ORIGINAL RESEARCH ARTICLE

One-year follow up of contraceptive use and pregnancy rates after early medical abortion: Secondary outcomes from a randomized controlled trial of immediate post-abortion placement of intrauterine devices

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Abstract

Introduction: Intrauterine devices (IUDs) effectively prevent unwanted pregnancies. Little is known about long-term outcomes of women choosing an IUD after early medical abortion.

Material and methods: We present secondary outcome data of continuation rates, factors associated with continuation and discontinuation, choice of IUD type, women's satisfaction with IUD, and IUD expulsions, subsequent pregnancies, and abortions within 1 year post-abortion in a randomized, controlled, multicenter trial on IUD placement within 48 hours compared with placement 2–4 weeks after medical abortion up to 63 days' gestation (ClinicalTrials.gov NCT03603145).

Results: Of the 240 women studied, 112/120 (93.3%) in the intervention group vs 113/120 (94.2%) in the control group completed the 12-month follow-up. The rate of IUD use at 12 months was 84/112 (75%) in the intervention group vs 75/113 (66.4%) in the control group (P = 0.19). Attendance at the IUD placement visit was the only predictor of long-term IUD use (relative risk [RR] = 5.7, 95% confidence interval [CI] 2.03–16.0; P = 0.001). The main reason for choosing an IUD was high contraceptive effectiveness. The most common reasons for IUD discontinuation were bleeding problems and abdominal pain. IUD expulsion was rare and did not differ between groups. Satisfaction among IUD users at 1 year was high (>94%) and the majority of all participants would recommend IUD to a friend (65.8%). Use of no contraception and experience of unprotected intercourse were less common in the intervention group (11/112 [9.8%] vs 25/113 [22.1%], P = 0.02 and 17/112 [15.2%] vs 32/113 [28.3%], P = 0.02, respectively). There was no difference in the rate of subsequent pregnancies and abortions (pregnancies 14/112, 12.5% in the intervention group vs 8/113, 7.1% in the control group, P = 0.19; abortions 5/112, 4.5% vs 3/113, 2.7%, P = 0.5).

Abbreviations: CI, confidence interval; Cu-IUD, copper intrauterine device; H-IUD, hormonal intrauterine device; IUD, intrauterine device; RR, relative risk.

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Conclusions: IUD placement after medical abortion led to high continuation and satisfaction rates with no difference between groups. We found no difference in IUD expulsions after immediate compared with later placement. Unprotected intercourse was significantly less common in the immediate group. In clinical practice, immediate placement of IUDs available free of charge at the abortion clinic is likely to increase attendance to the placement visit and continued use of IUDs after abortion.

Keywords
abortion, contraception, contraceptive devices, copper intrauterine devices, family planning services, intrauterine devices, long-acting reversible contraceptives, medicated intrauterine devices

1 | INTRODUCTION

Worldwide, approximately 73 million abortions take place on an annual basis. Among women having an abortion, 37%–46% have a history of at least one previous abortion. To support women’s reproductive goals, access to effective contraception should be part of abortion care. Intrauterine devices (IUDs) are associated with high satisfaction and continuation rates and IUDs for post-abortion contraception are very effective in preventing subsequent abortions. At surgical abortion, immediate placement of an IUD leads to higher IUD user rates compared with delayed placements. However, medical abortion today is the most common abortion method in many countries. To date, randomized trials on IUD placement after medical abortion mainly focused on short-term uptake rates of IUD and medical safety aspects, such as IUD expulsion and bleeding patterns within the first months after the abortion. However, knowledge is lacking on women’s long-term continued use of and satisfaction with IUD placed after medical abortion.

The parent trial of this study was a randomized controlled trial where we compared user rates of IUD at 6 months following early medical abortion among women who had an IUD placed within 48 hours after complete abortion and those who had it placed 2–4 weeks after the abortion. In this trial, we could not show superiority with immediate placement in terms of the primary outcome, but more women in the immediate group preferred their allocated placement time and pain scores at IUD placement were lower. IUD expulsion within 6 months and other adverse events were rare and did not differ between groups.

In the current paper we present the results of secondary outcome analyses with the aim to explore continued use of IUD, reasons for discontinuation, subsequent pregnancies and satisfaction with use of IUD or other contraceptives up to 1 year after early medical abortion.

2 | MATERIAL AND METHODS

We performed an open-label, randomized, controlled, multicenter, superiority trial (phase 3). The full study design has been published elsewhere. In brief, we recruited women aged ≥18 years requesting medical abortion at ≤63 days’ gestation and opting for IUD as post-abortion contraception. After accepting participation by signing informed consent, we randomized women to IUD placement either within 48 hours after complete abortion (intervention) or at a scheduled follow-up visit 2–4 weeks after abortion (control). The sample size and power calculation were based on a hypothesis regarding the primary outcome, yielding 120 participants per group.

The medical abortion was performed according to World Health Organization guidelines. IUDs approved for the study were Mirena® (levonorgestrel-releasing intrauterine device [LNG-IUD], 52 mg), Kyleena® (LNG-IUD, 19.5 mg), Jaydess® (LNG-IUD, 13.5 mg, marketed as Skyla® in some countries) and NovaT 380™ (Cu-IUD), manufactured by Bayer GmBH, Leverkusen, Germany. The LNG-IUDs are hereafter referred to as hormonal IUD (H-IUD). The IUDs were placed at the abortion clinic and were provided at no cost according to study regulations by the Medical Products Agency.

Follow-up data were collected with structured questionnaires at 3, 6 and 12 months. In our previous publication, we presented the primary outcome of rates of IUD use in both groups at 6 months after the abortion and secondary outcomes up to a 6 months’ follow-up. In the current paper, we report secondary outcomes based on data from the 12-month follow-up including continuation rates of IUD and reasons for discontinuation during the first year after the abortion. Women’s reasons for choosing a certain type of IUD were collected during the first visit to the abortion clinic. We collected and report patterns of use of different contraceptives over time. We asked women to rate satisfaction with their current contraceptive on a five-degree Likert scale ranging from very satisfied to
very dissatisfied. In the analysis, these variables were dichotomized into satisfied (very satisfied/satisfied/neither) or dissatisfied (dissatisfied/very dissatisfied). Furthermore, we assessed women's acceptability of IUD as post-abortion contraceptive by asking whether they would recommend a friend to use an IUD after an abortion (yes/no/do not know). Moreover, we summarized rates of IUD expulsion, subsequent pregnancies and abortions occurring during the 12-month follow-up.

We performed statistical analyses using IBM SPSS Statistics for Windows, version 25 (IBM Corp.). The analysis of secondary outcomes was based on a modified intention-to-treat (mITT) analysis including all randomized women with medical abortion and follow-up recorded at 3, 6 and/or 12 months depending on outcome analyzed. Hence, women with no IUD placement and women experiencing expulsion were also included in the mITT population. The analyses included the full dataset, and all results were based on observed outcomes without imputation of missing data. Non-normally distributed continuous variables are presented as medians with minimum and maximum values; differences between groups were analyzed by the Mann–Whitney U-test. Dichotomous variables are presented as proportions with differences between groups analyzed by the Chi-square or Fisher’s exact test, as appropriate. A two-sided P-value of <0.05 was used as the significance level for group differences.

We explored factors related to continued use of IUD with a modified Poisson regression model with a robust error variance. We chose this model over logistic regression in order to avoid the rare event rate assumption.20 The outcome of interest was use of IUD at 12 months after the abortion and the following covariates were included in the model and chosen based on evidence or an assumption that they might be clinically relevant: attendance to allocated IUD placement visit (yes/no), age (over/under 30 years), level of education (≤12 years/≥13 years), parity (parous/nulliparous), history of previous abortion (yes/no), and whether women had reported any of the following main reasons for choosing a certain type of IUD, or not: positive health effects (dysmenorrhea or bleeding), effectiveness, low risk of side-effects or low hormone dose, recommendation from friend, recommendation from healthcare provider or the perception that IUDs are comfortable or easy to use. Estimates are presented as risk ratios (RR) with 95% confidence interval (CI).

2.1 Ethics statement

Approval from the Regional Ethics Committee of Stockholm was obtained with amendments for new study centers (permit numbers 2016/1685-31/1 [approved October 7, 2016]; 2018/48-32 [January 12, 2018]; 2018-962-32 [May 4, 2018]; 2019-03183 [June 20, 2019] and 2020-02925 [July 3, 2020]). The study was also approved by the Swedish Medical Products Agency and participant enrollment was initiated on January 16, 2019 and finished by February 18, 2021. The study was registered on January 25, 2018 in the EU Clinical Trials Register (EudraCT number 2018-000287-29, https://www.clinicaltrialsregister.eu) and on July 27, 2018 in ClinicalTrials.gov (NCT03603145).

3 RESULTS

From January 2019 to February 2021, 240 women having medical abortion up to 63 days of gestation and opting for post-abortion IUD were included.18 Participants had a median age of 30 years and a median gestational age of 42 days at time of abortion; 71.5% were parous. A total of 60.3% had previously had an abortion.

The flow of participants up to a 6 months’ follow-up was previously described.18 The 12-month follow-up rate was 93.3% (112/120) in the intervention group and 94.2% (113/120) in the control group. In the intervention group, five withdrew consent to participate before 12 months and three could not be reached. In the control group, four withdrew consent and three could not be reached.

In the mITT analysis at 12 months after the abortion, 84/112 (75%) in the intervention group used an IUD vs 75/113 (66.4%) in the control group (P=0.19). In a secondary analysis including only women who had an IUD placed after the abortion and who completed the 12-month questionnaire, 82/104 (78.8%) in the intervention group and 74/97 (76.3%) in the control group had continued use of an IUD at the 12-month follow-up (P=0.74).

The most common main reason for choosing a certain type of IUD was contraceptive effectiveness (56/228, 24.6%). Other common main reasons were the low dose (or absence) of hormones in IUDs (49/228, 21.5%) and a perception that IUDs are comfortable, easy to use or do not need to be remembered (48/228, 21.1%). Among women who chose a copper IUD, 11/14 (78.6%) stated the absence of hormones as their main reason. The most common secondary reasons were a perception that IUDs are comfortable, easy to use or do not need to be remembered (116/184, 63%), followed by a wish to bleed less (69/184, 37.5%). There were no differences between the intervention and control groups and therefore collapsed results for both groups are presented in Tables 1 and 2.

Attendance to the scheduled IUD placement visit after the abortion was the only predictor of IUD use after 12 months (RR=5.7, 95% CI 2.03–16.0; P=0.001). Results are presented in Table S1. A Poisson regression analysis did not show any significant predictors of attendance to the placement visit. “Recommendation from healthcare provider” had to be excluded from this model because all patients who had chosen their IUD due to this reason (n=22) attended the placement visit.

Figure 1 illustrates women’s contraceptive use after the index abortion (T0, n=235) and 12 months after the abortion (T12, n=231). At 12 months, in the intervention group less often reported no use of contraception compared with the control group (11/112, 9.8% vs 25/113, 22.1%, P=0.02). Numbers of users of different contraceptive methods at 0, 3 and 12 months after the index abortion are presented in Table S2. Alluvial plots of contraceptive use and movement between contraceptive methods at T0 and T12 per allocation group are presented in Figures S1 and S2.
At 12 months, there were no users of contraceptive implant, contraceptive injection or combined hormonal contraception. Women who stopped using IUDs most often chose to discontinue all contraceptive use irrespective of allocation.

There was no difference in continuation rates between H-IUD 52 mg and H-IUD 19.5 mg users ($P=0.38$). Among women who had an H-IUD 52 mg placed after the abortion, 79/103 (76.7%) were using an IUD at 12 months. The corresponding number among women who had an H-IUD 19.5 mg placed after the abortion was 63/86 (73.3%). Discontinuation rates did not differ between the groups, with 22/104 (21.2%) and 23/97 (23.7%) in the intervention and control group, respectively ($P=0.74$). The most common reasons for IUD discontinuation within 12 months were bleeding problems, abdominal pain, mood change and weight gain (Table 3).

The rate of IUD expulsion (observed complete or symptomatic partial expulsion) within 1 year after abortion did not differ significantly between groups ($12/112, 10.7%$ in the intervention group vs $6/113, 5.3%$ in the control group, $P=0.15$). Two women in each group reported IUD expulsion from 6 to 12 months after the abortion. Both women in the intervention group had an H-IUD 52 mg placed. One of them became pregnant after the IUD expulsion and had a subsequent abortion. At 12 months, they were both using an H-IUD again. In the control group, one woman who had an H-IUD 19.5 mg placed reported expulsion after 6–12 months. At 12 months, she was not using contraception. The other woman experienced expulsion of a Cu-IUD and had it replaced with another Cu-IUD, which was in situ at 12 months. In total, 9/18 (50%) women who experienced IUD expulsion within the first year had their IUD replaced and used it 12 months after the abortion.

Satisfaction with contraception at 12 months was high, with the highest satisfaction rate among H-IUD users (135/142, 95.1%) followed by 16/17 (94.1%) for Cu-IUD users. Most women who reported using no contraception were also satisfied (33/36, 91.7%). Eight out of 15 women who continued using progestogen-only pills, all but one (87.5%) were satisfied. Of the 12 women who stopped using male condom as contraception, 9/12 (75%) were satisfied. Moreover, the woman who went through sterilization reported satisfaction.

A total of 148/225 (65.8%) women agreed that they would recommend a friend to use IUD as post-abortion contraception, whereas 25/225 (11.1%) would not recommend this, and the remainder (52/225, 23.1%) were undecided. Among Cu-IUD users at 12 months, 124/159 (78.0%) would recommend Cu-IUD use, whereas 7/159 (4.4%) would not recommend this, and 28/159 (17.6%) were undecided with no difference between the intervention and control groups.

During the 12-month follow up, unprotected intercourse without a wish to become pregnant was less common among women in the intervention group than women in the control group, (17/112 [15.2%] vs 32/113 [28.3%], $P=0.02$), whereas four in the intervention group and 13 in the control group did not use contraception at 12 months. At 12 months after the index abortion, 15 women reported a wish to become pregnant.

### Table 1: Women’s main reasons for choosing a certain type of intrauterine device after medical abortion ($n=240$).

<table>
<thead>
<tr>
<th>Reason</th>
<th>Type of IUD chosen</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H-IUD 52mg $n=117$</td>
<td>H-IUD 19.5mg $n=102$</td>
<td>H-IUD 13.5mg $n=5$</td>
<td>Cu-IUD $n=15$</td>
<td>Total $n=239$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effective</td>
<td>35</td>
<td>21.1%</td>
<td>17</td>
<td>17.7%</td>
<td>2</td>
<td>40</td>
<td>2</td>
<td>14.3%</td>
<td>56</td>
</tr>
<tr>
<td>Low hormone dose/no hormones</td>
<td>9</td>
<td>8.0%</td>
<td>27</td>
<td>28.1%</td>
<td>2</td>
<td>40</td>
<td>11</td>
<td>78.6%</td>
<td>49</td>
</tr>
<tr>
<td>Comfortable/Easy to use, no need to think about it</td>
<td>25</td>
<td>22.1%</td>
<td>23</td>
<td>24%</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>48</td>
</tr>
<tr>
<td>Wish to reduce or avoid bleeding</td>
<td>22</td>
<td>19.5%</td>
<td>2</td>
<td>2.1%</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>24</td>
</tr>
<tr>
<td>Recommended by HCP</td>
<td>8</td>
<td>7.1%</td>
<td>12</td>
<td>12.5%</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>20</td>
<td>8.8%</td>
</tr>
<tr>
<td>Long-acting</td>
<td>5</td>
<td>4.4%</td>
<td>3</td>
<td>3.1%</td>
<td>1</td>
<td>20</td>
<td>0</td>
<td>9</td>
<td>3.9%</td>
</tr>
<tr>
<td>Recommended by relative/friend</td>
<td>2</td>
<td>1.8%</td>
<td>6</td>
<td>6.3%</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>8</td>
<td>3.5%</td>
</tr>
<tr>
<td>Low risk of side effects</td>
<td>2</td>
<td>1.8%</td>
<td>3</td>
<td>3.1%</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>7.1%</td>
<td>6</td>
</tr>
<tr>
<td>Eases dysmenorrhea</td>
<td>2</td>
<td>1.8%</td>
<td>1</td>
<td>1%</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>1.3%</td>
</tr>
<tr>
<td>Cost</td>
<td>0</td>
<td>0%</td>
<td>1</td>
<td>1%</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0.4%</td>
</tr>
<tr>
<td>Other reason, not specified</td>
<td>3</td>
<td>2.7%</td>
<td>1</td>
<td>1%</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>1.8%</td>
</tr>
<tr>
<td>Missinga</td>
<td>4</td>
<td>3.4%</td>
<td>6</td>
<td>5.9%</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>6.7%</td>
<td>11</td>
</tr>
</tbody>
</table>

Abbreviations: Cu, copper; H-IUD, levonorgestrel hormonal intrauterine device; HCP, healthcare provider.

Proportions for each reason calculated among respondents to the question.

Missing proportion calculated on total number of participants.

One woman in the intervention group withdrew from participation, and no data on chosen IUD or main reason were collected, hence total $n=239$. 

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*HOGMARK et al.*
TABLE 2 Women’s secondary reasons for choosing a certain type of intrauterine device after medical abortion (n = 240).

<table>
<thead>
<tr>
<th>Reason</th>
<th>Type of IUD n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H-IUD 52 mg n = 117</td>
</tr>
<tr>
<td></td>
<td>H-IUD 19.5 mg n = 102</td>
</tr>
<tr>
<td></td>
<td>H-IUD 13.5 mg n = 5</td>
</tr>
<tr>
<td></td>
<td>Cu-IUD n = 15</td>
</tr>
<tr>
<td></td>
<td>Total n = 239</td>
</tr>
<tr>
<td>Comfortable/easy to use, no need to think about it</td>
<td>48 (61.5) 52 (58.4) 2 (50) 14 (108)</td>
</tr>
<tr>
<td>Wish to reduce or avoid bleeding</td>
<td>46 (59) 23 (25.8) 0 0 0 0 0 0 0 69 (37.5)</td>
</tr>
<tr>
<td>Effective</td>
<td>23 (29.5) 28 (31.5) 1 25 4 30.8 56 30.4</td>
</tr>
<tr>
<td>Long-acting</td>
<td>27 (34.6) 18 (20.2) 0 0 3 23.1 48 26.1</td>
</tr>
<tr>
<td>Low hormone dose/no hormones</td>
<td>17 (21.8) 27 (30.3) 1 25 1 7.7 46 25</td>
</tr>
<tr>
<td>Recommended by HCP</td>
<td>19 (24.4) 12 (13.5) 0 0 0 0 31 16.8</td>
</tr>
<tr>
<td>Low risk of side effects</td>
<td>8 (10.3) 14 (15.7) 0 0 2 15.4 24 13</td>
</tr>
<tr>
<td>Eases dysmenorrhea</td>
<td>15 (19.2) 9 (10.1) 0 0 0 0 24 13</td>
</tr>
<tr>
<td>Cost</td>
<td>7 (9) 9 (10.1) 0 0 1 7.7 17 9.2</td>
</tr>
<tr>
<td>Recommended by relative/friend</td>
<td>6 (7.7) 4 (4.5) 0 0 1 7.7 11 6</td>
</tr>
<tr>
<td>Invisible/discrete</td>
<td>7 (7.7) 2 2.2 0 0 2 15.4 10 5.4</td>
</tr>
<tr>
<td>Other reason</td>
<td>2 (2.6) 0 0 0 0 0 0 2 1.1</td>
</tr>
<tr>
<td>Missing</td>
<td>39 (33.3) 13 (12.7) 1 20 2 15.4 55 23</td>
</tr>
</tbody>
</table>

Abbreviations: H-IUD, levonorgestrel hormonal intrauterine device; Cu, copper; HCP, healthcare provider.

<table>
<thead>
<tr>
<th>Reason</th>
<th>Proportions for each reason calculated among respondents to the question</th>
</tr>
</thead>
<tbody>
<tr>
<td>One woman reported that she was hoping for effect on PMDS and the other one wanted to try an IUD to see if it suited her.</td>
<td></td>
</tr>
<tr>
<td>Women could state more than one reason and some variables have been collapsed, hence responses can exceed 100%.</td>
<td></td>
</tr>
<tr>
<td>Not all women stated any secondary reasons.</td>
<td></td>
</tr>
<tr>
<td>One woman in the intervention group withdrew from participation, and no data on chosen IUD nor main reason were collected, hence total n = 239.</td>
<td></td>
</tr>
</tbody>
</table>

There was no difference between intervention and control groups in terms of subsequent pregnancies (14/112 [12.5%] vs 8/113 [7.1%], P = 0.19) or abortions (5/112 [4.5%] vs 3/113 [2.7%], P = 0.5) within 12 months of the index abortion. In the intervention group, 13/112 (11.6%) women had become pregnant again, whereas one woman twice. Six were stated as planned pregnancies and eight as unplanned pregnancies. Five women had had or were planning an abortion and two women had not yet decided whether to continue the pregnancy. In the control group, 6/113 (5.3%) women had become pregnant within 12 months of the index abortion, whereas two women twice. Four pregnancies were stated as planned and four as unplanned, and three pregnancies ended in subsequent abortion.

4 | DISCUSSION

We found high continuation and satisfaction rates with IUD after 1 year. Placement within 48 hours did not lead to significantly higher continuation rates than delayed placement. The only factor that predicted IUD continuation was attendance to the IUD placement visit. In the control group, a higher proportion of women reported no use of contraception after 1 year and a significantly higher proportion had engaged in unprotected intercourse without a wish to become pregnant. Rates of subsequent pregnancies and abortions within 1 year did not differ significantly between groups.

The randomized design, the large number of participants, and the low loss to follow-up at 12 months add strength to our study. Blinding was not deemed feasible. Even though IUDs are highly effective for a long time, a complicating aspect for some women may be the relatively high cost at initiation. The fact that IUDs were provided for free and placed at the abortion clinic (both of which are deviations from clinical routine) may have led to higher IUD placement rates than expected in the control group. The study was not powered to detect differences in rare events, such as subsequent pregnancies. However, in the intervention group, significantly fewer women engaged in unprotected intercourse. Hence, the study practice with early placement of free IUDs at the abortion clinic could increase attendance to the placement visit and reduce the proportion of women engaging in unprotected intercourse.

Early IUD placement immediately after completed medical abortion is included in international guidelines such as WHO and NICE guidelines. However, a recent meta-analysis by Schmidt Hansen, which served as background research for the NICE guidelines, concluded that evidence concerning IUD placement after early medical...
abortion is partly of low quality due to low event rates and high attrition, and does not include data on patient satisfaction.\textsuperscript{6} Our study thus provides valuable high-quality evidence and shows that satisfaction with contraception was highest among IUD users. Moreover, most participants reported that they would recommend IUD as post-abortion contraception to a friend. This confirms similar high satisfaction rates as for other groups of women after interval IUD placement.\textsuperscript{8,22,23}

Whereas long-term data on IUD use after abortion seldom exceeds a 6-months follow-up, Korjamo et al. followed patients for 1 year, comparing placement of a H-IUD 52 mg within 3 days of misoprostol administration with delayed placement after medical abortion up to 20 weeks of gestation and found that overall IUD continuation rates were higher in the intervention group than among controls (62.4% vs 39.7%; RR 1.57, 95% CI 1.23–2.02). However, in the gestational age strata of up to 63 days’ gestation, the dropout rate among the 108 participants was 40%.\textsuperscript{24} Our study contributes to the literature by presenting an overall high continued use of 78.8% in the intervention group when the participant could choose the type of IUD. We also explore contraceptive switching patterns during the first 12 months post abortion. The dropout rate in our study was 6.3%.

The only predictor we found of IUD use at 12 months after the abortion was attendance at the initial IUD placement visit. This indicates that routines that facilitate women attending, should be the highest priority. In a routine clinical setting, non-attendance at follow-up visits after abortion is common. In fact, if women are referred to a clinic outside the abortion care center, up to half do not attend and risk being left without contraception.\textsuperscript{25,26} In an RCT from Finland, the post-abortion IUD placement rate was 91% for placement at the abortion clinic, compared with only 24% for primary healthcare placement.\textsuperscript{27} Non-attendance has been associated with a history of previous pregnancy and abortion,\textsuperscript{28} whereas we could not identify any predictors for attendance. It is noteworthy that, in our study, all women who chose an IUD based on recommendation from the healthcare provider attended the placement visit.

Our results indicate that health benefits of H-IUDs such as less bleeding and dysmenorrhea were common reasons for choosing this method. Similar to other studies, the most common reasons...
for IUD discontinuation were bleeding problems and abdominal pain.\textsuperscript{29,30}

IUD expulsion rates within the first year after abortion did not differ between the groups of our study. In line with previous research on interval IUD placement, we found very few additional expulsions between 6 and 12 months after abortion.\textsuperscript{31} Likewise, Sääv et al. reported that only one of 10 expulsions occurred later than 4 weeks after IUD placement.\textsuperscript{16}

### 5 | CONCLUSION

For women choosing IUD as contraception after early medical abortion, IUD placement visits at no cost should be arranged at the abortion clinic as soon as the abortion is complete, preferably with IUDs provided for free. This practice is safe, highly acceptable to women, leads to high continuation rates, and lowers the risk of unprotected intercourse.

### AUTHOR CONTRIBUTION

HKK and K G-D planned and conceived the study, HKK and SH managed the trial. SH, NE and HKK performed data analyses. All authors participated actively in interpretation of data. SH wrote the first draft of the paper. All authors participated actively in writing the paper. All authors approved the submitted paper.

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### CONFLICT OF INTEREST STATEMENT

SH declares honoraria for lectures and/or expert opinions on contraception for Gedeon Richter and Bayer. NE declares honoraria from Medsphere Corp USA for expert opinions and personal fees from Bayer Sweden AB for educational activities. KGD declares honoraria for lectures and/or expert opinions on contraception, uterine fibroids and endometriosis from Bayer, Gedeon Richter, Exeltis, Nordic Pharma, Natural Cycles, Mithra, Merck, Organon, Ferring, Cirque, Time after abortion | Within 3 months | Within 3–6 months | Within 6–12 months | Total during the first year after abortion
---|---|---|---|---
Reasons
Bleeding problems | 3 | 3 | 2 | 8
Abdominal pain | 1 | 1 | 4 | 6
Mood change | 3 | 1 | 1 | 5
Weight gain | 2 | 3 | 5 | 5
Total or partial IUD expulsion | 4 | 1 | 5 | 5
A wish to become pregnant | | | | 2
Switch to other contraceptive method | | | | 2
Contraindication for IUD | | | | 1
Recurrent vulvovaginal candidiasis | | | | 1
Vacuum aspiration | 1 | | | 1
Headache | 1 | | | 1
Decreased libido | 1 | | | 1
Unplanned pregnancy during use of IUD$^*$ | | | | 1
Reason not specified | 1 | 6 | 7 | 15
Total | 15 | 6 | 25 | 46

Abbreviation: IUD, intrauterine device.

$^*$The unplanned pregnancy happened to one woman in the control group while using H-IUD 19.5 mg.

### TABLE 3

Reasons for intrauterine device (IUD) discontinuation among women having an IUD placed after early medical abortion, but not using an IUD after 12 months ($n=$207).


**SUPPORTING INFORMATION**

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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