

Case Report

Respiratory arrest due to airway obstruction following endoscopic removal of Trichobezoar

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Abstract

A trichobezoar is a ball of swallowed hair that collects in the stomach and fails to pass through the intestines. Upper gastrointestinal endoscopy is usually useful for diagnosis and retrieval of a portion of the gastric Trichobezoars but can have complications. Upper airway obstruction may occur during removal of bezoar. This complication may be life threatening.

We report the case of a 17-year-old girl who presented with severe anaemia and hypoproteinaemia. During diagnostic upper GI endoscopy, a large piece of hairball compressed the upper airway, leading to cyanosis, respiratory arrest and cardiovascular collapse. The patient was immediately intubated and transferred to the operation room for emergency esophagoscopy. In the operation room, after haemodynamic stabilization the otolaryngologist removed the large piece by esophagoscope. Then the patient was transferred to ICU ward with spontaneous ventilation. The day after, she became stable and conscious.

Keywords: Trichobezoars, Endoscopy, Upper airway obstruction, Respiratory arrest, Case report.

Introduction

Eating hair or any indigestible materials can lead to the formation of a bezoar. A bezoar is a ball of swallowed unusual materials such as hair, persimmon, plastic materials, screws, springs that collects in the stomach or other parts of gastrointestinal tract and fails to pass through the intestines. Upper gastrointestinal endoscopy is useful for diagnosis. The most common removal method of large size is epigastric surgical incision. Nowadays, laparoscopic surgery is usually employed.¹ Endoscopic removal of gastric trichobezoar may have complications. As denaturalized pieces are fragile, endoscopic removal may lead to aspiration of divided pieces and upper airway obstructions that may occur during removal of bezoars and may be life threatening. For prevention of these complications general anaesthesia is preferred. There have been few advocates of general anaesthesia for paediatric endoscopy. The proposed advantages of general anaesthesia are that the risks of loss of consciousness and apnoea from sedation are avoided and failed procedures are less likely.²

Case Report

A 17-year-old girl presented with abdominal pain, episodes of severe vomiting, anaemia (Haemoglobin = 4G) and hypoproteinemia. She was subjected to diagnostic upper gastrointestinal endoscopy to exclude gastrointestinal cause of anaemia. Intravenous 15mg midazolam and 125 mg mepredine were administered in repeated doses. A large bulk of trichobezoar ball filled the entire stomach cavity. Removal was attempted, but the grasper could not hold the bezoar due to its large size and hard consistency. It was divided into smaller pieces. While the removal of the bezoars was being done with endoscopic forceps, a huge trichobezoar ball compressed the upper airway and led to cyanosis and respiratory arrest. Despite the efforts to remove the bezoar, and in spite of intravenous injection of Naloxane and Flumazenil, the procedure failed. Airway obstruction could not be eliminated and respiratory arrest with cardiovascular collapse occurred. The patient had to be intubated and hyperventilated with 100% oxygen. The patient was transferred to the operation room immediately for emergency rigid esophagoscopy.

In the operation room, the patient could not achieve spontaneous respiration. Peripheral pulses were not palpable, but a weak carotid pulse was detected. After 3 minutes of 600 milliliter ringer serum, the peripheral pulses became palpable (PR=140 beat/minute, O₂ Saturation via pulse oximetry=98%, Blood Pressure=90/50 mm/Hg). Anaesthesia and neuromuscular blockade were achieved using 50% oxygen, 50% N₂O, 50 microgram fentanyl, 30 mg ketamine and 20 mg atracurium and maintained with Isoflurane. Monitoring was done with standard anaesthesia monitors. After haemodynamic stabilization, mechanical ventilation was used.

The otolaryngologist removed the large piece by using a rigid esophagoscope. Finally, anaesthetic gases were discontinued and after reversal of the effect of atracurium with neostigmine and atropine, the patient was extubated and transferred to ICU ward with spontaneous ventilation. The patient did well postoperatively and was transferred to the internal medicine ward on the next day. Five days after esophagoscopy she was discharged.

Discussion

The first authentic case of human trichobezoar was

described in 1779. Trichobezoars are usually black from denaturation of protein by acid, glistening from retained mucus, and foul smelling from degradation of food residue trapped within it. As denaturalized pieces are fragile, endoscopic removal may lead to aspiration of divided pieces. Endoscopical removal is usually not successful and results only in the retrieval of a small portion of the gastric Trichobezoar. The most common removal method of large size is epigastric surgical incision. Nowadays, laparoscopic surgery improves so much. As most of the patients are young women and cosmetic aspects of surgery are so important, laparoscopic removal is the best.¹

Although GI endoscopy is reasonably safe, it is not the perfect technique. The complication rate of gastrointestinal (GI) endoscopy is about 0.1% for upper GI and 0.2 % for lower GI procedures with cardiopulmonary events predominating. Cardio-pulmonary complications may account for over 50% of all reported complication.³

Morbidity and mortality from endoscopic procedures can be related to: 1) the procedure itself such as bleeding, perforation 2) sedation and 3) position related. During Upper endoscopy procedures, a scope is introduced into the esophagus and stomach via the oropharynx. Patients usually are placed in the extreme lateral or supine position. The combination of patient positioning and the nature of the procedure itself limit access to the head and, consequently, the airway. Airway obstruction and apnoea during sedation may develop, so the endoscopist and the anaesthesia provider must have a clear understanding between them that emergency management of the airway supersedes continuation of the procedure until the situation has been safely controlled.⁴ Because these procedures often cause a great deal of anxiety and initiate a strong gag reflex in patients, most GI physicians use both a topical anaesthetic spray and some form of intravenous sedation, usually midazolam and a narcotic (meperidine or fentanyl), to blunt these responses. Some procedures require the use of more potent agents because the procedures are longer and more complex and necessitate a high degree of patient cooperation.

Although most GI procedures can be completed successfully under monitored anaesthesia care (MAC) or total intravenous anaesthesia (TIVA), general anaesthesia with endotracheal intubation may be necessary, for example, in patients who are at high risk for aspiration. The need for intubation should be discussed with the endoscopist because the presence of an endotracheal tube (ETT) may make the procedure difficult to perform.⁵

Concerns over safety were initially raised from patient studies in the late 1980s, which reported sedation-related

complications; hypoxaemia from respiratory depression, respiratory arrest, dysrhythmias, myocardial ischaemia and cardiac arrest.⁶ This was caused mainly by high doses of benzodiazepines in conjunction with opioids and a lack of monitoring. Recommendations for minimum standards of monitoring and supplementary oxygen were introduced.⁶ Since the recommendations of lower doses of benzodiazepines and increased monitoring have been implemented, there appears to have been no large series re-auditing morbidity and mortality since 1991.⁶ Flumazenil is a drug that in the past has been reserved for treating inadvertent over sedation with benzodiazepines in the endoscopy suite.

In view of these complications, the British Society of Gastroenterology revised their recommendations in 2003 on safety and sedation during endoscopic procedures. The guidelines now recommend identifying risk factors prior to endoscopy. These risk factors include age, obesity, and comorbidities like cardiorespiratory disorders. ECG and blood pressure monitoring should be readily available for high-risk patients. Pulse oximetry monitoring should be used in all sedated patients. Despite these recommendations anecdotal evidence shows that only few centers routinely monitor patients undergoing upper GI endoscopy.^{7,8}

Traditionally, there have been few advocates of general anaesthesia for paediatric endoscopy, proposed advantages of general anaesthesia are that the risks of loss of consciousness and apnoea from sedation are avoided, failed procedures are less likely.²

References

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