A randomised controlled trial of Immediate initiation of contraception by levonorgestrel-releasing intrauterine system after medical abortion - one year continuation rates

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No conflicts of interests to declare
BACKGROUND

- Safe insertion of intrauterine device (IUD) at the time of the vacuum aspiration (Pakarinen 2003, Grimes 2010, Steenland 2011)
  - higher uptake of IUDs compared with delayed insertion
  - decrease repeat abortion rate (Heikinheimo 2008, Cameron 2012)

- Medical abortion the dominant method in recent decades
  - 95% in Finland 2014 (National Institute of Health and Welfare, Finland, 2015)

- Up to half the patients fail to attend to follow-up (Pohjoranta 2011, Cameron 2012)
MATERIALS AND METHODS

- A randomised controlled trial
- Medical abortion ≤ 20 weeks of gestation
- Immediate (same day/≤3 days) vs. Delayed (within 2-4 weeks)
  - Levonorgestrel-releasing intrauterine system (LNG-IUS)
  - Women ≥18 years
  - Helsinki University Hospital
  - Between Jan 30\textsuperscript{nd} 2013 and Dec 31\textsuperscript{st} 2014

- The primary outcome: the LNG-IUS use 1 year after abortion
- Secondary outcomes: expulsions, repeat pregnancies, abortions within 1 year
Randomised 267

Immediate-insertion 134
- Excluded 1
  (continued pregnancy)

Delayed-insertion 131
- Excluded 2
  (susp. cervic. Neoplasia)

Medical abortion: mifepristone 200mg p.o. + 24-72h later misoprostole
- 800µg at home (≤ 63 days of gestation)
- 400 µg every 3 hours until fetal expulsion at hospital (≥ 64 days of gestation)

LNG-IUS insertion 126
- within 3 days (≤ 63 days of gestation)
- before leaving hospital (≥ 64 days of gestation)
- Immediate insertion failed 1

Follow-up 2 to 4 weeks 121
Follow-up 2 to 4 weeks 115
LNG-IUS insertion 111

Follow-up 1 year 89
Follow-up 1 year 63
Demographics of the study participants

<table>
<thead>
<tr>
<th></th>
<th>Immediate insertion n = 133</th>
<th>Delayed insertion n = 131</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>27.3 (23.1–32.3)</td>
<td>27.1 (22.3–32.1)</td>
</tr>
<tr>
<td>BMI*</td>
<td>23.6 (21.7–26.5)</td>
<td>23.3 (21.1–26.9)</td>
</tr>
<tr>
<td>History of pregnancy</td>
<td>89 (66.9%)</td>
<td>92 (70.2%)</td>
</tr>
<tr>
<td>History of delivery</td>
<td>71 (53.4%)</td>
<td>68 (51.9%)</td>
</tr>
<tr>
<td>History of abortion</td>
<td>57 (42.9%)</td>
<td>63 (48.1%)</td>
</tr>
<tr>
<td>Gestational age (days)</td>
<td>67 (51.5–78.5)</td>
<td>67 (52–81)</td>
</tr>
<tr>
<td>≤ 63 (n = 55 vs. 53)</td>
<td>48 (45–56)</td>
<td>50 (46.5–56.5)</td>
</tr>
<tr>
<td>64 to 84 (n = 51 vs. 50)</td>
<td>71 (68–76)</td>
<td>72 (67–76.3)</td>
</tr>
<tr>
<td>85 to 140 (n = 27 vs. 28)</td>
<td>105 (96–116)</td>
<td>111 (98–122)</td>
</tr>
</tbody>
</table>

Data are presented as median (interquartile range), or n (%)

*BMI = body mass index
RESULTS

<table>
<thead>
<tr>
<th></th>
<th>Immediate insertion n=133</th>
<th>Delayed insertion n=131</th>
<th>OR</th>
<th>95% CI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LNG-IUS inserted</td>
<td>127 95.5%</td>
<td>111 84.7%</td>
<td>3.81</td>
<td>1.48 – 9.83</td>
<td>0.004</td>
</tr>
<tr>
<td>1-year follow-up visit</td>
<td>89 66.9%</td>
<td>63 48.1%</td>
<td>2.18</td>
<td>1.33 – 3.59</td>
<td>0.003</td>
</tr>
<tr>
<td>The best case scenario</td>
<td>113 85.0%</td>
<td>88 67.2%</td>
<td>2.76</td>
<td>1.52 – 5.03</td>
<td>0.001</td>
</tr>
<tr>
<td>The worst case scenario</td>
<td>83 62.4%</td>
<td>52 39.7%</td>
<td>2.52</td>
<td>1.54 – 4.14</td>
<td>0.000</td>
</tr>
</tbody>
</table>
**RESULTS**

<table>
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<tr>
<th>Immediate insertion</th>
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<th>OR</th>
<th>95% CI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LNG-IUS removed</td>
<td>n=133</td>
<td>10</td>
<td>7.5 %</td>
<td>15</td>
</tr>
<tr>
<td>Ekspulsion all</td>
<td>n=131</td>
<td>29</td>
<td>21.8 %</td>
<td>12</td>
</tr>
<tr>
<td>Expulsion total</td>
<td></td>
<td>3</td>
<td>2.3 %</td>
<td>3</td>
</tr>
<tr>
<td>Expulsion partial</td>
<td></td>
<td>26</td>
<td>19.5 %</td>
<td>9</td>
</tr>
<tr>
<td>Pregnancy</td>
<td></td>
<td>6</td>
<td>4.5 %</td>
<td>16</td>
</tr>
<tr>
<td>Repeat abortion</td>
<td></td>
<td>4</td>
<td>3.0 %</td>
<td>5</td>
</tr>
</tbody>
</table>

* p < 0.05
DISCUSSION

- Drop out rate high → Clinical records revised, sensitivity analysis

- Immediate uptake rate 96%
  - Similar at vacuum aspiration or D&E 90-100% (Bednarek 2011, Cremer 2011, Hohmann 2011)
  - Similar within ~1 week after early (<9weeks) medical abortion 94-97% (Shimoni 2011, Sääv 2012)

- One-year continuation rate 62% (the best case 85%)
  - One year continuation 71-90% (Ortayli 2001, Pakarinen 2003)
  - Three year continuation 29-61% (Ortayli 2001, Pakarinen 2003)
DISCUSSION

- Total expulsion rate 2.3% comparable to seen
  - after surgical abortion; 4.9-7.1%
  - after early (≤ 63 days of gestation) medical abortion; 4.1-9.7%
    (Betstadt 2011, Cameron 2012, Sääv 2012)

- The rate of 21.8% expelled or displaced LNG-IUS
  - Parallel with 24% after post-placental insertion following vaginal delivery (Chen 2010)

- Repeat abortion rate 3.0%
  - Similar than 2.4-6.1% seen after immediate or “enhanced” initiation of intrauterine contraception (Pohjoranta 2015, Goodman 2008, Heikinheimo 2008)
CONCLUSION

Immediate insertion of the LNG-IUS after medical abortion

- Higher uptake
- Higher continuation rates despite of higher partial expulsion rates
Our team:
Prof Oskari Heikinheimo
MD, PhD Maarit Mentula
Research nurse Pirjo Ikonen

Thank you!
Randomised 267

Immediate insertion 134

Included in intention-to-treat analysis 133

LNG-IUS inserted 126
Immediate insertion failed 1

Follow-up 2 to 4 weeks 121

Included in intention-to-treat analysis 131

Refused LNG-IUS insertion 5
Did not attend to insertion 1

Follow-up 2 to 4 weeks 115

Excluded 1
(Continued pregnancy)

Did not attend to follow-up 6

Follow-up 3 months 98

IUD removed 1 (1020)
Did not attend to 3-month follow-up 22

Follow-up 1 year 79 (33/32/14) + 10 = 89 (37/36/16) (10=4/4/2)

Delayed insertion 133

Excluded 2
(suspected cervical neoplasia)

LNG-IUS removed 3
Did not attend to 1-year follow-up 17

Follow-up 1 year 55 (24/21/10) + 8 = 63 (28/25/10) (8=4/4/0)

LNG-IUS removed 2
Did not attend to 1-year follow-up 30

Refused LNG-IUS insertion 3
Insertion failed 1

Follow-up 3 months 78

LNG-IUS inserted 111

Refused LNG-IUS insertion 3
Did not attend to follow-up 13

Follow-up 3 months 22