ARTICLE:
- Country: United States
- Funding Sources: Mayo Clinic affiliated – funding source not explicitly stated.

PURPOSE:
- Research Question(s): Does glucagon improve outcomes for the relief of esophageal food impaction (EFI) for patients in the emergency department?
- Hypothesis: A previously conducted randomized controlled trial found no significant difference in patients with esophageal who received glucagon versus those who did not. The authors provide a review their experience with glucagon for EFI to determine if their findings correlate with previously reported outcomes.

DESIGN:
- Study Design:
  - Retrospective Review

SETTING / SUBJECTS:
- Research Setting: St. Luke’s Hospital Emergency Department (a Mayo Clinic Hospital)
- Subjects:
  - Study population: All patients who received glucagon in the emergency department from January 1998 to May 2003
  - Inclusion / Exclusion criteria: ED patient who received glucagon for esophageal food impaction. No other criteria for inclusion or exclusion were noted.
  - Number: 85 patients
  - Demographics: 64 males, 21 females; Average age 58, range 16-98;
  - Attrition: N/A

METHODS:
- Interventions: There was no comparison group in this review. All patients in this study by definition received glucagon for EFI.
- Study Groups: N/A
Instruments: N/A
Data Collection: The authors did not disclose who performed data collection. The database was from the inpatient pharmacy at St. Luke’s Hospital and the patient information was abstracted from their medical records.

DATA ANALYSIS:
Level of Data:
- Continuous variables are described as means and ranges
- Categorical variables are described with percentages and modes

Statistics Used:
- Logistic regression analysis – evaluate association between relief of symptoms of food impaction with length of time from symptom onset to presentation to the ED adjusting for pertinent medical history, age, gender
- Fisher’s exact test - evaluate difference between glucagon vs. glucagon with a benzodiazepine

What, if any, variables were controlled for?: N/A

RESULTS:
Brief answers to research questions: The authors question the value of using glucagon for EFI in the emergency department. They cite a previously reported RCT by Tibbling, et al. which found no significant difference in spontaneous EFI resolution in patients with or without glucagon therapy as evidence for its lack of benefit over placebo. Their study found that 33% (30/92) patients had resolution of their food impaction 10-95 minutes following administration of glucagon. This was similar to the Tibbling study findings which had 38% (9/24) EFI resolution after glucagon versus 32% (6/19) in the placebo group, a statistically insignificant difference.

Additional finding:
- 92 episodes of esophageal food impaction in 85 patients; 91/92 meat
  - 46 pts w/ prior solid food dysphagia
  - 23 pts w/ prior EFI and endoscopic removal
  - Time from symptom onset to arrival at ED ~7 hrs
  - Time from arrival at ED to endoscopy ~3.6 hrs
- Relief of symptoms with glucagon in 33% within 10-95 min (avg 38)
- 63 episodes of EFI went to endoscopy
  - 45 had persistent impaction on endoscopy: 30 pushed down, 15 pulled out
  - One episode esophageal perforation prior to endoscopy
  - 79% had distal esophageal narrowing
  - 48% had esophagitis
  - 37% had hiatal hernias
- Diazepam or Lorazepam
  - Given to 19 pts at ED physician discretion; dose 2-5 mg Diazepam, 0.5-1 mg Lorazepam
  - 11/19 (58%) w/ relief of symptoms compared to 19/73 (26%) without

Limitations:
This was a retrospective review without any controls. There was no uniformity in patient selection for who receives glucagon, how much, or who needs endoscopy. They were unable to compare to patients with EFI who did not receive glucagon because they anticipated that the number of patients in this category would be relatively low and they would be particularly difficult to identify.

There was confounding by benzodiazepine administration which was performed completely at the discretion of the emergency physician. There was no restriction/reporting of other administered drugs, i.e. narcotics may have been administered to patients without any mention and the effects of these drugs cannot be measured.

**IMPLICATIONS FOR PRACTICE:**

- *Applicable to this clinical practice:* The setting for this study is relatable to our environment as the review was from an emergency department in the United States. They did not indicate if their hospital had residents, the size or annual patient volume of their emergency department, or the demographics of the community they serve. We currently use glucagon for our patients in the emergency department, so the discussion of whether it should continue to be given is directly applicable to our practice.

- *Feasible (cost, resources, etc):* Their discussion focuses on considering the discontinuation of glucagon for EFI since their literature review did not identify any RCT’s or better evidence show that it improves rate of spontaneous resolution or time to resolution in the emergency department. It would be cost-effective to discontinue glucagon if there continues to be no clear evidence for its use in this population.

- *Clinically Relevant:* If glucagon really does not have any significant impact on the spontaneous resolution of EFI either by hastening resolution or increasing likelihood of it then we may be able to forgo administering glucagon in this population. Since glucagon is expensive and is associated with some side effects (notably nausea and vomiting) patient satisfaction could be improved without a measurable effect on clinical outcomes if it is discontinued. However, the current data to support this change is limited, and the most compelling study noted by this article had a very small population size (n=43). This study was able to replicate previous findings regarding glucagon administration for EFI but did not provide new evidence for or against its use.

**LEVEL OF EVIDENCE / DECISION FOR USE:**

- X Background Consider Replication Ready for use

- *Level of Evidence:*
  - III Well-designed non-experimental studies