



Intranasal Use of Buprenorphine: A Case Report on Non-sublingual Routes and Associated Risks from Iran

Omid Massah ^{1,*}, Seyed Ramin Radfar ², Ali Farhoudian ³

¹ Substance Abuse and Dependence Researcher Center, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran

² Department of Neuroscience and Addiction, School of Advanced Technologies in Medicine (SATIM), Tehran University of Medical Sciences, Tehran, Iran

³ Department of Psychiatry, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran

*Corresponding Author: Substance Abuse and Dependence Researcher Center, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran. Email: omchomch@gmail.com

Received: 9 November, 2024; Revised: 10 March, 2025; Accepted: 12 March, 2025

Abstract

Introduction: Buprenorphine is a partial agonist of the μ -opioid receptor and one of the main drugs used for maintenance treatment of opioid use disorder. The widespread misuse of buprenorphine, particularly via non-sublingual routes, poses significant health risks.

Case Presentation: This paper presents a detailed case study of a 39-year-old male with a history of polydrug use, focusing on the respiratory complications arising from intranasal buprenorphine use, which he had been snorting for the past three years.

Conclusions: It appears that buprenorphine snorting can lead to serious and irreversible injuries and complications, including congestion and erythema of the nasal mucosa, deviation and perforation of the middle nasal septum, chronic sinusitis, and reduced sleep quality.

Keywords: Buprenorphine, Drug Snorting, Intranasal Drug Use, Sniffing Drugs

1. Introduction

Opium use disorder is a critical public health issue in Iran, accounting for 98% of the world's opium seizures (1). In response, Iran initiated a methadone and buprenorphine treatment program over two decades ago, yielding substantial success (2, 3). Buprenorphine, a synthetic derivative of thebaine and a partial agonist at the μ -opioid receptor and an antagonist at the κ -opioid receptor, offers a potent analgesic effect 25 to 40 times that of morphine, but with considerable cardio-respiratory tolerance considerations. It is employed both as a pain reliever in low doses and as a maintenance therapy in higher doses for opioid dependence (4, 5). The abuse potential of buprenorphine has been known since its clinical introduction (6). Data from multiple countries, including Finland, France, Great Britain, and Australia, indicate a persistent rise in buprenorphine abuse, often involving alternative administration routes such as intravenous and intranasal (7). Intranasal drug abuse

can lead to severe nasal and respiratory complications, paralleling those seen with substances like heroin and cocaine (8, 9). Buprenorphine can be snorted nasally due to its pharmacological properties and potential for mucosal absorption (10). The combination of buprenorphine with naloxone aims to reduce intravenous abuse potential; however, the abuse of buprenorphine alone and in combination continues, as indicated by recent studies and reports from needle exchange programs (11). Among 111 surveyed individuals with a history of drug use in France, 36 patients (32%) reported intravenous use, 15 people (13.5%) sublingually, and 24 people (21.6%) had used it both intravenously and orally (12). In another study in Australia among 372 patients under medication-assisted treatment who used buprenorphine, it was reported that 65 of them (18%) had smoked or snorted buprenorphine at least once. Of these 65 buprenorphine inhalers, 50 clients had smoked buprenorphine (77%). Buprenorphine sniffing was less common, with less than 10% having experienced it, and there was no constant sniffing (13). The combination of

Copyright © 2025, Massah et al. This open-access article is available under the Creative Commons Attribution 4.0 (CC BY 4.0) International License (<https://creativecommons.org/licenses/by/4.0/>), which allows for unrestricted use, distribution, and reproduction in any medium, provided that the original work is properly cited.

How to Cite: Massah O, Radfar S R, Farhoudian A. Intranasal Use of Buprenorphine: A Case Report on Non-sublingual Routes and Associated Risks from Iran. Iran J Psychiatry Behav Sci. 2025; 19 (2): e157802. <https://doi.org/10.5812/ijpbs-157802>.

buprenorphine and naloxone was introduced to prevent the non-sublingual use of buprenorphine. This combination was expected to have less abuse potential than buprenorphine alone. However, the abuse of buprenorphine by non-sublingual routes did not decrease significantly. This may be because combining naloxone with buprenorphine does not block all of its agonistic effects when administered non-sublingually. In contrast to this finding, respondents were willing to pay a significantly higher price for buprenorphine than for the combination product (7). In Iran, the prevalence of lifetime non-medical use of buprenorphine is reported to be 0.1%, and there are no reports of intranasal use of buprenorphine from Iran (14, 15). Among people with opioid use disorder (OUD), buprenorphine is the primary drug of abuse in less than 2% of people with OUD. Of these, more than 95% use it sublingually or intravenously, and less than 5% use it as their primary route of abuse intranasally. Given the low percentage of buprenorphine abusers among people with OUD, intranasal abuse of buprenorphine is an uncommon route. What has been concluded from past research is that abuse of buprenorphine from routes other than sublingual is seen mostly in people who have had a history of injection use (such as injecting heroin) or a history of intranasal use (such as cocaine snorting) (7, 10, 16, 17).

2. Case Presentation

This case report examines a 39-year-old male patient with a history of tramadol, opium, and methamphetamine use. He began taking tramadol occasionally at the age of 22 and started using opium at the age of 24. Over the last nine years, in addition to using opium, he has occasionally used methamphetamine. He has been undergoing maintenance treatment with buprenorphine for the past seven years, which he has been using intranasally for the past three years despite being introduced sublingually. During these seven years, he was withdrawn from treatment several times and used opium for several months. During the times he used opium, he also used methamphetamine. When he returned to treatment, he sometimes took buprenorphine sublingually and sometimes snorted it through the nose. For the last three years, he has exclusively snorted buprenorphine. During this period, he has occasionally used methamphetamine through inhalation and via a pipe.

This case highlights the severe physical consequences of chronic intranasal buprenorphine use, including nasal mucosa erythema, congestion, severe

deviation of the nasal septum, and recurrent sinus infections. Visibly, the nose was deviated to one side. On intranasal examination, the mucosa was erythematous and congested, and the middle septum was severely deviated to the right. Additionally, in the upper part of the middle septum, there was a small area of atrophy and necrosis. According to the patient, the middle septum of his nose was perforated, as confirmed by an ENT specialist. The patient had a history of chronic sinusitis and recurrent attacks of acute sinus infections, as well as severe breathing problems during sleep. He had also experienced recurrent attacks of pneumonia in the last two years. The patient's current drug dose is 8 mg, which he snorts a 2 mg pill each time in four stages. He also consumes half a gram of methamphetamine 3 - 4 days a week. While he achieves the same result and effect sublingually, he forcibly snorts through his nose, and although he is aware of the severe complications and problems caused to his nose and airways, he cannot refrain from buprenorphine snorting.

3. Discussion

The possibility of absorbing buprenorphine via the sublingual route makes it suitable for abuse through respiratory routes, such as intranasal snorting. This is because it can be easily absorbed from the mucous membranes, and its continuous snorting, similar to the consumption of heroin and cocaine through the nose, leads to serious and irreversible injuries and complications. These include congestion and erythema of the nasal mucosa, particularly the middle septum, deviation of the nasal septum to one side, capping and blocking of one side of the nose, perforation of the middle nasal septum, frequent sinus infections, chronic sinusitis, severe breathing problems during sleep, and reduced sleep quality.

Buprenorphine's abuse through non-traditional routes, such as intranasal and intravenous, necessitates a reconsideration of current treatment practices and the formulation of strategies to mitigate these risks. The case study underscores the need for enhanced patient education, monitoring, and potentially reformulating medications to deter misuse while providing effective treatment for opioid dependence.

Footnotes

Authors' Contribution: Manuscript concept and design: O. M.; Drafting of the manuscript: O. M.; Critical revision of the manuscript for important intellectual content; R. R.; Study supervision: A. F.

Conflict of Interests Statement: The authors declare there is no personal or professional relations with organizations and individuals in case of conflict of interest.

Data Availability: The dataset presented in the study is available on request from the corresponding author during submission or after publication.

Funding/Support: There was no funding/support for this article.

Informed Consent: Written informed consent was obtained from the participant.

References

- United Nations Office on Drugs and Crime. *World Drug Report 2022*. 2022. Available from: <https://www.unodc.org/unodc/en/data-and-analysis/world-drug-report-2022.html>.
- Mokri A. Brief overview of the status of drug abuse in Iran. *Arch Iran Med*. 2002;**5**(3):184-90.
- Ahmadi J. Buprenorphine maintenance treatment of heroin dependence: the first experience from Iran. *J Subst Abuse Treat*. 2002;**22**(3):157-9. [PubMed ID: [12039619](#)]. [https://doi.org/10.1016/s0740-5472\(02\)00222-2](https://doi.org/10.1016/s0740-5472(02)00222-2).
- Walsh SL, Preston KL, Bigelow GE, Stitzer ML. Acute administration of buprenorphine in humans: partial agonist and blockade effects. *J Pharmacol Exp Ther*. 1995;**274**(1):361-72. [PubMed ID: [7542336](#)].
- Walsh SL, Preston KL, Stitzer ML, Cone EJ, Bigelow GE. Clinical pharmacology of buprenorphine: ceiling effects at high doses. *Clin Pharmacol Ther*. 1994;**55**(5):569-80. [PubMed ID: [8181201](#)]. <https://doi.org/10.1038/clpt.1994.71>.
- Strang J. Abuse of buprenorphine (Temgesic) by snorting. *BMJ*. 1991;**302**(6782):969. [PubMed ID: [2032057](#)]. [PubMed Central ID: [PMC1669456](#)]. <https://doi.org/10.1136/bmj.302.6782.969-b>.
- Alho H, Sinclair D, Vuori E, Holopainen A. Abuse liability of buprenorphine-naloxone tablets in untreated IV drug users. *Drug Alcohol Depend*. 2007;**88**(1):75-8. [PubMed ID: [17055191](#)]. <https://doi.org/10.1016/j.drugalcdep.2006.09.012>.
- Lahari K, Patil K, Mahima VG. Prescription Drug Abuse and Oral Clues - an Overview. *J Indian Acad Oral Med Radiol*. 2006;**18**(3):150. <https://doi.org/10.4103/0972-1363.169373>.
- Yewell J, Haydon R, Archer S, Manaligod JM. Complications of intranasal prescription narcotic abuse. *Ann Otol Rhinol Laryngol*. 2002;**111**(2):174-7. [PubMed ID: [11860072](#)]. <https://doi.org/10.1177/000348940211100212>.
- Middleton LS, Nuzzo PA, Lofwall MR, Moody DE, Walsh SL. The pharmacodynamic and pharmacokinetic profile of intranasal crushed buprenorphine and buprenorphine/naloxone tablets in opioid abusers. *Addiction*. 2011;**106**(8):1460-73. [PubMed ID: [21395892](#)]. [PubMed Central ID: [PMC3776483](#)]. <https://doi.org/10.1111/j.1360-0443.2011.03424.x>.
- Winstock AR. Buprenorphine use by the smoking route in gaols in NSW. *Drug Alcohol Rev*. 2008;**27**(4):449-50. [PubMed ID: [18584400](#)]. <https://doi.org/10.1080/09595230802043807>.
- Roux P, Villes V, Bry D, Spire B, Feroni I, Marcellin F, et al. Buprenorphine sniffing as a response to inadequate care in substituted patients: results from the Subazur survey in south-eastern France. *Addict Behav*. 2008;**33**(12):1625-9. [PubMed ID: [18775604](#)]. <https://doi.org/10.1016/j.addbeh.2008.07.018>.
- Horyniak D, Dietze P, Larance B, Winstock A, Degenhardt L. The prevalence and correlates of buprenorphine inhalation amongst opioid substitution treatment (OST) clients in Australia. *Int J Drug Policy*. 2011;**22**(2):167-71. [PubMed ID: [21112758](#)]. <https://doi.org/10.1016/j.drugpo.2010.10.004>.
- Roshanpajouh M, Mirkazemi R, Ehterami M, Narenjiha H, Malek Afzali H, Sarraimi HR, et al. Drug use among Iranian population: results of a national household survey. *J Subst Use*. 2019;**25**(2):146-51. <https://doi.org/10.1080/14659891.2019.1664670>.
- Ansari M, Rostam-Abadi Y, Baheshmat S, Hamzehzadeh M, Gholami J, Mojtabai R, et al. Buprenorphine abuse and health risks in Iran: A systematic review. *Drug Alcohol Depend*. 2021;**226**:108871. [PubMed ID: [34214882](#)]. <https://doi.org/10.1016/j.drugalcdep.2021.108871>.
- Chilcoat HD, Amick HR, Sherwood MR, Dunn KE. Buprenorphine in the United States: Motives for abuse, misuse, and diversion. *J Subst Abuse Treat*. 2019;**104**:148-57. [PubMed ID: [31370979](#)]. <https://doi.org/10.1016/j.jsat.2019.07.005>.
- Soyka M. Buprenorphine Use and Risk of Abuse and Diversion. *Adv Pharmacoeconomol Drug Saf*. 2014;**3**(1):1000145. <https://doi.org/10.4172/2167-1052.1000145>.