


CASE REPORT

Gastroenterology

Kinetic sand! A tale of sandy times

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Abstract

Kinetic magnetic sand, composed of ultra-fine sand and dimethicone in a 98%–2% ratio, is a versatile sensory toy known for its moldable properties and structural stability (1). Despite the name, it lacks actual magnetic features. Ingesting kinetic sand can pose risks, including choking and gastrointestinal issues, especially in young children. This case report details a unique incident involving a 3-year-old who ingested a significant amount of kinetic sand. Although the sand's ingredients are generally hypoallergenic and nontoxic, its grainy texture presented challenges for retrieval. The patient was closely monitored, and ultimately, the sand passed without complications. While no official guidelines exist for managing such cases, individual assessments, considering factors such as ingestion time, symptoms, and age, are crucial for determining the appropriate course of action, which may range from observation to more invasive procedures like endoscopy or surgery.

KEYWORDS

foreign body ingestion, kinetic sand ingestion, magic sand, magnetic sand ingestion

1 | INTRODUCTION

Kinetic magnetic sand is a fun sensory toy, and it is made of ultra-fine grain sand and dimethicone (i.e., silicon oil), combined in a 98% and 2% ratio respectively.¹ Dimethicone, also known as polydimethylsiloxane, is a substance derived from silicone. Silicone comes from silica, a natural compound present in sand, sandstone, granite, and quartz. This unique mixture of sand and dimethicone creates an easily moldable solid that has the ability to maintain structural integrity for an extended period. Although referred to as magnetic or magic sand, kinetic sand does not possess any magnetic properties when brought near a magnetic field. It is not considered a poisonous substance when swallowed. However, it can pose serious threats such as choking, throat and abdominal pain, vomiting, intussusception, constipation, obstruction, and perforation. Currently, there are no guidelines for management of kinetic sand ingestion. We report a case involving a patient who ingested a substantial quantity of kinetic sand.

This represents the first documented instance of kinetic sand ingestion in a young, asymptomatic child. Herein we review the management of this case and explore potential management strategies for future incidents.

2 | CASE DESCRIPTION

A 3-year-old male with a significant history of developmental and speech delays was brought to the emergency department (ED) after accidental ingestion of “kinetic magnetic sand.” Ingestion occurred approximately 1–2 h before the ED presentation. Upon arrival, the patient was not in acute distress. No throat or chest pain, shortness of breath, abdominal pain, distention, nausea, vomiting, diarrhea, or constipation. No history of pica. Vital signs were documented as follows: temperature 37.0°C, heart rate 109, respiratory rate 20, SpO₂ 100%. The physical exam was unrevealing. A foreign body X-ray was remarkable for the presence of irregular-shaped, hyper-dense solid material in the

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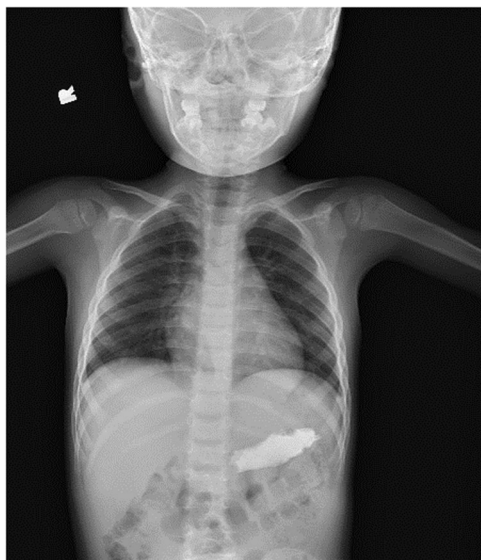


FIGURE 1 Hyperdense material in the region of the stomach.



FIGURE 2 No evidence of hyperdense foreign body, bowel obstruction, or free air.

body of the stomach, which measured >6.5 cm (Figure 1). There were no signs of overt aspiration on imaging. Pediatric gastroenterology and surgery teams were consulted given the size of the foreign body in the stomach and potential for gastric outlet and small bowel obstruction. Poison control was contacted and provided information on the nontoxic nature of the ingredients to the team. Given the nonpoisonous nature of the ingested material and lack of symptoms at the time of presentation, consulting teams recommended no acute interventions. Serial abdominal X-rays in the out-patient setting were advised. Patient was discharged home on polyethylene glycol with strict return precautions. Two days later, the patient returned to the ED for a

follow abdominal X-ray. In the interval period, he had not experienced any complications from his ingestion and remained at baseline with normal oral intake and bowel movements. There was no evidence of a foreign body in the gastrointestinal tract on repeat X-ray, suggesting complete passage of the kinetic sand (Figure 2).

3 | DISCUSSION

The American Association of Poison Control Centers has reported 75% of ingestions occur in children 5 years or younger. Of these, 98% were accidental and consisted of everyday common objects found in the household, including toys.¹ Kinetic sand ingredients are found in various household products such as shampoo, diaper creams, and silly putty.² It comes in a range of colors and is often sold in a playset with a specific theme.³ Kinetic sand is hydrophobic (fails to mix with water) and is not poisonous when swallowed. However, dimethicone is a silicone which is considered minimally toxic. Dimethicone can cause skin itching, redness, burning, swelling, and stinging. Medical and therapeutic advantages of kinetic sand include serving as a tactile sensory toy for kids, a relaxation toy for hyperactive children, and refining and developing motor skills in children (Figure 3). Although the ingredients found in kinetic sand are nontoxic, there can be medical repercussions if consumed in large amounts. Furthermore, up to 50% of ingestions are asymptomatic in toddlers and young children. A recent case report illustrates, a young girl who presented with intussusception after swallowing kinetic sand. Patient improved after conservative management of intussusception. The North American Society of Pediatric Gastroenterology, Hepatology and Nutrition (NASPGHAN) guidelines recommend that any object measuring ≥ 2.5 cm in diameter or ≥ 6 cm in length should be removed from the stomach, as these foreign objects are less likely to pass through the pylorus, duodenal sweep, and the ileocecal valve, especially in younger children.⁴ The management challenge in our case was the size of the foreign body in the stomach in an asymptomatic patient. Consideration of retrieval with esophagogastroduodenoscopy (EGD) would have been difficult given the grainy texture of the material. Our emphasis lies in elucidating the management approach for this case and investigating potential strategies for managing similar incidents in the future.

4 | CONCLUSION

There are no current recommended guidelines for kinetic sand ingestion. Each case should be assessed individually based on the time of ingestion, presence of symptoms, and age of the patient. Asymptomatic patients may only require close follow-up, whereas



FIGURE 3 Kinetic sand, a fun sensory toy.

symptomatic patients may require more invasive procedures such as EGD and/or surgical intervention.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest. All co-authors have seen and agree with the contents of the manuscript and there is no financial interest to report. We certify that the submission is original work and is not under review at any other publication.

ETHICS STATEMENT

Informed verbal consent was obtained from parent for publication. Verbal consent was obtained from mother (as patient is minor) that this case will appear/published in a journal. She expressed understanding and consented for the case report.

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REFERENCES

1. Litovitz TL, Klein-Schwartz W, White S, et al. 2000 annual report of the American Association of Poison Control Centers Toxic Exposure Surveillance System. *Am J Emerg Med*. 2001;19:337-395.
2. Helmenstine MA. *Kinetic Sand Recipe*. ThoughtCo; 2023. <https://www.thoughtco.com/kinetic-sand-recipe-604167>
3. Turner A, Sico R, Seifarth FG. Ingestion of kinetic sand leading to intussusception and bowel obstruction in a child: a case report. *AME Case Rep*. 2024;8:13. doi:10.21037/acr-23-37
4. Kramer R, Lerner D, Lin T, et al. Management of ingested foreign bodies in children. *J Peds GI Nutr*. 2015;60(4):562-574.

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