EDITORIAL

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Multi-modal Anaesthesia: The Significance of Integrating Regional and General Techniques in Contemporary Practice.

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The modern perioperative pathway is decisively shifting towards multimodal anaesthesia—namely, a synthesis of general anaesthesia or total intravenous anaesthesia alongside regional anaesthesia techniques aimed at ensuring stable intra operative conditions and enduring postoperative benefits. This approach is now regarded as a rational, evidence-based strategy for numerous patients when expertise and resources are accessible. When executed proficiently, this methodology enhances haemodynamic stability, diminishes perioperative opioid exposure, and may mitigate the progression towards persistent postsurgical pain (including phantom limb pain), all while facilitating rapid recovery and ensuring high patient satisfaction. The advancement of regional anaesthesia techniques, particularly through the implementation of ultrasound-guided approaches, has afforded enhanced precision and safety, thereby fostering its widespread clinical acceptance.

Surgical stimulations and perioperative manipulations produce profound sympathetic surges. Stress provokes a substantial neuroendocrine response characterized by sympathetic activation, leading to hypertension and tachycardia, which can increase myocardial oxygen demand and contribute to ischemic events. The inclusion of regional blockade effectively attenuates this stress response. Perioperative use of volatile or intravenous anaesthetics alone cannot always effectively blunt the surgical stimulus. Neuraxial, peripheral or interfacial techniques combined with general anaesthesia can modulate afferent input at its source, allowing lighter hypnotic/analgesic dosing and smoother intraoperative profiles. At the neural pathways, regional anaesthetic techniques interrupt the transmission of noxious stimuli from the surgical field before they reach the central nervous system. This pre-emptive peripheral and spinal blockade effectively decreases the ascending sensory input into the brain1.This interruption creates a profound pharmacological synergy with general anaesthetics.

Across surgical domains, adding a targeted block to GA reduces perioperative opioid requirements. The effectiveness of a regional anaesthesia and general/IV anaesthesia combo in controlling acute pain translates directly into its success as an opioid-sparing strategy, reducing opioid dependence and abuse in the post op period. Moreover by reducing the pharmacological burden perioperatively, we can reduce the risk of post op cognitive dysfunction.

In a prospective, randomised trial of microvascular free flap oral cavity surgery, a pre-operative donor-site block reduced postoperative opioid consumption without prolonging length of stay or introducing block-related harm.2 Beyond single trials, a 2024 systematic review in laparoscopic visceral surgery concluded that regional anaesthesia is an important component of multimodal postoperative analgesia3. Together, these data support routinely "front-loading" analgesia with regional techniques to curb the opioid burden while maintaining (or improving) analgesic quality.

Persistent pain after surgery (CPSP) remains a clinically and economically significant problem. Mechanistically, sustained nociceptive input during and immediately after surgery can facilitate central sensitisation; pre-emptive and preventive regional strategies directly target that input. A 2024 meta-analysis of randomised trials reported that regional

anaesthesia was associated with lower risks of prolonged opioid use and CPSP at 3–6 months (though not clearly at 12 months), underscoring the role of combining regional anaesthesia with general anaesthesia4. A 2025 focused review in Regional Anesthesia & Pain Medicine similarly concluded that RA may reduce CPSP risk in selected contexts (e. g., thoracotomy with epidural; breast surgery with paravertebral/pectoral plane blocks), while emphasising heterogeneity and research gaps.5 Pragmatically, these findings justify embedding RA within ERAS-style bundles and ensuring high-fidelity block delivery (ultrasound guidance, dose optimisation, and catheter stewardship) to maximise any disease-modifying effect.

For major limb amputation, prevention of phantom limb pain (PLP) has proven difficult. Evidence supports perioperative regional techniques to reduce acute stump pain and early opioid use, and continuous peripheral nerve blocks can meaningfully treat established PLP6.This is an important concept for clinicians and editors alike: we should advocate RA as a cornerstone within a multidisciplinary prevention package rather than as a solitary solution.

Practice and Policy

First, we should normalise offering regional anaesthesia along with general anaesthesia in our day to day clinical practice. Second, we should explain in detail with informed consent from the patient and relatives about our structured anaesthesia plan. Third, research and audit cycles must move beyond 24-hour endpoints to include patient-centred outcomes at 3, 6, and 12 months. Finally, training programs should prioritise advanced ultrasound-guided techniques and institutional pathways (block rooms, checklists, and follow-up protocols) so that multi-modal anaesthesia is delivered consistently, not occasionally. Also our perioperative quality dashboards should track block success, catheter dwell integrity, and opioid consumption —not just post anaesthesia unit pain scores.

In summary, the successful integration of regional anaesthesia techniques into clinical pathways yields recognized benefits that extend more than pain relief, like contributing to enhanced recovery pathways, better patient satisfaction, less dependence on opioids, reduced post op cognitive dysfunction and demonstrably improved perioperative physiology. In theory this also aligns with the concept of enhanced recovery protocol and opioid sparing anaesthesia concept.

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