

# Body Packing: Clinical Outcomes and Management Approaches in A Tertiary Referral Center

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## ABSTRACT

**Introduction:** Body packing, the internal concealment of illicit drugs within the gastrointestinal tract, remains a significant public health and medicolegal concern. Advances in drug-packet manufacturing have reduced rupture rates but have not eliminated the risk of life-threatening complications, including acute toxicity, bowel obstruction, and perforation. Early detection and optimal management are critical to preventing morbidity and mortality.

**Methods:** We conducted a retrospective observational study of patients admitted to the Department of Emergency, University of Health Sciences Türkiye, Çam and Sakura City Hospital, between June 2021 and July 2025 with confirmed body packing. The diagnosis was established by plain abdominal radiography (X-ray) and non-contrast abdominopelvic computed tomography (CT). Patients were classified into two groups: those managed conservatively and those requiring additional intervention (endoscopic or surgical). Demographic, clinical, laboratory, and imaging data were analyzed to identify predictors of conservative management failure.

**Results:** Of 45 hospitalized patients, 36 met inclusion criteria. The majority were male (86%), and the mean age was  $36.0 \pm 11.6$  years. X-ray imaging detected packets in 88.9% of cases, whereas non-contrast CT detected them in 100% of cases. Conservative management was successful in 30 patients (83.3%). Six patients (16.7%) required intervention -three endoscopic and three surgical. The surgical intervention rate was 8.3%, with one intraoperative death (2.7%). Complication and toxicity rates were 16.7% and 8.3%, respectively. Predictors of intervention included fewer ingested packets ( $p=0.03$ ), longer hospital stay ( $p=0.005$ ), presence of symptoms ( $p=0.02$ ), positive physical examination findings ( $p=0.01$ ), and electrocardiography abnormalities ( $p=0.01$ ).

**Conclusion:** Non-contrast CT is the gold standard for detecting and quantifying drug packets in body packers, offering 100% diagnostic accuracy in this cohort. Conservative management is safe and effective in the majority of patients; however, close monitoring is essential in symptomatic patients, those with abnormal findings on physical examination, or those with prolonged ingestion-to-admission intervals. Surgical intervention should be reserved for cases with toxicity, bowel obstruction, or failed conservative management.

**Keywords:** Body packing, drug smuggling, gastrointestinal obstruction, acute cocaine toxicity, drug trafficking

## Introduction

Drug trafficking continues to represent a significant global concern, with an ongoing evolution of sophisticated techniques aimed at evading detection by law enforcement authorities. The terms "bodypacker" and "mule" refer to individuals who internally conceal illicit substances -most commonly heroin or cocaine- within small rubber or latex packages to transport them across international borders (1). These packages are typically ingested and retained in the gastrointestinal tract, although rectal or vaginal insertion is also employed (2). The first documented account of internal drug smuggling through ingestion or insertion into body cavities was published by Mebane and DeVito (3) in 1975.

Since the initial publication of that case report, substantial changes have occurred in both the clinical presentation and management of these patients -primarily driven by advancements in the packaging techniques used for drug concealment. Traditionally used materials -such as cocaine-filled latex gloves, balloons, and condoms- have largely been replaced by mechanically manufactured, multilayered latex containers that are meticulously sealed (4,5). These improvements have significantly reduced the risk of package rupture, leading to a marked decrease in associated morbidity and mortality. Nevertheless, the intraluminal transport of cocaine pellets via body-packing continues to pose serious medical risks, including acute cocaine toxicity, intestinal obstruction, and gastrointestinal perforation (6).



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Historically, Türkiye has functioned as a critical transit hub in global drug trafficking networks, particularly for heroin originating in Afghanistan and transported to European destinations via Iran and Türkiye -along a route widely known as the “Balkan corridor.” According to the United Nations World Drug Report 2024, Iran and Türkiye were identified as the two countries with the largest quantities of illicit drugs seized, with Türkiye ranking highest for cocaine confiscations (7). At the national level, this has led to a marked increase in arrests associated with cocaine transportation, most notably in Istanbul, the country’s largest city and home to its principal international airport (8). Owing to its close proximity to the airport, our hospital has emerged as a primary referral center for the management of such cases. As a result, our institution has acquired substantial clinical expertise in treating this unique patient population.

This population of “travelers” poses an emerging and increasingly complex challenge for a diverse group of medical specialists in Türkiye, including emergency physicians, internists, surgeons, radiologists, and clinical toxicologists. The clinical management of individuals internally transporting drug packets represents a recurring medical issue, yet many healthcare professionals remain unfamiliar with this distinct patient cohort and the associated diagnostic and therapeutic complexities. In light of the increasing number of body packers apprehended upon arrival in Istanbul, this study aimed to evaluate the clinical outcomes of conservative management and to determine the indications for non-conservative intervention among patients treated at our tertiary referral center for detained individuals.

## Methods

### Patients and Data Collection

This retrospective observational study included individuals admitted to the Department of Emergency, University of Health Sciences Türkiye, Çam and Sakura City Hospital, between June 2021 and July 2025 and who were consulted by the General Surgery Department following a diagnosis of body-packing. The study was approved by the local Ethics Committee of the University of Health Sciences Türkiye, Çam and Sakura City Hospital (decision number: KAEK/03.09.2025.332, date: 22.09.2025).

Individuals suspected of body-packing, typically apprehended by law enforcement upon arrival at Istanbul International Airport, were transferred to our emergency department for further evaluation. All such cases underwent a standardized diagnostic approach including X-ray and computed tomography (CT) scans to confirm or rule out the presence of intraluminal drug pellets. During the study period, 45 patients suspected of body-packing were admitted to our institution. Of these, nine patients in whom imaging studies (X-ray and CT) identified no packets were excluded. Thus, 36 confirmed body-packing cases were included in the final analysis. A diagnosis of body-packing was established either by the radiological identification of drug-containing packets or by direct observation of packet excretion. Once confirmed to be without complications, patients were either admitted to a general ward or managed in the short-stay unit of the emergency department. The primary goals of inpatient management were to facilitate the safe

and complete evacuation of all ingested drug packets and to monitor for potential complications, particularly drug toxicity from ruptured packets or intestinal obstruction from impacted packets. During hospitalization, all patients were continuously supervised by law enforcement officers, who collected expelled packets and performed on-site presumptive drug tests to identify the type of illicit substance involved.

All suspected body-packers were evaluated using a standardized protocol in the emergency department, which included initial imaging, typically X-ray and CT, to determine the number and anatomical distribution of the foreign bodies and routine blood investigations. Conservative management strategies included bowel rest and close clinical observation, with serial X-rays and, when necessary, CT scans performed to monitor progression until the packets were fully cleared. Gastrointestinal motility was promoted through the administration of laxatives or enemas to minimize the transit time of drug packets through the gastrointestinal tract. Patients exhibiting any of the following clinical features were monitored more intensively daily: gastrointestinal symptoms (e.g., abdominal pain, signs of bowel obstruction, or suspected gastrointestinal perforation) or manifestations of drug intoxication.

Once a patient was confirmed as a body packer, electronic medical records were reviewed to collect data on demographics, clinical characteristics, laboratory results, the total number of packets ingested, and therapeutic measures employed, including laxative administration, gastrointestinal decontamination procedures, endoscopic retrieval, and surgical intervention. Furthermore, all X-rays and CT scans obtained at admission and during the hospital stay were reassessed as part of the study protocol.

Failure of conservative management was defined as the need for any non-conservative intervention, including endoscopic or surgical procedures, based on one or more of the following criteria: (1) radiological or clinical evidence of gastrointestinal obstruction (e.g., persistent vomiting, abdominal distension, or absence of bowel movements for more than 48 hours), (2) signs of drug intoxication or toxicity suggestive of packet rupture (e.g., tachycardia, hypertension, agitation, or altered mental status), or (3) radiological evidence of retained or ruptured packets despite adequate conservative measures, such as administration of laxatives or enemas.

### Statistical Analysis

Patients were classified into two groups: conservative management and additional intervention. Continuous variables were summarized as mean  $\pm$  standard deviation and compared using the Student’s t-test. Non-normally distributed continuous variables were analyzed using the Mann-Whitney U test. Categorical variables were summarized as counts and percentages and compared using the chi-square test; Fisher’s exact test was used when any expected cell frequency was  $<5$ . Two-tailed p-values  $<0.05$  were considered statistically significant. Statistically significant differences were marked with an asterisk (\*) in the results table. Statistical analyses were performed using SPSS version 26 (IBM Corp., Armonk, NY, USA).

## Results

During the study period, 45 body packers were hospitalized. Among these patients, nine who had no foreign body detected by X-ray or CT during the initial examinations were excluded from the study. Of these patients, 86% were male, with a median age of 36 years (range: 19-61). Interventions included an initial X-ray + CT and an osmotic laxative with monitoring an average of 4.02 days. Abdominal X-ray imaging was diagnostic in 32 (88.9%) patients, and CT was diagnostic in all patients (100%). Conservative treatment was successful in 30 patients (83.3%). Demographic and clinical characteristics of the patients are summarized in Table 1.

Conservative management failed in 6 (16.7%) of the 36 patients. Among them, three patients underwent endoscopic intervention and three required surgery; in one case, an endoscopic intervention was attempted but proved unsuccessful and was followed by surgery. Endoscopic intervention was successful in one patient with gastric outlet obstruction, achieving complete removal of the obstructing capsules. In a second case, ruptured packets led to severe drug intoxication with multiorgan failure; bedside endoscopic removal was successful following intensive care unit (ICU) admission and hemodialysis. In the third case, the patient, who presented with symptoms of drug intoxication and was resuscitated in the ICU, underwent an attempted bedside endoscopy. However, the procedure was unsuccessful because the packets were excessively large. Surgical intervention was subsequently planned, but the patient experienced cardiac arrest intraoperatively. Among the three patients who underwent surgery, one died intraoperatively, as mentioned above. Another patient presented with drug intoxication and imaging evidence of multiple drug packets extending from the stomach to the cecum, with associated intestinal obstruction. Laparotomy revealed gastric outlet obstruction and two additional packets in the distal ileum, which were all removed via gastrotomy and enterotomy. A ruptured cecal packet was also noted. The patient recovered uneventfully after follow-up in the ICU and ward, experienced transient postoperative hyperamylasemia and

hyperlipasemia that resolved with supportive care, and was discharged on postoperative day 12. The third surgical case involved a patient initially managed conservatively after ingesting 38 capsules. On day 18, surgery was performed for persistent gastric outlet obstruction, and one capsule was removed via gastrotomy. The patient was discharged on postoperative day 4 without complications.

Comparison between the conservatively managed and non-conservative groups revealed several significant differences. Patients in the non-conservative group had a longer mean follow-up period ( $10.00 \pm 8.07$  days vs.  $2.83 \pm 1.02$  days,  $p=0.005$ ) and ingested fewer capsules on average ( $24.50 \pm 18.12$  capsules vs.  $48.60 \pm 24.76$  capsules,  $p=0.03$ ). Additionally, the presence of symptoms at admission, positive physical examination findings, and electrocardiographic abnormalities were significantly more common among patients requiring intervention (50% vs. 6.7%,  $p=0.02$ ; 50% vs. 3.3%,  $p=0.01$ ; and 50% vs. 0%,  $p=0.01$ , respectively). No statistically significant differences were observed between the groups regarding age, sex distribution, or laboratory abnormalities (including white blood count, creatinine, and glucose levels) (Table 2).

## Discussion

Drug trafficking and body packing continue to pose significant global health and security challenges (9). Although modern multilayer drug packets have reduced rupture-related complications, body packing still carries risks of acute intoxication, bowel obstruction, and perforation (10,11). Early diagnosis remains essential, as plain radiography may miss non-radiopaque packets, while CT provides near-complete accuracy. Management has shifted toward conservative treatment with close observation, reserving intervention for those who develop symptoms or fail to progress (11). Despite growing case numbers, no universally accepted diagnostic algorithm exists. Most centers rely on locally developed protocols combining laboratory tests, imaging modalities, and substance analyses (12,13). This study presents our institutional experience and diagnostic-therapeutic approach in patients with

**Table 1. Demographic and clinical characteristics**

Characteristics (n=36)	Category	Value
Age (year)	Mean $\pm$ SD	$36.0 \pm 11.6$ (19-61)
Sex	Male Female	31 (86) 5 (14)
Number of ingested capsules	Median (min-max)	40.5 (1-100)
Presence of symptoms (n, %)	Yes No	5 (14) 31 (86)
Positive physical exam findings (n, %)	Yes No	4 (11) 32 (89)
Conservative treatment (n, %)	Yes No	30 (83.3) 6 (16.7)
Surgical or endoscopic intervention n=6 (n, %)**	Endoscopy Surgery Both	3 (50) 2 (33.3) 1 (16.7)
Duration of follow-up	Median (min-max)	4.02 (1-22)
Abnormal laboratory finding	Yes No	2 (5.6) 34 (94.4)

\*\*Percentages are calculated within the intervention subgroup (n=6). SD: Standard deviation, Min: Minimum, Max: Maximum

**Table 2. Variables associated with conservative management failure**

Variables	Conservative (n=30)	Non- conservative (n=6)	p value
Age (year), mean ± SD	35.30±11.52	39.50±12.14	0.3831 <sup>a</sup>
Sex, n (%) Female / male	4 (13.3) / 26 (86.7)	1 (16.7) / 5 (83.3)	1.000 <sup>b</sup>
Follow-up period, n (day)	2.83±1.02	10.00±5.07	<b>0.005<sup>**</sup></b>
Number of ingested capsules (n)	48.60±24.76	24.50±18.12	<b>0.03<sup>**</sup></b>
Presence of symptoms at the time of admission n (%) Yes No	2 (6.7) 28 (93.3)	3 (50) 3 (50)	<b>0.02<sup>**</sup></b>
Physical examination finding n (%) Yes No	1 (3.3) 29 (96.7)	3 (50) 3 (50)	<b>0.01<sup>**</sup></b>
Laboratory abnormality WBC Creatinin Glucose	9.17±5.46 0.81±0.49 103.93±79.71	3.87±3.38 1.35±1.88 192.00±196.89	0.08 <sup>b</sup> 0.94 <sup>b</sup> 0.33 <sup>b</sup>
**ECG abnormality n (%) Yes No	0 (0) 30 (100)	3 (50) 3 (50)	<b>0.01<sup>**</sup></b>

\*p<0.05, <sup>a</sup>: Mann-Whitney U test, <sup>b</sup>: Fisher's exact test, <sup>c</sup>: Student's t-test, SD: Standard deviation, \*\*ECG: Electrocardiography, n: number, WBC: White blood count

suspected body packing. In our cohort, failure of conservative management appeared to be associated with the presence of symptoms at admission and with radiological evidence of delayed progression, suggesting that both clinical and imaging findings play a key role in predicting the need for endoscopic or surgical intervention.

In line with previous literature suggesting that young men are often selected to transport substances due to greater physical capacity and fewer comorbidities, 86% of patients presenting to the emergency department in our cohort were male (6,14). This demographic pattern underscores the need for heightened clinical vigilance among this predominantly young male patient population.

Body packers are difficult to detect because of unreliable histories and the frequent absence of symptoms. Supine X-ray is the standard initial screening tool, offering low cost, accessibility, and a reported sensitivity ranging from 60% to 85% (12,15). If X-ray findings are inconclusive or negative but clinical suspicion remains high, current protocols recommend low-dose non-contrast CT, which delivers radiation doses comparable to those of X-ray while providing superior diagnostic accuracy (1,12,16,17). Non-contrast CT is considered the gold standard in such cases; reported sensitivity and specificity approach 100%, and it allows precise quantification of packets. Low-radiation CT protocols have been suggested to be sufficiently sensitive, although evidence remains limited (12,17). In a study of 282 patients, Bonnefoy et al. (18) reported that capsules were visualized on X-ray imaging in 98.6% of cases. Conversely, Markovits et al. (19) found a false-negative rate of 65% with X-ray imaging. Another study evaluating 189 patients suggested that the rate of false negatives may be increasing due to progressively more sophisticated packing techniques (5). In our study, consistent with previous reports, capsules were detected on X-ray imaging in 88.9% of patients, while non-contrast abdominal CT accurately confirmed or excluded the presence of packages in 100% of cases.

Conservative treatment is widely regarded as a safe approach, aiming to facilitate the spontaneous expulsion of drug packets, while reserving surgical intervention for cases in which conservative management fails or complications develop. Polyethylene glycol-electrolyte lavage solution (PEG), or lower-dose oral PEG, is commonly used for bowel cleansing in asymptomatic body packers (18). In published series, the reported proportion of body packers successfully managed with conservative treatment ranges from 70% to over 90%, depending on patient selection and institutional protocols (20-25). In six large retrospective studies involving 3,812 body packers, more than 98% were treated successfully with a conservative regimen; emergency laparotomy was required in less than 2%; and fatal outcomes were observed in only two patients (20-25). In our cohort, 83.3% of patients were treated conservatively with observation, oral purgation, and lavage, a rate consistent with previous literature. This alignment supports the safety and efficacy of conservative management when applied with appropriate clinical monitoring and the exclusion of high-risk cases.

Treatment strategies for body packers have evolved considerably over the past decades. In 1977, Suarez et al. (26) recommended surgical intervention for all patients; however, current practice favors conservative management whenever possible, usually with in-hospital observation (27). The refinement of drug-packet manufacturing techniques has contributed to a marked reduction in complication rates. Reported surgical rates vary between 2% and 24% (27-29). Schaper et al. (30) reported a mortality rate of 1.4% and a laparotomy rate of less than 1%. In a New York City cohort of 1,250 confirmed body packers evaluated between 1993 and 2005, only 4.5% required hospitalization and 2% underwent surgery (20). Veyrie et al. (21), in a study of 1,181 patients, reported that 19 patients (1.6%) underwent surgery: 13 for obstruction and 6 for acute intoxication. Bonnefoy et al. (18) found that only 3.5% of patients developed overt signs of cocaine toxicity; no cases required surgery and there were no deaths.

In our series, the surgical intervention rate was 8.3%, with an equal proportion (8.3%) undergoing endoscopy. Mortality was 2.7%, and toxicity occurred in 8.3% of patients. The overall complication rate was 16.7%. One endoscopic attempt failed, requiring conversion to surgery. All patients who required invasive intervention presented with abdominal symptoms such as nausea, vomiting, and bloating and exhibited pathological abdominal examination findings consistent with ileus, acute abdomen, or clinical or laboratory evidence of intoxication. Notably, in all such cases, the minimum time elapsed since ingestion was five days. Endoscopic removal is generally not recommended due to the risk of packet perforation. Surgical intervention is reserved for patients presenting with signs of toxicity or mechanical gastrointestinal obstruction, or for patients with persistent packet retention on prolonged follow-up (19).

### Study Limitations

This study has several limitations. First, the data were obtained through a retrospective review, which may have introduced selection and information bias. Second, toxicology and urine analyses were performed only in patients who exhibited signs of intoxication, potentially leading to underestimation of asymptomatic carriers. Third, information on the size and type of packaging of the retrieved packets was not available. Additionally, the relatively small number of patients limits the generalizability of our findings; therefore, larger prospective, multicenter studies are warranted to validate these results.

### Conclusion

The increasing incidence of body packers poses significant challenges for healthcare systems in terms of timely detection, prevention of complications, and reduction of intoxication-related mortality. Accurate diagnosis, quantification of the number of packets, and confirmation of their complete removal are essential; in this regard, CT can be considered the optimal imaging modality. While conservative management remains effective in the majority of cases, careful monitoring of the time elapsed since ingestion, the development of symptoms, and physical examination findings is critical. Maintaining high clinical vigilance among healthcare providers is essential to minimizing complications and mortality in this patient population.

### Ethics

**Ethics Committee Approval:** The study was approved by the local Ethics Committee of the University of Health Sciences Türkiye, Çam and Sakura City Hospital (decision number: KAEK/03.09.2025.332, date: 22.09.2025).

**Informed Consent:** Retrospective study.

### Footnotes

**Authorship Contributions:** Surgical and Medical Practices - T.M.Ö., S.A., A.Ç., O.A., G.Y., A.B.; Concept - T.M.Ö., S.S.; Design - T.M.Ö., S.S.; Data Collection or Processing - T.M.Ö., O.A.; Analysis or Interpretation - T.M.Ö., A.B.; Literature Search - T.M.Ö., O.A., S.S.; Writing - T.M.Ö.

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