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Contraception 85 (2012) 56 – 62

Contraception

Original research article

Contraceptive discontinuation and repeat unintended pregnancy within 1 year after an abortion☆

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Received 13 February 2011; revised 12 May 2011; accepted 13 May 2011

Abstract

Background: We examined 12-month hormonal contraceptive continuation and pregnancy rates by abortion history.
Study Design: Women who wanted to avoid pregnancy for at least 1 year were recruited at four San Francisco Bay area family planning clinics on regular service days and on abortion care days. Participants completed baseline and follow-up questionnaires. Multivariable Cox models assessed the factors associated with method discontinuation and pregnancy.
Results: Women who were enrolled into the study on the day of their abortion were 20% more likely to discontinue their contraceptive method than women who never had an abortion [adjusted hazard ratio (AHR)=1.21, 95% confidence interval (CI)=1.03–1.42]. Women who had a recent abortion or previous abortion were 60% more likely to have a pregnancy during follow-up than women who never had an abortion (AHR=1.63, 95% CI =1.21-2.20, and AHR=1.66, 95% CI=1.18-2.33, respectively).
Conclusion: The experience of having an unintended pregnancy and abortion does not lead to behavioral changes that protect against another unintended pregnancy.

Keywords: Postabortion; Repeat abortion; Unintended pregnancy; Young women; Longitudinal

1. Introduction

In spite of an expanding menu of contraceptive options, women in the United States continue to experience high rates of unintended pregnancy, with nearly half of all pregnancies identified as unintended [1]. Of these, 40% end in abortion [1]. One of the main reasons for these high rates is inconsistent and incorrect use of contraception. Among women undergoing abortion, 54% report contraceptive use (most often condoms or oral contraceptives) during the month they became pregnant. However, much of this use is ineffective, with 49% of condom users and 76% of pill users reporting incorrect or inconsistent use [2].

Among women who have an abortion, about half go on to have a repeat abortion [3]. While having one abortion is an indicator of unintended pregnancy, repeat abortion signals the need for a greater level of support for improved contraceptive use [3,4].

Almost all abortion clinics offer contraceptive counseling as part of postabortion care [5], and many women state an intention to use highly effective methods [6,7]. The immediate abortion experience may create a "teachable moment" for young women who have experienced an unplanned or mistimed pregnancy. In education theory, a "teachable moment" is when a unique situation arises in which a person personally engages with an issue or problem.

☆ This study was supported by National Institute of Child Health and Human Development Grant R01 HD045480.

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0010-7824/$ – see front matter © 2012 Elsevier Inc. All rights reserved.
doi:10.1016/j.contraception.2011.05.009

The high personal interest increases the potential for listening and learning, usually to avoid the problem again in the future [8].

For example, women receiving negative pregnancy test results are an ideal group on which to focus contraceptive interventions because they are at high risk for unintended pregnancy, are easily accessible when they present at the clinic for the test and are particularly receptive to messages about how to avoid the situation again [9,10]. Similarly, women who receive abortion services may be motivated to learn how to avoid another unintended pregnancy. It is often assumed that women who experience the serious consequence of an unplanned pregnancy and subsequent abortion change their behavior and become more motivated to use contraception consistently, at least for the short term.

However, women who undergo abortion may have unique characteristics that make them a high-risk group and more susceptible to repeat unintended pregnancies than other patient populations. The very factors that contribute to their unintended pregnancies are also associated with poor method use, including stressful life events, impulsive behavior, denial of risk, inability to negotiate safer sex practices and low self-efficacy [11,12]. One study found that women undergoing repeat abortions may have better access to contraception but struggle with using methods correctly [3]. Some women believe that there is a delay in the return to fertility after an abortion. Others may have the naïve expectation that they will never have sex again and thus do not need contraception [13].

Few studies have compared long-term patterns of contraceptive use and pregnancy among women after an abortion with those who have never had an abortion. California is an ideal backdrop to examine this question. This state provides women wide access to abortion and family planning services and limits cost barriers due to Medi-Cal and Family PACT, a state-sponsored family planning insurance program [14]. In an environment with limited cost and access barriers, variations in contraceptive use due to individual factors can be assessed.

We compare 12-month contraceptive continuation among three groups of women who were selecting to initiate a reversible hormonal contraceptive method: (1) women who were enrolled on the day they were having an abortion, (2) women who had a previous abortion at some other time before enrollment and (3) women who had never had an abortion. We also sought to assess the risk of becoming pregnant again within 12 months. Our hypothesis was that young women in both groups who have had an abortion would have higher rates of contraceptive discontinuation than those who never had an abortion despite stating their intention to avoid another unintended pregnancy. Because they had experienced a teachable moment, we expected that women who initiated a method after having undergone an abortion on the day of enrollment would have slightly better outcomes in the immediate 12-month follow-up period than women who had a previous abortion at some other time.

2. Materials and methods

2.1. Study setting and participants

The study was designed to examine continuation rates of newer combined hormonal contraceptives, the patch and vaginal ring, compared with oral contraceptives and depot medroxyprogesterone acetate (DMPA) to see if they result in longer use; results for these outcomes and overall sample characteristics are reported elsewhere [15]. The study was conducted from September 2005 to July 2008 at four Planned Parenthood clinics in the Northern California communities—Vallejo, Richmond, East Oakland and Hayward.

Women were recruited on regular family planning days (including teen clinic days) and on days devoted to abortion care. We enrolled consecutive women who presented for reproductive health care at the study clinics and selected to initiate a hormonal contraceptive after they received standard clinical care from clinic providers. Women were eligible for inclusion in the study if they were ages 15 to 24 years, not married, could read English or Spanish, not pregnant, not desiring pregnancy within the next year and able to provide written informed consent and comply with study procedures to be contacted over the next 12 months.

During enrollment, 1605 women were screened and 1387 women were enrolled; 187 women declined to participate, and 31 women did not meet eligibility criteria. Follow-up data on contraceptive use, discontinuation and pregnancies were available for 1316 women who completed at least one follow-up questionnaire. Follow-up data were available for 1237 participants at visit 2, 1256 at visit 3 and 1208 at visit 4. An attrition analysis revealed no significant differences between women who were lost to follow-up and those who contributed follow-up data in terms of intention to use the method in the next year, as well as sociodemographic and reproductive health factors, including age, race/ethnicity, low income, previous use of hormonal contraception and previous birth or abortion.

2.2. Procedures

Participants completed self-administered electronic questionnaires, at baseline and at 3, 6 and 12 months postbaseline. Questionnaires were pilot tested to ensure that the instrument was at an appropriate reading level and understood by respondents. The questionnaires, which were available in English and Spanish, were accessed through the Internet on laptop computers and were administered either at the clinic site or at a location convenient for the participant or when necessary by telephone. Study participants received $30 for completing

the baseline and 12-month follow-up questionnaires and $20 for completing the 3- and 6-month follow-up questionnaires.

The study was approved by the Committee on Human Research at the University of California, San Francisco. All participants provided written informed consent. Because under California law, minors may consent to their own confidential reproductive medical and contraceptive care and the study posed minimal risk, parental consent for participation for minors was waived.

2.3. Study measures

The primary outcomes of interest were continuation of contraceptive methods and pregnancies over the 12-month follow-up period as assessed in the follow-up questionnaires. Participants were asked if they started the method selected, if they were using it currently and whether they used the method continuously. If participants discontinued the method, they were asked how long they used it. We defined an unintended pregnancy as any pregnancy occurring during the 1-year follow-up period. Retrospective reports of intention are unreliable. Women often are ambivalent about pregnancy intentions, they fluctuate frequently with partner changes and life changes and after a pregnancy has occurred. Therefore, we chose to use a prospective definition given that the desire to avoid pregnancy for 1 year was one of the eligibility criteria for the study. Information on pregnancies was collected via self-report at each follow-up, urine pregnancy tests at 6- and 12-month in-person follow-up visits and medical record chart review at the study sites at the end of the 12-month follow-up period.

The primary independent variable of interest was abortion history as assessed on the day of enrollment into the study. Participants were categorized as (1) women who were having an abortion on the day of enrollment, (2) women who previously had an abortion at some other time prior to enrollment into the study and (3) women who never had an abortion. We conducted a chart review to confirm whether a reported abortion was a previous abortion or one that occurred on the day of enrollment.

Other independent variables were selected based on their theoretical importance in the model and their having been identified in the literature as affecting the risk of contraceptive discontinuation and pregnancy. Independent variables included sociodemographic characteristics, contraceptive and reproductive history, attitudes toward pregnancy and provider–patient interaction, all of which were measured at baseline. Sociodemographic characteristics included age, race/ethnicity, highest grade completed and employment status.

Contraceptive and reproductive history variables included the contraceptive method selected for initiation at baseline (pill, patch, ring or DMPA), whether the woman had a sexual partner, whether she had ever had a previous birth and whether she had ever had a previous abortion (aside from the one they may have had on the day of enrollment). Attitudes toward pregnancy variables included those that assessed pregnancy intentions and future plans. Participants were asked the question: "How sure are you that you will use the baseline method selected for one year?" to gauge intent to use contraception (very sure, sure, somewhat sure and not at all sure) [16]. Participants were also asked their likelihood of becoming pregnant in the next 3 months by their main partner (not at all likely, a little likely, somewhat likely, very likely or do not know). To assess pregnancy desire, participants were asked how they would feel if they became pregnant in the next 3 months (very upset, somewhat upset, I would not care, somewhat pleased, very pleased and do not know) and their plans if they became pregnant by their main partner in the next 3 months (have an abortion, keep the baby or give it up for adoption or do not know). Provider–patient interaction variables included whether the pill, patch, ring and DMPA were discussed at the visit, who made the decision to initiate the method (self or self and/or provider) and how strongly they agreed to the statement that she chose the method due to provider counseling (strongly agree, agree, neutral, disagree, strongly disagree).

2.4. Data analysis

Women who completed at least one follow-up were included in the analyses; for those lost to follow-up during the study period, data are included up until the point when they are lost to follow-up (i.e., censored). To compare women with no follow-up data to women contributing study data, we completed an attrition analysis.

We examined the characteristics of the study population by abortion history as reported at baseline: abortion on the day of enrollment, previous abortion prior to enrollment or no previous abortion. Groups were compared using χ^2 statistics. We plotted 12-month contraceptive continuation by method with Kaplan–Meier estimates of the probability of discontinuation. Life table analysis was then used to estimate survival rates for contraceptive continuation and for pregnancy. The log-rank test was used to compare survival rates for each group.

To assess the factors associated with method discontinuation and pregnancy, we estimated Cox proportional hazards models [17]. Each woman contributed observation time to the analysis for the period in which she participated; individuals were censored when lost to follow-up, when the event (discontinuation or pregnancy) occurred or when they exited the study. To check the assumptions of the proportional hazards models, we estimated the Schoenfeld residuals. Independent variables were selected from the baseline data. Bivariate analyses were first conducted to examine the unadjusted associations with contraceptive discontinuation and pregnancy for each variable. Then covariates were selected for inclusion in the multivariable models based on biologic or social plausibility as evidenced in the literature. Likelihood ratio tests were used to estimate the final simplest

models. Missing values are not included in the analyses. All multivariable models controlled for differences by age, race/ethnicity, highest grade completed and clinic site. Adjusted hazard ratios (AHRs) and 95% confidence intervals (CIs) were estimated. Statistical analyses were performed using Stata 11 (Stata Corporation, College Station, TX, USA).

Table 1
Sociodemographic characteristics, contraceptive and reproductive history and pregnancy attitudes of the study population, by abortion history

	Enrolled on day of abortion (*n*=384; %)	Had an abortion previously (*n*=182; %)	Never had an abortion (*n*=750; %)	Total (%)	Total (*n*)
Total	29.2	13.8	57.0	100.0	1316
Sociodemographics					
Age (y)**					
15-17	25.3	21.4	44.5	35.7	470
18-19	31.3	31.3	32.5	32.0	421
20-24	43.5	47.3	22.9	32.3	425
Race/ethnicity**					
White (reference)	8.6	7.7	12.8	10.9	143
Latina	27.1	20.3	27.7	26.5	349
Black	44.8	48.9	27.7	35.6	469
Asian/Pacific Islander	7.6	10.4	12.9	11.0	145
Multiracial/other	12.0	12.6	18.8	16.0	210
Highest grade completed**					
Currently in high school	23.3	19.2	43.9	34.5	453
Less than high school	16.5	14.3	6.8	10.7	140
High school diploma or GED	30.9	31.9	23.9	27.0	355
Some college, vocational training or college degree	29.3	34.6	25.5	27.9	366
Work status**					
In school or employed	76.6	81.3	86.7	83.0	1,092
Not in school or employed	23.4	18.7	13.3	17.0	224
Contraceptive and reproductive history					
Contraceptive method selected at baseline**					
Pill	19.3	22.5	39.3	31.2	410
Patch	34.6	24.2	27.3	29.0	382
Ring	16.7	33.0	15.6	18.3	241
DMPA	29.4	20.3	17.7	21.5	283
Currently has a sex partner**	70.8	83.5	89.1	83.0	1,092
Previous birth**	31.8	31.9	10.5	19.7	259
Previous abortion (before index abortion)**	32.6	100.0	0.0	23.3	307
Pregnancy attitudes					
Very sure will continue method for 1 year	39.6	44.5	42.5	41.9	552
Likelihood of becoming pregnant in the next 3 months by main partner**					
Not at all or a little likely	43.5	55.5	63.3	56.5	743
Do not know	7.8	8.8	9.6	9.0	118
Very likely or somewhat likely	20.1	20.3	16.4	18.0	237
No current partner	28.6	15.4	10.7	16.6	218
Woman's feelings if got pregnant in the next 3 months**					
Very or somewhat upset	38.8	39.6	50.3	45.4	598
Do not know/would not care	48.4	40.1	32.1	38.0	500
Very or somewhat pleased	12.8	20.3	17.6	16.6	218
Plans if got pregnant in the next 3 months**					
Have an abortion	25.8	24.2	30.3	28.1	370
Have the baby or give up for adoption	21.6	37.9	38.0	33.2	437
Do not know	52.6	37.9	31.7	38.7	509
Provider–patient interaction					
Talked about all study methods at visit	16.9	10.4	13.1	13.8	182
Who made decision for method*					
Self	87.0	84.1	90.5	88.6	1,164
Self and/or provider	13.0	15.9	9.5	11.4	150
Chosen method due to provider counseling**					
Strongly agree/agree	58.0	52.7	46.0	50.4	662
Neutral	14.4	13.7	21.1	18.1	238
Disagree/strongly disagree	27.7	33.5	32.9	31.5	413

* $p<.05$.
** $p<.001$.

3. Results

3.1. Pregnancy attitudes and experience

Among the study population, 29.2% had an abortion on the day of study enrollment, 13.8% reported having a previous abortion at some other time prior to enrollment and 57.0% reported never having an abortion (Table 1). Among women who had an abortion on the day of enrollment, 33% had a previous abortion at some other time. Compared with women who never had an abortion, women who had an abortion on the day of enrollment or at some other time prior to enrollment were more likely to have had a previous birth. They were also more likely to report that it was somewhat or very likely they would become pregnant in the next 3 months. Women who had an abortion on the day of enrollment or at some other time prior to enrollment were also less likely to report that they would be very or somewhat upset if they became pregnant in the next 3 months than women who never had an abortion. Women who had an abortion on the day of enrollment or at some other time prior to enrollment were more likely to report provider involvement in their choice of method and were more likely to have chosen their method because of what their provider said compared with women who have never had an abortion.

3.2. Contraceptive discontinuation

The 12-month discontinuation rate was high for all groups of women; however, it was significantly higher among women who were enrolled on the day they were having an abortion than among women who never had an abortion [85.5 per 100 person-years (95% CI=80.8-89.5) vs. 78.4 per 100 person-years (95% CI=73.8- 82.8), respectively]. Women who had a previous abortion at some other time prior to enrollment also had a higher discontinuation rate than those who never had an abortion, but this difference was not statistically significant [85.2 per 100 person-years (95% CI=77.8-91.2) vs. 78.4 per 100 person-years (95% CI=73.8-82.8); not shown].

The multivariable model shows that having an abortion on the day of enrollment was a risk factor for method discontinuation after controlling for age, race/ethnicity, education and study clinic site (adjusted hazard ratio =1.21, 95% CI=1.03-1.42; Table 2). Women who selected to initiate the patch and DMPA were also more likely to discontinue their contraceptive method compared with those who selected to initiate the pill, and women who reported they were “very sure” they will continue their method for one year were less likely to discontinue than those who reported they were sure, somewhat sure, or not at all sure. None of the provider–client interaction variables were independently associated with contraceptive discontinuation and, therefore, were not included in the model.

3.3. Pregnancy rates

The 12-month pregnancy rate was significantly higher among women enrolled on the day they were having an abortion (30.0 per 100 person-years, 95% CI=25.6-35.1) and for women who had a previous abortion at some other time prior to enrollment (30.9 per 100 person-years, 95% CI=24.6-38.4) compared with women who never had an

Table 2
Adjusted hazard of discontinuation and pregnancy, by abortion history and other selected characteristics

	Adjusted hazard of contraceptive discontinuation[a] (*n*=1314)		Adjusted hazard of pregnancy[a] (*n*=1313)	
	Hazard ratio	95% CI	Hazard ratio	95% CI
Abortion experience				
Enrolled on the day of abortion[b]	1.21*	1.03–1.42	1.63**	1.21–2.20
Had an abortion previously at other time[c]	1.17	0.96–1.41	1.66**	1.18–2.33
Never had an abortion (reference)	1.00		1.00	
Previous birth	1.13	0.95–1.35	1.35*	1.01–1.82
Contraceptive method selected at baseline				
Pill (reference)	1.00		1.00	
Patch	1.87***	0.96–1.41	1.65**	1.21–2.26
Ring	1.17	0.95–1.43	1.80**	1.26–2.57
DMPA	1.24*	1.04–1.49	0.77	0.52–1.14
Very sure will continue method for 1 year	0.71***	0.63–0.81	0.86	0.67–1.09
Plans if got pregnant in the next 3 months				
Have an abortion	1.00		1.00	1.01–1.82
Have the baby or give up for adoption	1.13	0.96–1.34	1.51*	1.09–2.08
Do not know	1.03	0.88–1.21	1.23	0.90–1.69

[a] Multivariable models are adjusted for age, race/ethnicity, highest grade completed and study site in addition to the other factors shown.
[b] Includes all women recruited at their abortion appointment. Women in this group may also have had an abortion previously.
[c] Includes all other women not recruited at an abortion, but who have had an abortion.
* p<.05.
** p<.01.
*** p<.001.

abortion (17.5 per 100 person-years, 95% CI=14.9-20.4; not shown).

The adjusted hazards models confirmed the higher pregnancy rates among women who had an abortion after adjusting for other factors (Table 2). Women who were enrolled on the day they were having an abortion and women who had a previous abortion were significantly more likely to become pregnant during the 12-month follow-up period than women who have never had an abortion, controlling for age, race/ethnicity, education and study clinic site (AHR=1.63, 95% CI=1.21-2.20, and AHR=1.66, 95% CI=1.18-2.33, respectively). Women who selected to initiate the patch and ring were also more likely to become pregnant compared with those who selected to initiate the pill. Women who reported that they would have the baby should they become pregnant in the next year were also more likely to become pregnant than women who reported that they would have an abortion. None of the provider–client interaction variables were significantly associated with pregnancy.

4. Discussion

This study demonstrates that women who have abortions are a group of women at high risk of repeat unintended pregnancy. Even with an expanding menu of contraceptive options, including the ring and patch, contraceptive continuation is low in comparison with women who have never had an abortion. Our findings are consistent with studies in other contexts that have demonstrated low contraceptive prevalence and recurrent unintended pregnancies among women who have had recent abortions [13,18].

Our study challenges the assumption that the experience of having an unintended pregnancy and abortion leads to behavioral changes that protect against subsequent unintended pregnancy. This was also the conclusion in a study that found that women who have experienced an unplanned pregnancy were less likely to be using contraception than other women [12]. Any motivation that may have been gained by experiencing an abortion dissipates in the face of the multiple factors that contribute to poor contraceptive use.

Reproductive health care providers continue to struggle with assisting abortion patients to improve their contraceptive continuation. We did not examine the specific content of counseling received, though women who have experienced an abortion were more likely to have received input and advice from counselors than women who have not. Providers probably were responding to clients who appeared to be at higher risk or who had low participation in counseling and method selection. Contraceptive counseling occurs at the time of the abortion procedure and usually focuses on providing women information and a range of contraceptive methods [19]. Several studies have found that contraceptive counseling appears to have limited potential, however [18,20,21]. A meta-analysis of three studies involving 694 women found no evidence indicating that contraceptive counseling is effective in increasing acceptance and use of contraceptive methods after an abortion [20]. Immediate initiation of a contraceptive method has been linked to a lower risk of repeat abortion, however [22].

Long-acting reversible methods, which include intrauterine devices (IUDs) and implants, appear to have the most promise for the post abortion population [23]. Contraceptive continuation of the IUD and implants have been found to be higher than oral contraceptives [24–28]. Studies also demonstrate reduced repeat pregnancies and abortions among postabortion clients who select an IUD [7,29].

Abortion is increasingly becoming concentrated among disadvantaged communities [30]. Thus, solutions that focus on the larger contextual factors in women's lives along with individual women's attitudes and beliefs may also be effective. Repeat unintended pregnancies should not be seen in a vacuum but rather as a symptom of disempowerment where women lack control over their reproductive lives.

Interventions that improve women's ability or motivations to manage aspects of their lives and plan for the future are needed. Lack of ability to plan appears to put women at high risk of unintended pregnancy. In one study, the only predictor that a woman would be using contraception 3–5 weeks after her abortion was whether she indicated on her medical history form that she wanted contraception or information about contraception [13]. In our study, one of the strongest protective factors against contraceptive discontinuation was reported confidence in using the selected contraceptive method for a year after initiation. It is important to explore the effects of interventions that address contextual factors like pregnancy ambivalence, sexual relationships, life opportunities and self-efficacy because women who face the most contextual barriers benefit most from timing their births when it fits their social and financial priorities.

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