

## Case Report



# Tusi and general anesthesia: a quasi-mortal pink cocktail. case report

## Abstract

Tusi, also known as «pink cocaine,» is a term that has become popular to describe a dangerous mixture of psychoactive substances. Its name comes from a distortion of 2C-B, a drug synthesized in 1974, belonging to the phenethylamine family. It is a combination of addictive substances that has been gaining popularity in Latin America, Europe, Asia, Australia, and recently in the USA. Ketamine and MDMA are the usual ingredients, but samples of tusi have been found with other addictive components such as methamphetamines, benzodiazepines, opioids, and other psychoactive compounds. It rarely contains cocaine. We describe a tourist patient who traveled to our plastic surgery unit in search of improving the image of his body contour. He has a history of chronic addiction to various psychoactive substances, including tusi. During the anesthesia, he developed a difficult-to-manage cardiovascular instability.

**Keywords:** Tusi, Pink cocaine, General anesthesia

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## Introduction

The irrational use - legal or illegal - of psychoactive substances has been an ancient practice that dates back about 12,000 years,<sup>1-3</sup> and for several decades now it has become a global health crisis that has claimed millions of lives regardless of age; from the unborn to octogenarians continue to be victims of this deadly pathology. This ancient pathological behavior currently involves not only the so-called opioid crisis, but also the illicit use of non-opioid substances, being one of the multifactorial challenges that is extremely difficult or impossible to solve. The use of opioids alone or in combination with other psychoactive drugs claims thousands of lives across the planet; in 2023, nearly 316 million people used some drug (excluding alcohol and tobacco). That is, 6% of the population between 15 and 65 years old, compared to 5.2% of the population in 2013. With 244 million users, cannabis continues to be the most widely used drug, followed by opioids (61 million), amphetamines (30.7 million), cocaine (25 million), and ecstasy (21 million).<sup>4,5</sup>

A drug mixture known as tusi or pink cocaine has become popular in Latin America and Europe, and is now increasingly used in the United States, Australia, and Asia. «Tusi» is the phonetic translation of «2C,» a series of psychedelic phenethylamines. It rarely contains drugs from the 2C series, with ketamine and 3,4-methylenedioxymethamphetamine (MDMA) being the classic combination.<sup>6-8</sup> This addictive form is often used at concerts, nightclubs, and during homosexual intercourse.

Drug addictions are a continuing challenge in medicine, especially in anesthesiology, due to the multiple drug interactions and secondary physiological impact. Patients with acute or chronic drug exposure pose a serious risk in the perioperative period, a danger that must be carefully assessed by the medical team. Hallucinogens, psychedelics, opioids, and other addictive substances have significant effects on various cell receptors, ranging from antagonizing the NMDA receptor to stimulating muscarinic receptors.<sup>9,10</sup> We describe a tourist patient who traveled to our plastic surgery facility in search of improving the image of his body contour. He has a history of chronic addiction to various psychoactive substances, including tusi. During the anesthesia, he developed a difficult-to-manage cardiovascular instability.

## Case report

A 50-year-old male, originally from Colombia and residing in San Francisco, California. His most relevant medical history included being addicted to various psychoactive substances for several years: cocaine, ketamine, cannabis, ecstasy, and, for the past three years, frequent use of tusi during parties, concerts, and/or homosexual intercourse. He takes emtricitabine, rilpivirine, and tenofovir alafenamide to treat his HIV-1 infection. Physical examination: BP 147/97, HR 60, Respiratory rate 18, Temp 37°C, oximetry in room air 98%, BMI 29.2. The rest of the physical examination and routine laboratory tests were normal. No toxicology test was performed. He seemed slightly anxious, which was attributed to his desire to begin his surgery. The surgical plan was radiofrequency-assisted liposuction of the abdomen, flanks, pectorals, and full back with gluteal and pectoral lipoinjection. In addition, upper blepharoplasty was performed.

The patient was premedicated one hour before the start of anesthesia with 10 mg melatonin, 0.1 mg clonidine, 2 mg lorazepam, and 90 mg etoricoxib. An adequate state of sedation and anxiolysis was not achieved with this pharmacological regimen. Immediately before induction, 1 g of tranexamic acid, 16 mg of dexamethasone, and 1 g of dipyrone were administered intravenously. Anesthesia was induced with 5 mg of midazolam, 130 mg of propofol, 50 µg of fentanyl, and 50 mg of rocuronium. He was orotracheally intubated without incident, and anesthesia was maintained with sevoflurane. A modified Klein solution (lidocaine-epinephrine in lactated Ringer's solution) was injected immediately before starting liposuction (total dose of lidocaine 7.3 mg/kg, and total dose of epinephrine 36.6 µg/kg). During the first hour under anesthesia, the patient experienced systolic hypertension and sinus tachycardia attributed to the subcutaneous injection of epinephrine. Sevoflurane was gradually increased from 2% to 3.5%, and intravenous fentanyl was administered in divided doses of 50 µg for a total dose of 250 µg. The antihypertensive response was inadequate; therefore, an intravenous infusion of propofol was started, stabilizing blood pressure and heart rate for 45 minutes. The total anesthetic time was 330 minutes, during which the patient experienced periods of sinus tachycardia up to 150 beats per minute, hypertension up to 160/110 mmHg, alternating with bradycardia of 49 bpm and hypotension of 80/40 mmHg, which were



treated with atropine and ephedrine IV infusion. A total of 2900 ml of liposuction was performed, with approximately 300 ml of blood loss. The postoperative course was uneventful, and the patient regained cardiovascular stability one hour after the anesthesia wore off.

## Discussion

The use of illicit substances and/or legal drugs for recreational purposes is a rapidly growing global pandemic that is inadequately controlled due to multiple factors, most notably the economic interests of the illicit market, corruption, and, of course, the irrational consumption of drug addicts. Patients who take addictive substances during the perioperative period pose a management challenge for anesthesiologists and surgeons; they are individuals with low credibility, so we must be very cautious when questioning them about their addiction history. Furthermore, it is known that acute or chronic exposure to these substances has physiological impacts that can affect anesthesia and analgesia medications during the perioperative period.<sup>9,10</sup>

Tusi, also known as tuci, tusilini, tucibi, false tusi, pink cocaine, Eros, Venus, pink power, and cocaína rosada, is a highly addictive recreational drug combination, which has been conceptualized as a monstrous illegal substance.<sup>7,8</sup> Apparently designed in Colombia around 2010, although data suggest that it was developed in 2018 in Medellín, Colombia, for use by high-class addicts, with Spain being the first European country where it became popular. Its use has expanded exponentially in various regions of Europe, Asia, Latin America, Australia, and, more recently, in the USA. Tusi combines various psychoactive substances, with ketamine and MDMA being the most common drugs in this cocktail of substances. Unlike illicit mono-drugs, pink cocaine doesn't have a steady formula and infrequently includes cocaine. It's a changing combination of drugs contained in a powder form dyed with inert pink colorants. Therefore, the content of the tusi variable changes according to suppliers and the availability of illegal and legal substances on the black market. This makes the risk of complications, including death, variable, higher, and hardly predictable.

Our patient's hemodynamic response during anesthesia cannot be attributed solely to the low doses of local lidocaine (7.3 mg/kg) and epinephrine (36.6 µg/kg) injected subcutaneously, which were below the usual doses recommended for low-volume liposuction (<4,000 ml aspirated). The maximum safe dose of lidocaine with epinephrine in tumescent anesthesia for liposuction oscillates between 35 and 55 mg/kg,<sup>11</sup> and epinephrine should not exceed 50 µg/kg.<sup>12</sup> Although we considered the patient's history of frequent use of ketamine, cocaine, and ecstasy (MDMA), our error in the comprehensive management of this patient was overlooking the information about his addiction to tusi, which could have been another trigger for the intraoperative hypertension-hypotension, bradycardia, and tachycardia. Therefore, this intraoperative cardiovascular response was the result of several factors; considering the possibility that our patient used MDMA, ketamine, cocaine, cannabis, and tusi in the immediate preoperative period, we can assume the following effects.

1. MDMA (Ecstasy). The current results suggest that MDMA is acutely detrimental to heart function. There is an increase in norepinephrine, with augmented blood pressure, arrhythmias, heart attack, and increased myocardial oxygen consumption, with an initial rise in cardiac output and subsequent heart failure. MDMA-induced late-onset cardiomyopathy may also develop, as well as arterial hypotension and bradycardia. Other acute adverse effects include tremor, sweating, bruxism, and life-threatening hyperthermia that may be further complicated by rhabdomyolysis, disseminated intravascular coagulation, and acute renal failure.<sup>13-16,17</sup>
2. Ketamine. It was introduced in anesthesia in the early 1970s. Because of its hallucinogenic and dissociative effects, ketamine is often abused for recreational purposes, commonly known as "K powder". Although it has a well-known cardio-protective effect, this drug can produce heart and blood vessel instability characterized by hypertension, tachycardia, palpitations, arrhythmias, and chest pain.<sup>17,18</sup>
3. Cocaine. This drug has been used as a stimulant for thousands of years, although its recreational use and associated risks were recognized much later. The Incas in the Andean region that now encompasses Colombia and Peru chewed coca leaves for their stimulating effects and to combat fatigue and altitude sickness. They considered the plant sacred, and its use was integrated into cultural and religious rituals. Cocaine was brought to Europe in the mid-1850s, where it was studied by Sigmund Freud as a cure for morphine addiction and as a tonic for his psychoneurotic patients. It was Carl Köller who discovered its potential in loco regional anesthesia, and it has been used for that purpose ever since. It can cause irreversible structural damage to the heart, significantly accelerate cardiovascular disease, and cause sudden cardiac death. There is an established connection between cocaine use and myocardial infarction (MI), arrhythmia, heart failure, and sudden cardiac death. It can cause MI by causing coronary artery vasoconstriction and accelerated atherosclerosis, and initiating thrombus formation. Cocaine has also been shown to block K<sup>+</sup> channels, increase L-type Ca<sup>2+</sup> channel current, and inhibit Na<sup>+</sup> influx during depolarization, all potential causes of arrhythmia. Furthermore, cocaine use has been associated with left ventricular hypertrophy, myocarditis, and dilated cardiomyopathy, which can lead to heart failure. It is a highly addictive substance.<sup>17,19,20</sup>
4. Cannabis. The cannabis plant (marijuana) is one of the oldest documented medicines in history and is the most widely used illegal drug in the world, with an estimated 219 million users globally. Addicts to this substance not only require higher doses of anesthesia, but have also been found to develop cardiovascular damage. It can cause high blood pressure, arrhythmias (tachycardia, atrial fibrillation, ventricular tachycardia, and ventricular fibrillation), arterial stiffness, and reduced diastolic function.<sup>21-23</sup>
5. Amphetamines, methamphetamines. The illegal abuse of amphetamines and methamphetamines is a serious global problem. They are the most commonly used illegal drugs after cannabis. Like other addictive substances, their effects on the cardiovascular system are dependent on the duration of use and the dosage. These effects can range from malignant and benign arrhythmias, associated cardiomyopathy, Takotsubo cardiomyopathy, heart failure, cardiogenic shock, coronary vasospasm, and atherosclerotic coronary artery disease.<sup>24-28</sup>
6. Tusi. It is a highly variable and unpredictable mixture of psychoactive substances, which means its exact chemical components and associated pharmacological and physiological risks are unknown. It typically contains ketamine, 3,4-methylenedioxymethamphetamine (MDMA), amphetamine, methamphetamine, and occasionally cocaine, opioids, or other new psychoactive substances. The potential for harmful effects on the cardiovascular system, including sudden death, depends on the various components and their concentrations.

As mentioned, this mixture is highly variable, making it very difficult to predict the physiological changes. Stimulants like MDMA and methamphetamine, contained in tusi, place extreme stress on the cardiovascular system, manifesting as arrhythmias, high blood pressure, heart attack, or sudden cardiac arrest. If tusi also contains cocaine, the cardiovascular risk is even greater, making this drug a deadly cocktail, especially when combined with anesthesia.

## Conclusion

Pink cocaine or tusi is not a single drug but a synthetic blend marketed for its aesthetic appeal and nightlife attraction. Its increasing use poses a significant risk in perioperative management. The appeal of tusi is its stimulant-sedative effect, which, combined with its deleterious cardiovascular effects and pharmacological interactions with anesthetics, makes this drug a potentially deadly cocktail. Recognizing patients addicted to tusi is mandatory in safe perioperative management.

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