

## Case Study: Cocaine Intoxication

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**Citation:** Lakrafi A, Maghrabi O, Khaleq K, Nssiri A, Bouhouri A, et al. (2024) Case Study: Cocaine Intoxication. Annal Cas Rep Rev: ACRR-385.

**Received Date:** 04 April, 2024; **Accepted Date:** 08 April, 2024; **Published Date:** 12 April, 2024

### Abstract

Cocaine is a hard drug consumed in many countries worldwide and has become one of the leading causes of toxic deaths, accounting for 1 to 15% of drug-related fatalities. Its trafficking poses a global health problem. In this study, we report three cases of cocaine capsule ingestion. Cocaine intoxication can be potentially fatal and requires urgent intervention by a resuscitation specialist to limit complications. Surgical intervention can be life-saving in cases of cocaine capsule ingestion, and postoperative cardiologic follow-up remains essential to rule out underlying cardiovascular issues.

### Introduction

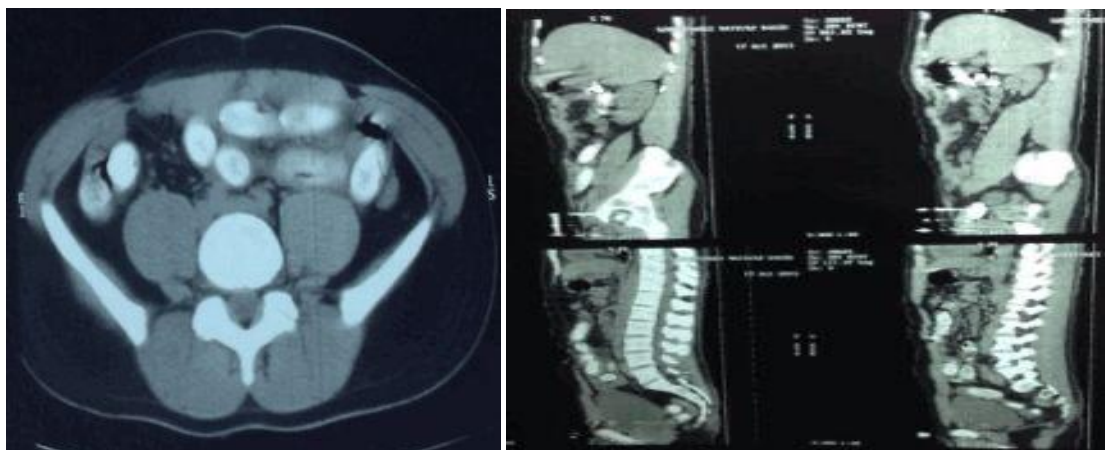
Cocaine has local anesthetic, vasoconstrictive, and sympathomimetic effects. Its local anesthetic effects result from blocking voltage-dependent sodium channels in neuronal membranes, leading to neural conduction inhibition. Cocaine's vasoconstrictive effect is primarily due to the stimulation of alpha-adrenergic receptors in arterial smooth muscle cells. Increased endothelin-1 and decreased blood levels of nitric oxide can also contribute to cocaine's vasoconstrictive properties. The primary toxicities of cocaine use stem from sympathomimetic effects. Cocaine inhibits the presynaptic reuptake of biogenic amines such as norepinephrine, dopamine, and serotonin throughout the body, including the central nervous system (CNS). Systemic effects include an increased heart rate and blood pressure with widespread vasoconstriction. CNS effects are likely due to excessive dopaminergic activity, resulting in euphoria and increased self-confidence at lower doses and agitation and delirium at higher doses. Cocaine's thrombogenic effects have been attributed to increased

plasminogen activator inhibitor activity, platelet count, platelet activation, and platelet aggregation. An inflammatory state characterized by elevated C-reactive protein, von Willebrand factor, and fibrinogen concentrations may also promote thrombosis.

### Patients and Observations

#### Case 1:

The first case involves a 21-year-old adult male of Polish origin with no significant medical history. He was transferred from the airport due to severe abdominal pain and agitation. Upon clinical examination, the patient was conscious (GCS 15/15), anxious, had a normal heart rate (85 beats/min), normal blood pressure (131/70), and was eupneic (respiratory rate 15 cycles/min). Abdominal tenderness was found diffusely, with no palpable mass. A mobile oblong mass was detected by rectal examination, located 5 cm from the anal margin, with no other specific pathological signs.



**Therapeutic Approach:** Extraction of the cocaine capsule.

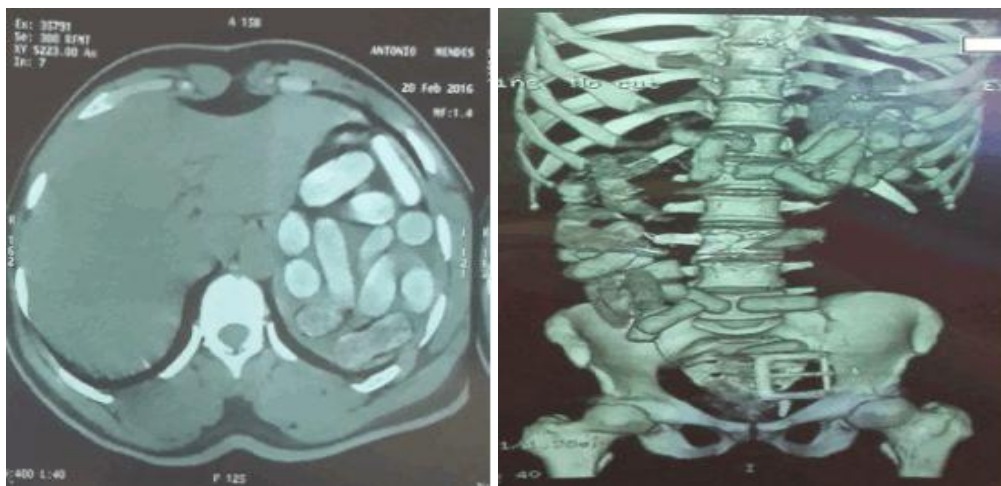
**Evolution:** The patient was hospitalized and monitored for capsule evacuation. On the 4th day of hospitalization, the patient experienced severe chest pain and agitation, with a blood pressure of 220/100. He was transported to the operating room for urgent surgical extraction but suffered an unrecoverable cardiac arrest within 30 minutes of CPR.

**Case 2:**

The second case involves a 42-year-old adult male from Guinea with no significant medical history. He was apprehended at the airport due to suspected cocaine ingestion. Clinical examination

revealed a conscious patient (GCS 15/15), with a normal heart rate (75 beats/min), normal blood pressure (141/75), and eupnea (respiratory rate 16 cycles/min). Oxygen saturation was 96% in ambient air. Abdominal examination revealed a soft abdomen, and rectal examination identified a cocaine capsule located 12 cm from the anal margin, with no other specific pathological signs.

CT Scan: 18 capsules in the stomach, 12 capsules in the ascending colon, 2 capsules in the transverse colon, and 8 rectal capsules.



**Therapeutic Approach:** Hospitalization for capsule expulsion monitoring. On the 4th day of hospitalization, the patient developed chest pain and agitation, with blood pressure rising to 221/102 mmHg.



**Evolution:** The patient was taken to the operating room for exploratory laparotomy, which resulted in the expulsion of 27 capsules through the lower gastrointestinal tract.

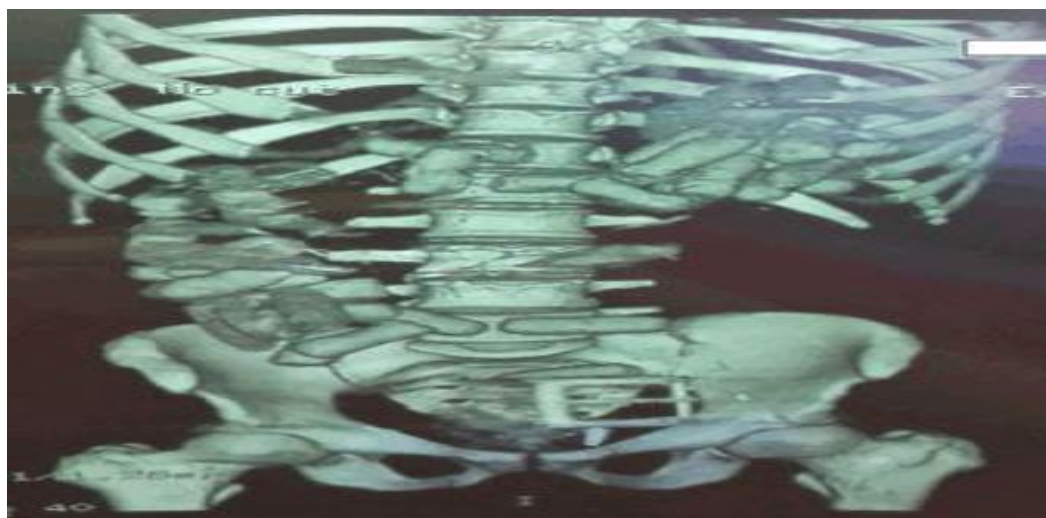


Postoperative recovery included the resolution of clinical manifestations and normalization of blood pressure. The patient was discharged on the 7th postoperative day.

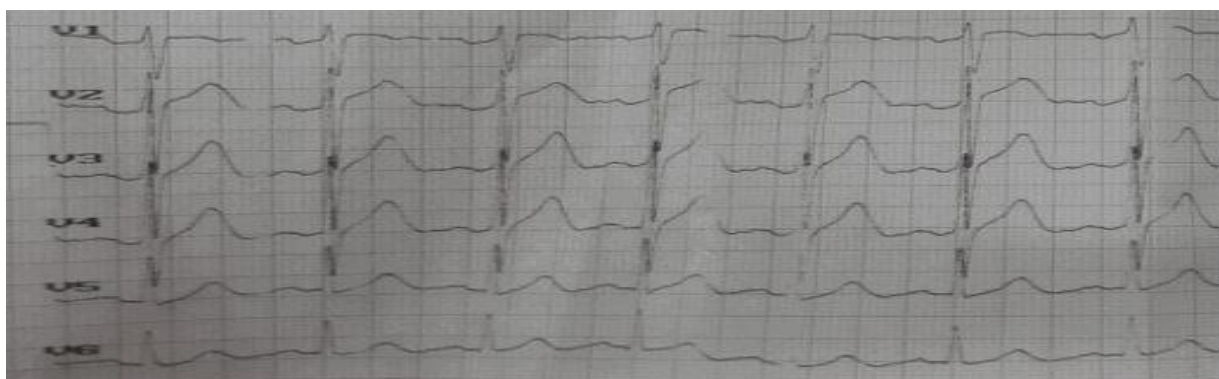
**Case 3:**

The third case involves a 42-year-old adult male with no significant medical history, arrested at the airport for cocaine possession. The patient had ingested 70 cocaine capsules. On admission, the patient was conscious (GCS 15/15), had

symmetric reactive pupils with no motor deficits, a blood pressure of 130/80 mmHg, heart rate of 85 bpm, and oxygen saturation of 95% in ambient air. Rectal examination revealed a capsule located 2 cm from the anal margin.



**Therapeutic Approach:** The patient was admitted to the intensive care unit, monitored with capsule elimination surveillance. The patient expelled 43 capsules through normal defecation. On the 4th day, the patient experienced chest pain and a hypertensive peak of 22/10 cmHg. An ECG revealed ST-segment elevation in the anteroseptal-apical region.



**Evolution:** Given the clinical presentation, the patient was immediately transported to the operating room. A midline laparotomy was performed, resulting in the extraction of capsules. The patient's blood pressure normalized under general anesthesia. Postoperative recovery was marked by improvement in cardiovascular signs, and the patient was discharged on the 7th postoperative day.



## Discussion

Cocaine consumption has significantly increased since the 1990s, driven by abundant supply, a tenfold reduction in the price per gram over 30 years, and normalization associated with a festive lifestyle. A report by the National Observatory for Drugs and Addictions (ONDA) (3) published in 2016 estimated a minimum of 800,000 drug users in Morocco, representing 5% of the total population. Additionally, a study by the National Assessment Program (PNEA) conducted in April 2017 on psychotropic drug use in schools revealed that 13% of young students use drugs.

The global cocaine trade originates from the three major South American cocaine-producing countries: Colombia, Peru, and Bolivia. Routes for cocaine transport and distribution to Europe, North America, Africa, and emerging Asian markets have multiplied since the 1990s. Most mules apprehended at Ibn Rochd University Hospital were arrested at Mohamed 5 Airport. Passengers suspected of carrying cocaine are identified in advance through targeting methods and customs inspections during security checks.

Regarding cocaine toxicity (1), it depends on prior exposure, absorbed dose, form used, purity level, adjuvants used for cutting the drug, and co-intoxications, especially alcohol, which increases the molecule's half-life. The main complications observed in cases of acute cocaine intoxication are cardiovascular and neurological. The risk of myocardial (5;6) infarction is 24 times higher within 60 minutes after cocaine ingestion. Cocaine-induced myocardial ischemia is multifactorial, linked to increased vasoconstriction and oxygen demand, along with endothelial barrier impairment, hyperplatelet aggregation, and coronary artery vasospasm. The risk of ischemic events is not related to the quantity consumed, mode of administration, or frequency; cocaine use can even lead to various rhythm disturbances.

As for neurological complications, the prevalence of seizures varies from 1% to 10% among cocaine users in studies and can reach 16.9% in epileptic individuals; cocaine lowers the epileptogenic threshold. Headaches are common during cocaine use and appear to increase with repeated use.

### Transport and Concealment of Cocaine: (8)

Cocaine, along with other illicit drugs, can be ingested or inserted into the body to transport or conceal the substance. "Body stuffing" refers to the act of swallowing or hiding cocaine in body cavities to avoid detection and prosecution by authorities. These individuals are at risk of toxicity because cocaine is either unpackaged or packaged to allow absorption in the gastrointestinal tract. "Body packing" refers to the ingestion of larger quantities of cocaine for drug trafficking. The risk of toxicity in these individuals is low because cocaine is meticulously packaged to remain intact during gastrointestinal transit. Body packers are usually evaluated and managed in emergency departments. Most patients exhibit mild signs of cocaine exposure, such as tachycardia, hypertension, and agitation, but potentially life-threatening toxicity (seizures, arrhythmias, and cardiac arrest) can also occur. Although activated charcoal is often administered, its beneficial effect on drug adsorption may be minimal due to cocaine's rapid absorption from mucous surfaces. A 6-hour observation period may suffice for asymptomatic individuals and those with

minimal symptoms that resolve during the observation period. Abdominal radiographs typically do not reveal drug packets in body stuffers, but some packets may be detected by computed tomography. Patients with significant toxicities may require hospitalization and management in the hospital or intensive care unit. Asymptomatic cocaine body packers can usually be managed conservatively until packets are eliminated. Abdominal radiography detects drug packets with a sensitivity of 85% to 90%, but computed tomography is also frequently used for detection. Mild laxatives, such as lactulose or polyethylene glycol electrolyte lavage solution, may be administered to expedite elimination. Endoscopic retrieval is generally not recommended due to the risk of packet rupture. Surgical intervention is reserved for patients with signs of gastrointestinal obstruction or perforation, suspected packet rupture, or persistent significant cocaine toxicity.

## Conclusion

Cocaine intoxication is potentially life-threatening and requires urgent intervention by a resuscitation specialist to limit complications. Surgical intervention can be life-saving in cases of cocaine capsule ingestion, and postoperative cardiologic follow-up remains essential to rule out underlying cardiovascular issues.

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