Obstetrics & Gynaecology - Topic 30 - PCOS and hirsutism

Polycystic Ovary Syndrome

Definition

- Polycystic ovary syndrome, usually called PCOS, is a condition involving ovulation, androgen activity and metabolic health.

Terminology and Ovarian Appearance

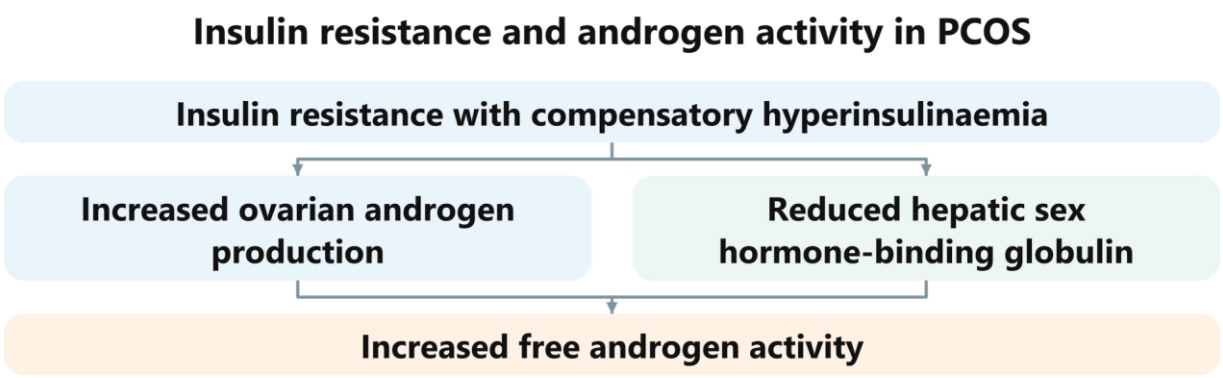
- In May 2026, an international consensus introduced the name **polyendocrine metabolic ovarian syndrome**, or PMOS, to describe its wider effects.
- The familiar PCOS term is retained here because it remains the name used in this syllabus and in many clinical records.
- The small structures seen in a polycystic ovary are follicles, rather than the large pathological cysts suggested by the older name.
- Ovarian morphology alone does not establish the syndrome, and a normal-looking ovary does not exclude it.

Interacting Mechanisms in PCOS

1. Hormonal and Ovarian Changes

- Genetic susceptibility, ovarian androgen production, insulin action and neuroendocrine regulation interact in different proportions in different patients.
- Excess androgen activity can interfere with normal follicle development, so ovulation becomes infrequent or absent.
- Altered gonadotropin signalling may favour ovarian androgen production, but an elevated LH-to-FSH ratio is neither necessary nor diagnostic.
- Repeated failure to ovulate reduces regular progesterone exposure of the endometrium and can cause irregular shedding or prolonged amenorrhoea.

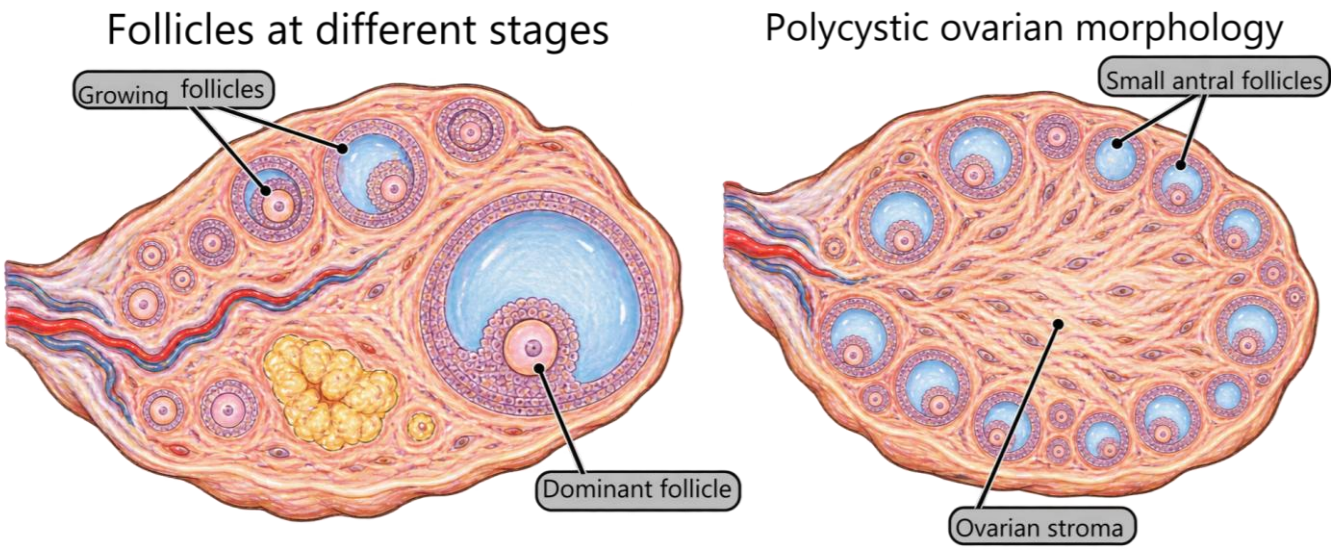
2. Insulin Resistance



- Insulin resistance may cause compensatory hyperinsulinaemia, which stimulates ovarian androgen production and reduces hepatic sex hormone-binding globulin.

Copyright by Engacy Learning Private Limited. All rights reserved. Reproduction or distribution without written consent is strictly prohibited.

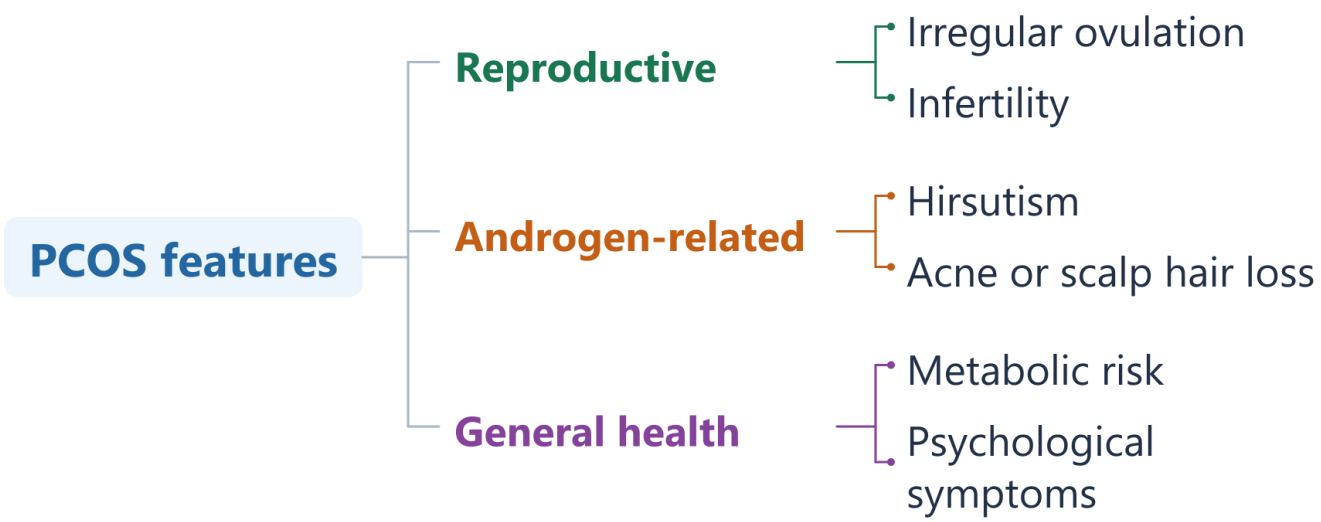
- The resulting increase in free androgen can reinforce menstrual and hair-growth problems.
- Higher weight may worsen this cycle, but PCOS also occurs in people with a normal body mass index.
- Neither body size nor a single insulin concentration should be used to decide whether the condition is present.



Ovarian follicle development and polycystic morphology; the drawing is schematic and morphology alone does not diagnose the syndrome

Clinical Features and Diagnostic Criteria

Clinical Feature Groups



1. Menstrual and Reproductive Features

- The patient may report infrequent periods, unpredictable bleeding, prolonged amenorrhoea or difficulty conceiving.
- Occasional apparently regular bleeding does not always prove that ovulation has occurred.

Copyright by Engacy Learning Private Limited. All rights reserved. Reproduction or distribution without written consent is strictly prohibited.

- Infertility usually relates to anovulation, but the partner and other female factors still need assessment.

2. Androgen-Related Features

- Hirsutism means coarse terminal hair in androgen-sensitive areas, such as the chin, upper lip, chest or lower abdomen.
- Acne and female-pattern scalp hair loss may accompany androgen excess, although either finding alone is less specific than hirsutism.
- Rapid progression, deepening of the voice or other virilisation is unusual for ordinary PCOS and needs prompt investigation.

3. Metabolic and Psychological Features

- Central adiposity, acanthosis nigricans, dyslipidaemia, impaired glucose tolerance or diabetes may be present.
- Acanthosis nigricans is a velvety thickening of skin, often around the neck or axillae, that can accompany insulin resistance.
- Ask about depression, anxiety, disturbed eating, body-image concerns and the emotional effects of unwanted hair or infertility.
- Snoring, unrefreshing sleep and daytime sleepiness should prompt assessment for obstructive sleep apnoea.

Diagnosis in Adults

Diagnostic Criteria and the Role of AMH

- After excluding alternative causes, adults generally require **two of three features**: ovulatory dysfunction, clinical or biochemical hyperandrogenism, and polycystic ovarian morphology.
- In adults, an appropriately interpreted anti-Müllerian hormone result can replace ultrasound in defining ovarian morphology within the diagnostic algorithm.
- AMH is not a stand-alone diagnostic test, and performing both AMH and ultrasound routinely can increase overdiagnosis.
- When irregular cycles and hyperandrogenism are already established, ultrasound or AMH is not needed simply to obtain a third criterion.

Ultrasound Morphology and Counting Precautions

- With suitable modern transvaginal ultrasound, at least 20 follicles in one ovary supports polycystic morphology in adults; equipment quality and alternative volume criteria matter.
- When older equipment or image quality prevents a reliable whole-ovary follicle count, ovarian volume of at least 10 mL or at least 10 follicles in one section of either ovary can support adult morphology assessment under the guideline.
- Follicle counts must exclude dominant follicles, corpora lutea and unrelated ovarian cysts, and the report should describe the examination technique.

Copyright by Engacy Learning Private Limited. All rights reserved. Reproduction or distribution without written consent is strictly prohibited.

Diagnosis in Adolescents

- Adolescents need both persistent menstrual irregularity appropriate to time since menarche and clinical or biochemical hyperandrogenism, after excluding other causes.
- Ultrasound morphology and AMH should not be used to diagnose PCOS during adolescence because normal pubertal ovaries can resemble the condition.
- Irregular cycles are common during the first year after menarche and should not alone produce a permanent diagnosis.

Time since menarche	Cycle pattern that needs assessment
First year	Irregularity is often part of puberty; assess severe symptoms and other concerns.
One to less than three years	Cycles shorter than 21 days or longer than 45 days are irregular.
Three years onwards	Cycles shorter than 21 days, longer than 35 days, or fewer than eight per year are irregular.
More than one year after menarche	A single interval longer than 90 days needs assessment.
Primary amenorrhoea	Assess absent menarche by age 15 or more than three years after breast development.

- An adolescent who has some features but does not meet the criteria can be described as being at increased risk and offered symptom treatment with planned reassessment.
- This approach avoids both dismissing distressing symptoms and prematurely labelling normal puberty as disease.

Assessment and Differential Diagnosis

History, Examination and Alternative Causes

- Establish the age at menarche, cycle pattern, change in hair growth, acne, weight trajectory, fertility intentions and relevant family history.
- Ask about medicines, androgen-containing products, anabolic steroids and possible transfer from a partner's testosterone gel.
- Look for thyroid disease, galactorrhoea, Cushing syndrome, acanthosis, hirsutism and signs of virilisation.
- Record blood pressure and discuss body measurements respectfully, with permission and without weight stigma.

Copyright by Engacy Learning Private Limited. All rights reserved. Reproduction or distribution without written consent is strictly prohibited.

Modified Ferriman–Gallwey Scoring

- The modified Ferriman–Gallwey score assesses terminal hair in nine androgen-sensitive regions; ethnic variation and prior hair removal affect interpretation.
- The regions are the upper lip, chin, chest, upper and lower back, upper and lower abdomen, upper arms and thighs.
- Each region is usually graded from 0 to 4, giving a possible total of 0 to 36.
- Use a population-appropriate threshold and the patient's distress rather than assuming that one score defines clinically important hirsutism in every ethnic group.

Core Investigations

1. Excluding Other Causes

- Exclude pregnancy when amenorrhoea or irregular bleeding could reflect conception.
- TSH, prolactin and an early-morning 17-hydroxyprogesterone help identify thyroid disease, hyperprolactinaemia and non-classic congenital adrenal hyperplasia when clinically appropriate.
- FSH and oestradiol can help distinguish ovarian insufficiency or hypothalamic suppression when the menstrual history suggests these conditions.
- Investigate Cushing syndrome only when the clinical pattern supports it, rather than ordering cortisol tests indiscriminately.

2. Assessing Androgens

Assay Selection and Interpretation

- Measure total and estimated free testosterone using a reliable assay when biochemical assessment is needed.
- A high-quality mass-spectrometry method is preferable to a poorly sensitive direct immunoassay at female testosterone concentrations.

Hormonal-Contraception Effects and Marked Androgen Excess

- Combined hormonal contraception changes androgen concentrations and binding proteins, which can make results difficult to interpret.
- If biochemical androgen testing is essential, the guideline advises at least three months off the combined pill, with alternative contraception arranged by the clinician.
- DHEAS can help assess an adrenal contribution, but no isolated result identifies every ovarian or adrenal tumour.
- Marked elevation, rapid onset or virilisation requires specialist evaluation and appropriate ovarian or adrenal imaging.

Copyright by Engacy Learning Private Limited. All rights reserved. Reproduction or distribution without written consent is strictly prohibited.

FREE PREVIEW

Click here to visit our website

MBBS PREMIUM NOTES

Complete MBBS notes for every subject and year are available only in the FirstHope app.

Scan or click here

Click here to get the app >

Available on Google Play

Browse MBBS notes by year

firsthope.co.in/mbbs

Click here to explore MBBS >

Scan or click here

FirstHope Medical on Instagram

@firsthope.medical

Click here to follow

App and notes help

Find answers about access and downloads

Click here for help

YEAR 1 / YEAR 2 / YEAR 3 / YEAR 4