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Use of the Copper T380A Intrauterine Device by Adolescent Mothers: Continuation and Method Failure

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Abstract

Study Objective—This report contributes to limited empirical data regarding use of the Copper T380A intrauterine device among adolescent mothers.

Design—We conducted a retrospective case series of adolescent mothers age 15 to 21 years whose index delivery occurred before age 18 and met study inclusion criteria.

Setting—All adolescent mothers received obstetrics and gynecology care at one urban clinical site in Washington, DC.

Participants—Each participated in a teen secondary pregnancy prevention program from April 2002 to November 2008 and used the Copper T380A intrauterine device.

Main outcome measures—We abstracted data to evaluate intrauterine device utilization, expulsion, removal, and pregnancy diagnosis.

Results—Thirty-nine adolescent mothers met inclusion criteria. Six patients had partial or complete expulsion (15%; 95% CI 6–29%), and 10 requested removal (26%; 95% CI 14–41%) within 24 months of placement. Four users (10%; 95% CI 3–23%) became pregnant. Three had an intrauterine device in place at time of conception, while one became pregnant due to unrecognized device expulsion.

Conclusions—In this case series, many adolescent mothers discontinued Copper T380A use within two years of placement. The numbers of patients were too limited to provide stable estimates of contraceptive effectiveness. Larger comparative studies will further evaluate both effectiveness and acceptability of this device among teen mothers.

Keywords

intrauterine device; Copper T380A; contraception; adolescent; teen mothers

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Introduction

The intrauterine device (IUD) is a highly effective form of contraception that has not been recommended for adolescent populations until recently. Prior concerns regarding increased infection risk and subsequent infertility among younger age groups are unwarranted[1, 2]. The World Health Organization and the American College of Obstetricians and Gynecologists now endorse its use in this group[3].

A recent systematic review found only six cohort or case-control studies of IUD use among adolescents, all published prior to 1998, none of which were among U.S. populations[4]. Since then, only three studies have reported findings related to IUD use in an exclusively adolescent or young adult population. A questionnaire study, case-series report, and small randomized controlled trial reported on expulsions, continuation, and satisfaction over varying time periods[5–7].

Efficacy trials report a first-year pregnancy rate of 0.5–0.8% across all ages for the Copper T380A (CuT380A)[8]. These rates may not be specific to an adolescent age group with overall higher fecundity. Other studies suggest expulsion rates may be greater in younger IUD users, particularly for copper-containing devices[9]. In this retrospective case-series report, we describe a sample of adolescent mothers whose index delivery occurred before age 18 while enrolled in a teen parenting program, and who used the CuT380A. We report device expulsion, removal, pregnancy, and continuation.

Materials and Methods

We reviewed the charts of a sample of adolescent mothers age 15 to 21 years who delivered prior to age 18 while participating in a teen secondary pregnancy prevention program. Program records were reviewed to identify all participants between April 1, 2002 and November 30, 2008 who elected intrauterine contraception. The study was approved by the Institutional Review Board of MedStar Health Research Institute.

Overall, 316 adolescent mothers participated in a subsequent teen pregnancy prevention program at one health center. Adolescent mothers who were 21 years or younger at the time of insertion, had at least one child, and used the Copper T380A intrauterine device met study inclusion criteria. Thirty-nine eligible patients were identified. Two patients had a second IUD, resulting in 41 IUD insertions among this sample. All patients had a negative pregnancy test at time of insertion, and no pregnancies occurred among users within 45 days of insertion.

Complete expulsion was defined by the IUD completely exiting the uterine cavity, while partial expulsion was defined as having some part of the IUD remaining in the uterine cavity. Complete expulsion was confirmed by ultrasound. Partial expulsion was identified by physical exam and noted by the examining practitioner. Removal of the IUD was documented by practitioner medical record notation of performing a removal. Pregnancy was verified by urine pregnancy test and ultrasound confirmation. Time-to-event was based on the date of insertion documented in the medical record. Univariate and descriptive analysis was performed using STATA 10 (College Station, TX, USA). Normally distributed data were represented by means, and non-normally distributed data were represented by medians.

Results

Most participants (93%) were Hispanic. Median age of participants was 18 years old at time of placement (inter-quartile range 18–20). Seventeen percent had been pregnant more than once, and 21% had more than one child.

Forty-one CuT380A devices were inserted in the 39 adolescent mothers (including the two reinsertion procedures). All but one device were placed at least six weeks after delivery. Median time from delivery to IUD placement was 12 months, with a range of 1 to 43 months. Three did not return for follow-up after insertion. All but one patient had a follow-up visit within six months. Mean time from insertion to first clinical follow-up visit was 1.2 months, excluding one outlier whose first and only known follow-up visit was 47 months after insertion. No known uterine perforations occurred at the time of insertion. One patient had severe cramping and pelvic pain at the time of placement; she elected to have the device removed within six hours.

Six patients experienced partial or complete expulsion (15%; 95% CI 6–29%). Of those, four were partial and two were complete expulsions. One complete expulsion resulted in pregnancy. (Table 1) All but one expelled IUD (83%; 95% CI 41–99%) were placed six weeks or more after childbirth. The median time from childbirth to insertion was 4 months among users experiencing an expulsion (inter-quartile range 2 to 10 months).

Four users became pregnant (10%; 95% CI 3–23%), 3 of which occurred within one year of placement. The pregnancies occurred at 3, 4, 9, and 57 months after insertion, and 3 ended with live births. Among users who had a pregnancy, three occurred with the IUD in the uterine cavity. (Table 1)

Ten users requested removal of their CuT380A within 24 months of insertion (26%; 95% CI 14–41%). Three desired removal within six months (8%; 95% CI 2–20%) and six requested removal within one year of placement (15%; 95% CI 6–30%). Patient-specified reasons for removal were abstracted from the medical record when noted. Seventeen of the nineteen had a recorded reason for removal. Two specifically removed their IUD because pregnancy was desired, and subsequent birth control was not initiated. Two others had their IUD removed with planned insertion of the etonorgestrel implant, and implantation was performed the same day. Among the remaining thirteen, one or more reasons for removal were noted. Five noted vaginal spotting or bleeding, two stated their sexual partners were bothered by IUD strings, and six included cramping as a reason for removal.

Birth control initiated the day of elective removal was also noted for each patient, except the two who desired pregnancy. Nine received an injection of depomedroxyprogesterone the day of removal, two had the etonorgestrel implant inserted as planned, five received a prescription for oral contraceptives or the ethinyl estradiol transdermal patch, and one did not desire another form of contraception at that time.

Most patients (72%; 95% CI 56–84%) had either complete follow-up data to termination of CuT380A use (due to expulsion, pregnancy, or elective removal) or 24 months of follow-up. Eighty-five percent (95% CI 71–94%) had follow-up for at least 12 months post-insertion. Sixteen users (41%; 95% CI 27–57%) had their CuT380A in place at the time of data collection. Of those 16, nearly one-third (31%; 95% CI 12–56%) had their CuT380A in place for over two years. Of the 72% (28/39) patients who had either complete follow-up data to termination of CuT380A or at 24 months of follow-up, the continuation rate at one year was 64% (18/28) and at two years was 39% (11/28).

Discussion

The present findings supplement limited existing empirical data to guide counseling and practice on IUD use among adolescents and young adults. The outcome frequencies in this study were based on sparse numbers, however, and the confidence intervals around these proportions were wide, indicating statistical instability. Nevertheless, the higher than expected number of pregnancies diagnosed with the IUD in the uterine cavity indicates the need for additional data.

Many adolescent mothers decided to discontinue their CuT380A within two years of insertion. Discontinuation rates with depo-medroxyprogesterone acetate are also high[10]. In health care settings that support access to multiple long-acting reversible contraception (LARC) methods, the etonogestrel implant may be an attractive alternative.

Among this sample of adolescent mothers, several reasons were reported for elective removal. Two patients in this sample reported desire to conceive as a reason for removal. As the median time from delivery to insertion was 12 months, an inter-pregnancy interval of two years was achieved in these two patients, as well as others whose reason for removal was not specifically desire to conceive.

Limitations of this study include its retrospective design and small sample size. Additionally, the follow-up period varied among patients. Nonetheless, this is one of few studies with a contemporary sample of adolescent mothers using an IUD. Furthermore, 72% of the sample had either complete follow-up to discontinuation of IUD use or at least 24 months of follow-up.

IUDs represent an important contraceptive option for sexually active women who wish to avoid pregnancy. Two recent reports examine attitudes among adolescents and young adults concerning IUD use. Findings suggest IUD knowledge is limited, but their use is viewed favorably following education, and providers may influence these attitudes[11, 12]. Pilot data and a small case-series reported continuation, expulsion, and pregnancy in a combined total of 29 adolescent CuT380A users[5, 6]. It appears likely that IUD use will increase among these younger age groups, and this report contributes to the limited published data among adolescents.

Our findings suggest that pregnancies among adolescent mothers using IUDs may occur more frequently than previously reported, and duration of method continuation may be more limited than desired. Potential users may benefit from counseling regarding other LARC methods in addition to the IUD, and reasons for elective removal should be considered when counseling patients on contraceptive options. Larger comparative studies are needed to evaluate both effectiveness and acceptability of this device in teen mothers.

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Table 1

IUD method failure among 39 CuT380A users

Outcome of method failure	n =	Percent	95% CI
Expulsion	6	15	6 – 29
Partial	4	10	3 – 23
Complete	2*	5	1 – 16
Pregnancy	4	10	3 – 23
Ectopic	0	0	
IUD in utero	3	8	2 – 20
IUD not in utero	1*	3	0 – 12

* One complete expulsion also represents the pregnancy diagnosed with no IUD in utero