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Editorial

The return of surface anatomy: Restoring the clinical touch

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Abstract

Background: Surface anatomy has historically been the foundation of clinical bedside skills. However, increased reliance on imaging modalities in recent decades has diminished emphasis on these essential techniques in medical education.
Objective: To highlight the renewed importance of surface anatomy in current clinical practice and medical training, especially in the Indian healthcare context.
Discussion: The COVID-19 pandemic re-emphasized the irreplaceable role of bedside assessment where rapid screening, procedure safety, and patient interaction rely heavily on anatomical localization. Competency-based medical education (CBME) in India now promotes vertical integration, peer-based examinations, and early clinical exposure to enhance anatomical application.
Conclusion: The revival of surface anatomy bridges technology and clinical acumen, reinforcing patient safety, diagnostic precision, and the therapeutic value of touch. Restoring this balance is crucial for developing confident, competent, and compassionate clinicians for India's diverse healthcare environments.

Keywords: Surface Anatomy, Clinical Skills, Competency-Based Medical Education

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1. Introduction

Clinical medicine has historically relied on the physician's ability to observe, palpate, percuss, and auscultate. Over the past few decades, however, rapid technological breakthroughs such as cross-sectional imaging, interventional radiology, and computer-assisted diagnostics have unintentionally reduced emphasis on bedside skills and anatomical localization in medical education.[1] The result is that future clinicians increasingly depend on screens rather than their senses.

Today, medical educators, clinicians, and professional bodies across the world including India are recognizing the impact of this shift. The return of surface anatomy reflects a recalibration of priorities, where technology supports clinical acumen, not substitutes it.[2]

2. Surface Anatomy: Precision for Patient Safety

Surface anatomy serves as a real-time guide linking visible and palpable landmarks to deeper structures. Common clinical procedures such as cricothyrotomy, lumbar puncture, chest tube insertion, venous cannulation depend on precise external localization. Misjudgement by even a few millimetres may cause life-threatening complications such as vascular injury or pneumothorax.

In India, where emergency and primary healthcare systems frequently operate with limited imaging availability, reliance on surface anatomy is often not optional but essential for survival and timely care. A strong grasp of surface landmarks enhances procedural safety in rural health centres, Peripheral Health Units (PHCs), field hospitals, and disaster zones.

3. Clinical Lessons from the Pandemic

The COVID-19 pandemic offered a striking demonstration that high-quality bedside examination remains indispensable. When hospitals were overwhelmed and imaging resources constrained, rapid clinical evaluation for example, respiratory effort, chest movement, pulse character, peripheral perfusion once again became the first line of assessment.33 Indian clinicians managing large volumes of severe illness relied

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heavily on traditional skills reinforcing that hands and eyes are still the primary diagnostic tools.

Surface anatomy proved vital not only for clinical decision. But also for bedside procedures in infectious isolation central lines, arterial lines, chest drains where imaging supplementation was not always feasible.

4. Technology Enabling, Not Erasing Anatomy

Interestingly, the rise of point-of-care ultrasound (POCUS) has helped revive surface anatomy teaching. Before applying a probe, clinicians must palpate ribs, identify intercostal spaces, and delineate organ boundaries. Imaging reinforces rather than replaces anatomical understanding, allowing learners to *see under their hands*.

Specialties such as sports orthopaedics, emergency medicine, pain management, and interventional anaesthesia increasingly depend on surface mapping for enhancing accuracy and reducing complications. Thus, the future lies in integrating imaging with surface anatomy not divorcing the two.

5. Educational Imperative: Bringing Anatomy Back to the Bedside

Globally and in India, curriculum reforms are acknowledging that anatomical education must progress beyond cadaver tables and simulation labs. The National Medical Commission (NMC) has emphasized competency-based medical education (CBME), where hands-on clinical correlation and early patient exposure are core learning pathways. Surface anatomy aligns seamlessly with these goals.

Effective strategies include:

1. Vertical Integration between departments of anatomy with medicine, surgery, and orthopaedics.
2. Peer Physical Examination to build palpation confidence and interpersonal comfort.
3. OSCE-based Assessments focused on anatomical landmark accuracy
4. Radiology-Correlated Workshops using real patients and standardized volunteers.
5. Community-based Training enhancing procedural safety in peripheral postings.

Indian medical colleges increasingly report student satisfaction and improved procedural competence when surface anatomy is taught in clinical context.

6. Restoring the Human Touch

Surface anatomy reinforces something deeper than knowledge that is the therapeutic value of touch. In an era where clinicians spend more time facing computer screens than patients, the humanistic act of physical examination strengthens trust, communication, and dignity.[4]

In the Indian cultural setting, patients often associate a thorough physical examination with competence and genuine care. Thus, reinstating surface anatomy also nurtures doctor-patient rapport and reduces the sense of depersonalization that modern healthcare can create.

7. Future Directions: Equilibrium, Not Extremes

Medicine is advancing rapidly toward virtual reality, artificial intelligence, and robotic intervention. Yet, the essential tactile and visual skills of bedside assessment remain foundational.

Surface anatomy is not a relic of traditional medicine. It is a safeguard of clinical excellence.

The goal ahead is clear:

1. Reinforce surface anatomy throughout training.
2. Integrate technology without losing tactile clinical competence.
3. Emphasize patient safety and humanity at every step.

The return of surface anatomy marks a revival of balanced, thoughtful medicine. It reminds us that the patient is not merely a digital dataset but a living body that communicates through form, movement, and subtle anatomical cues. Clinicians must retain the ability to interpret these signals directly through skilled hands, attentive eyes, and compassionate presence.

Surface anatomy has not only returned. It has reclaimed its rightful position at the centre of clinical practice.

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9. Conflict of Interest

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