Minimizing Barriers to IUC Use: Do Interventions that Improve Access Have an Impact on Repeat Abortion?

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BACKGROUND

- Of the 1.3 million abortions performed per year in the U.S., approximately half are repeat procedures (1).
- Women seeking repeat abortions are more likely than those undergoing a first abortion to report having used a contraceptive method at the time of conception (2,3), suggesting an advantage for higher efficacy contraception.
- 83% of women ovulate during the first cycle after abortion (4). Contraception introduced immediately following the procedure may minimize the risk of repeat unintended pregnancy.
- Both the copper-T380A IUD and the levonorgestrel-releasing IUS are safe and at least as effective as tubal sterilization (5), yet only 2% of U.S. women of reproductive age use intrauterine contraception (IUC) (6). Barriers to IUC insertion, including delayed rather than immediate post-abortal insertion, may be responsible for low utilization in the U.S.
- IUC insertion immediately following an abortion is safe, with no increased risk of perforation and only a slight increase in the risk of expulsion over delayed insertion (7).
- Insertion of an IUC immediately after early abortion has several advantages including convenience (for both patient and provider), high motivation, and assurance a woman is not pregnant.
- Despite the need for immediate, highly effective contraception following abortion, delayed insertion is still the norm. We hypothesize that immediate post-abortal IUC insertion will decrease repeat unintended pregnancy and abortion.

RESULTS

673 women had an immediate post-abortal IUC insertion during the study period. **1,346 matched controls** were selected for a total study population of **2,019**.

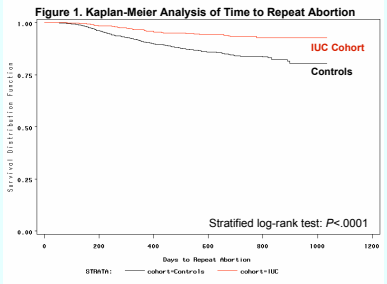
- Descriptive data for the study population are summarized in Table 1.

Table 1. Characteristics of Study Population

	IUC Cohort (N=673)	Controls (N=1,346)	P-Value
Age: Mean (SD)	27.8 (6.2)	24.7 (6.5)	<.0001
Race: N (%)			
Latina/Hispanic	216 (32%)	336 (25%)	0.0004
White	199 (30%)	414 (31%)	
Black	128 (19%)	274 (20%)	
Asian/Pacific Islander	51 (8%)	173 (13%)	
Other	79 (12%)	149 (11%)	
Marital Status: N (%)			
Single	442 (66%)	1,003 (75%)	<.0001
Partnered	104 (15%)	161 (12%)	
Married	79 (12%)	104 (8%)	
Divorced	26 (4%)	23 (2%)	
Undeclared	21 (3%)	55 (4%)	
Family Size: Mean (SD)	2.3 (1.4)	1.6 (1.1)	<.0001
Payer Type: N (%)			
Public Funding	583 (87%)	984 (73%)	<.0001
Private Pay	80 (12%)	316 (24%)	
Insurance	9 (1%)	43 (3%)	
Gestational Age: N (%)			
4-7 weeks	256 (38%)	478 (36%)	0.01
7-12 weeks	360 (53%)	715 (53%)	
12-14 weeks	46 (7%)	92 (7%)	
14+ weeks	11 (2%)	61 (5%)	

- Women who received immediate post-abortal IUC had a lower rate of repeat abortions (i.e. survived longer) than controls (*P*<.0001), as shown in the Kaplan-Meier curves depicting time to repeat abortion in Figure 1.

Figure 1. Kaplan-Meier Analysis of Time to Repeat Abortion



- Controls experienced a rate of repeat abortion that was **2.7 times higher** than that of women who received immediate post-abortal IUC when adjusted for covariates, as shown in the Cox Proportional Hazards model presented in Table 2.
  - Women with larger families had higher rates of repeat abortions than those with smaller families; single women had more repeat abortions than married women, and black and Latina/Hispanic women were more likely than white women to have a repeat abortion.

Table 2. Cox Proportional Hazards Model of Repeat Abortion

Variable	Hazard Ratio	95% CL	P-Value
Cohort: Controls vs. IUC	2.69	1.90 – 3.82	<.0001
Age: Continuous	0.98	0.95 – 1.00	0.04
Family Size: Continuous	1.19	1.05 – 1.34	0.01
Marital Status: Compared to Single			
Partnered	1.11	0.76 – 1.60	0.60
Married	0.49	0.26 – 0.92	0.03
Divorced	1.97	0.98 – 3.92	0.05
Undeclared	0.68	0.30 – 1.53	0.35
Race: Compared to White			
Black	1.82	1.25 – 2.66	0.002
Latina/Hispanic	1.45	1.00 – 2.11	0.05
Asian/Pacific Islander	1.26	0.78 – 2.04	0.34
Other	1.56	0.99 – 2.47	0.06

Limitations

- The two cohorts were non-comparable on a variety of demographic factors (Table 1). While age, family size, marital status, and race have all been shown in the literature to influence repeat abortion seeking (2,3,10), immediate post-abortal IUC insertion remained strongly protective against repeat abortion after adjusting for these potential confounders in a Cox model (Table 2).
- Only Planned Parenthood data were available for this study; if a woman sought a repeat abortion elsewhere it was not captured. Rates of repeat abortion may therefore be underrepresented in these results; however, there is no reason to believe that women would have sought repeat abortion care outside of Planned Parenthood differentially between the two cohorts.

MATERIALS AND METHODS

Study Design

- A multisite cohort study of three interventions designed to minimize barriers to IUC use was conducted at a Northern California Planned Parenthood agency from November 2002 - October 2005 (preliminary results were presented at ARHP 2006).
- In March 2004, agency protocols were changed to permit immediate post-abortal IUC insertion in the absence of known or suspected infection, contraindications, or special conditions as outlined in the national Planned Parenthood Standards and Guidelines (8).

Selection of Study Cohorts

- **All women who received an immediate post-abortal IUC insertion** in the agency during a 20 month study period from March 2004 - October 2005 were selected to comprise the IUC cohort.
  - If a woman received more than one immediate post-abortal IUC insertion during the study, the ***first*** incidence was selected as the index insertion.
- A **2:1 matched cohort of controls** who received abortions without immediate post-abortal IUC insertion was selected according to the following algorithm:
  - All women with abortions during the study period were stratified by clinic site and date of abortion.
  - For each woman in the IUC cohort, two controls with abortions on the same day at the same site were selected using a stratified random sampling technique.
  - If a woman was randomly selected as a control twice (due to multiple abortions during the study period), her ***second*** incidence of abortion was kept in the control cohort while the first incidence was discarded (to ensure that any bias in results would be directed toward the null). A replacement control was selected in the appropriate date/site stratum using simple random sampling.
  - If a clinic did not have enough patients on a specific date to ensure adequate controls, additional controls were randomly selected from all women with abortions on the target date regardless of clinic site, until the desired number of controls was obtained.
- All analyses were intent-to-treat; women remained in the cohort of original designation for the duration of the study regardless of whether IUC was removed (in the IUC cohort) or inserted (in the control cohort).
- Follow-up data on repeat abortions were obtained for both cohorts through December 31, 2006 (14 months following end of study enrollment).

Statistical Analysis

- Frequencies (for categorical variables) and distributions (for continuous variables) were calculated for descriptive data at the index date; descriptive data were compared between cohorts using a Chi-Square statistic or Student's *t*-test, respectively.
- A Kaplan-Meier curve was plotted to depict differences in time to repeat abortion between the IUC and control cohorts. A stratified log-rank test was used to determine statistical significance.
- A Cox Proportional Hazards model was fit to determine differences in rates of repeat abortion between the two cohorts, adjusting for variables determined ***a priori*** to influence repeat abortion in the literature (age, family size, marital status, and race).
- All statistical analyses were conducted using SAS version 9.1.3.

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CONCLUSIONS

- Women who had IUC inserted immediately following an abortion had lower rates of repeat abortions than those who did not. This effect was significant despite the inclusion of women who had their IUC removed at some point during the study.
- We conclude that immediate post-abortal IUC insertion is a safe, effective, practical, and underutilized intervention that has significant potential to reduce the recurrence of unintended pregnancy and abortion.

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