PHARMACOTHERAPY

REVIEW OF THERAPEUTICS

Glucagon for Relief of Acute Esophageal Foreign Bodies and Food Impactions: A Systematic Review and Meta-Analysis

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Glucagon is frequently used for the relief of esophageal impactions. This systematic review and meta-analysis were performed to evaluate the efficacy and safety of glucagon for acute esophageal foreign body and food impactions. PubMed, CINAHL, Latin American and Caribbean Health Sciences Literature (LILACS), Scopus, Cochrane Database of Systematic Reviews, and Cochrane Central Register of Controlled Trials were searched from inception to March 1, 2018. Retrospective, observational, and randomized controlled trials assessing glucagon for the relief of acute esophageal foreign body and food impaction were included. There were no language or age restrictions. Only studies conducted on humans and with a comparator (e.g., control or placebo) were included. Study quality analysis was performed using the Cochrane Risk of Bias tool. Quality of evidence analysis was performed using the Grading of Recommendations, Assessment, Development and Evaluations approach. A total of 1988 studies were identified, and five studies with a total of 1185 subjects were included. Treatment success occurred in 213 of 706 (30.2%) patients in the glucagon group and 158 of 479 (33.0%) patients in the control group (odds ratio [OR] 0.90, 95% confidence interval [CI] 0.69–1.17, p=0.42). There was minimal statistical heterogeneity (I^2 = 14%, p=0.33). No publication bias was identified. Adverse events were identified in 24 (15.0%) patients in the glucagon group and 0 (0%) patients in the placebo group (risk difference [RD] 0.18, 95% CI 0.03-0.33, p=0.02). Vomiting events occurred more frequently in the glucagon group (17 of 160 [10.6%] vs 0 of 53 [0%]) but was not statistically significant (RD 0.07, 95% CI -0.03-0.17, p=0.19). Glucagon was not associated with a difference in treatment success but had a higher rate of adverse events for the treatment of esophageal foreign body and food impaction. Further controlled studies are needed to confirm the efficacy of glucagon with adequate power to assess adverse events.

KEY WORDS esophagus, foreign body, glucagon, impaction, obstruction.
(Pharmacotherapy 2019;39(4):463–472) doi: 10.1002/phar.2236

Esophageal foreign body impaction accounts for ~13 cases per 100,000 in the emergency department (ED) annually.[1] Esophageal foreign body impactions occur when an object or food

No external funding was received for completion of this systematic review and meta-analysis

Conflict of interest: The authors have declared no conflicts of interest for this article.

This review was accepted for presentation at the 2018 American College of Clinical Pharmacy Global Conference on Clinical Pharmacy, October 2018, in Seattle, Washington.

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become lodged in the esophagus. Foreign bodies typically include magnets and coins; frequently implicated foods include meat, most commonly steak.[2, 3] Esophageal foreign body impaction may result in the inability to tolerate oral intake, potential airway compromise, and potential esophageal perforation, and therefore, patients commonly present to the ED for emergent treatment. Although most impactions pass without intervention, those that do not spontaneously resolve may require urgent or emergent endoscopy to clear the obstruction. Endoscopy procedures are invasive, costly, and carry risks such as esophageal perforation.[4, 5] For these reasons, providers may attempt medical management to relieve impactions and possibly avoid the need for endoscopy.

A frequently used medication for the medical management of esophageal impactions is glucagon,[2, 3] a polypeptide hormone administered as a therapeutic agent.[6] When administered at doses of 0.5–1 mg, glucagon was shown to increase peristalsis and improve transit in the esophagus of healthy subjects.[7] Escalating doses of glucagon up to 1 mg exhibited a ceiling effect with regard to reduction of lower esophageal sphincter resting pressure and distal esophageal amplitude of contraction, facilitating passage of the foreign body.[8] Consequently, the American Society for Gastrointestinal Endoscopy suggested glucagon as a potential intervention for the treatment of esophageal foreign body impactions.[2] However, clinical studies evaluating the efficacy of glucagon have shown conflicting results.

This systematic review and meta-analysis evaluates the efficacy and safety of treatment with glucagon for acute esophageal foreign bodies and food impactions. The primary objective was to determine the effectiveness of glucagon for relief of impactions. Secondary outcomes included rates of adverse events, rates of vomiting, and time to relief of impaction.

Methods

Search Strategy

The study protocol (CRD42017082302) was registered with and is available for review on the International Prospective Register of Systematic Reviews (PROSPERO) Web site (https://www.crd.york.ac.uk/PROSPERO/). This study conforms to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines for systematic reviews and was performed in accordance with best practice guidelines.[9] In conjunction with a medical librarian, a search of PubMed, CINAHL, Latin American and Caribbean Health Sciences Literature (LILACS), Scopus, the Cochrane Database of Systematic Reviews, and the Cochrane Central Register of Controlled Trials were conducted to include citations from inception to March 1, 2018. Details of the search strategy are included in the appendix. To minimize the risk of excluding studies due to incompletely written abstracts, the bibliographies of identified studies and review articles were reviewed for potentially missed publications.

Inclusion and Exclusion Criteria

Inclusion criteria consisted of all retrospective, prospective observational, and randomized controlled trials assessing glucagon for the relief of acute esophageal foreign bodies and food impactions. All studies must have had a comparator group (e.g., control group or placebo). Only studies conducted on humans were included. Exclusion criteria included case reports, case series, and studies published in abstract format only. There were no language or age restrictions.

Abstracts of articles identified on the initial search strategy were digitally imported into Covidence (Veritas Health Innovation, Melbourne, Australia), a standardized screening tool for systematic reviews. Two investigators (J.M.D. and J.B.) independently assessed study abstracts for eligibility based on the inclusion and exclusion criteria. All abstracts meeting initial criteria were reviewed as full manuscripts. Studies with missing or incomplete abstracts were also assessed with full-text review. Studies determined to meet the eligibility criteria on full-text review by both extractors were included in the final data analysis. Any discrepancies were resolved by consensus with inclusion of a third party (G.D.P.) if necessary.

Data Collection and Processing

Two investigators (J.M.D. and J.B.) independently extracted data from all included studies. The investigators underwent initial training and extracted data into a predesigned electronic data collection form created by a single investigator (G.D.P.). The following information was abstracted: last name of the first study author, study title, publication year, study population size, study country, study location (e.g., ED,

outpatient clinic), study design, study inclusion and exclusion criteria, mean patient age, sex of patients, glucagon treatment regimens, concomitant medications administered with glucagon, comparator group (e.g., placebo, control), definition of treatment success as per the index study, rates of treatment success, rates of adverse events, rates of vomiting, rates of esophageal abnormalities, and time to relief of impaction. Any discrepancies were resolved by consensus with inclusion of a third party (G.D.P.) if necessary. Authors of studies were contacted only if reported data warranted clarification.

Studies were independently assessed for quality by two separate investigators (G.W.S. and M.G.) using the Cochrane Risk of Bias tool.[10] The modified Cochrane Risk of Bias tool for nonrandomized studies was used for retrospective and prospective observational studies.[11] Studies were assessed for quality of evidence using the Grading of Recommendations, Assessment, Development and Evaluations (GRADE) approach, and the software tool GRADEpro (McMaster University and Evidence Prime, Inc., Hamilton, ON, Canada) was used to create an evidence profile table.[12] Any discrepancies were resolved by consensus with inclusion of a third party (G.D.P.) if necessary.

Outcomes

The primary outcome for this review was treatment success, as defined by the original study, that could include subjective symptom relief or radiographic imaging confirmation. Secondary outcomes included overall rates of adverse events, rates of vomiting, and time to relief of impaction.

Analysis

Dichotomous variables were measured by odds ratio (OR) with 95% confidence intervals (CIs), and a 2-sided p value<0.05 was considered statistically significant. Risk difference (RD) was used in place of OR when study data included zero events. The Mantel-Haenszel method was used for analyses. Then χ^2 and I^2 statistics were utilized to assess heterogeneity of included studies with $p < 0.1$ or $I^2 > 50\%$ considered significant for heterogeneity.[13] Pooled data were analyzed using a random-effects model if significant statistical heterogeneity existed. In the absence of significant heterogeneity, a fixed-effects model was used. A funnel plot and Egger's test were utilized to assess for publication bias.[14] A post hoc sensitivity analysis was completed when studies reported posttreatment endoscopic findings of possible treatment success. Adverse events reported per dose received rather than per patient were analyzed using the most conservative per patient estimate. Statistical analyses were performed using RevMan (The Nordic Cochrane Centre, Copenhagen, Denmark), v.5.3, and StataMP, v.13.0 (StataCorp LP, College Station, TX), was utilized to assess publication bias.

Results

A total of 1988 studies were identified. PubMed yielded 86 studies, Scopus identified 1803 studies, CINAHL found 11 studies, LILACS discovered 82, the Cochrane Central Register of Controlled Trials yielded 6 studies, and the Cochrane Database of Systematic Reviews identified no studies. After removing duplicates, 1842 abstracts were reviewed with 14 selected for full-text review (Figure 1). No additional articles were identified through bibliographic review.

Study and Patient Characteristics

Five studies, comprising 23 study sites and 1185 patients, were selected for the final analysis.[15–19] Four studies were conducted in the United States,[16–19] and one study was conducted in Sweden.[15] Four studies were performed in the ED setting,[16–19] and one study occurred across four otolaryngology clinics.[15] Two studies were randomized controlled trials with placebo.[15, 16] The other three were retrospective studies[17–19] with a control group.

The mean patient ages of the five included studies ranged from 5.1–59.5 years, and 63.7% of all patients were male. Studies most frequently used a glucagon dose of 1 mg, and repeat dosing was permitted (Table 1). One study reported no simultaneous medications administered with glucagon,[17] one study administered 2–3 ounces of water to all patients,[16] one study administered diazepam to all patients,[15] and two studies administered concomitant benzodiazepines or nitroglycerin to a portion of patients.[18, 19] Two studies reported rates of esophageal abnormalities by treatment group and were similar between groups (glucagon 52 of 233 [22.3%] vs control 26 of 145 [17.9%]).[17, 19] One study reported esophageal abnormalities in 16 of 43 (37.2%) patients.[15] Similarly, another

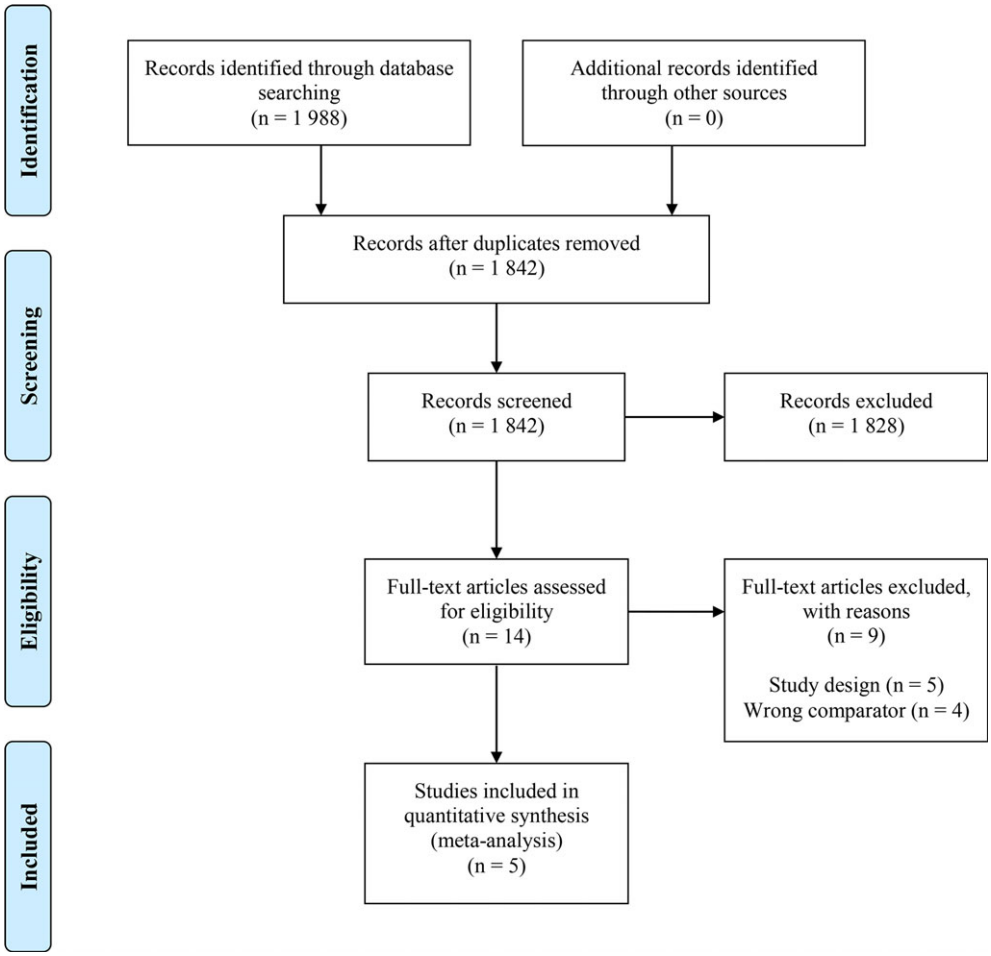

Figure 1. Preferred Reporting Items for Systematic Reviews and Meta-analyses flow diagram.

group reported esophageal ring, stricture, web, or narrowing in 145 of 470 (30.9%) patients, erosive esophagitis with stricture in 130 of 470 (27.7%) patients, and eosinophilic esophagitis in 52 of 470 (11.1%) patients.[18] Four studies defined treatment success by clinical signs and symptoms,[15, 17–19] whereas one study, completed with patients younger than 9 years, used radiographic imaging in their primary outcome definition.[16] Authors of two studies were contacted for clarification.[18, 19] The author of one study clarified the number of patients per group (glucagon vs no glucagon) and rates of treatment success.[18] The author of an additional study provided rates of adverse events in the control group that were not reported in the original article.[19]

Primary Outcome

Overall, treatment success occurred in 213 of 706 (30.2%) patients in the glucagon group and 158 of 479 (33.0%) patients in the control group. Treatment success did not differ significantly between groups, and the OR was 0.90 (95% CI 0.69–1.17, p=0.42; Figure 2). There was minimal statistical heterogeneity with an I^2 = 14% (p=0.33). The funnel plot analysis depicted no evidence of publication bias (Figure 3). Egger's test for small-study effects also indicated no significant bias existed (p=0.48). A sensitivity analysis reclassifying treatment success from one study based on posttreatment endoscopic findings resulted in an OR of 0.93 (95% CI 0.72–1.21, p=0.59).[18]

Secondary Outcomes

Overall adverse events were identified in 24 (15.0%) patients in the glucagon group and 0 (0%) patients in the placebo group (RD 0.18, 95% CI 0.03–0.33, p=0.02) (Figure 4). One study reported adverse events per dose received rather than per patient,[16] so the most

Table 1. Characteristics of the Included Studies

	Study population	Study setting	Study design and comparator	Mean patient age, yrs	No. of male patients (%)	Glucagon dosing	Foreign body/Impaction	Outcome definition
[15]	43	ENT departments	Randomized controlled multicenter placebo	56.0	29 (67.4)	1 mg IVP	Meat (n=34) Fruit (n=8) Bran (n=1)	Disimpaction
[16]	14	Pediatric ED	Randomized controlled single-center placebo	5.1	NR	0.1 mg/kg (max 1 mg) IVP. May repeat in 30–60 min if unsuccessful	Coin (n=14)	Coin passage from the esophagus to the stomach confirmed by radiographic imaging at 30–60 min
[17]	222	ED	Retrospective single-center control group	59.5	138 (62.2)	1 mg IVP per dose Received 1 dose (n=83) Received 2 doses (n=21) Received 3 doses (n=2)	Meat (n=191) Vegetable (n=12) Bread (n=2) Other food (n=17)	Relief of obstruction within 30 min obviating the need for endoscopy
[18]	750	ED	Retrospective multicenter control group	56.7	486 (64.8)	1 mg IVP (n=376) 2 mg IVP (n=18) 1 mg IM (n=20) Successive dosing (n=26)	Beef/Steak (n=265) Chicken or turkey (n=160) Pork (n=116) Fish (n=11) Non-meat food (n=161) Medication (n=37)	Successful if after glucagon administration the patient was able to tolerate their own secretions, had a subjective feeling of bolus passage, and had the ability to drink liquids freely
[19]	156	ED	Retrospective multicenter control group	35.5[a]	102 (65.8)	1 mg IVP per dose Received 1 dose (n=122) Received 2 doses (n=4) Received 3 doses (n=1)	Food (n=139) Coin (n=12) Unspecified (n=5)	Documented resolution of symptoms at 60 min

ED = emergency department; ENT = ear, nose, and throat; IVP = intravenous push; NR = not reported.
[a]Median age.

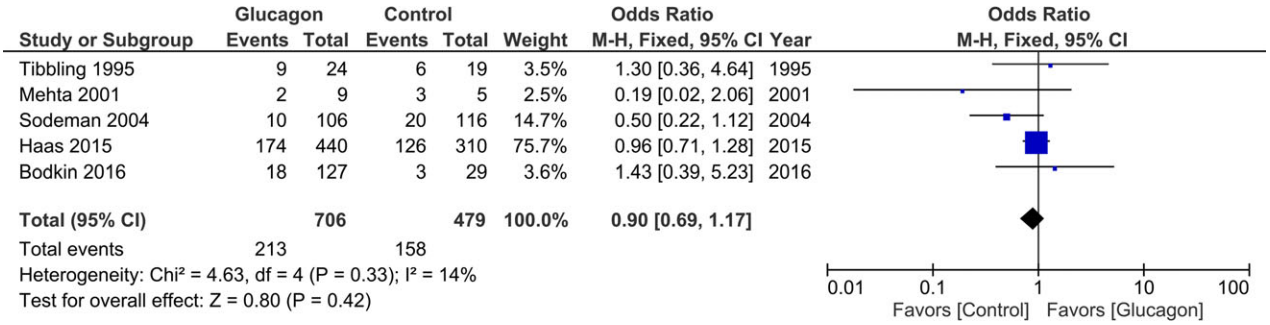

Figure 2. Forest plot demonstrating no difference in treatment success with glucagon compared with control for treatment of acute esophageal foreign body and food impactions.[15–19] CI = confidence interval; M-H = Mantel-Haenszel.

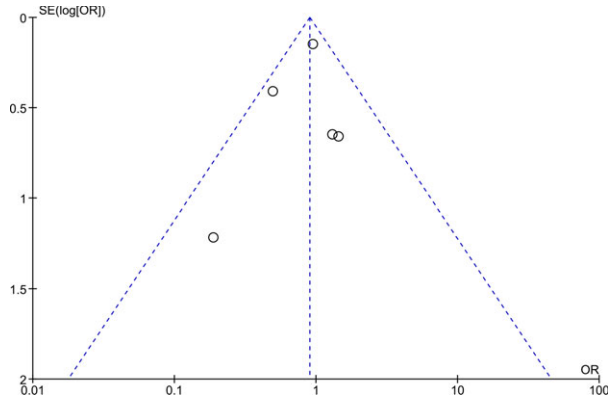

Figure 3. Funnel plot of the included studies demonstrating no publication bias existed.[15–19] OR = odds ratio; SE = standard error.

conservative per patient estimate was used. Adverse events most commonly consisted of vomiting and retching (20 patients), followed by burning sensations (2), hiccups (1), and chest pain (1). Vomiting events occurred more frequently in the glucagon group (17 of 160 [10.6%] vs 0 of 53 [0%]) but was not statistically significant (RD 0.07, 95% CI −0.03–0.17, p=0.19) (Figure 5). Only one study assessed time to relief of impaction and reported that 3 of 24 (12.5%) patients in the glucagon group and 1 of 19 (5.3%) patients in the control group experienced relief within 1 hour of treatment (RD 0.07, 95% CI −0.09–0.24, p=0.39).[15]

All five studies were at overall low risk of bias (Tables 2 and 3). For the randomized controlled trials, one study was at moderate risk of bias with respect to blinding due to open-label medication administration if initial treatment failed.[16] Of the retrospective studies, all were at moderate risk of bias for confounding. One study reported a significant difference in the rates of esophageal abnormalities,[17] another did not discuss demographic data between groups or potential confounders,[18] and one study administered benzodiazepines and nitroglycerin more frequently to the glucagon group.[19] Using the GRADE approach for assessment of the quality of evidence yielded low certainty for the primary outcome and moderate certainty for secondary outcomes. Table 4 provides a GRADE evidence profile with details of each certainty assessment category.

Discussion

In this systematic review and meta-analysis, the efficacy and safety of glucagon for the treatment of acute esophageal foreign bodies and food impactions was investigated. Glucagon did not result in improved rates of treatment success when compared with a control group and resulted in higher rates of adverse events.

To our knowledge, this is the largest systematic review and meta-analysis focused on the use of glucagon for the treatment of acute esophageal foreign bodies and food impactions. Two prior systematic reviews were performed on this topic but were significantly limited by narrow search strategies resulting in only a small number of studies and the absence of meta-analysis.[20, 21] This review differs by including only studies with a comparator group (e.g., placebo or control), completion of a pooled meta-analysis, and the use of a more expansive and updated search strategy completed in conjunction with a medical librarian. Consequently, it was possible to identify two additional studies and complete a quantitative meta-analysis, thereby strengthening the conclusions that may be drawn from the use of glucagon.

Previous studies found that glucagon is efficacious in relieving acute esophageal food bolus,[22–25] but this meta-analysis does not support those conclusions. Two observational

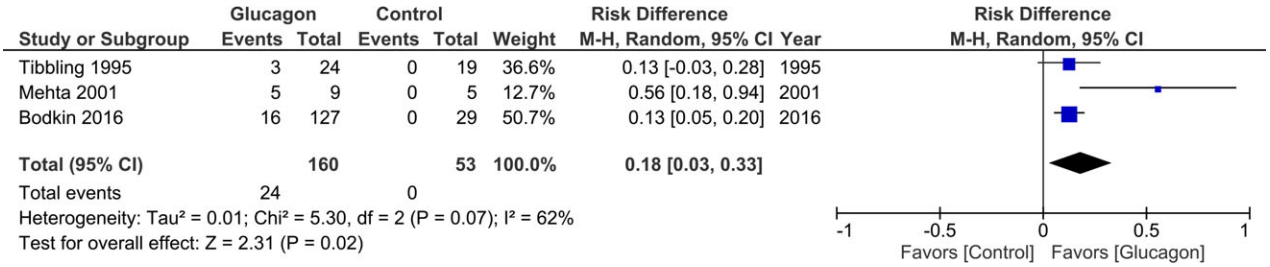

Figure 4. Forest plot demonstrating significantly greater rates of adverse events with glucagon compared with control for treatment of acute esophageal foreign body and food impactions.[15, 16, 19] CI = confidence interval; M-H = Mantel-Haenszel.

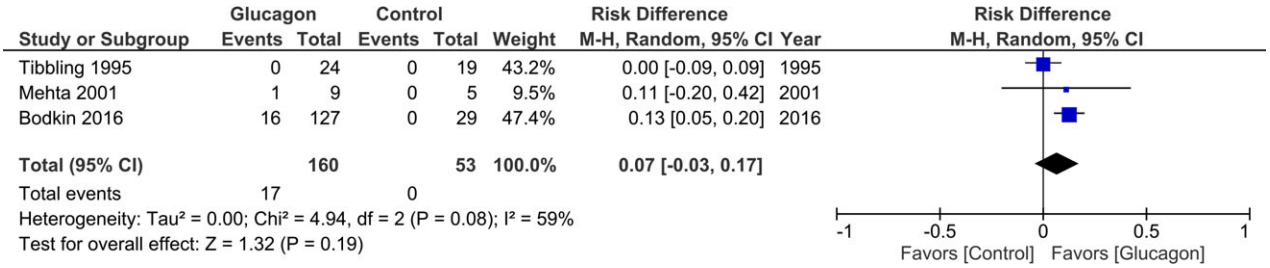

Figure 5. Forest diagram demonstrating no difference in rates of vomiting with glucagon compared with control for treatment of acute esophageal foreign body and food impactions.[15, 16, 19] CI = confidence interval; M-H = Mantel-Haenszel.

Table 2. Assessment of Study Quality for Randomized Controlled Trials

	Random sequence generation	Allocation concealment	Selective reporting	Other bias	Blinding of participants and personnel	Blinding of outcome assessment	Incomplete outcome data
[15]	L	L	L	L	L	L	L
[16]	L	L	L	L	M	L	L

L = low risk of bias; M = moderate risk of bias.

Table 3. Assessment of Study Quality for Retrospective Studies

	Confounding	Selection of participants	Measurement of interventions	Departures from intended interventions	Missing data	Measurement of outcomes	Selection of reported results
[17]	M	L	L	L	L	L	L
[18]	M	L	L	L	L	L	L
[19]	M	L	L	L	L	L	L

L = low risk of bias; M = moderate risk of bias.

studies reported high efficacy rates of 69–75% for relief of obstructions.[22, 24] However, the studies were limited by small sample sizes of 16–48 patients. Two additional studies, one observational and one retrospective, reported efficacy rates of 32.8% and 37%, and the authors concluded glucagon was a reasonable medical therapy for esophageal foreign bodies.[23, 25] In contrast, one study reported an efficacy rate of 32.6% and concluded glucagon lacked any advantage over placebo.[26] In the studies just mentioned, the judgment of efficacy was subjective and without a control group for comparison. This pooled analysis reports that an efficacy rate of 30.2% with glucagon does not differ from control (33.0%).

For a number of reasons, glucagon may be tried as a medical therapy but ultimately may result in treatment failure. Most patients presenting with esophageal impaction require urgent endoscopic intervention over the proceeding 24 hours.[2] The available time to prepare for endoscopic intervention, combined with glucagon's immediate onset of action (45 sec), makes glucagon an attractive option to consider. Furthermore, glucagon's short duration of action (25 min) allows for rapid assessment of treatment response. Given the previously mentioned pharmacokinetics of glucagon, studies included in this analysis logically assessed treatment success at appropriate time points. Next, glucagon's mechanism of action includes reduction of lower

Table 4. GRADE Profile Assessment of the Quality of Evidence

Outcome	Certainty assessment						No. of patients		Effect		Certainty	Importance
	No. of studies	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Glucagon	Control	Relative (95% CI)	Absolute (95% CI)		
Treatment success	2 RCTs[15, 16] 3 observational studies[17–19]	Not serious	Not serious	Serious[a]	Not serious	None	213/706 (30.2%)	158/479 (33.0%)	OR 0.90 (0.69–1.17)	23 fewer per 1000 (from 36 more to 76 fewer)	⊕⊕◯◯ LOW	CRITICAL
Adverse events (all)	2 RCTs[15, 16] 1 observational study[19]	Not serious	Serious[b]	Not serious	Serious[c]	Strong association	24/160 (15.0%)	0/53 (0.0%)	RD 0.18 (0.03–0.33)	180 fewer per 1000 (from 30 fewer to 330 fewer)	⊕⊕⊕◯ MODERATE	IMPORTANT
Adverse events (vomiting)	2 RCTs[15, 16] 1 observational study[19]	Not serious	Serious[d]	Not serious	Serious[c]	Strong association	17/160 (10.6%)	0/53 (0.0%)	RD 0.07 (−0.03 to 0.17)	70 fewer per 1000 (from 30 more to 170 fewer)	⊕⊕⊕◯ MODERATE	IMPORTANT

CI = confidence interval; GRADE = Grading of Recommendations, Assessment, Development and Evaluations; OR = odds ratio; RCTs = randomized controlled trials; RD = risk difference.
[a]Studies used differing definitions for the outcome of treatment success.
[b]Significant heterogeneity existed for the outcome (I^2 = 62%, p=0.07).
[c]Low sample size with inadequate statistical power for the outcome.
[d]Significant heterogeneity existed for the outcome (I^2 = 59%, p=0.08).

esophageal sphincter resting pressure in healthy subjects, but effects in clinical practice may not be realized because patients frequently have underlying esophageal pathologies (e.g., physical narrowing or stricture).[2, 8, 18] One study included in this analysis reported 145 of 470 (30.9%) patients failed medical therapy, underwent endoscopic intervention, and were found to have an underlying esophageal pathology related to physical narrowing or stricture.[18] Given these findings, endoscopic intervention may be a preferred treatment. A recent study compared medical therapy versus endoscopic intervention and concluded first-line endoscopic intervention was superior to medical therapy and should not be delayed for a trial of medical therapy due to concerns of higher morbidity with endoscopic intervention.[27]

The use of glucagon resulted in significantly higher rates of adverse events (15% vs 0%), thus challenging the notion that glucagon is a benign and relatively safe treatment option. Of the included studies, three reported adverse events, and the predominant complication reported was vomiting.[15, 16, 19] This is important because vomiting may increase the risk of aspiration and possibly esophageal perforation, and the latter is known to adversely affect morbidity from esophageal obstructions.[28, 29] One study reported the management of adverse events from glucagon included the need for fluid resuscitation secondary to hypotension and antiemetic administration.[27] Additionally, two patients experienced lightheadedness or near syncope but did not require medical intervention. Additional studies reported glucagon adverse events of mucosal laceration, burning sensation, hiccups, or chest pain[22] that may require additional medical management in patients already experiencing urgent or emergent esophageal foreign body impaction.

This systematic review and meta-analysis has several potential limitations. First, retrospective studies were included that did not control for concomitant medication administration with glucagon and did not standardize care in their control groups. Although the retrospective studies were otherwise of good quality and at low risk of bias, assessment of the quality of evidence yielded low certainty for the primary outcome. Next, studies used different outcome definitions of treatment success and included different esophageal foreign body impactions (e.g., food and objects); however, both assessments reflect current management in real-world practice. Furthermore, although treatment success is known to be

affected by the duration of time between ingestion and treatment,[18, 27] included studies did not control for time to treatment that may have influenced the outcomes. Nonetheless, the large sample size and similar probability of occurrence between groups make this less likely. Moreover, although we found a greater risk of adverse events with glucagon when compared with placebo, only three studies reported adverse events, and none were adequately powered for this outcome. Finally, no formal cost analysis was completed in this systematic review. Providers should consider the influence of cost on this intervention, given the increasing cost of glucagon to an average wholesale price of ~$330 per 1-mg dose.

Although the results of this review suggest that glucagon does not significantly improve outcomes for esophageal foreign body impaction, more randomized controlled studies are needed to better assess the efficacy of this intervention. Further studies should control for concomitant medication administration, evaluate different dosing strategies of glucagon, and quantify adverse events associated with glucagon, as well as the subsequent management of adverse events. Lastly, more data are needed to delineate the true efficacy in certain subgroups including those with or without esophageal abnormalities and pediatric populations.

Conclusion

Glucagon was not associated with a difference in treatment success but had a higher rate of adverse events. This study does not support the use of glucagon for the treatment of esophageal foreign body and food impaction. Further controlled studies with adequate power to assess adverse events are needed to confirm the efficacy of glucagon.

Acknowledgments

The authors would like to thank Tania Rivero, MLIS, for her assistance with the literature search.

Author Contributions

Gary D. Peksa and Michael Gottlieb were responsible for study concept, design, and data analysis. Joshua M. DeMott, Jaxson Burkins, and Gary D. Peksa completed study selection and data extraction. Giles W. Slocum, Michael Gottlieb, and Gary D. Peksa completed a quality review of the included studies. All authors contributed to the drafting of the final manuscript, and Gary D. Peksa takes responsibility for the article as a whole.

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APPENDIX

PubMed

((“Esophagus”[Mesh] OR Esophag* OR oesophag* OR “Esophageal Diseases”[Mesh])) AND ((coin OR coins) OR “steakhouse syndrome” OR webs OR “Foreign Bodies”[Mesh] OR “Foreign Body” OR motility OR “food bolus” OR impact* OR obstruct*) AND ((glucagon OR glucagon) OR “Glucagon”[Mesh])

Scopus

((esophag* OR oesophag*) AND (glucagon OR glucagen) AND (coin OR coins) OR “steakhouse syndrome” OR webs OR “Foreign Body” OR “Foreign Bodies” OR motility OR “food bolus” OR impaction OR obstruction)

CINAHL, LILACS, Cochrane Central Register of Controlled Trials, and Cochrane Database of Systematic Reviews

((esophag* OR oesophag*) AND (glucagon OR glucagen) AND ((coin OR coins) OR “steakhouse syndrome” OR webs OR “Foreign Body” OR “Foreign Bodies” OR motility OR “food bolus” OR impaction OR obstruction))