

Bleeding in Early Pregnancy

1 POINT

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INTRODUCTION

Vaginal bleeding commonly occurs in pregnancy. More than 20% of pregnant women with successful deliveries experienced vaginal bleeding during the antenatal course.¹ Two of the most important differential diagnoses for patients presenting because of bleeding in early pregnancy are miscarriage and ectopic pregnancy.

ASSESSMENT OF BLEEDING IN EARLY PREGNANCY

For patients admitted to the ward through the Accident & Emergency Department, the general condition should be assessed before taking history and performing examination. Resuscitation of the patients should be performed as appropriate.

History should be directed to establish the possibility of pregnancy. Associated symptoms including abdominal pain and passage of tissue mass should be asked. Risk factors of ectopic pregnancy like history of previous ectopic pregnancy, pelvic inflammatory disease, tubal surgery, use of assisted reproduction techniques should be explored.

Abdominal examination is an indispensable assessment. Apart from helping to make the diagnosis, presence of free fluid or peritoneal signs often indicates surgical treatment. The value of performing routine vaginal examination is challenged.^{2,3} However, vaginal examination would be important for patients with severe vaginal bleeding or abdominal pain. Removal of products of concep-



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tion from the cervix may stop bleeding. It will also ameliorate vasovagal shock as a result of distension of the cervical os. There are other advantages of vaginal examinations. Local causes of vaginal bleeding like cervical ectropion and cervical polyp can be diagnosed. Opportunistic screening for carcinoma of cervix can also be done. The authors are of the opinion that a vaginal examination should be done.

To make a definitive diagnosis, most patients would need further investigations. A negative pregnancy test

would rule out pregnancy related complications. The single most useful investigation for a patient with bleeding in early pregnancy is transvaginal ultrasound examination. The other important investigation is the serum human chorionic gonadotrophin (hCG) level.

MISCARRIAGE

Miscarriage is the preferred term for pregnancy loss before 24 weeks.⁴ This should replace the term 'abortion' in a series of related conditions. (Table 1) The term silent miscarriage is better because

Table 1. Recommended Terminology for Early Pregnancy Loss and Related Conditions

Old Terminology	Recommended Terminology
Spontaneous abortion	Miscarriage
Threatened abortion	Threatened miscarriage
Inevitable abortion	Inevitable miscarriage
Incomplete abortion	Incomplete miscarriage
Complete abortion	Complete miscarriage
Missed abortion	Silent miscarriage
Septic abortion	Miscarriage with infection

Adapted from RCOG Green Top Guideline No. 25.⁴**Table 2. Diagnostic Criteria for Silent Miscarriage**

	Ultrasound Findings	Management
Transvaginal Scan	CRL <7mm with no visible heartbeat	Perform a second scan a minimum of 7 days after the first
	CRL ≥7mm with no visible heartbeat	Seek a second opinion on the viability and/or perform a second scan a minimum of 7 days after the first
Transabdominal Scan	MSD <25mm with no visible foetal pole	Perform a second scan a minimum of 7 days after the first
	MSD ≥25mm with no visible foetal pole	Seek a second opinion on the viability and/or perform a second scan a minimum of 7 days after the first
Transabdominal Scan	Visible foetal pole with no visible heartbeat	Record the size of the CRL, perform a second scan a minimum of 14 days after the first
	Visible intrauterine with no visible foetal pole	Record the size of the MSD, and perform a second scan a minimum of 14 days after the first

Adapted from NICE Clinical Guideline 154.⁹

CRL: Crown-rump Length; MSD: Mean Sac Diameter

sound should be done to confirm the foetal viability by detecting the foetal pulsation. Cardiac activity can be documented at around 5 weeks and 5 days' gestation.⁷ However, a substantial proportion of pregnancies miscarried after detection of cardiac activity. In one series of patients after assisted reproduction treatment, 12.2% of pregnancies miscarried afterward.⁸ The efficacy of treatment of patients with threatened miscarriage with progesterone is inconclusive.⁹

Silent Miscarriage

The clinical features are very similar to threatened miscarriage. Some patients have no symptoms at all. The uterine size may be smaller than the gestational age. The ultrasound diagnostic criteria are listed in Table 2. The confirmation by a second opinion or repeat ultrasound examination after one week is recommended because of the consequence of misdiagnosing a viable pregnancy as miscarried.⁹ After a diagnosis of silent miscarriage is made, there are three options to further management. Expectant management for 1-2 weeks is the preferred management because this would minimise the risk of terminating a viable pregnancy. Also, expectant management is probably the most cost effective.¹⁰ The National Institute for Health and Clinical Excellence (NICE) suggested that an ultrasound examination should be done if bleeding and pain have not started or bleeding or pain are persisting and/or increasing after 3 weeks. If bleeding and pain of the patient have subsided, a pregnancy test should be done at the end of 3 weeks.⁹ It is important to note that this recommendations are not supported by sufficient clinical studies.¹¹ Medical treatment is the second accept-

'missed miscarriage' is considered 'a mouthful to enunciate'.⁵ The other alternative term is 'delayed miscarriage' but this term could imply fault on the part of the woman or her doctors.⁶

Threatened Miscarriage

The amount of bleeding is usually not heavy. There is usually no abdominal pain and the uterine size is corresponding to the gestational age. Pelvic ultra-

able option. This is also cost effective¹² and avoids the risk of evacuation of uterus. Eight hundred micrograms of misoprostol can be administered vaginally. The dose can be repeated if there is no bleeding or abdominal pain the next day. NICE suggested that a pregnancy test should be done after 3 weeks. Again, this recommendation is only based on expert recommendation. The third option is surgical evacuation of the uterus, either through electric vacuum aspiration or manual vacuum aspiration. A comparison of the three options can be found in table 3. The final decision should be made by the patient in the absence of contraindications. Tissue mass obtained in the course of treatment should be sent for histological assessment to confirm intrauterine pregnancy and exclude unsuspected gestational trophoblastic disease.⁴

Intrauterine Pregnancy of Uncertain Viability

A woman is considered to have an intrauterine pregnancy of uncertain viability if transvaginal ultrasonography shows an intrauterine gestational sac with no embryonic heartbeat and no findings of definite pregnancy failure.¹³ NICE suggested that an ultrasound examination can be repeated in a week following a transvaginal scan. The findings of a prospective observational multicentre study supported this recommendation.¹⁴

Incomplete Miscarriage

The patient usually has a history of passage of tissue mass apart from vaginal bleeding. There may also be history of abdominal pain. The cervical os is open and the uterine size is usually smaller than the gestational age. There is no consensus on the ultrasound diagnos-

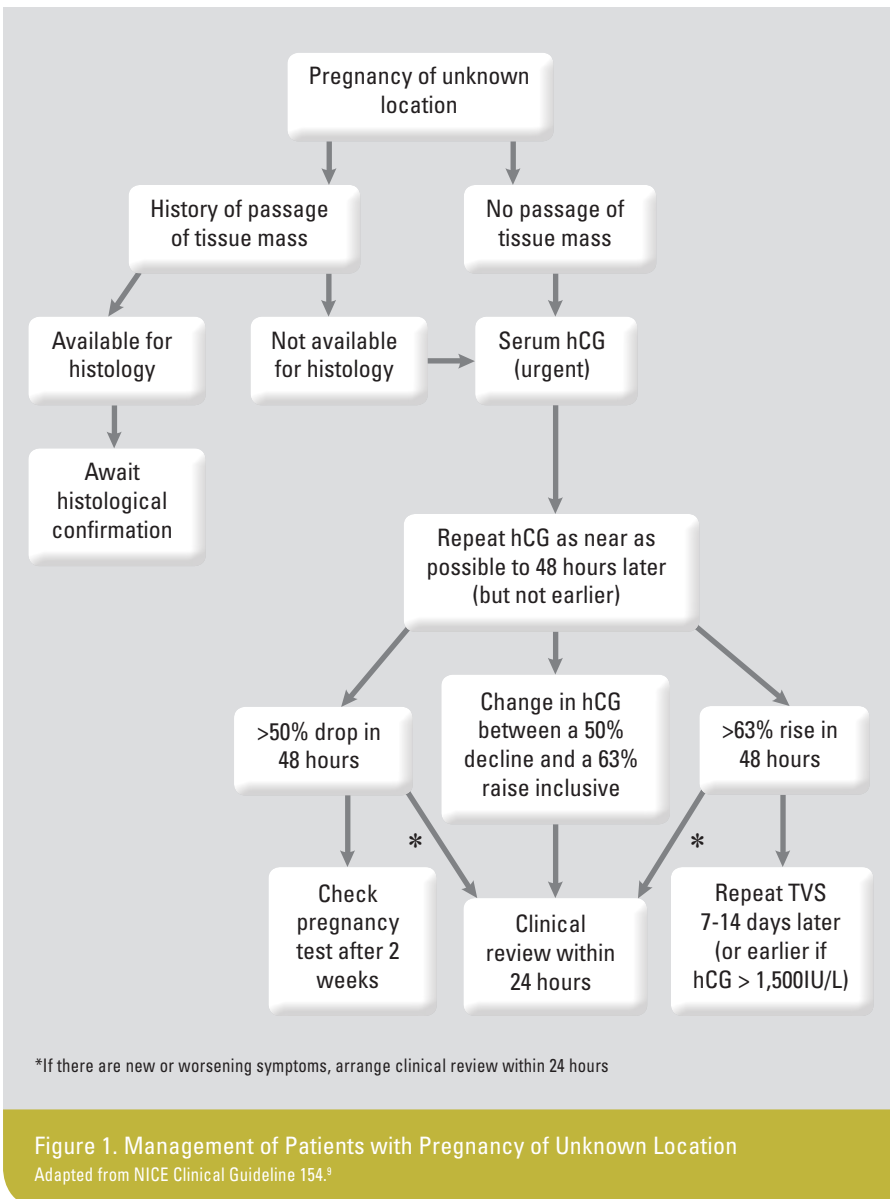
Table 3. Three Options of Management of Miscarriage

	Expectant Management	Medical Management	Surgical Management
Treatment	-	Vaginal misoprostol single dose 800 micrograms	Evacuation under MAC or GA
Contraindications	<ul style="list-style-type: none"> Evidence of infection Haemodynamic instability Suspicion of ectopic pregnancy 	<ul style="list-style-type: none"> Evidence of infection Haemodynamic instability Allergy to misoprostol Suspicion of ectopic pregnancy 	-
Advantages	Non-invasive	Less invasive	Quickest, highest success rate. Shortest duration of bleeding.
Disadvantages	Increased need for blood transfusion, unplanned admission and intervention. Longer duration of bleeding.	Compared to surgical treatment: <ul style="list-style-type: none"> Gastrointestinal side effects Longer duration of pain and bleeding More unplanned admissions 	Anaesthetic and surgical risks.
Success Rate	14-47% (silent miscarriage); 85% in 2 weeks (incomplete miscarriage)	85%	95%
Anti-RhD prophylaxis for non-sensitised RhD-negative women	No, if spontaneous miscarriage occurs and no intervention needed	No	Yes At least 250 IU anti-D Ig
Cost	Most cost effective	Second most cost effective	Most costly

MAC: Monitored anaesthesia care

tic criteria for incomplete miscarriage. Measurement of endometrial thickness or volume cannot differentiate between retained products of gestation and de-

cidua.¹⁵ The value of morphological criteria are also not sufficiently evaluated.⁷ The same three options are useful for management after the diagnosis is



made. Expectant management is probably more successful for incomplete miscarriage when compared to silent

riage can be used although a lower dose for incomplete miscarriage should suffice.

Ectopic pregnancy remains one of the important causes of maternal mortality

miscarriage.¹⁶ The same is probably also true for medical miscarriage. To keep the local protocol simpler, the same protocol used for silent miscar-

Complete Miscarriage

The presentation is very similar to incomplete miscarriage but usually, both pain and bleeding should have sub-

sided. The cervical os is closed and the uterine size should be smaller. Ultrasound examination should reveal no signs of any pregnancy tissue within the uterine cavity.⁷ This diagnosis should be made only if there is evidence supporting the prior presence of an intrauterine pregnancy like previous ultrasound evidence or histological evidence of intrauterine pregnancy.

Pregnancy of Unknown Location

This is a descriptive term applied to women with a positive pregnancy test who have no evidence of either an intrauterine or ectopic pregnancy on transvaginal ultrasound examination.¹⁷ An algorithm to manage patients in this state can be found in figure 1.

ECTOPIC PREGNANCY

Ectopic pregnancy remains one of the important causes of maternal mortality.¹⁸ When an ectopic pregnancy ruptures, the patient develops hypovolemic shock and may die without timely intervention. Fortunately, most patients present before rupture. The classic symptoms of ectopic pregnancy include missed period, vaginal bleeding and abdominal pain. Risk factors should be explored. Significant physical findings include abdominal tenderness, cervical motion tenderness, adnexal mass or tenderness. In a recent review of literature, it was found that all components of patient history and symptoms showed limited clinical value. Similarly, normal findings did not decrease the likelihood of an ectopic pregnancy.¹⁹

Transvaginal ultrasound examination is the most important modality of investigation. The likelihood ratio of ectopic pregnancy in the presence of

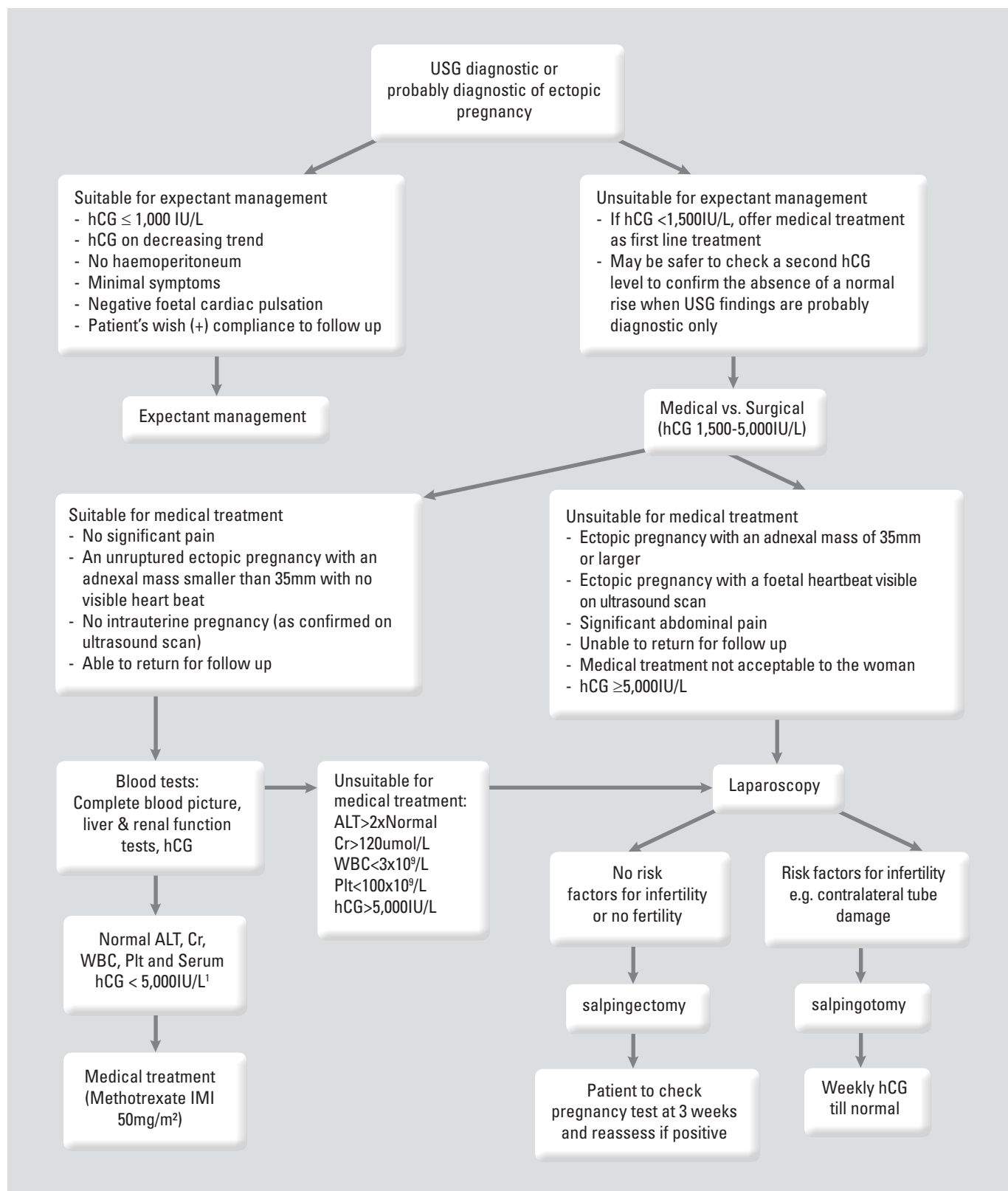
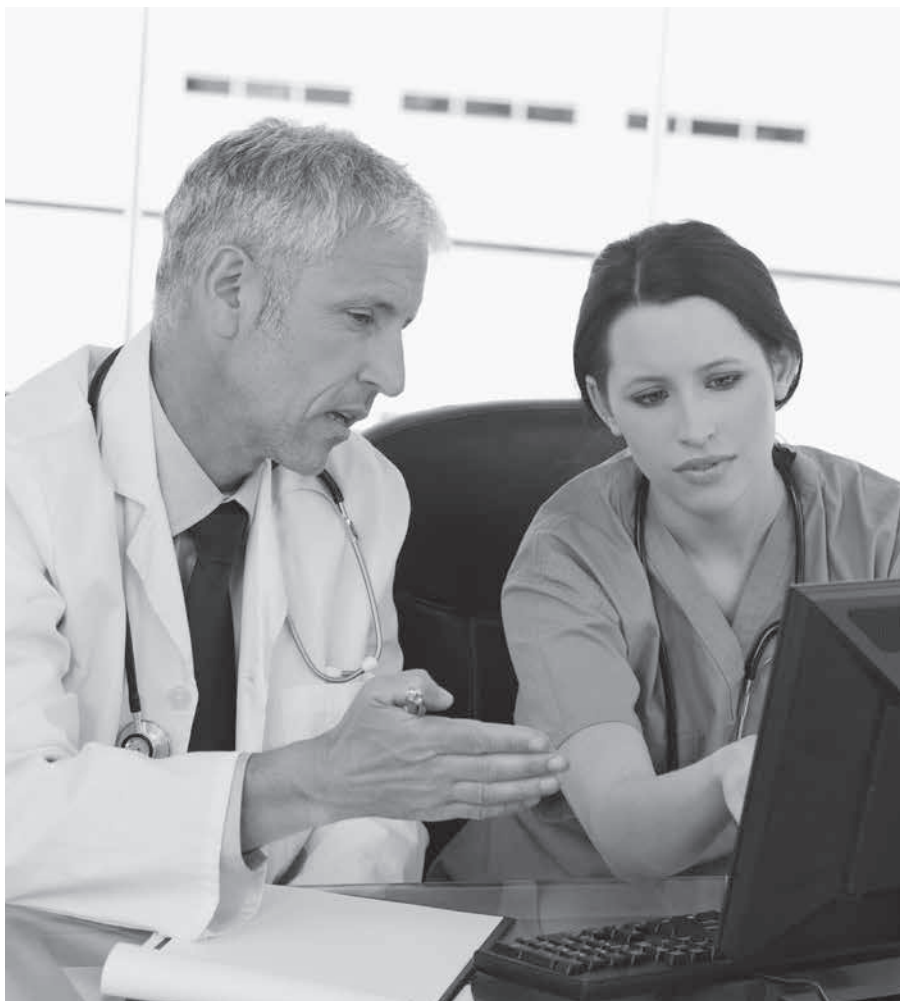


Figure 2. Management of Ectopic Pregnancy

Adapted from NICE Clinical Guideline 154.⁹



Laparoscopic salpingectomy should be the surgery of choice for ectopic pregnancy. This can avoid the risk of persistent ectopic pregnancy whilst the reproductive outcome is similar.

an adnexal mass and the absence of an intrauterine pregnancy was reported to be 111 (95% confidence interval [CI], 12-1028). Presence of extrauterine gesta-

as probably ectopic pregnancy.¹⁷ This distinction is important to avoid inadvertently giving methotrexate to an early intrauterine pregnancy.

Molar pregnancy and cervical ectopion are other causes of bleeding in early pregnancy

tional sac with yolk sac and/or embryo is considered definitive evidence of ectopic pregnancy. The presence of an inhomogeneous adnexal mass or extrauterine sac-like structure should be considered

Checking serum hCG level is important in pregnancy of unknown location. The concept of discriminatory zone has been described but the pitfalls of using it to diagnose ectopic pregnan-

cy should be avoided. It only suggests that the pregnancy may not be viable.²⁰ The pregnancy may even be proven to be viable later. In a retrospective study, there were at least 8 patients in whom no intrauterine pregnancy was observed when the hCG level was more than 2,000 IU/L. On follow up, seven of them delivered a live birth and the other pregnancy was ongoing at 35 weeks at the time of report.²¹ Serial hCG would be more helpful. In fact, the use of discriminatory zone was not described in the NICE guideline. Apart from making the diagnosis, the level of hCG can also help to triage a patient for the different options of management.

There are also three options in the management of ectopic pregnancy. An algorithm to manage patients suffering from ectopic pregnancy can be found in figure 2. Expectant management has been reported to be effective in more than a third of patients.²² They included patients in whom there is no immediate indication to perform surgery and the hCG level lower than 1,500 IU/L. A lower cut-off of 1,000 IU/L was recommended in the previous RCOG guideline.²³ This option was not mentioned in the current NICE guideline.

Medical treatment with systemic methotrexate is a cost effective option compared to surgery. In general, it is useful for asymptomatic patients with early ectopic pregnancy. The inadvertent administration of methotrexate to an undetected intrauterine pregnancy is the worst nightmare of medical treatment. It is thus safer to confirm the absence of a normal rise in hCG for patients with a diagnosis of probable ectopic pregnancy before administration of methotrexate.

Laparoscopic salpingectomy should be the surgery of choice. This can avoid the risk of persistent ectopic pregnan-

cy whilst the reproductive outcome is similar.²⁴

The discussion so far is mainly applicable to tubal ectopic pregnancy, which constitutes more than 90% of all ectopic pregnancies. The diagnosis and management of non-tubal ectopic pregnancy are different and the authors would like to refer to other publications for more information.^{25, 26}

OTHER DIAGNOSES

There are other causes of bleeding in early pregnancy.

Molar pregnancy is a condition which can be associated with serious sequelae. This is the reason why all tissue mass obtained in the course of management should be sent for pathological examination.

Cervical ectopion is more commonly found. It was found in more than 10% of patients. Cervical polyp was

found in 2% of patients.³ In fact, in many of these patients, a normal intrauterine pregnancy was found. The ectopion or the polyp could be the cause of the bleeding and the easiest way to make the diagnosis is to perform a vaginal speculum examination.

OTHER MANAGEMENT ISSUES

It is important to give anti-D rhesus prophylaxis at a dose of 250 IU (50 micrograms) to all non-sensitised rhesus negative women who have a surgical procedure to manage an ectopic pregnancy or a miscarriage.⁹ There is no need for patients who receive solely medical management for an ectopic pregnancy or miscarriage or have a threatened miscarriage or have a complete miscarriage or have a pregnancy of unknown location.

Different patients can have very different reactions after suffering from

bleeding in early pregnancy. The doctor should be very sensitive towards the possibility of developing emotional distress and consider appropriate intervention as necessary.

CONCLUSION

Bleeding in early pregnancy is a common condition. The most important differential diagnoses include miscarriage and ectopic pregnancy. Apart from history and physical examination, ultrasound examination and measurement of serum hCG are mostly required to make a diagnosis and guide management.

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Conflict of interest: none declared.

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CME ARTICLE 1 POINT

Bleeding in Early Pregnancy

Answer True or False to the questions below.

	True	False
1. There is no need to perform pelvic examination in patients suffering from bleeding in early pregnancy because of the accuracy of ultrasound examination.	<input type="radio"/>	<input type="radio"/>
2. Delayed miscarriage is a better term than silent miscarriage because most patients would have some symptoms and therefore cannot be 'silent'.	<input type="radio"/>	<input type="radio"/>
3. Silent miscarriage can be diagnosed if foetal pulsation is not detected after 6 weeks maturity.	<input type="radio"/>	<input type="radio"/>
4. Expectant management is the preferred management for silent miscarriage because the risk of terminating a viable pregnancy would be minimised with other treatments.	<input type="radio"/>	<input type="radio"/>
5. It is proven that repeating a vaginal scan after 7 weeks is the most cost effective approach for intrauterine pregnancy of uncertain viability.	<input type="radio"/>	<input type="radio"/>
6. Endometrial thickness of less than 1 cm confirmed the diagnosis of complete miscarriage.	<input type="radio"/>	<input type="radio"/>
7. The presence of an inhomogenous adnexal mass or extrauterine sac-like structure and absence of an intrauterine gestational sac confirm the diagnosis of ectopic pregnancy.	<input type="radio"/>	<input type="radio"/>
8. An hCG level of more than 2,000 IU/L without evidence of intrauterine gestation on transvaginal ultrasound examination is not compatible with a normal intrauterine pregnancy.	<input type="radio"/>	<input type="radio"/>
9. Expectant management is not an option for the management of ectopic pregnancy.	<input type="radio"/>	<input type="radio"/>
10. Laparoscopic salpingotomy should be considered the surgical treatment of choice because of the superior reproductive outcome.	<input type="radio"/>	<input type="radio"/>

Name in BLOCK CAPITALS: _____

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Answers

1	2	3	4	5	6	7	8	9	10
F	F	T	T	F	F	T	F	F	F