

# Assessing the Epidemiological Data and Management Methods of Body Packers Admitted to a Referral Center in Iran

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**Abstract:** The incidence of smuggling and transporting illegal substances by internal concealment, also known as body packing, is on the rise. The clinical approach to such patients has been changed significantly over the past 2 decades. However, despite a recorded increase in body packing in general, there are controversies in the management of these patients. We aimed to gather data regarding the demographic characteristics, treatment, and outcome of body packers, which were that referred to Loghman Hakim Hospital, Tehran, Iran.

The data of all body packers admitted to Loghman Hakim Hospital during 2010 to 2014 were evaluated retrospectively. Data regarding the demographic characteristics of the patients, findings of clinical imaging, treatment, and outcome were recorded.

In this study, 175 individuals with a mean age of  $31 \pm 10$  years were assessed. The most common concealed substances were crack (37%), crystal (17%), opium (13%), and heroin (6%). According to the results of surgery and imaging (abdominal radiography or computed tomography), the most common place for concealment was stomach in 33.3% and 12% of cases, respectively. Imaging findings were normal in 18% of the individuals. Forty-eight (27%) patients underwent surgery. The main indications for surgery were clinical manifestations of toxicity (79%) and obstruction of the gastro-intestinal tract (17%). The most common surgical techniques were laparotomy and gastrotomy (50%). The mean duration of hospitalization was  $3.8 \pm 4$  days. The mortality rate was 3%.

Conservative treatment of body packers seems to be the best treatment method. Careful monitoring of the patients for possible signs and symptoms of intoxication and gastro-intestinal obstruction is strongly recommended.

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**Abbreviations:** CT scan = computed tomography scan, ER = emergency room, GI = gastrointestinal, ICU = intensive care unit, PEG = polyethylene glycol, WBI = whole bowel irrigation.

The smuggling and transportation of illicit substances is considered an expanding and profitable commerce throughout the world. Body packers are people who illegally carry illicit substances, mostly cocaine and heroin, concealed within their bodies.<sup>1</sup> The packets can be made of various materials, but most often are condoms, which are easily available on the market. The packets are inserted in the mouth, rectum, or vagina to get across borders without being detected.<sup>2</sup> Body stuffers, sometimes called mini packers, are people who commit or are strongly suspected of ingesting illegal substances to escape detection and transport drugs across the borders. In these cases the packing is loose.<sup>3</sup>

The most serious complications of this syndrome are ileus and acute intoxication with the smuggled substances. In spite of increased prevalence of body packing, there are still some controversies in the management of these patients. On the other hand, considering the difference between Iran and Western countries with respect to the type of smuggled substances (mostly opium and crack which is concentrated heroin compared with cocaine and occasionally amphetamines) few studies exist on the management of packers in Iran.

In this regard, we aimed to gather the data regarding the demographic characteristics, treatment, and outcome about body packers admitted to Loghman Hakim hospital, which is a referral center for such patients.

## METHODS

In this cross-sectional retrospective analysis, the data of all proved body packers admitted to Loghman Hakim hospital, during 2010 to 2014 were retrospectively evaluated. Data extracted from patient's records included age, sex, history of addiction or disease, type of illicit substance and number of packets, clinical presentations, location of packet(s) in the body, radiographic finding(s), and follow-up data.

The treatment protocols for these patients were based on evidence-based algorithm,<sup>4</sup> which were modified according to expert opinion, clinical data, and the literature (Figure 1). The inclusion criteria were positive history and/or presence of packet(s) proved by abdominal radiography or computed tomography (CT). All cases were initially resuscitated in the emergency room (ER) and then treated based on the type of illicit substance and clinical presentation(s). All patients with clinical manifestations of intoxication were conservatively managed with activated charcoal (suspension 0.5–1 g/kg in 240 mL water), and whole bowel irrigation (WBI) with polyethylene glycol 7% (PEG).

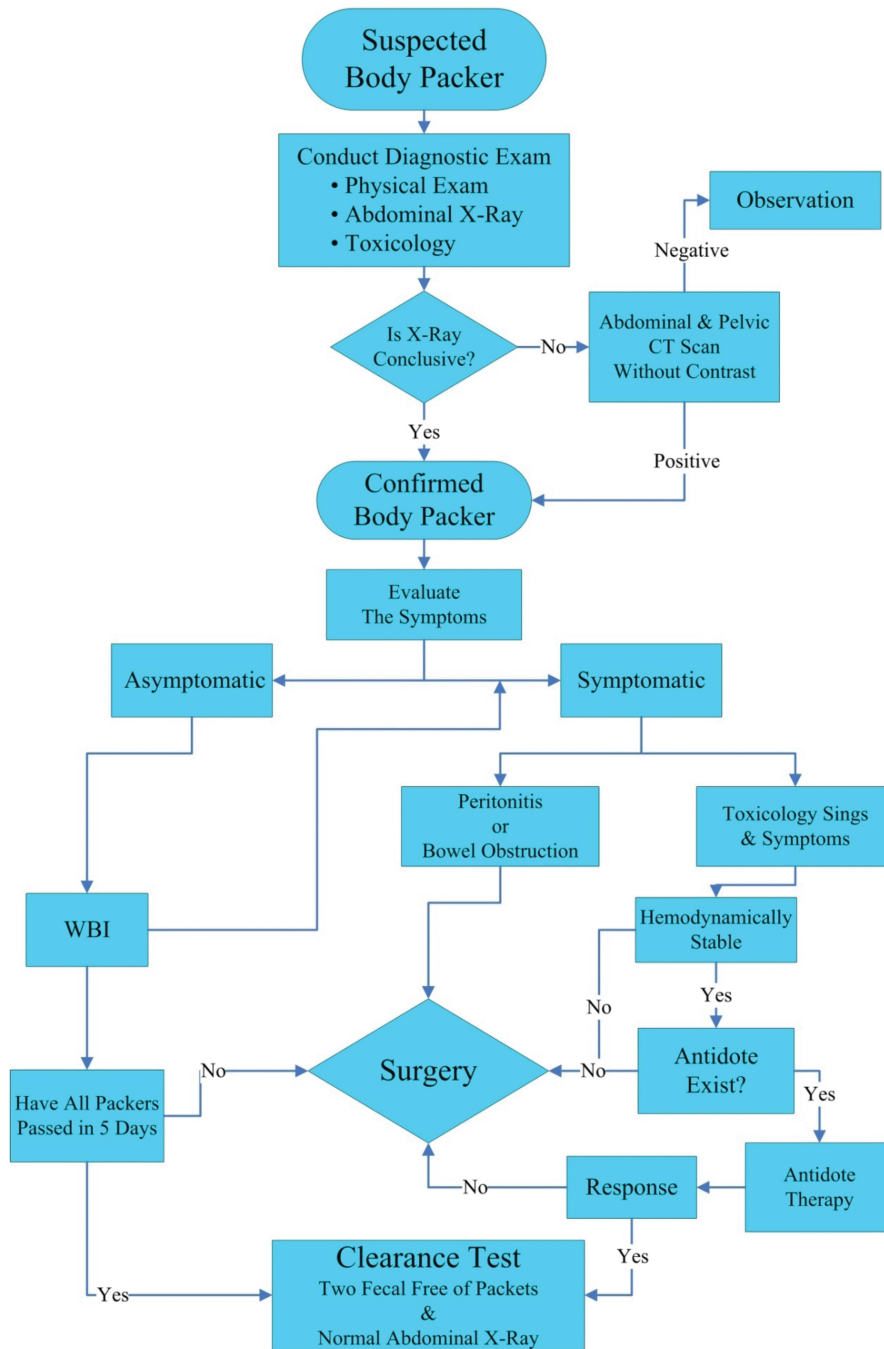


FIGURE 1. Algorithm for diagnosis and management of body packers. (Modified from: reference 4).

Those patients with sign(s) and symptom(s) of opioid intoxication were treated with naloxone as well. Emergency surgery was indicated in cases with stimulant(s) intoxication, manifestations of gastro-intestinal (GI) obstruction, and no response to naloxone.

Data were analyzed using social package for statistical analysis (SPSS) version 20. The data were expressed as mean ± SD for continuous or discrete variables and as a frequency and percentage for categorical variables. We used Mann–Whitney rank sum *U* test to compare continuous variables. *P* values of 0.05 or less were considered to be statistically significant.

The ethical committee of Shahid Beheshti University of Medical Sciences approves this study.

## RESULTS

### Demographics

For all reviewed cases, 175 patients met the inclusion criteria, which 165 (94%) were men. The mean age of the patients was 31 ± 10 years (range, 2–71 years). The mortality rate was (3%). Eighty-four patients (48%) had a positive history

of addiction, from whom 10 patients (14%) had a history of multiple substance abuse. Ninety-one patients (52%) had no recorded history of addiction. The most commonly abused substances were crack and opium, respectively. Prison, police station, and the airport were the sources of referral in 32%, 26%, and 12% of the patients, respectively; and 52 patients (30%) came to the ER voluntarily.

The attempted methods of body packing were ingestion (97.7%), rectal enema (1.7%), and vaginal insertion (0.6%). The mean duration from the insertion of packets to arrival at the hospital was  $42 \pm 27$  hours. The most common concealed substances were crack (37%), crystal (the street name of methamphetamine in Iran) (17%), opium (13%), and heroin (6%), respectively. The type of packed substances was not specified in 27% of cases.

The mean number of ingested packets was  $30 \pm 18$  ranging from 1 to 137 packets. Moreover, the mean total weight of the packets was  $236 \pm 84$  g ranging from 0.5 to 1200 g.

At the time of arrival, 42 (24%) cases had altered levels of consciousness. The most common location for concealment based on abdominal radiography or CT scan was stomach (12%). Imaging results were normal in 18% of the cases and unavailable in 28%. In 42% of cases the packets were distributed in the other parts of GI tract. Based on the results of the surgery, the most common place for concealment was stomach (33.3%). Table 1 summarizes the acquired data from the patients records.

### Management

Serum therapy and closed monitoring was performed for all patients. Conservative treatments include WBI with PEG, and WBI with PEG and antidote therapy with naloxane, which was prepared for 61% and 12% of patients, respectively.

**TABLE 1.** Frequency (%) of Different Types of Treatments, Surgical Indications and Techniques, and Common Locations of Packets in the Surgical Treated Patients

Treatment	
Only surgery	33 (19%)
Whole bowel irrigation + surgery	15 (8%)
Conservative treatment	127 (73%)
Surgery indications	
Toxicity symptoms	38 (79%)
Obstruction	8 (17%)
Peritonitis	1 (2%)
Gastrointestinal bleeding	1 (2%)
Surgical techniques	
Laparotomy and gastrotomy	24 (50%)
Laparotomy and milking	10 (21%)
Laparotomy and enterotomy	8 (17%)
Gastrotomy and enterotomy	3 (6%)
Rectosigmoidoscopy	2 (4%)
Laparotomy and gastrotomy	1 (2%)
Common locations of packs	
Stomach	16 (33.3%)
Small intestine	5 (10.4%)
Whole gastro-intestinal tract	14 (29.1%)
Rectosigmoid	3 (6.3%)
Colon + rectosigmoid	3 (6.3%)
Stomach + small intestine	3 (6.3%)
No packet extracted	4 (8.3%)

Nineteen percent of cases underwent surgery, and 8% of patients were treated by WBI with PEG followed by surgery. Forty-eight patients underwent surgery. Indications for surgical intervention were signs and symptoms of intoxication with stimulants or opioids that did not respond to antidote therapy with naloxone (79%), GI obstruction (17%), GI bleeding (2%), and peritonitis (2%). For these 48 patients, 24 (50%) underwent laparotomy and gastrotomy. Laparotomy and milking was carried out for 10 (21%) cases (Table 1).

In surgical treated patients, the most common site of the packets was the stomach. In 4 patients, no packets were obtained. In 9 cases, some packets were defecated before they were treated with surgery. The mean number of packets that were obtained after the surgery was  $25 \pm 22$  ranging from 1 to 120 packets.

### Follow-Up

The mean duration of hospitalization was  $3.8 \pm 4$  days ranging from 1 to 38 days, which was longer in patients who were treated surgically ( $5.6 \pm 2.2$  days) in comparison to patients who were treated nonsurgically ( $3.2 \pm 4.4$  days) ( $P < 0.001$ ). The mortality rate was 3%, from which 5 cases died after surgery. One opium body packer with mild toxicity was treated medically with antidote and conservative treatments, but showed no response to treatment and therefore was a candidate for surgery on the 7th day of hospitalization; however, he expired before surgery due to respiratory distress.

### DISCUSSION

We found that most body packers were young men. Almost half of them were not addicts. Approximately one-third of the patients came to hospital voluntarily because of onset of poisoning. The most common treatment modality was WBI with PEG. The most common concealed substance was crack. In other similar studies, the most common location for packet(s) concealment was stomach.<sup>3,5</sup>

Smuggling illegal substances by internal concealment has turned into a global challenge for social and security institutions.<sup>1</sup> Developments made in packaging systems have significantly reduced the risk of rupture and possibility of detection.<sup>6</sup>

Compared with the total number of body packers, few are hospitalized after the ingestion of illegal substances.<sup>7</sup> Most body packers refuse self-referral to hospitals voluntarily because of the successful concealment through advanced packaging systems that facilitate the defecation of the packages in the desired destination or fearing the consequent legal and judicial issues. Therefore, even large studies have limited sample sizes and few studies with large sample sizes exist in the literature, none of which are in the form of randomized controlled trials.<sup>7-9</sup> Loghman Hakim hospital, with a well-equipped specialized poisoning emergency department, ward, and intensive care unit (ICU), is a referral center in the country for many suspected body packers that are referred from police stations, prisons, and airports. The significant sample size of this study is one of its strengths compared with other national and international studies.<sup>1,7-9</sup>

In this study, the most common contents of the packages were crack and crystal; while in previous studies conducted in Iran, opium was the most common concealed substance.<sup>8</sup> However, almost all international studies reported cocaine as the most commonly smuggled drug transported by body packers.<sup>3,10</sup>

Currently, conservative treatment of such patients has become more favorable.<sup>3,11,12</sup> The improvement of packaging

quality in Western countries on one hand and the complications of surgery on the other hand are among the reasons for the increasing acceptability of conservative management.<sup>13,14</sup> The error rate in asymptomatic patients undergoing such treatment has been reported to be approximately 5%.<sup>15</sup>

McCarron and Wood categorized body packers of cocaine into 3 groups based on the types of packaging: weak packaging with a higher risk of rupture, packaging with layers of tubular latex with lower risk of rupture, and packaging with several layers of strong latex with an additional layer of aluminum foil with a very low risk of rupture.<sup>10</sup> Handmade opium packages, which are generally weak, are more difficult to be managed conservatively in case of toxicity, because of their higher GI tract absorption. Absolute reliance on medical treatment, especially in symptomatic patients, will put them at risk.<sup>16</sup> In our study, the packages were pulled out ruptured in 17 (35%) patients, which caused preoperative toxicity in 94% of them. This indicates the poor quality of packaging techniques used by body packers in our country compared with Western countries.

Routine use of WBI has not been recommended in some studies.<sup>17,18</sup> Administering strong and oil-based laxatives is not recommended because they increase the risk of package rupture.<sup>17–19</sup> Endoscopic intervention is also not suggested because it increases the risk of package rupture.<sup>20</sup> This method was not used on any patients who participated in our study.

Generally, surgery seems to be a safer treatment method when the nature of the substance and method of packaging is unknown.<sup>15</sup> The main indications for surgical management in body packers are the presence of the signs and symptoms of intoxication and/or GI obstruction.<sup>15,21,22</sup> Other mentioned indications of surgical intervention are high risk of package rupture in asymptomatic patients, not to defecate the packages for more than 5 days, repeated manifestations of opioid intoxication, and inadequate response to naloxone therapy.<sup>2,14,16,23,24</sup> The most common indications for surgery in 48 patients who underwent such treatment in our study were evident signs and symptoms of intoxication (79%) and GI obstruction (17%). The other 2 patients underwent surgery for other reasons.

The preferable surgical technique for such patients is laparotomy followed by enterotomy or milking.<sup>15</sup> Some studies have shown that enterostomy followed by milking suffices for removing the packages.<sup>13,23</sup> However, other researchers suggest that multiple incisions are required when the packets are widely spread in the GI tract.<sup>19,25</sup> Silverberg et al recommended placing such patients in the position for lithotomy and milking the packages slowly toward the enterotomy site or if the packages are distal, toward the anus. Longitudinal incision of the colon and its transverse closure are required when the jejunum and ileum are obstructed. Cecostomy has been reported to be successful in some cases.<sup>15</sup>

From the total 48 patients who participated in our study, 50% underwent laparotomy and gasterotomy and 21% underwent laparotomy and milking toward the distal of intestine. It seems that the types of surgical techniques applied should be selected for each patient separately based on the types of packaging and the place in which the packets are trapped.<sup>10</sup>

One of the limitations of our study was the incomplete patients, records due to retrospective survey.

## CONCLUSIONS

Conservative measures involving WBI with PEG with or without naloxone provided good results in most of our patients. Careful monitoring of the patients for possible signs and

symptoms of intoxication and/or GI obstruction is strongly recommended. Surgery should be reserved for GI obstruction, and/or intoxication with no response to medical therapy.

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