

Editorial

Novel Route for Emergency and Chronic Drug Therapy

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The best, safest and most acceptable route varies for the drugs and the clinical situation. The optimal route of drug administration is decided as per the need. Though decision between invasive and non invasive route is based on the drug and its indication but the noninvasive route is always preferred. The noninvasive routes include oral, rectal, skin patches and sublingual. All these routes have advantages and limitations. Oral route is the most common route preferred by the patient but may be limited in gastrointestinal disorders or condition with erratic enteral absorption. The rectal routes are uncomfortable to patient and may have erratic absorption in enteral disorders. The skin patches have delayed onset and may not be suitable for acute conditions. Also the onset may be delayed with these routes and may not be applicable in patients who are sick and drowsy leading to inability to take orally.

Sublingual route is an alternate option for drug administration [1]. It may be considered an acceptable option in emergency scenario where intravenous route may not be available. Drug administered through sublingual route has rapid absorption and thus immediate effect [2]. It avoids the first pass hepatic metabolism as it reaches directly to blood via reticulated vein on ventral surface of tongue and floor of mouth and thus has better bioavailability. So this route may be considered in patients without an intravascular access or having nausea, vomiting, dysphagia, gastrointestinal disturbance such as obstruction [3,4]. This route is acceptable to patient being non invasive, painless and ease of administration. The drug for sublingual administration has to be lipophilic, unionized and low molecular weight [5]. Lipophilic drugs tend to be absorbed best through the sublingual mucosa [5].

There are various drug groups which are suitable for sublingual route. However still many drugs used in emergency and for chronic drug therapy may not be suitable for sublingual route administration. The drugs destined for other route may be administered sublingually with an acceptable efficacy. Many of drugs are not available in sublingual route formulation due to concerns related to its molecular structure. There is need for molecular alteration of the various drugs molecule for its administration via sublingual route with better efficacy. This route may be boon for all emergency drugs and may be applicable for drugs for chronic therapy like palliative care, pain management and other chronic disease.

The drugs available for sublingual route are very limited. The use of this route in preoperative settings opens up a new horizon for an anesthesiologist and needs to be explored. Various drugs required for an anesthesia, sedation and pain management like midazolam, lorazepam, ketamine, fentanyl, buprenorphine, ondansetron are commoner drugs and their sublingual route administration needs to be further explored [6,7]. The newer routes of administration should be explored keeping in mind patient comfort, safety and better efficacy. This route is required for pediatric population where intravascular access is not possible because of lack of cooperation from the child [8]. The drugs for pain management has limited for sublingual administration. Buprenorphine, a potent, synthetic, mixed agonist-antagonist with long half life, is readily absorbed by sublingual route.

Sublingual route will also be boon for palliative care patient specially with advanced diseases like cancers [9]. The palliative cancer patient during end of life or terminal illness is usually cared in either hospice or patients wish to be at home with family members. The drug therapy for symptom management needs to be continued for better of quality of life not only for patient but for family members as well. Palliative cancer patient usually requires morphine for cancer pain management. The use of morphine sublingually has equivocal literature support. Some concluded that poor absorption made morphine unsuitable for sublingual administration [10]. This is due to the fact of its hydrophilicity. Similarly ketamine has been tried via sublingual route for neuropathic acute pain management and in severe neuropathic pain [11]. Sublingual ketamine has a rapid onset peak blood level; therefore it may be useful for rapid analgesic effect. However there is a potential for dysphoric type side effects [12].

However, giving drug by sublingual route has its own disadvantage such as unpalatability, burning sensation, ulceration, and the need to retain the drug sublingually for several minutes. Despite many uses, sublingual route remains unexplored, yet potential route for an anesthesiologist in preoperative and pain care settings. The drug delivery and its molecular alteration need to be explored and researched for optimal sublingual route administration.

References

1. Narang N, Sharma J. Sublingual mucosa as a route for systemic drug delivery. *Int J Pharm Pharm Sci.* 2011; 3: 18-22.
2. Bind AK, Gnanarajan G, Kothiyal P. A review: sublingual route for systemic drug delivery. *Int J Drug Res Tech.* 2013; 3: 310-336.
3. Sung YF. Risks and benefits of drugs used in the management of postoperative nausea and vomiting. *Drug Safety.* 1996; 14: 181-197.
4. Wadibia EC. Antiemetics. *South Med J.* 1999; 92: 162-165.
5. Nibha KP, Pancholi SS. An Overview on: sublingual route for systemic drug delivery. *Int J Res Pharama Biomed Sci.* 2012; 3: 913-923.
6. Gupta S, Gadani H, Kedia S. Is premedication with midazolam more effective by the sublingual than the oral route? *Anesth Essays Res.* 2011; 5: 43-47.
7. Wagner DS, Gauger V, Chiravuri D, Faust K. Ondansetron oral disintegrating tablets for the prevention of postoperative vomiting in children undergoing strabismus surgery. *Ther Clin Risk Manag.* 2007;3:69-694.

8. Baines D. Postoperative nausea and vomiting in children. *Paediatr Anaesth*. 1996; 6: 7-14.
9. Reisfiled GM, Wilson GR. Rational use of sublingual opioids in palliative medicine. *J Pall Med*. 2007; 10: 465-475.
10. Tassinari D, Masi A, Sartori S, Nielsen I, Ravaioli A. Atypical absorption of morphine sulfate through oral mucosa: An unusual case of acute opioid poisoning. *J Pain Symp Mana*. 1995; 10: 405-407.
11. Lara DR, Bisol LW, Munari LR. Antidepressant, mood stabilizing and procognitive effects of very low dose sublingual ketamine in refractory unipolar and bipolar depression. *Int J Neuropsychopharmacology*. 2013; 16: 2111-2117.
12. Weinberg DS, Inturrisi CE, Reidenberg B, Moulin DE, Nip TJ, Wallenstein S, et al. Sublingual absorption of selected opioid analgesics. *Clin Pharmacol Ther*. 1988; 44: 335-342.