



# International Journal of Medical Anesthesiology

E-ISSN: 2664-3774  
P-ISSN: 2664-3766  
[www.anesthesiologypaper.com](http://www.anesthesiologypaper.com)  
IJMA 2023; 6(1): 126-129  
Received: 03-02-2023  
Accepted: 05-03-2023

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## Anaesthetic challenges of achalasia cardia

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**DOI:** <https://doi.org/10.33545/26643766.2023.v6.i1b.384>

### Abstract

Poor peristalsis and an inability to relax the lower esophageal sphincter are symptoms of achalasia cardia, a chronic neurodegenerative motility condition of the oesophagus. (LES). The primary problem with remedial operations for achalasia cardia is pulmonary aspiration of esophageal residual contents during induction of general anaesthesia. The timing of nil per oral or endoscopic clearance of esophageal contents prior to induction of anaesthesia is not governed by any universally accepted standards. We present the case of a 43-year-old man with a history of hypertension, diabetes, and myocardial infarction who underwent surgery to repair his sigmoid oesophagus. The patient was optimised before the anaesthesia was administered in accordance with the current standard of care. The patient's stay was uneventful, and there was no sign of aspiration during the operation. Aspiration during general anaesthesia was avoided by carefully optimizing the patient beforehand.

**Keywords:** Aspiration, esophageal achalasia, heller myotomy, lower esophageal sphincter

### Introduction

The esophageal motility problem known as achalasia cardia is a chronic and debilitating condition. Neurodegeneration in the esophageal myenteric plexus causes a decline in peristalsis and an inability to relax the lower esophageal sphincter (LES) over time. Achalasia cardia is a disorder of oesophageal motility brought on by the uncommon autoimmune neurodegeneration of the oesophageal myenteric plexus. 1 While oesophageal motility disorders are uncommon, this one is by far the most prevalent and best understood. Failure of lower oesophageal sphincter (LES) relaxation distinguishes achalasia from other motility diseases like Jackhammer oesophagus and distal oesophageal spasm. As a result, the primary goal of treatment is to lower LES pressures. Three distinct manometric subtypes of achalasia cardia exist, each with their own unique prognosis and treatment implications [13, 14]. In recent years, peroral endoscopic myotomy (POEM) and other forms of third-space endoscopy have revolutionized the endoscopic care of achalasia, sparking a resurgence of interest in this motility condition. 4 This review looks at achalasia cardiac from every angle: how common it is, what causes it, how to diagnose it, and what can be done about it. Compression of the left atrium is a rare presenting symptom in patients with dysphagia to both liquids and solids, regurgitation, retrosternal chest discomfort, and heartburn caused by the accumulation of undigested food particles in the oesophagus [1]. Aspiration pneumonia accounts for about 10% of individuals presenting with cough and fever [2]. Achalasia cardia has also been discovered in a few patients during accidental discovery during general anaesthesia induction [3]. Hiatus hernia can occur at the same time (1.4%-10%) [4]. The treatment of general anaesthesia is made more difficult by the presence of a sigmoid oesophagus [5].

We present a difficult case of anaesthetic management involving a patient with a sigmoid esophagus, Achalasia cardia Type II, a hiatus hernia, and a history of myocardial infarction, all of which highlight the importance of pre-anaesthetic optimization in preventing aspiration during induction of anaesthesia.

### Case

A 43-year-old male, 60 kg, BMI 20 kg/m<sup>2</sup>, with a progressive onset and worsening over the previous year of vomiting, severe dysphagia to both solids and liquids, chest discomfort, and retrosternal pain, reported to the hospital for evaluation. No surgical history was present, however the patient did have a history of diabetes, hypertension, and a previous myocardial

infarction. Dyspnea of New York Heart Association Class II, moderate exertion tolerance, and metabolic equivalent tasks of 3 were found after additional investigation.

After an 8-hour fast, the patient underwent endoscopy with a 10% Lidocaine spray applied topically. Endoscopic evaluation revealed sigmoid esophagus, a lack of LES relaxation, and the presence of undigested food particles. Later, after a barium swallow exam and esophageal high-Resolution Manometry, he was diagnosed with Achalasia Cardia Type II, which is a condition of esophageal motility. (Chicago Classification). His next surgery would be a Laparoscopic Dor fundoplication with Heller's myotomy.

The pre-anesthesia check-up was very comprehensive, including blood work, a heart exam, and a CT scan of the chest. The echocardiogram showed inferior wall hypokinesia and a left ventricular ejection fraction of 50%, and the coronary angiography revealed 50% stenosis of the Right Coronary Artery in addition to an elevated NT-pro-BNP level. The CT thorax revealed no signs of aspiration pneumonia. He qualified as an ASA III, so he could get anaesthesia.

We expected the following anaesthetic difficulties: difficulty in assessing esophageal volume; increased risk of aspiration and regurgitation during induction of general anaesthesia / pre-surgical endoscopy; physiologically difficult airway leading to scenarios of can't intubate or can't ventilate; and management of concomitant ischemic heart disease, glycemic, and electrolyte milieu.

The patient was instructed to consume only clear liquids for 48 hours before to surgery, and was admitted to the hospital 24 hours beforehand to begin intravenous fluids and be kept nil per oral. Informed written consent was obtained. Precautions were taken to prevent aspiration. Endoscopic clearing of the esophageal contents and the placement of a naso-esophageal tube were both performed under topical Lidocaine 10% spray two hours prior to the surgery. No food particles were detected via endoscopy. He was taken to the operating room and fitted with the usual ASA monitors. Under local anesthetic, a cannula was placed in the patient's left radial artery to continuously monitor blood pressure. Suctioning the naso-esophageal tube revealed a negligible amount of secretions. In Quick Order Cricoid pressure was used to facilitate intubation. The airway was intubated with a single-lumen cuffed endotracheal tube using a C-MAC Video-laryngoscope. PCV-VC, or pressure-controlled ventilation with a constant airflow, was used. During the laryngoscopy, there were no secretions. There was no evidence of subcutaneous emphysema or pneumothorax, and peak airway pressures were within the normal range.

The patient's blood pressure and heart rate were both consistently normal, and the operation went off without a hitch. Surgery revealed a sizable hiatus hernia, which was successfully corrected. The patient was extubated while conscious and breathing on their own after a slow withdrawal of anesthetics, careful suctioning, and sufficient reversal. The decision was made to move Further to the HDU for overnight monitoring. The patient was given sufficient pain medication and fluids after surgery. His two-day hospital stay ended without incident, and he was released.

**Discussion**

Surgical or endoscopic intervention is virtually usually necessary for patients with achalasia cardia, a complex neurodegenerative motility condition of the oesophagus [6]. Table 1 lists some of the unique difficulties in treating Achalasia cardia. Pre-anesthetic optimization for patients with achalasia cardia is not governed by any established protocols. 37% of patients with achalasia cardia have solid residue, and 14.8 percent retain water [3] while fasting for 24 hours. Fasting hours, pre-operative endoscopic evacuation, naso-esophageal tube installation, and lavage have all been shown to lower the risk of aspiration, however these measures vary from study to study and from clinician to clinician. (Table 2). Most studies found that pre-operative fasting instructions differed by medical centre (Table 2), but in all cases, patients were told to consume only clear liquids for 24 hours before to general anaesthesia.

Controversy persists in the published literature on the safety of esophageal and gastric contents evacuation prior to anaesthesia endoscopy. When it comes to individuals presenting with a sigmoid esophagus, some research suggests a few hours prior to surgery [7], while other research suggests 1-3 days prior [5]. The benefits of pre-anesthesia endoscopy are still up for debate [9] because to the fact that the endoscopic process itself can cause aspiration. Therefore, it is necessary to weigh the benefits and drawbacks of each individual situation before deciding whether or not to evacuate the contents.

**Table 1:** A few pre anesthetic concerns for patients presenting with Achalasia cardia

Difficulty in assessment of esophageal residual volume.
Aspiration and regurgitation.
Pre-existing aspiration pneumonia.
Physiological difficult airway, can't intubate & can't ventilate scenarios.
Hydration, electrolyte imbalance, malnutrition.

**Table 2:** Pre anesthetic optimization for prevention of aspiration: Summary of few available literature

Reference	No. of patients	Diet guidelines		Endoscopic clearance of esophageal contents	Naso-esophageal tube	General anesthesia technique	Aspiration, if any
		Diet before surgery	NPO				
Darisetty <i>et al.</i> [5]	480	Clear fluids 24-36hr. 72-96hr in case of sigmoid esophagus.	12hr	Yes. Half hour before surgery.	-	GA without RSI.	-
Tanaka <i>et al.</i> [7]	28	Not specified	24hr	Few hours before anesthesia.	-		-
Löser <i>et al.</i> [8]	173	Clear fluids >72hr (2-5days)	>8hr	Yes. One day before surgery.	-	RSI.	-
Yang <i>et al.</i> [9]	52	Clear fluids 48hr. 3-5days for high risk cases.	>7hr	-	-	RSI.	-
Nishihara <i>et al.</i> [10]	86	Clear fluids 48hr	24hr for solidand 2hrs for clear fluid	-	Yes.	RSI.	-
Jayan <i>et al.</i> [11]	21	Low residue diet & cola 48hr	>11 hr	-	-	RSI.	-

Goudra <i>et al.</i> [12]	24	Variable	Variable	-	-	RSI.	One
NPO - Nil per oral; RSI - Rapid sequence intubation; GA - General Anesthesia.							

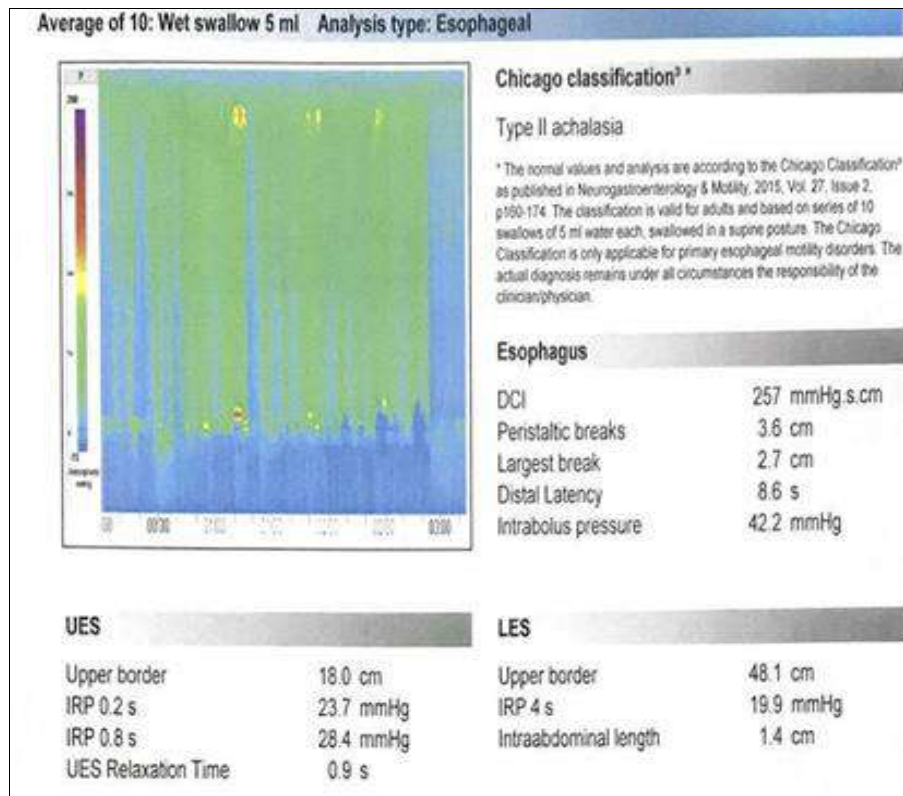


Fig 2: Esophageal High Resolution Manometry report of the patient

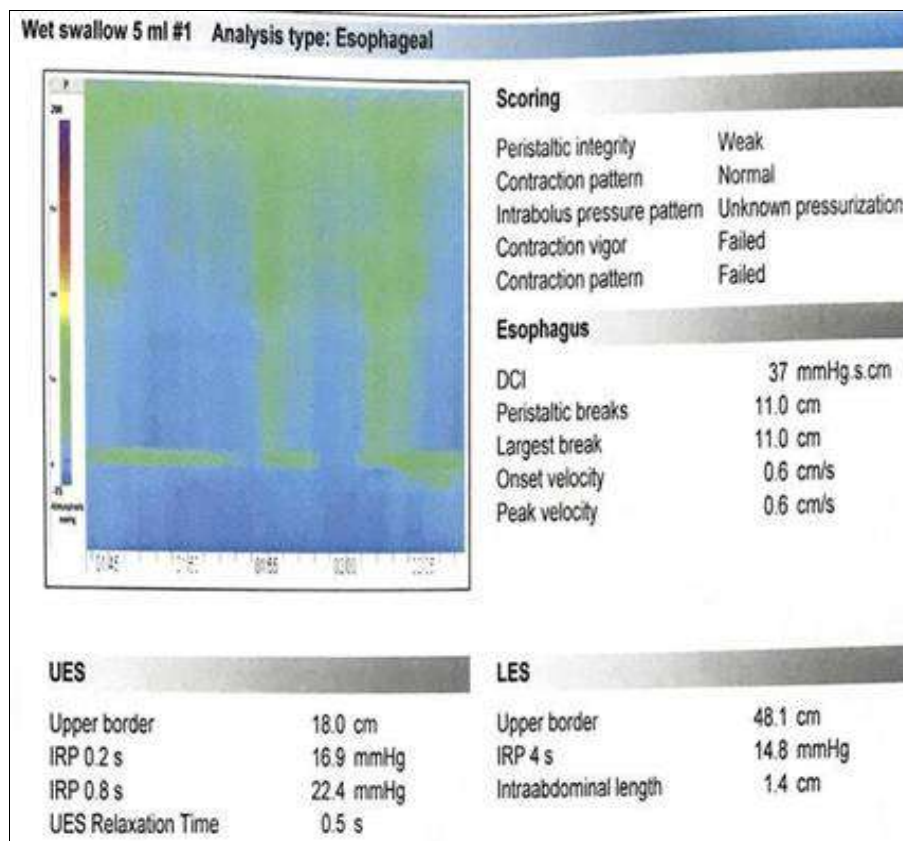


Fig 2: Esophageal High Resolution Manometry report of the patient

**Conclusion**

Here, we stress the necessity of standard practise guidelines

for peri-operative management of achalasia cardia and highlight the importance of pre-anesthetic procedures to

optimise the patient to prevent aspiration and regurgitation. Even with the best planning and preparation, an anaesthetic emergency may happen. Our ability to conceptualize the management approach and to incorporate and optimally utilise technical breakthroughs in the sector is greatly enhanced by the experiences we receive from managing such circumstances firsthand. In addition to head-up positioning and RSI, other foolproof techniques that eliminate the danger of aspiration in patients having achalasia cardia include oesophageal suctioning before induction of anesthesia, video laryngoscope-guided intubation, and ultrasound confirmation of ETT location before ventilation is initiated.

#### Acknowledgement

Not available

#### Author's Contribution

Not available

#### Conflict of Interest

Not available

#### Financial Support

Not available

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#### How to Cite This Article

Mohapatra S, Mashar G, Bhaskar B, Aneez A. Anaesthetic challenges of achalasia cardia. *International Journal of Medical Anesthesiology*. 2023; 6(1): 126-129.

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