common reason for early removal of implants in this study (32%), which infers that counseling services given to patients about the contraceptive method and its duration during inception is very essential. Moreover, side-effects were cited as the most common reasons for early removals, especially unscheduled bleeding. This has also been found in other studies.[10-13] In comparison to Thai population-based study, Assavapokee N et al. found that the discontinuation rate of etonogestrel implant within 3 years was 16.9% and unscheduled bleeding was the main reason for early implant removal.[23]

Of all the demographic characteristics and clinical factors that we studied; one-year and two-year acceptability of bleeding problems and BMI were the most cited factors associated with early removal of the etonogestrel

TABLE 4. Bivariate comparison of characteristics by etonogestrel implant discontinuation status.

Characteristics	Early removal (N = 218)	No early removal (N = 812)	p-value
Gravidity			0.255
Nulligravid	30 (13.8)	83 (10.2)	
Gravidity = 1	110 (50.4)	448 (55.2)	
Gravidity ≥ 2	78 (35.8)	281 (34.6)	
Parity			0.669
Nulliparous	37 (17.0)	118 (14.5)	
Parity = 1	128 (58.7)	489 (60.2)	
Parity ≥ 2	53 (24.3)	205 (25.3)	
BMI			0.021
< 18.5 kg/m^2	41 (18.8)	97 (12.0)	
18.5-24.9 kg/m^2	105 (48.2)	450 (55.4)	
≥ 25 kg/m^2	72 (33.0)	265 (32.6)	
Marital status			0.065
Married	189 (86.7)	744 (91.6)	
Single	22 (10.1)	47 (5.8)	
Divorced	7 (3.2)	21 (2.6)	
Bleeding problem			
1-year after insertion			
Bleeding pattern			0.539
Regular bleeding	18 (12.1)	84 (10.3)	
Unscheduled bleeding	131 (87.9)	728 (89.7)	
Acceptability			<0.001
Acceptable	135 (90.6)	797 (98.2)	
Not acceptable	14 (9.4)	15 (1.8)	
2-year after insertion			
Bleeding pattern			0.196
Regular bleeding	6 (10.3)	109 (16.9)	
Unscheduled bleeding	52 (89.7)	536 (83.1)	
Acceptability			<0.001
Acceptable	53 (91.4)	635 (98.4)	
Not acceptable	5 (8.6)	10 (1.6)	
3-year after insertion			
Bleeding pattern			1.000
Regular bleeding	0 (0)	185 (23.9)	
Unscheduled bleeding	0 (0)	590 (76.1)	
Acceptability			1.000
Acceptable	0 (0)	743 (95.9)	
Not acceptable	0 (0)	32 (4.1)	

implant. First-year unscheduled bleeding was found in 89% of women in this study, which emphasizes the importance of counseling patients about expected side-effects and appropriate management before offering the contraceptive choice. Acceptance of potential side-effects before choosing the contraceptive method may decrease the early discontinuation rate. Only a few women reported acne, weight increase, dizziness, and headache as reasons for early removal of the etonogestrel implant. The side-effects found in our study are corresponding to the potential side-effects of the etonogestrel implant. In this study, the author observed that Low BMI was associated with early removal of etonogestrel implants. There are studies support that the lower basal BMI may account for the higher percentage of irregular bleeding.[24] Moreover, obese women were 2.6 times less likely to have implant removal for bleeding as compared with normal weight women. It could be hypothesized that the effect of higher endogenous estrogen levels in women with higher BMI stabilizes the endometrium.[14]

Moreover, we also noticed in this study that almost half of the women who had used etonogestrel implants until the end desired to have it reinserted after removal, demonstrating acceptability and satisfaction of this method. As we know that etonogestrel implants offer the benefits of long action of use and reversibility. In this study, we figured out that the most common reasons for intending to use an etonogestrel implant was the desire for a long-acting contraceptive method that did not require frequent follow-ups.

CONCLUSION

In conclusion, the study revealed that early etonogestrel implant discontinuation rate is significant and that the main reasons for early removal was a wish to become pregnant and/or bleeding side effects. The study also suggests that a lower BMI and unacceptability of bleeding problems increases the likelihood of early removal of this contraceptive method.

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Conflict of interests: The authors declare that they have no conflict of interests.

Ethical issues: This study was conducted after obtaining necessary permissions from the Ethics Committee of SIRB (Siriraj Institutional Review Board: 406/2563(IRB2)). All ethics were respected in this study.

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