

Topic: ULTRASONOGRAPHY/DOPPLER STUDIES

Reasoning Puzzle

Case Scenario

A 50-year-old male with suspected prostate enlargement is scheduled for transrectal ultrasound (TRUS). The sonographer must reason through probe selection, patient positioning, and Doppler for vascular assessment. The goal is to differentiate benign prostatic hyperplasia from malignancy using grayscale and spectral Doppler, while ensuring patient reassurance during the invasive procedure. Post-scan maintenance involves probe disinfection to prevent cross-infection.

Objectives

- Apply logical reasoning to select techniques (e.g., endorectal probe) and preparations (e.g., enema).
- Reason through positioning for comfort and image quality in TRUS.
- Evaluate clinical applications like biopsy guidance and quality metrics for reproducible hypoechoic lesion detection.
- Consider recent trends like contrast-enhanced ultrasound for better vascularity assessment.

Instructions

Analyze the logical sequence in the scenario. Use deductive reasoning to fill in the blanks or choose the best option for each step. Refer to the image for visual cues on probe orientation.

Questions

- Given the invasive nature of TRUS, what preparatory step (e.g., laxative) is logically first to ensure clear rectal access, and why?
- Reasoning from patient comfort: Why is left lateral decubitus with flexed knees preferred over supine for TRUS positioning?
- If Doppler shows elevated velocity in peripheral zones, what clinical application (e.g., stenosis detection) does this indicate, and how does it assure quality images?
- To achieve reproducibility, what post-procedure maintenance protocol must follow, and how does it tie into patient care?

Clues

- Clue 1: Bowel contents obscure views; evacuation precedes insertion.
- Clue 2: Flexion reduces sphincter tension; lateral avoids pressure on spine.
- Clue 3: Hypervascularity flags malignancy; spectral waveform confirms flow direction.
- Clue 4: High-level disinfection prevents nosocomial spread; ties to ethical reassurance.



(Image shows patient in semi-lithotomy for TRUS; reason how it aids probe alignment.)

Rubrics	Marks Alloted (out of 10 marks)
Accuracy of Preparations & Instructions	3
Positioning & Patient Care	3
Clinical Applications & Techniques	2
Quality Assurance & Reproducibility	2
TOTAL MARKS	10 marks

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