

Review Article



Management of Patients With Drug Packet Ingestion (Body Packers): A Narrative Review

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Context: Due to the increased freight traffic and illicit movement of drug packages disguised inside the body, as well as the shortage of adequate surgical textbook references regarding the management, we aimed to utilize our clinical experience and collect relevant content to present a plausible solution.

Evidence Acquisition: The PubMed, Scopus, Web of Sciences, and Google Scholar databases were systematically searched for related articles.

Results: Of the overall 294 retrieved articles, 37 articles remained for review after the exclusion of duplicates and unrelated papers. Imaging is beneficial in several cases of body packing. Abdominopelvic computed tomography without contrast, which is likely the best diagnostic tool for identifying the existence and quantity of packets in these patents, can help doctors avoid common diagnostic mistakes. Whether it be opioids, cocaine, or amphetamines, each drug class should have a customized course of action.

Conclusion: Although conservative treatment is often employed for these individuals, early surgical intervention for packet removal is advised in the cases of ingesting cocaine and amphetamine packets due to the lack of an appropriate antagonist.

Keywords: Drug packing, Body stuffers, Drug mules, Drug packets, Management

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Context

Body packers, also called mules, stuffers, or swallowers, are individuals who carry illicit drugs within their bodies to evade law enforcement detection (1). Typically, body packers carry a substantial quantity of drugs that are placed into several body cavities, including the vagina, rectum, and oral cavity (2). It has occasionally been noted that some body packers swallow drugs other than opiates, including amphetamines or cannabis (3, 4). Each individual consumes between 50 and 100 packets, each weighing 8-10 g, or roughly one kilogram on average (2, 5, 6). Children and pregnant women have occasionally been used for this purpose (7-9). Any package of these substances has the potential to be fatal. These patients often have good physical conditions; thus, their management is associated with lower morbidity and mortality (10).

Evidence Acquisition

The PubMed, Scopus, Web of Sciences, and Google Scholar databases were systematically searched for related articles published until 2021. "Body packer", "body pusher", "body stuffer", and "drug mule" and their potential derivatives were the main search terms. Of the overall 294 retrieved articles, 37 articles were

selected for review after excluding duplicates and unrelated papers.

Results

Overall, 37 out of 294 retrieved articles were reviewed after the exclusion of duplicates and unrelated papers. Imaging is considered beneficial in several cases of body packing. Abdominopelvic computed tomography without contrast, which is probably the best diagnostic instrument for the identification of the existence and quantity of packets in these patents can assist doctors to avoid common diagnostic mistakes. Whether it be opioids, amphetamines, or cocaine, each drug class should include a customized course of action.

Clinical Manifestations

There are three primary reasons for the frequent referral of body packers to the medical system, arrest by the security personnel, the opening of ingested packets and the development of drug poisoning symptoms, and the occurrence of gastrointestinal tract obstructive symptoms (11). In this case, proper patient history is taken as the first step, together with the type of packets (content, number, and packaging), and gastrointestinal symptoms (pain, vomiting, obstipation, and constipation). It must

be noted that these individuals do not normally provide the doctor with specific information.

Clinical Examinations

The condition of a packet containing any opening or leakage can be determined by several factors, including consciousness, emotional state, vital signs, pupil size, and bowel sounds. An abdominal examination can identify distension or the presence of packets (12). Vaginal and rectal examinations can occasionally aid in the discovery of packets. Other examinations do not provide further information to the examiner (13, 14).

Radiological Examinations

The diagnosis of individuals with a complete history of swallowing packets or those who exhibit poisoning symptoms is not difficult; nonetheless, radiography can be beneficial for the majority of those who do not have any symptoms. Abdominal X-rays can identify foreign bodies in the digestive system. According to some studies (6, 15, 16), the sensitivity of plain abdominal radiography is 85%-90% based on a specific radiographic view (the "double condom" sign) and can be used as a screening test (Figure 1). Multiple foreign bodies in supine abdominal radiography further implied that heroin packets may have been swallowed (6, 17-19). The effectiveness of ultrasonography and other screening procedures has been found to be insufficient in various investigations, but the sensitivity and specificity have not been well studied yet (14, 20-22).

Due to the radiolucency of liquid cocaine in plain X-rays and when there is a strong suspicion that a drug packet has been consumed, abdominal and pelvic computed

tomography (CT) scanning should be performed, first without contrast and then with contrast if necessary (14, 23-26). The packets are found in these CT scans as multiple foreign objects surrounded by a small volume of gas (Figure 2). Undoubtedly, CT specificity is greater than that of conventional radiography, and the type of material included in the packet has been identified even in research utilizing the Hounsfield scale (27, 28). Contrast-enhanced abdominal radiography, which has a sensitivity of 96%, is one of the most sensitive diagnostic techniques (12).

Management

Numerous books and articles have been published about the management and treatment of such patients which are briefly presented as follows:

Opioid Poisoning

When a person exhibits signs of drug intoxication from opium or heroin, opioid antagonists (naloxone hydrochloride) are administered in repeated doses of 2-5 mg. It is continued as the following continuous infusion to ensure a satisfactory clinical result (29-31).

Cocaine Poisoning and Other Stimulant Drugs Such as Amphetamines

Surgery is strongly advised to remove packets in symptomatic individuals because there is no antagonist for the effective treatment of these drugs. Conservative therapy is recommended for the management of additional symptoms. For seizure management, benzodiazepines are employed, while lidocaine and sodium bicarbonate are used to avoid cardiac dysrhythmias. To lower blood pressure, sodium nitroprusside should be used rather than beta-blockers (12).

Ileus, Obstruction, or Peritonitis Due to Perforation

Body packers frequently have intestinal obstruction;

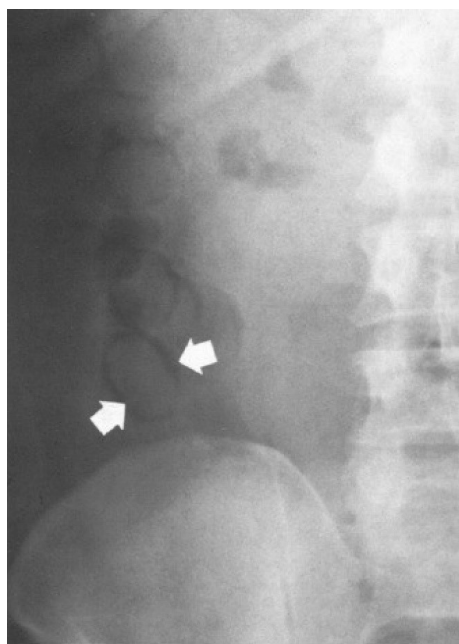


Figure 1. Abdominal X Ray, White Arrow demonstrate pack.

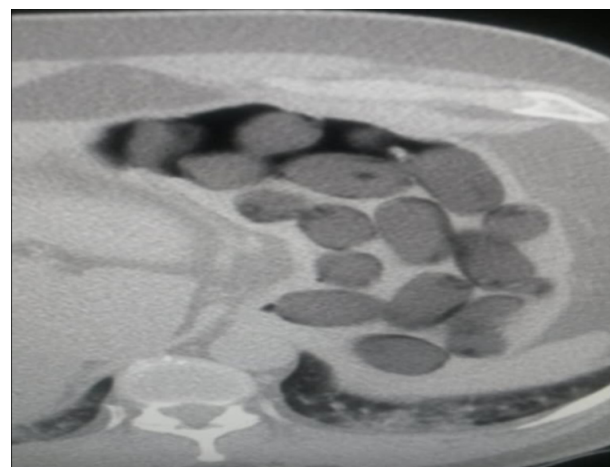


Figure 2. Abdominal CT.

however, intestinal perforation and esophageal obstruction are far less common (19). The foregoing issues are unrelated to the quantity of packets (19, 32).

Asymptomatic Patients

Without any symptoms, patients do not require emergency surgery or other supportive treatments such as enema. According to several in-depth studies in this field, the surgical procedure to remove the packets is only advised if the patient is really concerned about packet perforation or when packaging is highly novice (24). Conservative treatment is recommended for packets that have been retained in the stomach for longer than 48 hours. However, there is disagreement regarding the precise timing of surgery; In general, 5-7 days are suggested for packet passage (11). Whole bowel irrigation with poly ethylene glycol is the best option for the rapid removal of packets.

Detoxification

Numerous studies have suggested that patients take detox medications as they get ready for surgery. These medications include polyethylene glycol solution (2 L/h) or activated charcoal (1 g/kg of the patient's weight every four hours. This decontamination continues until the gastrointestinal tract is cleaned entirely. Some researchers have recommended using gastrointestinal stimulants together with metoclopramide and erythromycin (29, 33).

Endoscopy

The risk of packet rupture still prevents the routine use of this technique despite reports on effective packet removal by endoscopy (29). Therefore, it is advised that packet removal be performed selectively. When a packet ruptures, a surgical team and antagonists should be available. Additionally, it is preferable to remove the packets using appropriate recyclable bags (30).

Surgery

In our experience, a young man had a seizure after ingesting a 10-gram packet of methamphetamine while receiving emergency care. A drug-containing plastic packet leak was discovered during the autopsy. In other instances, patients succumbed to multiorgan failure, brain injury, and loss of consciousness in the intensive care unit. Laparotomies were performed on four patients who lacked pertinent information; two of them had heroin packets discovered in their stomachs, while in the other two, packets were found in their intestines (Figure 3). There was also a case of distal ileum obstruction brought on by an ingested opium packet that was removed by proximal enterotomy. Finally, in our opinion, surgical intervention is unquestionably necessary for acute cocaine and amphetamine intoxication, gastrointestinal obstruction, and peritonitis due to intestinal perforation.

To remove the packets surgically, an enterotomy is



Figure 3. Intestinal removed packets.

performed proximal to the packets, preferably in the clean regions of the intestine. The packets are then removed by milking. In the unclean portions of the gut (colon), the packets can be milked out to the anus (29, 32). If a perforation has already developed, a colostomy will be used. The removal of all packets following surgery is confirmed using one of the radiological modalities, namely, CT scan or contrasted X-ray (30). Complications, including wound infection and dehiscence with damage to the fascia, have been observed in all cases following packet removal through colostomy (10). Moreover, in patients who have had conservative therapy, the complete removal of the packets should be validated by counting the packets or cutting-edge radiological techniques. The use of a CT scan or contrasted X-ray is recommended, and all packages should be delivered to hospital security (10, 34).

Recommended Solutions

After performing a thorough physical examination, obtaining the patient's history, and performing primary resuscitation, a toxicologist should be consulted regarding the aforementioned issues when dealing with such individuals. A plain abdominal flat and upright X-ray can be utilized to confirm the diagnosis. Abdominal CT, with or without oral contrast, can be performed in cases when certain packets are not recognized, especially where liquid cocaine is suspected. First, it is preferable to perform a CT with contrast if there is enough time (12).

If the items are small and in the stomach of asymptomatic patients, a skilled individual can remove them with an endoscope and a recycle bag (35). Due to the possibility of leakage, it is preferable to surgically remove stimulant substances such as cocaine. Whole bowel irrigation is performed using polyethylene glycol when packets are in the bowels (36, 37). All expelled packets should be gathered and counted to match the number of packets that were ingested. The expulsion of all packets is verified if the patient has at least two bowel movements without the presence of drug packets, or by appropriate imaging. If a package remains after five days, it is best to surgically remove it (11).

Figure 4 presents the management algorithm of drug

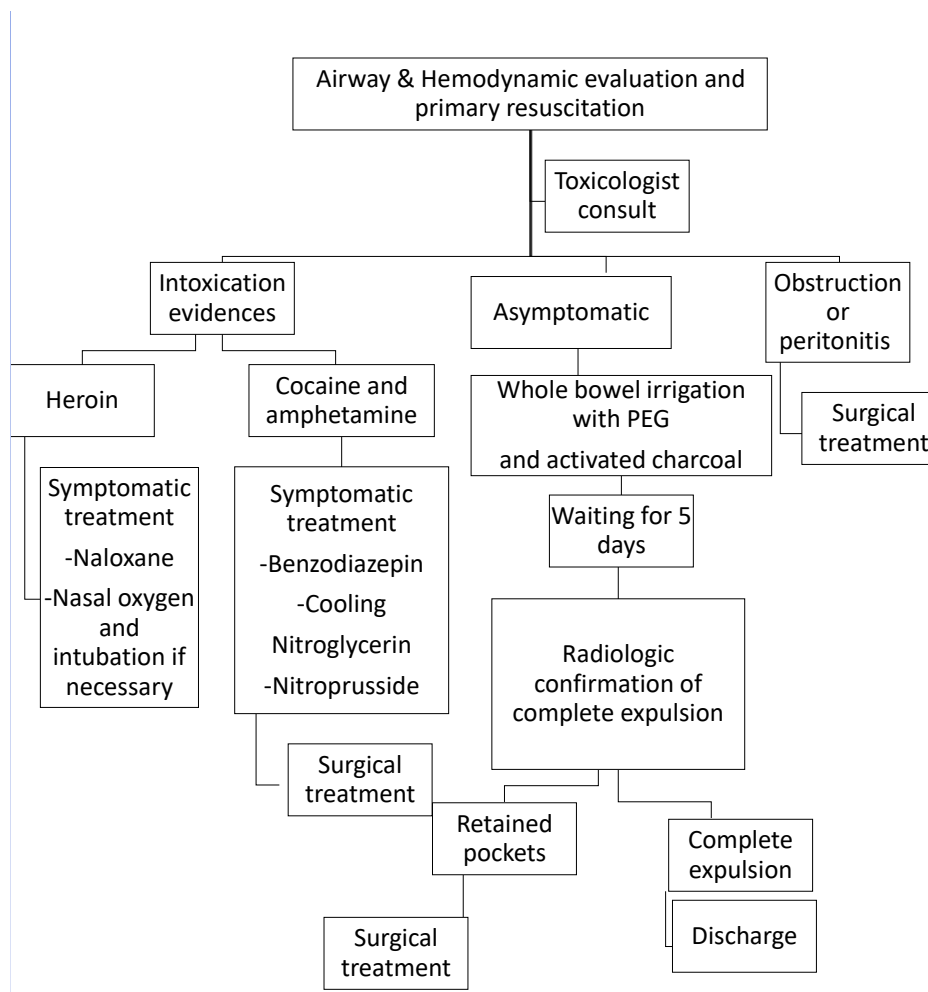


Figure 4. Management algorithm. Note. PEG: Polyethylene glycol.

packers. After initial resuscitation and treatment of poisoning symptoms in symptomatic patients, laparotomy should be performed for the removal of packets if there is any obstruction or peritonitis caused by a perforation of the intestine. Naloxone and other medications are used in the treatment of individuals who show signs of opium and heroin intoxication. Although many cases may be treated conservatively, we recommend surgery to remove the remaining packets in the absence of an appropriate response (Figure 4).

Due to the low lethal dose and lack of perfect antidote in the symptomatic carriers of cocaine or other stimulants, we advise that after initial resuscitation and proportional control of provocation-related symptoms, the patient be transferred to the operating room as soon as possible for surgical removal of the packets (Figure 4). Researchers are currently prioritizing the need for more accurate detection and effective treatment of these patients due to the development of air transportation, the production of new drugs, and improvements in package production technology; as a result, sharing new information between authors and researchers is highly beneficial.

Conclusion

Despite the involved health hazards, it appears that the intra-corporeal carriage of illegal drugs for international trafficking is growing. Imaging is becoming more prevalent to reduce morbidity and mortality, as well as to discourage the practice of body packing or pushing. This technique is used to detect packets and look into potential clinical consequences once a patient has been brought to the attention of a doctor. Although conservative treatment is often employed for these individuals, early surgical intervention for packet removal is advised in the cases of ingesting cocaine and amphetamine packets because of the lack of an appropriate antagonist.

Due to the development of air transport and production of new drugs and advances in packages production technology, more accurate detection and effective treatment of these patients are the priority of researchers, thus the exchange of new information between authors and researchers is extremely useful.

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Authors' Contribution

Conceptualization and study validation: MES. Database searching and article retrieving: MAS. Manuscript writing and reviewing: BN. All authors read and approved the final manuscript.

Conflict of Interests

The authors declare that they have no conflict of interests.

Ethical Approval

Not applicable.

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References

- Hajinasrollah E, Zamani A, Mirhashemi H, Oshidary B, Soori M, Rashnoo F, et al. Demography and mortality of body packers; an extended experience from a referral center. *Arch Iran Med*. 2020;23(8):542-7. doi: 10.34172/aim.2020.57.
- Cappelletti S, Piacentino D, Sani G, Bottoni E, Fiore PA, Aromatario M, et al. Systematic review of the toxicological and radiological features of body packing. *Int J Legal Med*. 2016;130(3):693-709. doi: 10.1007/s00414-015-1310-3.
- Pidoto RR, Agliata AM, Bertolini R, Mainini A, Rossi G, Giani G. A new method of packaging cocaine for international traffic and implications for the management of cocaine body packers. *J Emerg Med*. 2002;23(2):149-53. doi: 10.1016/s0736-4679(02)00505-x.
- Hergan K, Kofler K, Oser W. Drug smuggling by body packing: what radiologists should know about it. *Eur Radiol*. 2004;14(4):736-42. doi: 10.1007/s00330-003-2091-5.
- Gill JR, Graham SM. Ten years of "body packers" in New York City: 50 deaths. *J Forensic Sci*. 2002;47(4):843-6.
- Krishnan A, Brown R. Plain abdominal radiography in the diagnosis of the "body packer". *J Accid Emerg Med*. 1999;16(5):381. doi: 10.1136/emj.16.5.381.
- Cordero DR, Medina C, Helfgott A. Cocaine body packing in pregnancy. *Ann Emerg Med*. 2006;48(3):323-5. doi: 10.1016/j.annemergmed.2006.02.019.
- Traub SJ, Kohn GL, Hoffman RS, Nelson LS. Pediatric "body packing". *Arch Pediatr Adolesc Med*. 2003;157(2):174-7. doi: 10.1001/archpedi.157.2.174.
- Beno S, Calello D, Baluffi A, Henretig FM. Pediatric body packing: drug smuggling reaches a new low. *Pediatr Emerg Care*. 2005;21(11):744-6. doi: 10.1097/01.pec.0000186428.07636.18.
- Mandava N, Chang RS, Wang JH, Bertocchi M, Yrad J, Allamaneni S, et al. Establishment of a definitive protocol for the diagnosis and management of body packers (drug mules). *Emerg Med J*. 2011;28(2):98-101. doi: 10.1136/emj.2008.059717.
- de Bakker JK, Nanayakkara PW, Geeraedts LM Jr, de Lange ES, Mackintosh MO, Bonjer HJ. Body packers: a plea for conservative treatment. *Langenbecks Arch Surg*. 2012;397(1):125-30. doi: 10.1007/s00423-011-0846-z.
- Marc B, Baud FJ, Aelion MJ, Gherardi R, Diamant-Berger O, Blery M, et al. The cocaine body-packer syndrome: evaluation of a method of contrast study of the bowel. *J Forensic Sci*. 1990;35(2):345-55.
- Utecht MJ, Stone AF, McCarron MM. Heroin body packers. *J Emerg Med*. 1993;11(1):33-40. doi: 10.1016/0736-4679(93)90007-t.
- Hierholzer J, Cordes M, Tantow H, Keske U, Mäurer J, Felix R. Drug smuggling by ingested cocaine-filled packages: conventional X-ray and ultrasound. *Abdom Imaging*. 1995;20(4):333-8. doi: 10.1007/bf00203366.
- Ab Hamid S, Abd Rashid SN, Mohd Saini S. Characteristic imaging features of body packers: a pictorial essay. *Jpn J Radiol*. 2012;30(5):386-92. doi: 10.1007/s11604-012-0069-4.
- Berger FH, Nieboer KH, Goh GS, Pinto A, Scaglione M. Body packing: a review of general background, clinical and imaging aspects. *Radiol Med*. 2015;120(1):118-32. doi: 10.1007/s11547-014-0458-0.
- Wetli CV, Mittlemann RE. The "body packer syndrome"-toxicity following ingestion of illicit drugs packaged for transportation. *J Forensic Sci*. 1981;26(3):492-500.
- Niewiarowski S, Gogbashian A, Afaq A, Kantor R, Win Z. Abdominal X-ray signs of intra-intestinal drug smuggling. *J Forensic Leg Med*. 2010;17(4):198-202. doi: 10.1016/j.jflm.2009.12.013.
- Beerman R, Nunez D Jr, Wetli CV. Radiographic evaluation of the cocaine smuggler. *Gastrointest Radiol*. 1986;11(4):351-4. doi: 10.1007/bf02035108.
- Pinto A, Reginelli A, Pinto F, Sica G, Scaglione M, Berger FH, et al. Radiological and practical aspects of body packing. *Br J Radiol*. 2014;87(1036):20130500. doi: 10.1259/bjr.20130500.
- Meijer R, Bots ML. Detection of intestinal drug containers by ultrasound scanning: an airport screening tool? *Eur Radiol*. 2003;13(6):1312-5. doi: 10.1007/s00330-002-1689-3.
- Cengel F, Bulakci M, Selcuk T, Savas Y, Ceyhan M, Kocak A, et al. The role of ultrasonography in the imaging of body packers comparison with CT: a prospective study. *Abdom Imaging*. 2015;40(7):2143-51. doi: 10.1007/s00261-015-0430-z.
- Olmedo R, Nelson L, Chu J, Hoffman RS. Is surgical decontamination definitive treatment of "body-packers"? *Am J Emerg Med*. 2001;19(7):593-6. doi: 10.1053/ajem.2001.21720.
- Hartoko TJ, Demey HE, De Schepper AM, Beaucourt LE, Bossaert LL. The body packer syndrome--cocaine smuggling in the gastro-intestinal tract. *Klin Wochenschr*. 1988;66(22):1116-20. doi: 10.1007/bf01727846.
- Algra PR, Brogdon BG, Marugg RC. Role of radiology in a national initiative to interdict drug smuggling: the Dutch experience. *AJR Am J Roentgenol*. 2007;189(2):331-6. doi: 10.2214/ajr.07.2306.
- Shahnazi M, Hassanian-Moghaddam H, Gachkar L, Ahmadi N, Zamani N, Bahrami-Motlagh H, et al. Comparison of abdominal computed tomography with and without oral contrast in diagnosis of body packers and body stuffers. *Clin Toxicol (Phila)*. 2015;53(7):596-603. doi: 10.3109/15563650.2015.1054501.
- Bulstrode N, Banks F, Shrotria S. The outcome of drug smuggling by 'body packers'--the British experience. *Ann R Coll Surg Engl*. 2002;84(1):35-8.
- Bulakci M, Kalelioglu T, Bulakci BB, Kiris A. Comparison of diagnostic value of multidetector computed tomography and X-ray in the detection of body packing. *Eur J Radiol*. 2013;82(8):1248-54. doi: 10.1016/j.ejrad.2012.12.022.
- Suarez CA, Arango A, Lester JL 3rd. Cocaine-codomo ingestion. Surgical treatment. *JAMA*. 1977;238(13):1391-2.
- Beck NE, Hale JE. Cocaine 'body packers'. *Br J Surg*. 1993;80(12):1513-6. doi: 10.1002/bjs.1800801205.
- Kersschot EA, Beaucourt LE, Degryse HR, De Schepper AM. Roentgenographical detection of cocaine smuggling in the alimentary tract. *Rofo*. 1985;142(3):295-8. doi: 10.1055/s-2008-1052652.
- Peake ST, Das S, Greene S, Dubrey SW. Cocaine 'body packers' and the clinical management of packet rupture.

- Br J Hosp Med (Lond). 2009;70(2):110-1. doi: [10.12968/hmed.2009.70.2.38914](https://doi.org/10.12968/hmed.2009.70.2.38914).
33. Tomaszewski C, Voorhees S, Wathen J, Brent J, Kulig K. Cocaine adsorption to activated charcoal in vitro. J Emerg Med. 1992;10(1):59-62. doi: [10.1016/0736-4679\(92\)90012-i](https://doi.org/10.1016/0736-4679(92)90012-i).
34. Schaper A, Hofmann R, Bargain P, Desel H, Ebbecke M, Langer C. Surgical treatment in cocaine body packers and body pushers. Int J Colorectal Dis. 2007;22(12):1531-5. doi: [10.1007/s00384-007-0324-9](https://doi.org/10.1007/s00384-007-0324-9).
35. Shabani M, Zamani N, Hassanian-Moghaddam H. Endoscopic retrieval of baggies in body stuffers. Endosc Int Open. 2016;4(4):E443-5. doi: [10.1055/s-0042-103242](https://doi.org/10.1055/s-0042-103242).
36. Hoffman RS, Smilkstein MJ, Goldfrank LR. Whole bowel irrigation and the cocaine body-packer: a new approach to a common problem. Am J Emerg Med. 1990;8(6):523-7. doi: [10.1016/0735-6757\(90\)90155-s](https://doi.org/10.1016/0735-6757(90)90155-s).
37. Thanacoody R, Caravati EM, Troutman B, Höjer J, Benson B, Hoppu K, et al. Position paper update: whole bowel irrigation for gastrointestinal decontamination of overdose patients. Clin Toxicol (Phila). 2015;53(1):5-12. doi: [10.3109/15563650.2014.989326](https://doi.org/10.3109/15563650.2014.989326).