

Postoperative pain management: Stepping towards newer frontiers

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The critical role of pain control after surgery can never be over-emphasised. Adequate postoperative pain control is analogous to improved patient satisfaction and enhanced recovery. Every surgery poses a unique challenge for postoperative pain management. This recognition led to the formation of the PROcedure-SPECific Pain Management (PROSPECT) group to provide practical and evidence-based recommendations to prevent and treat postoperative pain catering to specific procedures. Depending on the type of surgery, various postoperative pain management regimens using different classes of drugs like opioids, non-opioids such as non-steroidal anti-inflammatory drugs (NSAIDs), paracetamol, alpha-2 agonists along with local anaesthetics, wound infiltrations, regional anaesthetics and nerve blocks are available.

Although opioids have always remained the backbone of postoperative pain management, their concomitant effects in the form of nausea and vomiting, pruritus, respiratory depression, urinary retention, etc., obviate their use. Patient satisfaction after surgery depends on not only the adequacy of pain relief but also on the occurrence of adverse events, opioid-related side effects and time for recovery including functional recovery.^[1] This highlights the importance of incorporating opioid-free multimodal analgesia techniques including regional analgesia (RA) and neural blocks in anaesthesia practice.^[2] In fact, finding a multimodal analgesic technique which provides

good patient satisfaction and enhanced recovery is a favourite topic of researchers.^[3-9] Opioids additionally limit the neurological assessment postoperatively in post-craniotomy patients. In a study being published in this issue of the Indian Journal of Anaesthesia (IJA), the authors have explored a relatively new technique of instillation of ropivacaine through subgaleal drain.^[10] The current opioid-free analgesic concoction for post-craniotomy pain is limited to NSAIDs, paracetamol and local anaesthetics for wound infiltration or scalp block.^[11] However, the safety concerns of this new technique like wound infection and pressure effect of the large volume of drug or saline instilled through the drain, on the galea need to be explored and evaluated in the future.

In another study being published in this issue, the authors have compared ultrasound-guided transversalis fascia plane block with wound infiltration for acute and chronic post-caesarean pain management.^[12] Adequate postoperative analgesia in obstetric patients is aimed at achieving the specific recovery needs of breastfeeding and care of the newborn without compromising on the safety of the mother and baby and the cost.^[13,14]

The amalgamation of ultrasonography (USG)-guided fascial blocks like transversus abdominis plane block (TAP) block, quadratus lumborum block and erector spinae block in the postoperative pain

management of the parturient is a step forward towards achieving these desired goals.^[15-18] Transversalis fascia plane block is a newer addition to the family of fascial blocks for post-caesarean delivery.^[19] Easy recognition of fascial planes in between the muscles with USG, has significantly decreased the performance learning curve for these blocks. However, a major drawback which needs to be addressed is the limited duration of these blocks if placed without the catheter or adjuvants. Recent literature on the use of liposomal bupivacaine has shown promising results. A multi-centre randomised trial reported decreased opioid consumption during the first 72 hours postoperatively in patients who received TAP block with bupivacaine 50 mg plus liposomal bupivacaine 266 mg after caesarean delivery.^[20]

The linkage of chronic pain to acute pain is well established. Despite this, there is gross paucity of literature exploring the effect of upcoming pain relief modalities on chronic pain. This issue of the IJA features a systematic review and meta-analysis on the efficacy of cryoneurolysis in the management of chronic non-cancer pain.^[21] The authors are to be appreciated for conducting a meta-analysis on this less evaluated relationship. The management of acute postoperative pain by regional anaesthesia has several disadvantages, namely, the burden of catheter/infusion pump care, risk of catheter site infection and short duration of action of single shot (<24 hours) and catheter-based local anaesthetic infusions (<1 week) which may be inadequate for pain relief in surgical procedures with anticipated long duration of pain. This has paved the way for cryoneurolysis which provides long-term pain relief lasting for months. Apart from chronic pain, cryoneurolysis has also been efficacious in the management of acute postoperative limb pain in amputees, post thoracotomy pain, rotator cuff repair and total knee arthroplasty.^[22-24] Use of cryoneurolysis has received a boost recently with hand held cryoneurolysis equipment, portable ultrasound devices, awareness about its opioid-sparing effects and its potential to prevent chronic post-surgical pain (CPSP) by adequately longer relief of acute postoperative pain. Recent studies indicate that the burden of CPSP is close to 10%, one year after major surgery.^[23] High incidence of CPSP is being reported after limb amputation, thoracotomy and knee, hip and lumbar spinal surgery. Standardised data generation by analysis of clinical and patient reported outcomes has been proposed by Initiative on Methods, Measurement, and Pain Assessment in Clinical Trials

for assessment of CPSP in future epidemiological studies.^[24] Novel approaches as targeted ribonucleic acid toxins and deep brain stimulation are being studied for the management of CPSP. Development of transitional pain clinics aiming to bridge the gap between acute pain services in surgical wards and CPSP management in pain outpatient department can help to screen, identify the at-risk patient, review the postoperative pain prescription during the subsequent hospital visits and attach these patients to deaddiction and rehabilitative clinics, if required. Nonetheless, studies and reports on novel, safer and effective techniques for the relief of chronic pain have been published time and again in the IJA.^[25,26]

Current research on postoperative pain management highlights major lacunae in pain management services, especially the dependence on subjective evaluation of pain using various patient driven pain scales like visual analogue scale, numeric rating scale which are subjected to social, cognitive and contextual influences. Most pain-related research studies are associated with methodological limitations such as failure to evaluate pain beyond 24 hours and inability to consider the effect of factors like stress and anxiety levels that can affect the pain scores.^[27] An observational study published in one of the previous issues of the IJA has concluded that postoperative pain is inadequately treated in our nation.^[28] Could this be due to inadequacies in pain assessment rather than the management? Nevertheless, methods for the assessment and monitoring of pain should be technically easy, more objective and accurate. A survey has found that many practitioners use checklists for monitoring postoperative epidural analgesia in our country.^[29] The future of pain assessment lies in the development of tools which are more objective, less intrusive and have a data-driven approach. PainChek is one example of an artificial intelligence (AI) developed pain assessment tool, developed on automated facial-analysis technology and smart automation. This can be especially useful in the neurosurgical and paediatric population to look for the presence of pain when it is not self-evident. There is a need for further use of AI and machine learning in pain research to develop algorithms that will be able to accurately predict and assist clinicians in the efficient diagnosis, successful decision-making and effective treatment of pain.^[30]

Meanwhile, the diversity of pain management practices in our nation due to lack of standard protocols, the

dilemmas arising on the choice of analgesic technique/drug, the varying availability of opioid and non-opioid drugs and the wide variation in the knowledge and skills of those managing pain, cry out one thing in unison; that there is a dire need to tame this wild diversity by formulating and following standard protocols in postoperative pain management in our country. In a nation known for its remarkable unity amongst a vast diversity, and with the lead taken by societies like the Indian Society of Anaesthesiologists and the Indian Society for the Study of Pain, will it not be apt to predict that all these challenges will soon be overcome?

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