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REVIEW ARTICLE

Endoscopic Management of Foreign Bodies in the Upper Gastrointestinal Tract: An Evidence-Based Review Article

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Abstract Gastrointestinal foreign bodies (FB) are comprised of food bolus impaction and intentionally or unintentionally ingested or inserted true FB. Food bolus impaction and true FB ingestion represent a recurrent problem and a true challenge in gastrointestinal endoscopy. More than 80–90% of the ingested true FB will pass spontaneously through the gastrointestinal tract without complications. However, in 10–20% of the cases an endoscopic intervention is deemed necessary. True FB ingestion has its greatest incidence in children, psychiatric patients and prisoners. On the other hand, food bolus impaction typically occurs in the elderly population with an underlying esophageal pathology. The most serious situations, with higher rates of complications, are associated with prolonged esophageal impaction, ingestion of sharp and long objects, button batteries and magnets. Physicians should recognize early alarm symptoms, such as complete dysphagia, distressed patients not able to manage secretions, or clinical signs of perforation. Although many papers are yearly published regarding this subject, our knowledge is mainly based on case-reports and retrospective series. Herein, the authors summarize the existing evidence and propose an algorithm for the best approach to FB ingestion.
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PALAVRAS-CHAVE
Endoscopia Gastrointestinal; Corpos Estranhos; Trato Digestivo Superior

Tratamento Endoscópico de Corpos Estranhos no Trato Digestivo Superior: Um Artigo de Revisão Baseado na Evidência

Resumo A definição de corpo estranho gastrointestinal compreende a ingestão acidental ou voluntária de verdadeiros corpos estranhos e o impacto alimentar. Estas entidades representam uma recorrente e desafiadora problemática para os Gastroenterologistas. Em mais de 80 a 90% dos casos referentes à ingestão de verdadeiros corpos estranhos, o mesmo passa através do tubo

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digestivo sem complicações. No entanto, em 10 a 20% dos casos é necessária uma intervenção endoscópica. A ingestão de verdadeiros corpos estranhos apresenta o seu pico de incidência em crianças, doentes com perturbações psiquiátricas e reclusos. Por outro lado, o impacto alimentar ocorre tipicamente na população idosa, que, na maioria dos casos apresenta uma patologia esofágica subjacente. As situações mais frequentemente associadas a complicações sérias relacionam-se com a presença prolongada de corpos estranhos ou impacto alimentar no esófago, ingestão de corpos estranhos pontiagudos, compridos, pilhas ou ímanes. O médico deve reconhecer precocemente sinais de alarme tais como disfagia completa, incapacidade de deglutir saliva ou sinais clínicos de perfuração. Apesar da publicação anual de artigos referentes a este tópico, a maioria da evidência existente na atualidade apoia-se apenas em *case-reports* e séries retrospetivas. Este artigo pretende resumir de modo conciso a evidência atual e propor um algoritmo versando o tratamento endoscópico de verdadeiros corpos estranhos e impacto alimentar do trato digestivo superior.

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1. Epidemiology

A foreign body (FB, from the Latin *corpus alienum*) refers to any object that was originated outside the body. Most of the references to FB involve their entrance through natural orifices into hollow organs, thus one of the most common locations for a FB is the digestive tract. The exact incidence of FB ingestion in children and adults is unknown. Annually it is estimated that 1500 deaths occur due to upper gastrointestinal FB ingestion.[1] Food bolus impaction is the most common gastrointestinal FB, with an estimated incidence of 16 *per* 100 000 persons/year.[2] Most of the food impactions (>75%) occur in adults after the fourth decade of life[3] and the majority of them have an underlying esophageal motility disorder and/or esophageal luminal pathology (e.g., strictures, rings, webs, diverticula, anastomoses and cancer).[2,4–9] Of note, in young adults there is a greater incidence of eosinophilic esophagitis presented at the time of food impaction (10%).[8,10] It is estimated that 80% of the non-food or true FB ingestion (mostly coins, buttons, small toys and marbles) occur in the pediatric population due to natural oral curiosity, between the ages of 6 months and 3 years.[11,12] Among the adult population, accidental ingestions occur with increased frequency in those who have dental appliances or impaired mental status (elderly, demented or intoxicated patients).[13] Iatrogenic foreign bodies are an increasing problem and some of the culprit objects are capsule endoscopy devices, migrated luminal stents, gastrostomy buttons, catheters and dentistry material.[13,14] Intentional true FB ingestions occur in the psychiatric patients, prisoners and drug dealers – ''drug mules'' or ''body packers''.[15,16] This subset of patients often ingest multiple, complex objects and display a recurrent pattern (Fig. 1).[15,17] The FB most commonly swallowed by adults are: fish bones (9–45%; Fig. 2B and E), bones (8–40%) and dentures (4–18%; Fig. 3B and C).[18–20] Fortunately, about 80–90% of the ingested FB passes spontaneously and uneventefully.[21–23] On the other hand, 10–20% will require endoscopic intervention and approximately less than 1% will require surgical intervention.[21] Topographically, the esophagus is the location where most complications occur. Potential complications include perforation, mediastinitis, fistula and aspiration. The complication rate from esophageal FB is directly proportional to the time spent in the esophagus. There are four areas of natural narrowing in the esophagus where impactions usually occur: upper esophageal sphincter, at the level of the aortic arch, crossing of the main stem bronchus and the lower esophageal sphincter. Sharp objects are the most dreaded in the stomach and duodenum. This type of objects are associated with a perforation rate up to 35%.[24] Objects greater than 2 cm in diameter or longer than 5 cm will have difficulty traversing the pylorus, passing through the duodenal sweep, the ligament of Treitz and ileocecal valve.

2. Diagnosis

In adults who are communicative, the history will often provide reliable details regarding the time and type of object ingested. Patients may localize discomfort with poor correlation to the site of impaction.[23] In contrast to true FB ingestion, food bolus impactions are almost always symptomatic due to partial or complete esophageal obstruction, and they include subesternal chest pain, dysphagia, gagging and vomiting. Drooling and inability to handle oral secretions may occur in complete obstruction. Of note, adults who swallow non-food FB may not provide a reliable history because they can be mentally impaired or have swallowed items for secondary gain. Children may be asymptomatic (20–40%) and in up to 40% of the cases caregivers do not give history of ingestion.[11] In this population, symptoms can be subtle like drooling, poor feeding, irritability and failure to thrive. The physical examination, in both children and adults, does little to aid in the diagnosis but it is important in identifying any complication. If an impaction has occurred proximally in the esophagus and compresses the trachea, wheezing and stridor may be present. Crepitus in the neck

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