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Etonogestrel Implants in Adolescents: Experience, Satisfaction, and Continuation

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A B S T R A C T

Purpose: Few studies have evaluated the use of etonogestrel subdermal implants (ESI) by U.S. adolescents. We assessed several factors, including continuation rates, the association of implant removal with postimplant management of nuisance bleeding, and the relation between bleeding and body mass index.

Methods: We reviewed 116 charts from all adolescent females with ESI placement in our adolescent medicine clinic from January 2010 to August 2013. Data were obtained from follow-up encounters up to 36 months after insertion.

Results: Of the 116 adolescents, 94% were nulliparous. Follow-up data were available for 81% (n = 94). Early ESI removal was defined as removal <32 months. ESI continuation rates at 12, 24, and 32 months were 78%, 50%, and 40%, respectively; this represents an early removal rate of 35% (33 of 94). Nuisance bleeding occurred in 48% (45 of 94). Of those complaining of bleeding, 63% (25 of 40) received medication management. Resolution of bleeding occurred in 25% of those in the early removal group versus 15% in the full retention group. Early implant removal due to nuisance bleeding occurred in 18% (17 of 94). There was no significant association between body mass index, nuisance bleeding, and early ESI removal.

Conclusions: Implant continuation rates were quite high at 12 and 24 months, with 40% of patients reaching 32 months retention, providing a significant period of pregnancy prevention. Treatments for nuisance bleeding were often not prescribed and when they were, medication regimens varied among providers. An evidence-based protocol for medication management, combined with more routine use of appropriate medications and preventive or long-term therapies, may help improve continuation of ESI.

IMPLICATIONS AND CONTRIBUTION

Adolescents with etonogestrel subdermal implants had good continuation rates: 78% at 12 months, 50% at 24 months, and 40% at 32 months. Half of patients with early removals discontinued because of nuisance bleeding. Only 63% of patients with early removals received medication management; among these, persistent bleeding occurred in 67%.

The U.S. teen birth rate remains a significant problem, despite a reduction by 32% between the peak year of 1991 and 2008 [1]. Unintended pregnancies occur in 82% of pregnant adolescents aged 15–19 years and 60% of pregnant young women aged 20–24 years [2,3]. The 2006–2008 National Survey of Family Growth found that teenagers' use of contraceptives has remained largely unchanged since 2002. Among sexually experienced

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females, the condom is still the most commonly used method of contraception (95%), followed by withdrawal (58%) and the pill (55%) [4]. These user-dependent and shorter term reversible contraception methods pose a challenge to adolescents because of the proven risk of inconsistent or incorrect use [5]. Studies have shown that most pregnancies result from user-related method failure, not failure of the method itself [5]. Therefore, recent recommendations call for long-acting, reversible contraception (LARC) methods—which include intrauterine devices (IUDs) and contraceptive implants such as the etonogestrel subdermal implant (ESI)—to be used as the first-line contraceptive methods for both nulliparous and parous adolescents [6,7].

Despite the proven safety, effectiveness, and cost-effectiveness of LARC, only 4.5% of 15- to 19-year-old females and 8.3% of 20- to 24-year-olds used LARC from 2002 to 2010 [8]. This LARC use represents primarily insertion of IUDs; in 2009, implant use was estimated to be only 1% [8]. Few studies have assessed the continuation and satisfaction rates of adolescents using LARC methods. An exception is the Contraceptive CHOICE study, which showed that 81% of females aged 14–19 years using LARC methods free of cost continued at 1 year, compared to 80%–85% of older women [9]. Females aged 14–19 years had higher discontinuation rates at 1 year for non-LARC methods compared to women aged >25 years (53% vs. 44%) [9]. Adolescents and older women were equally satisfied with LARC methods [9].

The CHOICE study found that 10% of all implant users of all ages reported discontinuing the method because of unpredictable bleeding [10]. In an open-label clinical trial of Implanon, comparable discontinuation rates for implant users were reported: 13% of women aged 18–40 years discontinued their implant because of bleeding irregularities [11]. Casey et al. [12] found that obese women were 2.6 times less likely to have ESI removal for bleeding versus normal-weight or overweight women, after adjusting for age and parity. On the other hand, Mansour et al. [13] found that lower-weight women had less bleeding/spotting than heavier women. However, no studies have investigated the relationship of body mass index (BMI) with early ESI removal in adolescents.

ESI has been demonstrated to be the most effective LARC method [14], yet only 1% of adolescents use it. More needs to be learned about why the method is not more widely used by nulliparous adolescents, reasons for early discontinuation, and effectiveness of management of nuisance bleeding.

To address these gaps, we conducted a retrospective chart review of all adolescent females who had ESIs placed in our outpatient adolescent medicine clinic over 3 years. We investigated demographic factors, BMI, contraceptive and reproductive history, discontinuation rates, reasons for implant removal, and side effects and their management. We aimed to identify factors associated with implant removal that might be modified to increase length of ESI retention, particularly medical management of side effects.

Methods

Design

This retrospective study was approved by the University of Rochester Research Subjects Review Board. We used current procedural terminology codes through the electronic medical record to identify all 119 charts with codes for an ESI placement at the Outpatient Adolescent Medicine Subspecialty Clinic at Strong Memorial Hospital between January 1, 2010, and August 1, 2013. We reviewed records of follow-up clinic and telephone encounters made to Adolescent Medicine (AM) and General Pediatrics (GP) clinics and an affiliated school-based health center, from time of implant placement through 36 months after insertion (approved length of retention). Because data were analyzed in February 2015, 25% of patients had not yet reached 32 months postinsertion, but all had been in the study for at least 18 months.

Exclusion criteria were age <13 years and no documentation of ESI insertion or contraception or reproductive history. Three charts were excluded; two had no documentation of ESI placement and the third was a duplicate chart.

Contraception was provided at usual cost, and ESIs were covered by all patients' insurance.

Data collection

Data collected at time of ESI insertion included demographic data, insurance type, BMI, history of sexually transmitted infections (STIs), prior and current methods of contraception, and parity. We reviewed office visit and phone call records from AM or GP clinics up to 36 months after ESI placement. We collected data regarding BMI, complications immediately after insertion, reported side effects and their management, and pregnancy and satisfaction with the implant and ESI outcome (continuation or removal). For those with implant removal, we recorded reason(s) for discontinuation and new method of contraception selected. In patients who had an ESI inserted, removed, and replaced around 36 months, only the initial insertion and removal were considered in the analysis.

Statistical analysis. To evaluate interrater reliability, two investigators (L.O. and S.B.) each independently reviewed the same 10 records. There were no remarkable differences in data interpretation, and subsequent records were divided between both investigators and reviewed.

Results were summarized using standard descriptive statistics, including frequency and percentages for categorical variables and mean, median, and standard deviation for continuous variables. ESI continuation rates were calculated using a Kaplan–Meier survival curve. A power calculation was not performed as we planned to enroll all potentially eligible adolescents for this descriptive study.

Results

Demographics

A total of 116 patients were included in the study: 46% white, 40% black, and 12% Hispanic (Table 1). Mean age was 17 years, and most patients were nulliparous (94%). About 52% of patients had public insurance, whereas 39% had private insurance. Contraception was subsidized by insurance for all patients. Mean BMI was 26 kg/m^2; 15% of patients were overweight and 19% were in the obese range. About 11% of patients had a history of an eating disorder.