

**INTENTIONAL FOREIGN BODY INGESTION BY INMATES: DEMOGRAPHICS, TRENDS, AND
MOTIVATIONS**

A thesis submitted to the University of Arizona College of Medicine – Phoenix
in partial fulfillment of the requirements for the Degree of Doctor of Medicine

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Class of 2020

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Word count: 2314

Tables and Figures: 4

Intentional Foreign Body Ingestion by Inmates: Demographics, Trends, and Motivations

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Disclosures

These authors have no financial relationships with commercial interests.

Acknowledgements

None

Abstract

Objective: The purpose of this study was to identify and analyze the prevalence of psychiatric disorders among inmates who have intentionally ingested foreign bodies.

Methods: A retrospective chart review was done on all inmates seen at Valleywise Health Medical Center for intentional foreign body ingestion between January 2010 and January 2014. Data obtained from these encounters included several variables on patient demographics, psychiatric history, and ingestion history. Analysis of these variables was performed through comparison of percentages.

Results: 89% of patients had psychiatric diagnoses coded in their medical records with 78% having more than 1 diagnosis. In terms of motivation, 40.7% subjects attributed their ingestion to negative affect, while 22.2% did so as a suicide attempt. Only 3/27 patients (11.1%) claimed secondary gain as their reason for ingestion. Only 4/16 (25%) repeat ingesters received special behavioral plans during their inpatient stay.

Conclusions: Psychiatric co-morbidity is common among inmates who ingest foreign bodies and may play a larger role in their motivations than previously recognized .

Introduction

A common misconception is that the majority of foreign body ingestions are accidental. However, Palta et. al found 92% of foreign body ingestions by adults were intentional with 84% recurrent ingestions¹. Intentional foreign body ingestion is a complex and costly issue. It differs from accidental ingestion with respect to demographics, treatment and complications. Intentional foreign body ingestion is found at a higher prevalence in the inmate population than in the general population². Most cases of inmate ingestion involve repeated swallowing episodes³. Ingestion incidents commonly involve objects that are harmful to the body such as paperclips, razor blades, and other metal objects. Intentional foreign body ingestion is a costly problem for the penal system with median hospital charges from \$4683-\$7698 per episode. One study found that these charges can be as \$49,676.50 per patient, or \$14,274.80 per episode⁴. Many of the prisoners who intentionally ingest foreign bodies have a history of multiple ingestions². Historically, it has been thought the higher incidence of deliberate ingestion in inmates is due to malingering or imitative behavior⁵, however, evidence for this assumption is lacking. In fact, there appears to be larger psychiatric component than

previously thought⁶. Despite this, little research has evaluated which psychiatric diagnoses are most prevalent among inmates with ingesting behaviors⁷. Determining the most common psychiatric diagnoses among these patients could support more effective treatment plans to decrease the incidence of initial and repeated intentional foreign body ingestion among inmates.

Effort should be focused on creating a successful strategy to prevent further swallowing behavior. Most of the cases currently involve treatment of the acute ingestion, but do not lead to a psychiatric care plan or follow-up monitoring. The creation of a successful prevention strategy could serve as a means to improve this common and costly problem, especially among the inmate population. Such a strategy should include both a monitoring and psychiatric component.

Diagnostic and therapeutic algorithms have been put forth for patients with foreign body ingestion, but currently, there is no universally accepted algorithm for treatment of these patients^{6,8}. One reason may be significant variability in presentation. The objects ingested in intentional cases commonly consist of objects that are aimed to cause more harm to the body than those of accidental ingestion⁴. Therefore, a specialized diagnostic plan should be developed that separates intentional foreign body ingestion from accidental foreign body ingestion.

Despite the various studies done on intentional foreign body ingestion in the general population and in the prisoner population, little attention has been paid to the psychiatric aspect of this issue. Favazza et al. has previously found an association with ingestion of foreign bodies and disorders with poor impulse regulation⁹. Placing a stronger focus on the psychiatric aspects of this problem will offer insight into the best

way to handle those that intentionally ingest foreign bodies. This study aims to characterize the most common psychiatric diagnoses among ingesters, and also to analyze the demographic data of the inmates to support creation of effective diagnostic and prevention plans for cases of intentional foreign body ingestion. We hypothesize that disorders associated with poor impulse control will be the most common psychiatric diagnoses among prisoners who have intentionally ingested foreign bodies.

Methods

A retrospective chart review was conducted of foreign body ingestion cases at Maricopa Integrated Health Systems between January 2010 and January 2014. Subjects were defined as people > 18 years old who were admitted for intentional FBI and were also coded as being in the custody of the Maricopa County Sheriff's Office at the time of the ingestion. Data was extracted from the electronic medical record (Epic) based on search terms including all ICD-9 codes referring to FBI as well as CPT codes referring to endoscopic retrieval of foreign bodies. In addition, data regarding demographics, endoscopies, GI surgeries, imaging, clinical data, psychiatric history, and nature of ingested objects were collected. Exclusion criteria included unintentional ingestion, "body packing" of illicit drugs, and food impactions. Patients not considered incarcerated at the time of ingestion were also excluded.

This study was approved by the Institutional Review Board of Maricopa Integrated Health System (now Valleywise Health).

Results

A total of 27 subjects were identified; 24 (88.9%) were male, and 3 (11.1%) female [Figure 1]. The mean age of the patients at time of ingestion was 32.3 years (range 19-51). Sixteen (59%) subjects had repeat ingestions based on endoscopy procedures and of this group, 14 had 3 or greater ingestions. One subject had a total of 10 foreign body ingestions. Figure 2 shows the number of ingestions per subject. The average number of ingestions for repeat ingesters was 5.19. Twenty-four of the 27 subjects required endoscopies with the total number of endoscopies being 91 and an average of 3.37 endoscopies per ingester. Of the 24 patients who received endoscopies, six subjects received GI surgery with one patient needing three GI surgeries. A total of 350 abdominal x-rays and 145 abdominal CTs were performed on these 27 subjects with four subjects being responsible for 54.5%% of the abdominal x-rays. Five subjects had concomitant FB insertion.

Twenty-four subjects were admitted to the hospital with a median length of stay of 4 days (range 0-144 days). Figure 3 shows the various subject dispositions. 15 (55.6%) subjects required 1 on 1 supervision for the median length of time of 4 days. 10 (37%) patients required seclusion and restraint during their stay for a median of 2.5 days. 5 patients (18.5%) had prior treatment at the Arizona State Hospital.

Psychiatric Comorbidity

Of the 27 subjects, 24 (89%) had psychiatric diagnoses coded in their medical records. Twenty-one had more than 1 psychiatric comorbidity with an average of 2.46 diagnoses per subject. Figure 4 shows 74% subjects diagnosed with disorders known to be associated with poor impulse regulation, 14 (51.8%) with Cluster B personality disorders, 13 (48.1%) with mood disorders, 9 (33.3%) with psychotic disorders, 7 (25.9%) with PTSD, 5 (18.5%) with substance use disorder, 4 (14.8%) with intellectual disability, 2 (7.4%) with ADHD, and 1 (3.7%) with anxiety disorder. Ten (37%) subjects had a diagnosis of seizure disorder.

Figure 5 notes the various reasons for the ingestion including: 11 (40.7%) subjects attributing the ingestion to negative affect, 6 (22.2%) for suicide, 4 (14.8%) for unknown reasons, 3 (11.1%) for psychosis, 3 (11.1%) for secondary gain, 1 (3.25%) for attention, and 1 (3.25%) for other. Five (18.5%) subjects had objective evidence for psychosis at the time of their ingestion.

10 (37%) subjects were classified as a danger to others. Twenty-four (88.9%) subjects were on psychiatric medications at the time of ingestion. 4 of the 16 (25%) repeat ingesters received special behavioral plans during their inpatient stay, while 1 of the 9 (11%) first time offenders receive behavior plans. Overall, 5 (18.5%) subjects received specialized behavioral plans during their inpatient stay.

Substance Use Disorders

Substance use diagnoses affected 5 of 27 subjects (18.5%). Furthermore, 2 (7.4%) of the subjects noted intoxication to be their reason for ingestion, while 1 (3.7%) ingested a balloon filled with heroin.

Malingering

Three out of the 27 ingesters (11.1%) claimed secondary gain as their reason for ingestion. All three of these subjects were classified as repeat ingesters. Only one of these three subjects received an inpatient specialized behavioral plan. All three of these subjects were discharged back to jail.

One subject noted attention-seeking behavior as their reason for ingestion. This subject was a first time ingester and did not receive any medication or special behavioral plan upon their discharge back to jail.

Discussion

Intentional foreign body ingestion (IFBI) has a poor response to current treatment modalities. There are few effective options to prevent intentional foreign body ingestion. This is apparent in the fact that 64% of the subjects evaluated in this study were classified as repeat ingesters with 56% of subjects having 3 or greater ingestions. The most substantial number of IFBIs came from a subject with ten FB ingestions. Despite the clear problem of repeat ingestion, only 4 of the 16 repeat ingesters (25%)

received specialized behavior plans. These specialized behavior plans are implemented during the subject's inpatient stay involving psychology services, multidisciplinary meetings, enforcement and implementation by nursing as well as possible recreational therapy; all at an additional expense.

Little attention is paid to psychiatric component present in most cases of IFBI among inmates. There is a general belief that a common reason for inmates to ingest foreign bodies is for secondary gain. However, only 10% of our study population noted their reason for ingestion as secondary gain. The majority of the inmates recorded negative affect (32.3%) or suicide (19.4%) as their reason for swallowing. This finding highlights that inmates are more likely to engage in IFBI for psychiatric reasons rather than for secondary gain.

Narrowing the most common psychiatric diagnoses in inmates with intentional foreign body ingestions can help develop targeted treatment modalities for IFBI. When evaluating the psychiatric health of inmates with IFBI, 92% had one or more psychiatric co-morbidities and all 23 of these subjects were on one or more psychiatric medications at the time of ingestion. In breaking down the types of psychiatric diagnoses, disorders associated with poor impulse regulation were the most common followed by mood disorders, psychotic disorders, intellectual disability then anxiety disorder. 76% of subjects diagnosed with psychiatric disorders had two or more. A better understanding of the types of psychiatric co-morbidities that affect these patients could help improve the patients' overall health as well as their long-term prognosis.

Treatment and removal of the foreign object presents its own risks and possible complications, in addition to economic cost. In the study population 91 endoscopies,

348 abdominal x-rays, 145 abdominal CTs, and 6 GI surgeries were performed. On average, each subject received 4 endoscopies, 14 x-rays, and 5.8 CTs. Additionally; the average length of hospital stay was 15.77 days. Over half of the subjects required 1-on-1 supervision for an average length of time of 8.3 days. It is clear that this is a costly problem that continues to be propagated.

In the past, there has been an underestimation of the extent to which mental illness affects IFBI in inmates. This is an expensive problem for the healthcare system as well as the criminal justice system that needs to be addressed. A multidisciplinary approach should be incorporated to see if this aids in decreasing the incidence/recurrence of IFBI in inmates. Furthermore, this new approach to treatment can help curb the high costs of current treatment modalities by preventing future occurrences.

Additional research is needed in this population to investigate the generalizability of our findings in other demographic areas. More subjects must be studied to analyze further patterns of psychiatric diagnoses among IFBI in inmates. Given these findings, additional research is also needed in testing the efficacy of various treatment modalities for IFBI, including incorporation of a more multidisciplinary approach.

References

1. Palta R, Sahota A, Bemarki A, Salama P, Simpson N, Laine L. Foreign body ingestion: characteristics and outcomes in a lower socioeconomic population with predominantly intentional ingestion. *GastrointestEndosc*. 2009;69:426–433.
2. Evans DC. Intentional ingestions of foreign objects among prisoners: A review. *World Journal of Gastrointestinal Endoscopy*. 2015;7(3):162.
doi:10.4253/wjge.v7.i3.162.
3. Grimes IC, Spier B, Swize L, Lindstrom M, Pfau P. Predictors of recurrent ingestion of gastrointestinal foreign bodies. *Canadian Journal of Gastroenterology*. 2013;27:e1-e4.
4. Otey JA, Houser JS, Jones C, Evans DC, Dalal PP, Whitmill ML, Levine EJ, McKimmie RL, Papadimos Steinberg SM, Bergese SD, et al. Examination of financial charges associated with intentional foreign body ingestions by prisoners: A pattern of escalation. *OPUS 12 Scientist*. 2014;8: 6–8.

5. Lee TH, Kang YW, Kim HJ, et al. Foreign Objects in Korean Prisoners. *The Korean Journal of Internal Medicine*. 2007;22(4):275.
doi:10.3904/kjim.2007.22.4.275.
6. Ribas Y, Ruiz-Luna D, Garrido M, Bargalló J, Campillo F. Ingested Foreign Bodies: Do We Need a Specific Approach When Treating Inmates. *American Surgey*. 2014;80:131-137.
7. O'Sullivan ST, Reardon CM, MCGreal GT, Hehir DJ, Kirwan WO, Brady MP. Deliberate ingestion of foreign bodies by institutionalised psychiatric hospital patients and prison inmates. *Irish Journal of Medical Science*. 1996;165(4):294-296. doi:10.1007/bf02943095.
8. Ambe P, Weber SA, Schauer M, Knoefel WT. Swallowed Foreign Bodies in Adults. *Deutsches Ärzteblatt International*. 2012;109(50):869-875.
doi:10.3238/arztebl.2012.0869.
9. Favazza AR, DeResear L, Conterio K. Self-mutilation and eating disorders. *Suicide Life Threat Behav*. 1989;19:352–361

Figures

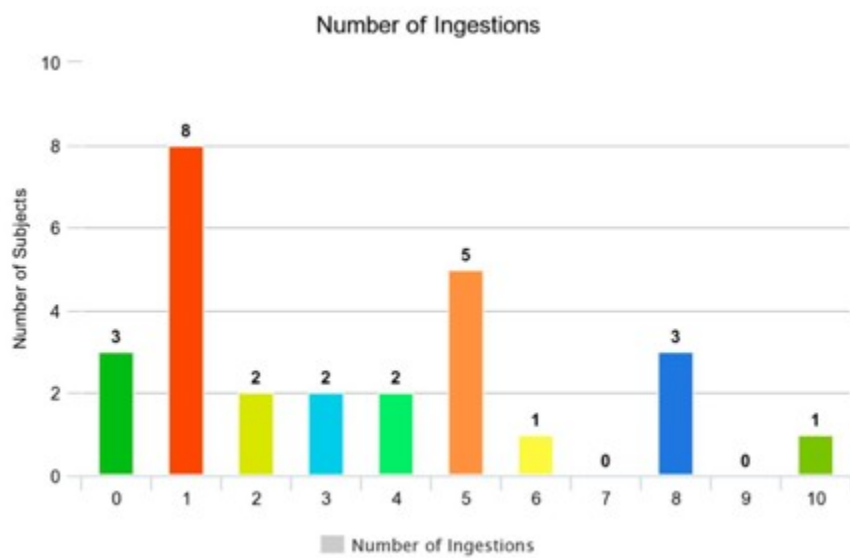


Figure 1: The number of ingestions recorded among inmates

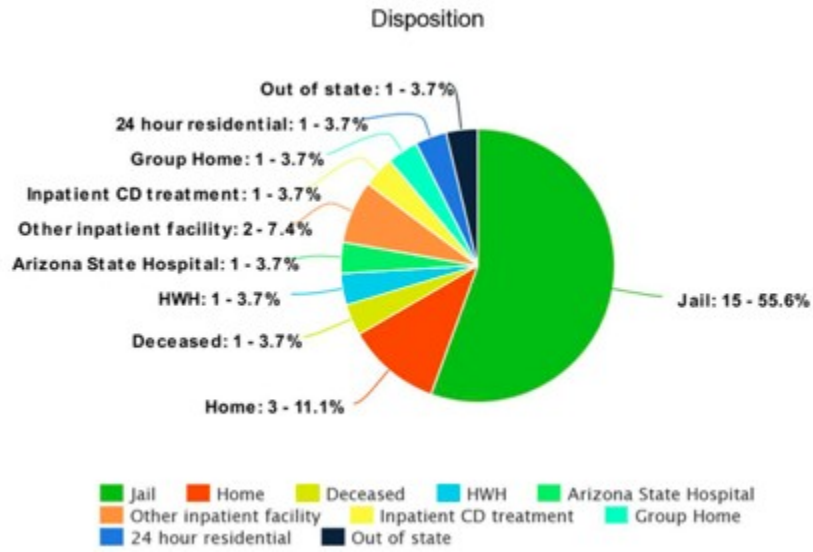


Figure 2: The recorded dispositions of the inmates who intentionally ingested foreign bodies

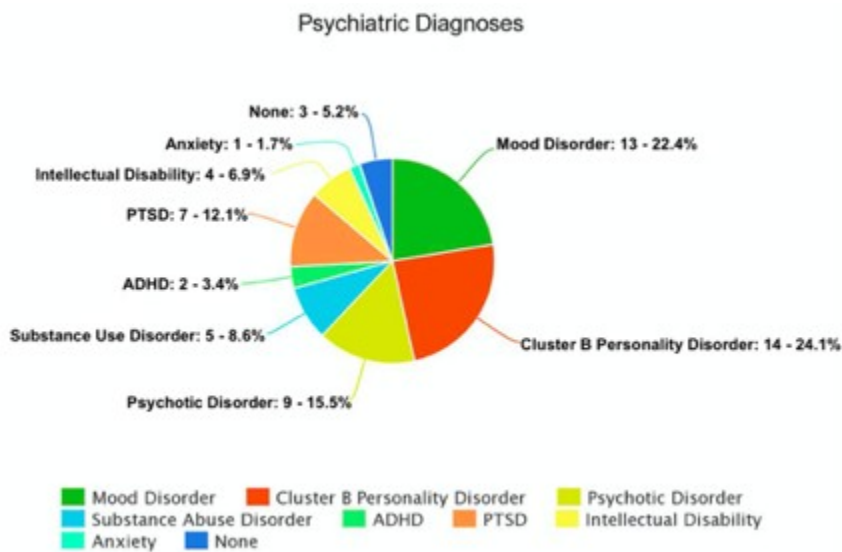


Figure 3: The prevalence of psychiatric disorders among inmates who intentionally ingest foreign bodies

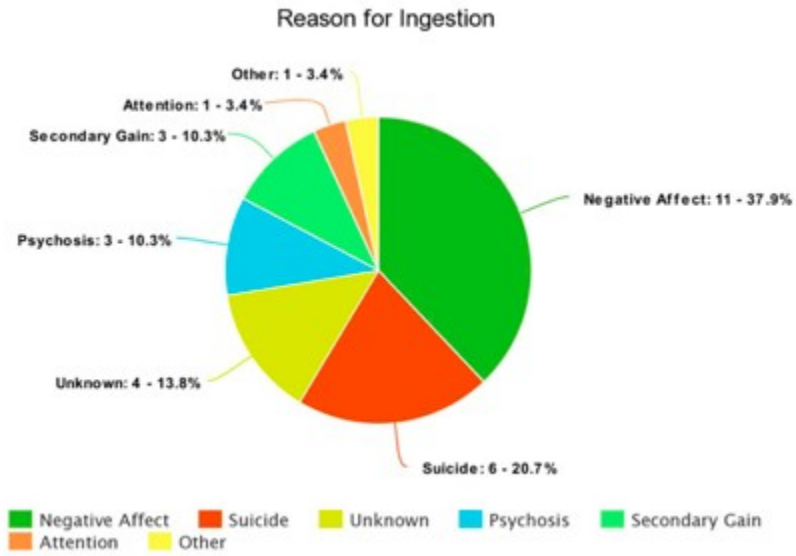


Figure 4: The varying reasons cited by prisoners for having ingested foreign bodies