

## Opioid Free Cardiac Anesthesia – A Flash in The Pan?

Opioids have been the mainstay in cardiac anesthesia for nearly fifty years. High dose opioid induction and maintenance was considered gold standard for cardiac patients in the early eighties. However, that concept came packaged with side effects of prolonged mechanical ventilation, increased length of stay (LOS) in the intensive care unit (ICU) and hospital. In the early nineties, with the proposal to ‘fast track’ patients after cardiac surgery, the anesthetic technique became multimodal; smaller doses of short acting opioids, non-opioids, adjuvant neuraxial blocks and titrated doses of inhalational anesthetic agent were offered to patients. Fast tracking was shown to benefit in decreasing the duration of mechanical ventilation, LOS ICU and hospital. An overall decrease in cost also became an obvious advantage of this renewed technique. This in the past 2 or 3 decades became the anesthetic technique of choice for cardiac surgical patients, though neuraxial block use declined due to the fear of symptomatic epidural hematomas.

Recently, surge in habituation to opioids in surgical patients in the United States of America was reported and the use of opioids during surgery by anesthesiologists was implicated.<sup>[1]</sup> In a survey, it was shown that about 75% of American patients complained of moderate to severe pain during the immediate postoperative period.<sup>[2]</sup> A vast majority of them receive opioids to alleviate the pain, because pain control is one of the parameters used for measuring quality of care; the care provider obviously made sure that pain was kept at minimum.<sup>[3]</sup> Many habitual heroin users agreed that their habituation was initiated often via a prescription. Acute tolerance and hyperalgesia caused by opioids encourages even opioid naïve patients to continue opioid use; which is called the ‘*opioid paradox*’. The perioperative use of benzodiazepines, diabetes, younger age, lower income, higher intraoperative use, and the duration of acute postoperative opioid use have all been identified as factors which carry increased risk of prolonged postoperative opioid use.<sup>[4]</sup> In a recent publication, the authors Koepke and coworkers opine, “Given that a significant proportion of opioid-naïve patients entering surgery may ultimately become chronic opioid users, minimizing opioids during the perioperative period should be an important goal of anesthesiologists. Identifying the patients that are high risk for opioid misuse or opioid use disorder in perioperative clinics enables the perioperative team to construct a plan to minimize the length of time the patient is exposed to opioids inside and outside of the hospital”.<sup>[1]</sup>

Aligning with these proposals, Chanowski and coauthors recently reported a case of opioid-free anesthesia of on pump coronary artery bypass graft surgery in a septuagenarian with bilateral erector spinae block.<sup>[5]</sup> There

have been many reports of opioid-free anesthesia in other surgical specialties as well.<sup>[6-8]</sup> Would such procedures become standard of care or just a flash in the pan?

It appears from the above citations that the problem of habituation to opioids initiated by prescription in the perioperative period is clear and present. In order to avoid opioid naïve patient turning habituated, strict prescription and dispensation laws must be enacted and should be followed in letter and spirit.

To curb this menace, prescribing, dispensation and discard of unused opioids must be made highly accountable. Thankfully, serious efforts to incorporate all these have been made by the Drug Controller and Excise commissioner, in India. Recently, they passed stringent rules for dispensing, utilizing and discarding (unused) opioids. The patient’s name, unique identification number of the hospital, residential address, prescribing doctor’s name and medical council registration number ought to be provided in triplicate to prescribe an opioid. Exact dose of the opioid used and discard of unused residual opioid (duly witnessed) with the name of the witness should to be submitted along with the empty (used) ampule. Storage of opioids is allowed only in the central pharmacy, storing opioids in ‘sub-stores’ is illegal. These make misuse of opioid at healthcare facility level highly improbable. Additionally, many medications with hallucinogenic effects such as synthetic opioids (pentozocine), ketamine, benzodiazepines were classified as Schedule H or X drugs, which made over the counter procurement nearly impossible. Possession of these drugs amounts to drug trafficking, and the punishment in India for that offence is, arrest by non-bailable warrant and an investigation by court marshalling. Most advanced countries do have such stringent policies, but loopholes exist allowing misuse.

The moot questions that needs answers are:

1. If intraoperative non-opioid medication provided adequate analgesia, will habituation among opioid naïve patient be eliminated?

The answer is not an easy one. The non-opioid anesthesia itself is a novel concept; evidence if this method obviates the opioid naïve patients turning repeat users is sparse. Perhaps when more evidence accrues, we may have an answer. Every year, more and more reasons are added to contraindicate opioids in surgical patients.<sup>[9]</sup> The pharmaceutical industry may dedicate research to innovate non opioids with intense analgesic action without habit forming side effects. It is perhaps unnecessary and even dangerous to have opioids that provide reasonable pain relief but come packaged with habit forming potential.

## 2. Can opioids be done away with?

Again, there is meagre evidence on the long-term beneficial effects of opioid-free anesthesia, doing away with opioids appears Utopian now. In future, use of habit-forming medications may be shunned and in the present scene, neither a non-opioid with analgesic property comparable with opioids is available, nor any in the research stage. Considering these practical difficulties, it may be a while before opioids could be done away with. The pharmaceutical industry on its part must make efforts to invent an analgesic medication without habit forming side effects. One should not merely switch over to opioid-free anesthesia at the cost of morbidities due to inadequate perioperative pain relief such as is associated with a broad range of negative consequences, including increased morbidity, development of chronic post-operative pain, impaired function, recovery from surgery, and quality of life, prolonged opioid use, and increased medical costs.<sup>[10]</sup>

## 3. Is opioid free anesthesia as efficient as or better than existing technique?

The concept of replacing conventional opioids in intraoperative period appears sound; but that must be done in stages. It may be a good idea to identify the indications for opioid-free anesthesia initially and then apply the technique to other cases. The indications are obesity, obstructive sleep apnea syndrome, opioid addiction, chronic pain syndromes and reflex sympathetic dystrophy.<sup>[9]</sup> Opioid-free anesthesia is not use of one single drug; it is a poly pharmacy of sorts. Several drugs such as premedication with gabapentin, intraoperative use of dexmedetomidine, clonidine, magnesium, ketamine, lignocaine, ketorolac, dexamethazone and diclofenac are used. To a purist using one or two infusions and achieving intraoperative analgesia, this polypharmacy may not appeal. However, this might be the case till powerful non-opioid analgesics are discovered.

## 4. What about the long-term adverse outcomes of suboptimal analgesia during surgery?

Though surgery might be life-saving inadequate pain relief intraoperatively and in post-operative period appears to be a major healthcare care problem.<sup>[10]</sup> These authors also opine, "Suboptimal acute-pain management in surgery patients is accompanied by an array of negative consequences, including increased morbidity, impaired physical function and quality of life, slowed recovery, prolonged opioid use during and after hospitalization, and increased cost of care. In addition, early post-operative pain appears to trigger persistent pain that may last for months after surgery in a substantial proportion of patients. To prevent the progression from acute to chronic postoperative pain, more aggressive analgesic/anesthetic measures are needed to reduce the incidence and intensity of acute pain during and immediately after surgery." It is not

clear if non-usage of opioids during the surgery provides the same quality of analgesia as opioids would.

This brings us to the fact that the anesthesiologists must look at modified techniques to achieve opioid free anesthesia in cardiac surgery as well. The literature about use of opioid-free anesthesia in cardiac surgery is few and sparse. The degree of problem of opioid habituation in opioid naïve patients seems to vary from one country to another. Every country must make efforts to reduce use of opioids and reach 'zero' opioids sooner than later. However, in the moto of pursuing opioid free anesthesia, one must not let patients suffer either intraoperatively or in the post-operative period. The cardiac anesthesiologist on their part may look at providing opioid free anesthesia while taking care of awareness, intraoperative nociception and postoperative pain resulting in adverse pain syndromes in the long term. In a recent editorial, it was pointed out that adjuvant use of regional anesthesia may pave way to opioid free anesthesia.<sup>[11]</sup> Though switching over to opioid-free anesthesia now currently in India may be dubbed 'flash in the pan', anesthesiologists must make sustained effort to go opioid free.

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