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Review Article

Abnormal Uterine Bleeding in Non-Sexually Active Patients: Evidence-Based Management and Minimally Invasive, Hymen-Sparing Diagnostic Pathways with Socio-Cultural and Islamic Bioethical Considerations in the Middle East and North Africa

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Abstract

Objective: To synthesise evidence for the evaluation and management of abnormal uterine bleeding (AUB) in non-sexually active patients, emphasising minimally invasive, hymen-sparing diagnostic pathways and culturally informed care relevant to Middle East and North Africa (MENA) settings.

Data Sources: Guidelines from ACOG, FIGO, NICE, and ACR, along with peer-reviewed literature on minimally invasive hysteroscopy, imaging alternatives to transvaginal ultrasound, and sociocultural and bioethical considerations.

Methods: Structured narrative review of literature (2005-2025), prioritising guideline-level evidence and minimally invasive gynaecology studies. Evidence was synthesised into a clinically applicable diagnostic and management pathway.

Results: Most AUB in adolescents results from ovulatory dysfunction, with bleeding disorders as a prominent secondary cause. A hymen-sparing diagnostic approach-using transabdominal ultrasound, MRI or transrectal ultrasound, and vaginoscopic hysteroscopy-maintains diagnostic accuracy while enhancing acceptability. Minimally invasive hysteroscopy allows for diagnosis and treatment with high tolerability. Virginity testing is not medically valid and should be avoided.

Conclusion: A structured, minimally invasive, culturally sensitive approach improves diagnostic access, patient experience, and clinical outcomes in non-sexually active patients with AUB.

Keywords: *Abnormal Uterine Bleeding; Heavy Menstrual Bleeding; Non-Sexually Active Patients; Vaginoscopic Hysteroscopy; Minimally Invasive Gynaecology; Islamic Bioethics*

Highlights

- Most adolescents bleed from ovulatory dysfunction; screen for bleeding disorders.
- Use transabdominal ultrasound; add magnetic resonance imaging or rectal ultrasound if needed.
- No-touch vaginoscopic hysteroscopy diagnoses and treats cavity pathology.
- Start iron therapy early, even without anaemia, to reduce heavy bleeding symptoms.
- Avoid nonmedical virginity testing; provide trauma-informed, dignity-preserving care.

Introduction

Abnormal uterine bleeding (AUB) is a common gynaecological issue throughout the reproductive years and is a leading cause of outpatient visits, emergency episodes, and diminished quality of life [1-3]. Standardised methods for managing AUB-guided by the International Federation of Gynaecology and Obstetrics PALM-COEIN classification and endorsed by major professional guidelines-have enhanced diagnostic accuracy and treatment outcomes [1,4-6]. Nonetheless, these strategies often depend on pelvic examinations and transvaginal ultrasound (TVUS) as the initial diagnostic tools.

A notable group of patients, including adolescents and those who are not sexually active, may refuse vaginal examination or TVUS due to discomfort, vaginismus, previous trauma, or sociocultural and religious reasons. In such cases, the lack of well-defined alternative options can result in diagnostic delays, repeated low-yield tests, or unnecessary escalation to invasive procedures [7-9]. This highlights a vital gap in modern gynaecological care.

Minimally invasive gynaecology provides an opportunity to bridge this gap through the use of non-vaginal imaging techniques and "no-touch" vaginoscopic hysteroscopy methods. These strategies enable precise assessment of the uterine cavity while reducing physical and psychological distress and often maintaining hymenal integrity. Emerging evidence demonstrates the feasibility, safety, and diagnostic effectiveness of these approaches, yet they remain underrepresented in mainstream AUB algorithms [1-3,5,10-12].

In the Middle East and North Africa (MENA), clinical decision-making is further influenced by sociocultural norms and ethical frameworks related to virginity, modesty, and family dynamics. Misconceptions about hymenal anatomy and the continued use of non-medical "virginity testing" can affect patient presentation, consent, and acceptance of procedures. Ethical practice in these contexts requires combining evidence-based medicine with culturally sensitive, dignity-preserving care grounded in established bioethical principles [13,14].

Aim of the Study

This review aims to synthesise current evidence and propose a structured, minimally invasive, hymen-sparing diagnostic and management pathway for AUB in non-sexually active patients. By combining guideline-based medical management with practical procedural adaptations and ethical considerations relevant to MENA and other multicultural settings, this work seeks to improve access, patient experience, and clinical outcomes.

Methods

We conducted a structured narrative review of guideline-level and primary literature published between 2005 and 2025. Sources included PubMed-indexed articles, guideline repositories, and consensus statements from major professional bodies, including the American College of Obstetricians and Gynaecologists, the International Federation of Gynaecology and Obstetrics, the National Institute for Health and Care Excellence, and the American College of Radiology.

Search emphasis focused on: (1) abnormal uterine bleeding in adolescents and non-sexually active patients, (2) imaging alternatives to transvaginal ultrasound, (3) vaginoscopic hysteroscopy and minimally invasive diagnostic techniques, and (4) sociocultural and Islamic bioethical considerations in gynaecologic care. Priority was given to high-quality guidelines, systematic reviews, and contemporary minimally invasive gynaecology literature.

Evidence was synthesised into a clinically applicable diagnostic and management pathway, with particular attention to decision points at which a standard vaginal examination is not acceptable. Where high-level evidence was limited, recommendations are based on best available data and expert-informed practice consistent with minimally invasive gynaecologic principles.

Terminology and aetiology

FIGO AUB systems and PALM-COEIN

FIGO introduced two complementary systems: one to standardise the description of normal and abnormal bleeding symptoms, and another (PALM-COEIN) to classify underlying causes. PALM categories include structural causes (polyp, adenomyosis, leiomyoma, malignancy/hyperplasia), while COEIN categories consist of non-structural causes (coagulopathy, ovulatory dysfunction, endometrial issues, iatrogenic factors, and not yet classified causes). Standardisation enhances comparability of research and supports a clear, stepwise approach in clinical practice [4,10].

Etiologic distribution in adolescents and virginal patients

In adolescents, ovulatory dysfunction due to an immature hypothalamic-pituitary-ovarian axis is the primary cause of AUB/HMB. A significant minority have an underlying bleeding disorder; ACOG emphasises that HMB at menarche can be a warning sign and recommends structured screening and collaboration with haematology when suspicion arises. A systematic approach to adolescent AUB should focus on the predominance of anovulatory cycles and highlight the importance of ruling out bleeding disorders and endocrine causes [2,3]. Structural causes are rare in early adolescence but should be considered when bleeding is resistant, focal symptoms are present, or abnormal imaging is detected. These patterns support prioritising noninvasive evaluation (anaemia/iron deficiency, endocrine factors, bleeding disorder screening) and reserving invasive uterine assessment for selected indications [2,11,15].

Clinical reasoning in virginal adolescents should begin with a presumption of non-structural causes, while remaining alert for rare structural pathology. Useful triage questions include: Is the patient stable? Is the bleeding severe enough to require urgent hemostasis? Are there signs indicating coagulopathy or endocrine disorder? Are there red flags for pelvic pathology (persistent intermenstrual bleeding, significant pain, palpable mass, or failure of medical treatment)? Using PALM-COEIN as a checklist helps prevent premature steps towards invasive assessment, while keeping rare but serious causes in mind [2,4,10]. Recognising abnormal menstrual patterns early as a vital sign can enable prompt diagnosis and treatment.

In older virginal patients (e.g. adult women who have never had penetrative intercourse), the range of potential causes widens to resemble that of the general reproductive-age population, and structural issues become more significant. Imaging and, when necessary, endometrial sampling should follow the same clinical criteria as for non-virginal patients, but with modifications to techniques (e.g. transrectal ultrasound, MRI, and vaginoscopic hysteroscopy) to respect patient preferences and prevent unnecessary trauma [7,8].

Clinical assessment

Triage and stabilisation (Acute bleeding)

Initial assessment of acute AUB should focus on urgency. ACOG advises quick evaluation for hypovolemia and haemodynamic instability, including orthostatic vital signs where possible. Stabilisation (intravenous access, fluids, and transfusion when needed) should precede definitive diagnostic evaluation. In adolescents, medical therapy is typically the first-line treatment; procedural interventions are reserved for non-response, instability, or when severe bleeding requires further investigation [2,3].

History: Focusing on actionable differentials

History should describe bleeding severity (duration >7 days, flooding, passage of large clots, need to change products frequently), cycle regularity, and the level of functional impairment (school absence, activity restrictions). Symptoms of anaemia (fatigue, dyspnoea, dizziness) should be identified. A bleeding disorder screen should include epistaxis, gingival bleeding, easy bruising, prolonged bleeding after dental or surgical procedures, postpartum haemorrhage in family members, and family history of diagnosed coagulopathy. Haematology guidance emphasises that failure to respond to conventional therapy should raise suspicion and prompt a more detailed assessment [2,15].

Although many patients self-identify as virginal, clinicians should avoid assumptions that could miss urgent diagnoses. When clinically relevant, a confidential, nonjudgmental assessment of pregnancy risk and genital tract infection should be undertaken in accordance with local law and safeguarding policy. The aim is not to challenge identity but to ensure patient safety, particularly in presentations with severe pain, syncope, or atypical bleeding patterns. Where pregnancy is plausibly excluded, evaluation proceeds under the AUB framework; where it cannot be excluded, pregnancy testing becomes a safety measure before labelling bleeding as AUB [3,16,17].

Examination: Minimum necessary, trauma-informed

Examination should start with a general assessment and a check of vital signs. Skin assessment for bruising or petechiae can support suspicion of coagulopathy. An abdominal examination helps identify uterine enlargement or an adnexal mass. In adolescents and virginal patients, vaginal examination is rarely necessary. It should only be performed if it will influence management (e.g. suspected trauma, foreign body, pelvic mass, severe pain, or ongoing unexplained bleeding). Principles of trauma-informed care are increasingly recognised as essential in gynaecological practice, emphasising patient autonomy, safety, and avoiding re-traumatisation, especially in groups more sensitive to invasive procedures [14,18]. When internal assessment is needed, clinicians should communicate trauma-informed, ensure privacy and chaperoning, and consider examination under anaesthesia if clinically justified and acceptable [2,13,16].

Communication is key to a successful examination strategy. A brief, clear explanation-what will be examined, why it matters for safety, what alternatives exist, and what will happen if the patient declines-reduces fear and supports consent. In MENA contexts, it can be helpful to state clearly that the goal is to manage bleeding and anaemia. It should be noted that hymenal appearance is not a medically valid indicator of sexual history. Offering a female clinician and a chaperone of the patient's choice, minimising exposure, and allowing the patient to pause or stop at any time, upholds dignity and modesty while maintaining clinical standards [13,16].

Red flags and escalation triggers

Features warranting early escalation include haemodynamic instability, syncope, rapidly falling haemoglobin, bleeding refractory to initial medical therapy, suspicion of pregnancy-related bleeding in sexually active patients, pelvic mass, severe pelvic pain, or systemic symptoms indicating infection or endocrine disease. In virginal patients, escalation decisions must balance clinical urgency with acceptability; in many cases, a non-vaginal imaging step can clarify risk and prevent unnecessary invasive examination [3,7].

Investigations and imaging

Laboratory evaluation

Core laboratory evaluation includes a full blood count and ferritin to assess anaemia and iron deficiency. ACOG recommends measuring ferritin because iron deficiency can be present even when haemoglobin is near normal. Testing for endocrine causes (e.g. thyroid function) should be based on medical history and clinical features. If coagulopathy is suspected, ACOG advises collaborating with haematology for laboratory assessment and management planning, as the interpretation and timing of hemostasis tests can influence diagnostic accuracy [2,15].

Interpreting ferritin in adolescents requires attention to inflammation and recent transfusion; when results are uncertain, repeating ferritin after recovery from acute illness may be appropriate. For suspected bleeding disorders, timing of hemostasis testing is important: von Willebrand factor levels can vary with stress, oestrogen exposure, and acute bleeding. Coordinating practically with haematology improves test selection, interpretation, and subsequent management planning, and can prevent false reassurance from a single normal screen obtained during an acute physiological stress response [2,15].

Imaging principles and appropriateness

Clinical questions rather than routine procedures should guide imaging. ACR Appropriateness Criteria recommend pelvic ultrasound as the first-line imaging for AUB and suggest MRI when ultrasound results are inconclusive or further characterisation is needed [5,11,19]. Typically, ultrasound involves both transabdominal and transvaginal approaches; however, in virgin patients who decline TVUS, alternative methods must be used without compromising diagnostic accuracy.

Transabdominal ultrasound should record uterine size, myometrial echotexture, adnexal morphology, and any obvious intracavitary lesion. When endometrial thickness or cavity detail is not clearly visualised, clinicians should avoid repeating low-yield transabdominal examinations and instead consider MRI or transrectal ultrasound, depending on availability and patient preference. MRI is especially useful when anatomy is complex, when congenital anomalies are suspected, or when myometrial disease needs to be considered; transrectal ultrasound can offer a closer, high-resolution view of the uterus and endometrium without vaginal instrumentation and may serve as a practical intermediate step in resource-limited settings [7,20,21].

Hymensparing imaging ladder

A pragmatic approach starts with a transabdominal ultrasound. If the uterus or endometrium is inadequately visualised, MRI can offer a detailed assessment without vaginal instrumentation. Transrectal ultrasound (TRUS) can also provide a view similar to TVUS. Evidence comparing virgins with suspected genital tract lesions suggests TRUS may have better agreement with vaginoscopic findings than 3D transabdominal ultrasound, although acceptability varies; therefore, shared decision-making is essential [21-23].

The choice between MRI and transrectal ultrasound can be considered as part of shared decision-making. MRI provides detailed anatomical mapping and is non-invasive, although it may cause delays and incur higher costs; transrectal ultrasound is quicker and similar to TVUS in its diagnostic approach, but some patients may decline it. Clinicians should normalise both options and emphasise that each is used to respect patient preferences while gathering the necessary information to guide treatment. When transrectal ultrasound is declined, and transabdominal imaging is limited, MRI becomes the preferred next step [20,21,24,25].

When to proceed to endoscopic evaluation

Endoscopic evaluation is recommended when intracavitary pathology is suspected, bleeding persists despite appropriate medical treatment, or tissue diagnosis is clinically necessary. In virgin patients, vaginoscopic hysteroscopy provides a minimally invasive, hymen-sparing method for direct visualisation, biopsy, and treatment. It may also reduce the need for repeated visits and prolonged empirical therapy by delivering a definitive diagnosis [8,26,27].

When endometrial sampling is necessary (e.g. persistent unexplained bleeding, risk factors, or imaging concerns), vaginoscopic hysteroscopy enables targeted biopsy under direct vision. It may decrease the rate of inadequate samples compared with blind techniques. In virginal patients, this method can also prevent repeated outpatient sampling attempts that may be distressing or unsuccessful. The decision to sample should remain based on clinical indications; the fact that a patient is virginal should not lower the threshold for appropriate evaluation when justified by age, symptoms, or imaging findings [8,16,26].

Medical management

Acute AUB in hemodynamically stable patients

For acute heavy bleeding in stable patients, medical therapy is the first line. ACOG describes options including multidose combined oral contraceptives or oral progestins and antifibrinolytics such as tranexamic acid. Selection should consider contraindications (e.g.

thromboembolic risk), patient preference, and the need for rapid control. When bleeding is severe or prolonged, iron therapy should begin early, and transfusion should be considered based on clinical symptoms and haemoglobin level rather than haemoglobin alone [1,2].

A practical approach involves pairing hemostatic therapy with a parallel plan for evaluation and follow-up. In stable patients, clinicians may start hormonal therapy and/or tranexamic acid to control bleeding, initiate iron supplementation, and plan follow-up within weeks to reassess bleeding patterns, adherence, anaemia resolution, and the need for further investigation. In severe cases, admission criteria may include symptomatic anaemia, ongoing heavy bleeding despite initial treatment, or inability to tolerate oral medications. Early coordination with haematology is advisable when coagulopathy is suspected, especially in those with menarche-onset HMB or a positive bleeding history.

Maintenance therapy for recurrent HMB

Once acute bleeding is controlled, maintenance therapy aims to prevent recurrence and address iron deficiency. ACOG states that maintenance options include combined hormonal contraception, oral or injectable progestins, and levonorgestrel-releasing intrauterine systems (LNG-IUS). NICE NG88 recommends LNG-IUS as a first-line option for many with HMB when appropriate. It supports non-hormonal options (tranexamic acid and NSAIDs) as well as systemic hormonal therapies when LNG-IUS is unsuitable or declined. In virginal patients who decline intrauterine devices, continuous systemic regimens and/or tranexamic acid remain suitable and effective [1,10].

Maintenance decisions should be tailored to three goals: (1) controlling bleeding and ensuring cycle predictability, (2) correcting and preventing iron deficiency, and (3) ensuring acceptability to the patient and family, including cultural and religious considerations. Continuous combined hormonal therapy is often effective for anovulatory bleeding; progestin-only regimens can be used where oestrogen is contraindicated or declined. Tranexamic acid and NSAIDs offer non-hormonal options for those who prefer to avoid hormones or contraception framing. In virginal patients, LNG-IUS may be highly effective but may require specialised counselling and, when chosen, consideration of insertion under sedation or anaesthesia in selected cases [1,11,28].

Tranexamic acid: Role and positioning

Tranexamic acid is an antifibrinolytic agent that reduces menstrual blood loss and can be used cyclically during menstruation. A NASPAG consensus statement describes tranexamic acid as an important option for adolescents with HMB, used alone or combined with hormonal therapies depending on severity and patient goals. In MENA settings where contraception might not be desired or acceptable, tranexamic acid can be positioned as a bleeding control therapy rather than a contraceptive measure [11,28].

Iron deficiency: Treat early and explicitly

Iron deficiency is common among adolescents with HMB and can occur with or without anaemia. Haematology guidance highlights that ferritin should be measured, and iron supplementation is an essential part of treatment. Clinicians should advise patients and families on adherence, side effects, and the expected timeline for symptom improvement. In cases of severe deficiency or intolerance to oral iron, intravenous options may be considered through local pathways [15].

Bleeding disorders and multidisciplinary care

When a bleeding disorder is suspected or confirmed, multidisciplinary management with haematology is advised. Hormonal therapies and antifibrinolytics may be combined to control bleeding and prevent recurrence. Planning for future procedures, including dental work and surgery, should include consideration of hemostasis. Coordinated care can reduce both hospitalisation and transfusions through early recognition and intervention [1,15].

Clinicians should also review medication use that could worsen bleeding. NSAIDs may decrease menstrual blood loss in ovulatory HMB, but for patients with platelet function defects or other coagulopathies, risks and benefits should be tailored and discussed with haematology experts. For patients with confirmed bleeding disorders, care planning must go beyond the acute episode to include anticipatory guidance for future procedures and emergencies, documentation of bleeding history, and clear pathways for rapid access to specialist support [1,11,15].

Minimally invasive hysteroscopy and procedural care

Indications for hysteroscopy in virgin patients

Hysteroscopy should be considered when imaging indicates intracavitary pathology (e.g. polyp, submucosal fibroid), when AUB persists despite guideline-concordant medical therapy, or when endometrial sampling is clinically indicated. In virginal patients, the decision to proceed should depend on medical necessity, with a clear explanation of options and a focus on minimising harm [3,7].

Informed consent for virginal patients should clearly differentiate between medical necessity and social considerations. A practical approach is to describe hysteroscopy as a camera-based assessment of the uterine cavity performed using a no-touch entry technique, emphasising that the goal is to reduce trauma and maximise comfort, while recognising that complete preservation of hymenal tissue cannot be assured in all anatomies or conditions. Offering options such as outpatient diagnostic hysteroscopy, procedural sedation, or examination under anaesthesia helps support autonomy and minimises the likelihood of procedure cancellation [8,16,26].

Vaginoscopic ("notouch") approach: Evidence and practice points

Vaginoscopic hysteroscopy is a significant advancement in minimally invasive gynaecology, enabling direct visualisation of the uterine cavity without the need for a speculum or tenaculum. The use of small-diameter hysteroscopes (≤ 3.5 mm) with saline distension is associated with improved patient comfort, higher success rates, and reduced need for anaesthesia [9,16,26].

Comparative evidence indicates that vaginoscopic approaches are better tolerated than conventional hysteroscopy, with shorter procedure times and fewer procedural failures [9,27].

These findings endorse its suitability as the preferred endoscopic method in non-sexually active patients, where maintaining comfort and acceptability is of paramount importance.

Preparation and periprocedural planning often determine success. Pre-procedure counselling should cover expected sensations, the no-touch approach, and the possibility of converting to anaesthesia if discomfort prevents safe completion. Where sedation is used, it should be proportional to the planned intervention (diagnostic versus operative). Intraprocedurally, gentle distension, steady visualisation, and avoidance of unnecessary cervical manipulation are consistent themes across reports. Post-procedure, patients should receive clear guidance on expected bleeding, pain control, and red-flag symptoms, alongside a plan for follow-up and pathology review when a biopsy is performed [9,28,29].

Technique should remain patient-centred and generalizable: careful counselling; individualised analgesia/sedation planning; use of a no-speculum entry where feasible; and escalation to examination under anaesthesia for complex pathology or when required to ensure safety. In settings where concerns about the hymen are prominent, clinicians should avoid guaranteeing hymen preservation and instead document the clinical rationale, consent, and steps taken to minimise risk [26,29].

Nonsurgical procedures and tamponade

In selected refractory cases, nonsurgical tamponade or other measures may be considered as part of acute management; however, such interventions often require transcervical placement and thus demand careful counselling, consent, and an appropriate setting. In

adolescents and virginal patients, these options should be reserved for situations where medical therapy fails and bleeding severity warrants escalation [1,2].

Islamic bioethics and sociocultural considerations

Virginity, the hymen, and clinical myths

Virginity has no reliable anatomical marker; hymenal morphology varies widely, and an intact hymen does not confirm the absence of sexual activity. Pediatric and ethics literature emphasise that there is no scientifically reliable examination to determine virginity and that "virginity testing" can be humiliating and traumatic. In MENA contexts, misconceptions may nevertheless drive careseeking behavior and procedural refusal. Clinicians should respond with clear education and a focus on health needs [16,30,31].

Islamic bioethical principles: Aligning care with patient values

Islamic medical ethics commonly emphasises the preservation of life and health, the necessity of permitting otherwise restricted actions, and the obligation to remove harm while respecting modesty and privacy. These principles support the timely treatment of significant bleeding and ethically justify intimate examination or procedures when clinically necessary, provided that harm is minimised and the least invasive effective approach is selected [13,29,31].

These principles translate into concrete clinical duties: to treat significant bleeding promptly (preservation of health), to choose the least invasive and adequate diagnostic step (harm reduction), and to respect privacy through same-gender care when feasible and with minimal exposure. Necessity and harmreduction reasoning can support procedures that might otherwise be resisted because of hymenrelated fears, when delaying care could lead to serious harm, such as severe anaemia or ongoing haemorrhage. This framing can be helpful in shared decision-making discussions with patients and families in Muslim-majority settings [1,13,29].

Virginity testing and documentation requests

BMJ Global Health recommendations describe virginity testing as unscientific and recommend avoiding invasive examination when not medically indicated. Clinicians should separate requests for certification from medically indicated evaluation, offer education, and assess for safety risks. Documentation should record medical indications, consent, and relevant clinical findings without asserting sexual status. Where local systems incorporate forensic consultation for hymen--related concerns, its role should be limited to safeguarding and medicolegal clarity when unavoidable harm may occur [16,29,31].

When families request documentation regarding the hymen, clinicians should avoid language implying sexual status. A safer approach is to document the clinical indication for assessment or procedure, the informed consent process, and relevant anatomic findings only insofar as they affect care. Where medico-legal risk is substantial, referral to appropriate institutional pathways (e.g. risk management or forensic consultation, where available) may protect both the patient and the clinician while maintaining a focus on medical necessity rather than social certification [16,29,31].

Modesty, gender concordance, and patient dignity

Respect for modesty can be operationalised through practical steps: offering a female clinician when feasible, ensuring appropriate draping, limiting the number of personnel in the room, using chaperones per preference and policy, and explaining each step before proceeding. Such measures can reduce distress and improve the acceptability of necessary examinations or procedures, including imaging and vaginoscopic hysteroscopy [13,16].

In practical terms, modesty-respecting care can be built into the service environment: scheduling with female clinicians where feasible, using dedicated gowns and drapes, limiting repeated examinations, and permitting a trusted companion when the patient requests it.

Some patients may also wish to involve a religious advisor; while not always necessary, allowing access to chaplaincy or community support can facilitate consent and reduce distress. These steps are consistent with Islamic bioethics frameworks that emphasise dignity, privacy, and clear explanations of procedures [13,31].

Adolescents, autonomy, and safeguarding

Adolescents may be particularly vulnerable to coercion or fear of repercussions related to virginity norms. WHO guidance on adolescent sexual and reproductive health and rights supports respectful, barrierreducing services. Where lawful, clinicians should provide confidential time with adolescents, assess risk of coercion or violence, and activate safeguarding pathways when concerns arise. This approach is ethically consistent with harm reduction and patient welfare [14,17].

Safeguarding is not limited to sexual activity assessment. In contexts where virginity norms are strongly enforced, a request for virginity testing or extreme fear about examination may signal risk of coercion, forced marriage, or honorbased violence. Clinicians should use locally approved safeguarding protocols, document concerns objectively, and involve multidisciplinary teams when appropriate. WHO guidance on adolescent rights supports reducing barriers to care while protecting vulnerable patients, including ensuring that medically necessary treatment is not withheld because of stigma or misconceptions [14,16,17].

Summary box

Prioritise patient health and safety over social myths; treat clinically significant bleeding promptly.
Use the least invasive effective pathway (transabdominal ultrasound → MRI/TRUS → vaginoscopic hysteroscopy when indicated).
Respect modesty and dignity with privacy safeguards, appropriate draping, and the patient's preferred clinician/chaperone when feasible.
Decline non medical "virginity testing"; provide education and safety assessment instead.
Document indications and consent carefully; avoid certification of sexual status.

Box 1: *Islamic bioethics: Practical take home points for minimally invasive gynaecologists.*

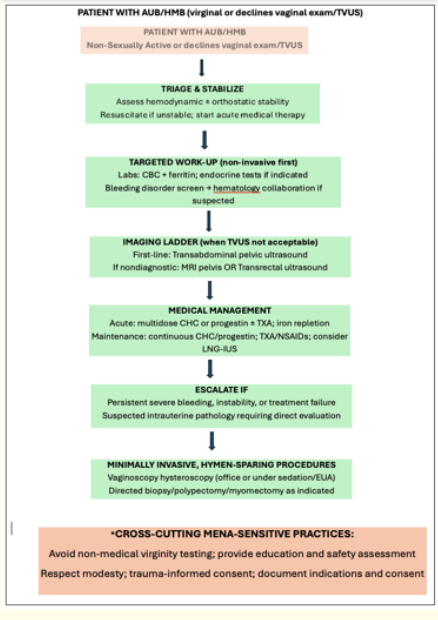

Figure 1: *Virginal-adapted AUB pathway (Algorithm).*

Category	Examples	Virginal/adolescent considerations	Suggested first steps
Ovulatory dysfunction (O)	Immature HPO axis; PCOS; thyroid dysfunction	Most common in adolescents; early post-menarche cycles often irregular	CBC and ferritin; targeted endocrine tests; medical therapy
Coagulopathy (C)	von Willebrand disease; platelet function defects; thrombocytopenia; clotting factor deficiencies	HMB at menarche is a sentinel; consider if flooding/clots or poor response to conventional therapy	Bleeding-disorder screen; coordinate with hematology; TXA and/or hormonal therapy; treat iron deficiency
Endometrial (E)	Primary endometrial hemostasis disorders	Diagnosis of exclusion after excluding anovulation/coagulopathy and structural causes	Medical therapy; reassess adherence; imaging if persistent
Iatrogenic (I)	Anticoagulants; hormonal medications; other drugs affecting hemostasis	Medication review critical; consider interactions and contraindications	Adjust/consult as appropriate; medical therapy for bleeding; monitor hemoglobin/iron
Structural (PALM)	Polyps; submucosal leiomyomas (structural causes rarer in adolescents)	Consider with refractory AUB, pelvic mass symptoms, or abnormal imaging	Transabdominal US → MRI/TRUS if nondiagnostic; vaginoscopic hysteroscopy for diagnosis/therapy
Malignancy/hyperplasia (M)	Endometrial hyperplasia or malignancy (rare in adolescents)	Consider with risk factors or persistent unexplained bleeding; plan minimally invasive sampling if needed	Imaging triage; directed biopsy via vaginoscopic hysteroscopy when clinically indicated

Table 1: *Differential diagnosis of AUB in virginal patients using FIGO PALM-COEIN, with adolescent emphasis.*

Modality	Utility in AUB	Advantages in virginal patients	Limitations/notes
Transabdominal ultrasound	First-line pelvic imaging	Noninvasive; acceptable in most contexts	May incompletely visualize endometrium/cavity
MRI pelvis	Problem-solving when US limited; characterization	No vaginal instrumentation; strong anatomic detail	Cost/availability; not required for all
Transrectal ultrasound (TRUS)	TVUS-analog view without vaginal route	Improved visualization compared with TAUS in selected cases; avoids vaginal insertion	Acceptability varies; counsel sensitively
Vaginoscopic hysteroscopy ("no-touch")	Direct cavity visualization; biopsy and treatment	Hymen-sparing feasibility reported; diagnostic and therapeutic	Requires expertise; may require sedation/EUA; consent essential
Sonohysterography	Intracavitary lesion detection in general pathways	High yield for intracavitary lesions in general practice	Often transcervical catheterization; may be unacceptable in virgins

Table 2: *Imaging and endoscopic options when a transvaginal ultrasound/speculum exam is declined.*

Domain	Recommended practice	Avoid
Virginity concerns	Explain limits of hymen exam; focus on bleeding and health; assess safety risks	Non-indicated "virginity testing" or certification
Modesty and privacy	Female clinician/chaperone when feasible; minimal exposure; clear stepwise consent	Unnecessary repeated intimate examinations
Family involvement	Include family with patient permission; provide confidential time where lawful; assess coercion	Disclosure without consent when confidentiality applies
Documentation	Document indications, consent, and harm-minimization steps; consider forensic input only if required	"Virginity certificates" as proof of sexual history
Procedural selection	Use hymen-sparing ladder (TAUS→MRI/TRUS→vaginoscopy) with shared decision-making	Default invasive vaginal procedures when noninvasive options suffice

Table 3: *MENA-sensitive clinical practices ("Do's and Don'ts").*

Key practice points

• Most AUB in adolescents and non-sexually active patients is non-structural.
• Initial evaluation should prioritise stability, anaemia, and bleeding disorders.
• Transabdominal ultrasound is first-line; MRI/TRUS when needed.
• Vaginoscopic hysteroscopy enables diagnosis without speculum use.
• Iron deficiency should be treated early, even without anaemia.
• Medical therapy remains first-line in stable patients.
• Virginity testing is not medically valid.
• Culturally sensitive, trauma-informed care is essential.

Table

Discussion

From a minimally invasive gynaecology perspective, AUB in non-sexually active patients is best understood not as a distinct disease entity, but as a challenge in access to standard diagnostic pathways. Conventional AUB evaluation relies heavily on pelvic examination and transvaginal imaging, both of which may be unacceptable in this population. Without alternative strategies, this can result in delayed diagnosis, repeated low-yield investigations, and suboptimal management.

The present review proposes a structured, hymen-sparing diagnostic ladder that maintains clinical rigour while improving patient acceptability. The combination of transabdominal ultrasound, MRI or transrectal ultrasound, and selective use of vaginoscopic hysteroscopy allows accurate evaluation of uterine and intracavitary pathology without reliance on vaginal instrumentation. This approach aligns with established imaging appropriateness criteria and extends the principles of minimally invasive gynaecology to a population with unique clinical constraints [9,14,20,26].

Emerging evidence supports the feasibility and safety of vaginoscopic hysteroscopy in non-sexually active patients. Small-diameter hysteroscopes (≤ 3.5 mm), saline distension, and no-touch entry techniques enable diagnostic and operative procedures with high completion rates and low complication risk. Comparative data suggest improved tolerability and reduced procedural time compared with traditional speculum-based approaches, reinforcing its role as a first-line endoscopic modality when direct visualisation is required [9,25,32].

Importantly, optimisation of outcomes in this population extends beyond procedural adaptation. A systematic approach to iron deficiency and early identification of bleeding disorders is critical, particularly in adolescents, where heavy menstrual bleeding may represent a sentinel presentation. Integration of hematologic evaluation and early iron therapy can significantly reduce morbidity and improve quality of life [1,3,15,26].

The relevance of this pathway extends beyond the MENA region. In increasingly multicultural healthcare settings, clinicians frequently encounter patients who decline vaginal examination for a variety of reasons, including cultural beliefs, prior trauma, or personal preference. The principles outlined in this review-minimally invasive diagnostics, patient-centred communication, and flexible clinical pathways-are therefore broadly applicable and align with contemporary models of trauma-informed and individualised care [14,16,18,29].

The integration of Islamic bioethical principles further strengthens the framework in MENA contexts. Concepts such as preservation of health (*darura*) and harm reduction support the ethical justification for necessary diagnostic and therapeutic interventions while emphasising dignity, modesty, and patient autonomy [13,17]. Rejecting non-medical virginity testing and reframing care around clinical need rather than social constructs are essential components of ethical practice [16,17,29].

Future research should focus on prospective evaluation of these pathways, including comparative effectiveness of MRI, transrectal ultrasound, and vaginoscopic hysteroscopy, as well as patient-reported outcomes such as acceptability, anxiety reduction, and time to diagnosis. Implementation studies are also needed to assess the impact of standardised hymen-sparing protocols on clinical outcomes, healthcare utilisation, and patient experience [8,14,17,20].

Ultimately, this paradigm reframes AUB in non-sexually active patients not as a limitation, but as an opportunity to advance minimally invasive, patient-centred gynaecology. By combining evidence-based medicine with culturally competent care, clinicians can deliver effective, respectful, and accessible management for a historically underserved population.

Conclusion

Abnormal uterine bleeding in non-sexually active patients is challenging mainly because of the limited acceptability of conventional diagnostic methods rather than different underlying causes. A structured, evidence-based approach that focuses on non-invasive assessment and uses minimally invasive techniques can maintain diagnostic accuracy and improve the patient experience.

Transabdominal ultrasound, complemented by magnetic resonance imaging or transrectal ultrasound when necessary, offers an effective imaging basis. Vaginoscopic hysteroscopy further allows direct visualisation and treatment of intracavitary pathology using a "no-touch" method that reduces discomfort and maintains dignity.

Optimal care involves assessing and managing iron deficiency and bleeding disorders, particularly in adolescents, where abnormal uterine bleeding can be an early sign of underlying haematologic issues.

In the MENA region and diverse settings, incorporate sociocultural awareness and ethics-like rejecting non-medical virginity testing and adopting trauma-informed, patient-centred communication-to ensure safe, respectful care.

This approach redefines managing abnormal uterine bleeding in non-sexually active patients as an opportunity for minimally invasive, culturally sensitive gynaecology. Future research should focus on prospective assessment of these pathways and patient-reported outcomes to improve and standardise care.

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Conflicts of Interest

None declared.

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