

# Expectant management of incomplete, spontaneous first-trimester miscarriage: outcome according to initial ultrasound criteria and value of follow-up visits

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## ABSTRACT

**Objectives** To assess whether the presence of a gestational sac or the width of the endometrium, can be used to predict the outcome of expectant management for an incomplete, first-trimester miscarriage, and to determine an appropriate schedule for follow-up visits.

**Subjects** Consecutive women with a spontaneous miscarriage, who were attending an early pregnancy assessment unit.

**Methods** Transvaginal ultrasonography was used at the first visit to identify those women with an incomplete miscarriage—defined as the presence of heterogeneous products of conception within the uterus and distinguishable from a missed miscarriage or an anembryonic pregnancy. The sonographic end-points were the presence of a gestational sac or the thickness of the endometrium. All subjects were offered the choice of surgical evacuation of the uterus under general anesthesia or expectant management with a follow-up visit within a few days of the cessation of transvaginal bleeding, or weekly monitoring for 4–5 weeks. The main outcome measures were the number of women with a complete miscarriage (defined as the absence of transvaginal bleeding and an endometrial thickness of < 15 mm without surgical intervention) and the proportion of women completing their miscarriage within each week of management.

**Results** Of the 312 women who participated, 234 (75%) chose expectant management; of these 13 were lost to follow-up leaving data from 221 for analysis. Two-hundred and one (91%) completed their miscarriage without intervention; the mean time from diagnosis to completion was 9 (range, 1–32) days. By the end of week 2, 184 women (83%) had miscarried. There was no statistically significant relationship between the initial presence of a gestational sac or endometrial thickness, and the success rate of expectant management. The odds of a woman completing a miscarriage spontane-

ously were 1 : 1 for week 1, 2 : 1 for week 2, 1 : 2 for week 3, and 1 : 5 for week 4. Twenty women had surgical treatment (19 elective with no serious prior complications, one emergency who was admitted to the accident and emergency department on day 21 of management). There were eight elective operations during week 1, and 11 over the following 3 weeks.

**Conclusions** Most women with an incomplete, spontaneous miscarriage chose expectant management and had a successful outcome. Neither the presence of a gestational sac, nor the endometrial thickness at diagnosis can be used to predict the likelihood of management failure. The current schedule of regular routine follow-up visits could be safely reduced to one or two fortnightly visits as appropriate, provided that patients have ready access to clinical advice by telephone.

## INTRODUCTION

The level of urinary human chorionic gonadotrophin forms the basis of all routine biochemical tests for early pregnancy, and by the 5th week from the last menstrual period a positive result can be confirmed by sonographic images of a gestational sac and fetal heart activity<sup>1</sup>. Subsequently, the presence of transvaginal bleeding or lower abdominal pain, and ultrasound images showing heterogeneous irregular echoes in the midline of the uterine cavity, are suggestive of an incomplete miscarriage<sup>2</sup>. The ideal way of helping women with this condition is by referral to an open access early pregnancy assessment unit with dedicated diagnostic facilities and staff<sup>3,4</sup>. Expectant management has been shown to be a suitable alternative to immediate surgical evacuation of the uterus for most women presenting with an incomplete, spontaneous miscarriage during the first trimester<sup>5–7</sup>.

Currently patients choosing expectant management are told to contact the assessment unit if they have excessive

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transvaginal bleeding, severe abdominal pain or signs of infection. In addition, they are often recommended to make frequent, follow-up visits to the clinic, possibly every 48 h, until their miscarriage is complete<sup>7</sup>. At each visit, transvaginal ultrasound images are taken to assess whether remnants of conception products or blood are still retained within the uterine cavity. The routine follow-up visits, however, make a significant contribution to the increasing workload of early pregnancy assessment units. Consequently, the aims of this study were to assess (1) whether the presence of a gestational sac or the thickness of the endometrium at the time of diagnosis might be used to predict the outcome of expectant management of incomplete, spontaneous miscarriage and (2) whether the frequency of follow-up visits might be reduced appropriately.

## PATIENTS AND METHODS

A total of 1096 consecutive women with a suspected miscarriage were scanned transvaginally in an early pregnancy assessment unit. The examinations were performed by experienced sonographers using a 5-MHz transducer for B-mode imaging (Aloka, Tokyo, Japan). The uterus was examined in the sagittal and oblique transverse planes to determine the presence or absence of a gestational sac and other retained products of conception. Endometrial thickness was measured in the sagittal plane from one myometrial/endometrial interface to another across the widest part of the cavity. Each miscarriage was classified as complete, incomplete, missed or anembryonic<sup>8</sup>. The last two classifications were confirmed by a repeat scan a few days later. An incomplete miscarriage was defined as the presence of heterogeneous, irregular tissues (with or without a gestational sac) which distorted the endometrial midline echo and could be clearly distinguished from a missed miscarriage or an anembryonic pregnancy. All women with a spontaneous, incomplete miscarriage before the 13th week of gestation were counseled about the implications of their condition and offered expectant management or surgical evacuation of the retained products of conception under general anesthesia.

Those women who chose expectant management were recommended to attend for follow-up as soon as possible after the cessation of transvaginal bleeding, or at weekly intervals for 4 weeks as appropriate. At each visit the women were asked about the presence of abdominal pain or transvaginal bleeding. The women were also given a direct telephone

number to obtain advice if they were worried about excessive pain or transvaginal bleeding, and told that they could attend the clinic at any time during opening hours or the accident and emergency department at other times. They were also given the option to be placed on an elective day surgery list for evacuation of the uterus at any stage of their management. The outcome measures were: the uptake of expectant management, the spontaneous completion of the miscarriage without surgical intervention (defined as an endometrial thickness < 15 mm with no evidence of retained conception products and the absence of transvaginal bleeding and lower abdominal pain), and the proportion of women completing their miscarriage within each week of management.

## RESULTS

Of the 1096 women, 312 (29%) were classified as having an incomplete miscarriage and, of these, 234 (75%) chose expectant management. Thirteen women were lost to follow-up, and of the remaining 221, 201 (91%) completed their miscarriage without surgical intervention. The mean time from diagnosis to complete miscarriage was 9 days with a range of 1–32 days. The relationship between the presence of a gestational sac or the thickness of the endometrium and the outcome of the miscarriage is shown in Table 1. A gestational sac was visible in 32% of cases and an endometrial thickness equal to or less than 15 mm in a further 38% of cases. There was no significant correlation between the presence or absence of a gestational sac and the proportion of completed miscarriages (Yates corrected chi-square test,  $P > 1.0$ ). Similarly, the trend towards a decrease in the proportion of completed miscarriages with the increase in endometrial thickness was not statistically significant (chi-square test,  $P > 0.61$ ). The total number of completed miscarriages and the number of surgical treatments at the end of each management week are shown in Table 2. It may be seen that 54% of women had completed their miscarriage during week 1 and 83% by the end of week 2. The odds in favor of a woman completing a miscarriage spontaneously were about 1 : 1 during week 1, 2 : 1 during week 2, 1 : 2 during week 3 and 1 : 5 during week 4. Two women were treated with antibiotics for endometritis without further intervention. Both had presented with lower abdominal pain (10 and 14 days after the completed miscarriage, respectively), and had mild leukocytosis. A bimanual examination and ultrasound scan provided further evidence for the diagnosis.

**Table 1** The presence of a gestational sac or endometrial thickness on the outcome of expectant management of incomplete, first-trimester miscarriage

| Variable                           | Women<br>(n (% of total)) | Complete miscarriages<br>(n (% of group)) | Days to completion<br>(Mean (range)) |
|------------------------------------|---------------------------|---|--------------------------------------|
| Gestational sac (3–28 mm diameter) | 70 (31.7)                 | 64 (91.4)                                 | 8.7 (2–32)                           |
| Endometrial thickness (mm)         |                           |   |                                      |
| < 11                               | 30 (13.6)                 | 28 (94.3)                                 | 6.8 (2–15)                           |
| 11–15                              | 54 (24.4)                 | 50 (93.3)                                 | 8.8 (2–21)                           |
| 16–21                              | 41 (18.6)                 | 38 (92.7)                                 | 8.9 (1–22)                           |
| > 21                               | 26 (11.8)                 | 22 (84.6)                                 | 10.4 (3–27)                          |
| All women                          | 221 (100.0)               | 201 (91.0)                                | 8.7 (1–32)                           |

**Table 2** Follow-up data from patients undergoing expectant management for an incomplete, first-trimester miscarriage

| Time from diagnosis (days) | Number of women | Completed, spontaneous miscarriages (n (% of group)) | ERPC (n (% of group)) | Accumulative, spontaneous miscarriages (n (% of total)) |
|----------------------------|-----------------|--|-----------------------|---|
| 1–7                        | 221             | 120 (54.3)   | 8 (3.6)               |   |
| 8–14                       | 93              | 64 (68.8)  | 3 (3.2)               | 184 (83.3)  |
| 15–21                      | 26              | 13 (50.0)  | 5* (19.2)             | 197 (89.1)  |
| > 22                       | 8               | 4 (50.0)   | 4 (50.0)              | 201 (91.0)  |

ERPC, evacuation of retained products of conception. \*Of the five, four were elective, one was emergency.

Twenty women had surgical treatment; 19 were elective with no prior complications and one had emergency treatment having been admitted to the accident and emergency department on day 21 of expectant management with excessive transvaginal bleeding, abdominal pain, a raised temperature and leukocytosis. Eight of the 19 women (42%) who requested surgical intervention did so within the first 7 days of expectant management.

## DISCUSSION

Most women (75%) with an incomplete, spontaneous miscarriage chose expectant rather than surgical management. Of these, 91% completed the miscarriage without surgical intervention and most (83%) within 14 days of diagnosis. Neither the presence of a gestational sac nor the thickness of the endometrium was a clinically useful index for predicting the outcome of expectant management, and repeat scans at non-emergency follow-up visits only confirmed the clinical findings. Consequently, the number of follow-up visits (and hence transvaginal scans) might be reduced. This conclusion is supported by the low number of complications requiring intervention that occurred in this well-defined group of women. We believe that it is important, however, that patients should be able to readily contact the clinic staff by telephone (or e-mail) for advice and support at all times. The data from this study suggest that under these circumstances the current follow-up schedule could be safely reduced to one or two fortnightly visits (depending on the continuing presence of transvaginal bleeding or abdominal pain) with the emphasis on counseling<sup>9</sup>. The results from our study show that about 10% of women who chose expectant management would not have completed their miscarriage within 4 weeks. There are also those women who prefer more active management from the time of diagnosis<sup>10</sup>. Consequently,

there is still a need for further studies to enable the identification of those women who are unlikely to complete their miscarriage spontaneously, and to determine the relative efficacy rates and side-effects of alternative treatments.

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