

Transdermal opioids for acute postoperative pain: A road less travelled!

Dear Editor,

Transdermal delivery system (TDS) is a simple, reliable, noninvasive analgesic delivery method that has been used extensively for chronic pain management. After application, drug in TDS forms a depot in the upper layers of skin that slowly increases serum concentration.^[1] Both fentanyl and buprenorphine have high lipid solubility and low molecular weight which makes them ideal candidates for a TDS. The perceived advantages of TDS for acute postoperative pain include sustained blood level of the drug and reduced side effects. Transdermal buprenorphine (TDB) provides convenient once-weekly dosing, has ceiling effect for respiratory, lower abuse potential, and does not require dose alterations patients with renal dysfunction, unlike fentanyl (full μ -opioid receptor agonist).^[2]

Khandelwal *et al.* compared two doses of buprenorphine ($10\mu\text{gh}^{-1}$ and $20\mu\text{gh}^{-1}$) with fentanyl ($25\mu\text{gh}^{-1}$) in adult patients undergoing lower limb arthroscopic surgery.^[3] They found TDB patch ($20\mu\text{gh}^{-1}$) to be an effective postoperative analgesic without any significant undesirable effects.

The concentration of TDS drugs tends to be higher in the first 24 h and several factors like variability in

body temperature, factors that increase cutaneous blood flow (warming blanket, sepsis or regional anesthesia), previous opioid use, hemodynamics, and patient's general condition may make TDS opioid absorption unpredictable.^[4] There have been reports of serious, life-threatening respiratory depression and death following transdermal fentanyl, mentioned as an important warning by the drug manufacturers themselves.^[1]

Buprenorphine is 60 times while fentanyl is 100 times as potent as morphine and the duration of action for fentanyl (3d) and TBD (7d) is different. So, equianalgesic doses of both [ratio 3:5] should be compared but the authors in the study have used a non-equianalgesic dosage (10:25 and 20:25). Also, the different. Most importantly, they are expensive and may not be ideal in our setting.

The peak effect comes in 12 h (fentanyl) to 24 h (buprenorphine). So, the patches are generally applied a day before surgery, but this may not be the ideal scenario in daycare settings. Alternative analgesics should be started till the effect of TDS drugs comes in 12–24 h, whereas in the index study, the usual analgesics were withheld the day before surgery when the patches were applied.^[3]

Many dose formulations are available and selecting the right dose in opioid naïve patients is a challenge. According to recommendations from the manufacturer, opioid-naïve patients should initially receive the lowest strength patch.^[5] Authors of present study evaluating the use of TDS in postoperative pain management concluded that further

prospective randomized studies are required to conclusively find the optimum dose.^[3]

TDS are amenable to abuse, serious side effects like respiratory depression, and cognitive dysfunction, may increase duration of hospital stay and overall cost of daycare procedures. Despite their success for chronic pain management, TDS opioids for acute postoperative pain is a new and off-label use and should be undertaken if the benefits outweigh the risks involved. The main rebuke for TDS is its lack of titrability, long latency for onset, and slow offset making it an inferior alternative compared to other commonly used modes of analgesic delivery such as patient-controlled analgesia. Moreover, they are an expensive alternative to parenteral and oral drugs.

Hence, we would urge caution in the indiscriminate usage of TDS as a sole modality of postoperative analgesia until further robust evidence proves the contrary. Whenever chosen, they should be used in monitored settings for opioid naïve patients.

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Conflicts of interest

There are no conflicts of interest.

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