

Peer Review File

Article Information: <https://dx.doi.org/10.21037/gs-22-402>

Review Comments (Round 1)

Major Comment 1:

Although I understand this is not a systematic review, the author's methodology was close enough to a systematic review that I encourage the authors to reconduct the search using PRISMA guidelines. This would make the paper much more complete and ensure all published cases on thyroid foreign bodies via esophageal ingestion are captured. The search strategy should be laid out clearly in a supplementary appendix, an additional (total 3) databases should be searched, and risk of bias should be considered.

Reply 1: We thank the reviewer for this valuable comment. We have reconducted the search using PRISMA guidelines in 4 databases to ensure all published cases on thyroid foreign bodies via esophageal ingestion are captured. Risk of bias has been considered and the search strategy has been laid out clearly in a supplementary appendix (supplementary figure1 and supplementary figure2).

The articles up to Aug. 2022 were collected from PubMed, Google scholar, Embase, Web of Science. The keywords were ("Foreign Bodies" OR "Foreign-Body Migration") AND ("Thyroid Gland" OR "Neck" OR "Neck Injuries"). In addition, reference lists of the retrieved articles were reviewed to identify other eligible studies. The search strategy created 479 relevant articles after removing duplicates. After screening titles and abstracts and excluding duplicate references, 127 articles were identified. We found that some of those studies were relevant to other Foreign Bodies instead of fish bone. Then, a full-text review was conducted to exclude those that did not meet inclusion criteria, and 23 studies containing 27 cases were identified.

Changes in the text: Page2 Line32-39

Introduction:

Comments 1:

First paragraph is not specific enough. Please provide data to support claims. For example, how common are esophageal injuries? Specifically, what is the incidence? Furthermore, "Patients require immediate medical intervention" is vague and can be deleted. All symptomatic esophageal impactions should be managed immediately.

Reply 1: We thank the reviewer for this professional comment. Parts of the Introduction section have been rewritten as you suggested. We reviewed the relevant literature and changed the phrase in the manuscript "esophageal injury caused by foreign body ingestion is a common incidence that often has serious consequences" to "foreign body ingestion is a common occurrence that may lead to serious consequences." In addition, according to Ginsberg GG, esophageal foreign bodies account for roughly 1,500 deaths annually in the USA ^[1]. We have specifically added this retrospective data from previous study to ensure the rigor of this article.

Reference:

1. Ginsberg GG. Management of ingested foreign objects and food bolus impactions. *Gastrointest Endosc.* 1995 Jan;41(1):33-8.

Comments 2:

Second paragraph: your claim “Compared to other parts of the esophagus, foreign bodies in the upper esophagus may lead to severe outcomes and even death” is not supported by the reference. The statement “Lacking sufficient understanding, patients with thyroid penetration caused by foreign body ingestion may suffer from delayed diagnoses and misdiagnoses” needs a reference. Is it truly established that a delay in diagnosis occurs?

Reply 2: We thank the reviewer for this professional comment. The statement that “Compared to other parts of the esophagus, foreign bodies in the upper esophagus may lead to severe outcomes and even death” in the introduction part is not accurate and is not currently supported by the previous literature, so we have removed this part and revised the manuscript to ensure the reliability. As shown in our manuscript, there were 28 previous cases of fish bone penetrating in the thyroid gland. According to data from these studies: about 26% of patients were correctly diagnosed after the onset of symptoms, 33% of patients were diagnosed after 3 to 7 days, and 41% of patients were diagnosed after 7 days, suggesting that there could be a delay in getting an initial diagnosis of this injury. Indeed, this delay may be caused by patients’ neglect rather than misdiagnosis of doctors. Therefore, for a more accurate description, we have reworded the statement and removed the words “*delayed diagnoses*” in the manuscript.

Comments 3:

“However, for migratory foreign bodies, especially fishbones, the diagnosis and treatment under laryngoscopy or esophagoscopy are challenging because some foreign bodies are hard to find in the esophagus.” Why are fishbones specifically harder to find? Also your statement is written suggesting that fishbones are especially migratory, which I argue is not necessarily true.

Reply 3: We thank the reviewer for this professional comment. Mostly, the ingestion of foreign bodies was located in the lumen of the esophagus or stomach, which can be directly detected by digestive endoscopy or laryngoscopy examination. However, migratory foreign bodies would not be directly detected in the lumen of the digestive tract once they penetrate the esophagus and reach tissues outside the tract, such as the abdominal cavity and thoracic cavity ^[1-3]. In addition, 18/19 (94.7%) fishbones that migrated in the thyroid cannot be discovered under digestive endoscopy examination. Therefore, the statement has been modified as below:

“However, for migratory foreign bodies that penetrated the esophagus, the diagnosis, and treatment under laryngoscopy or esophagoscopy are challenging because some foreign bodies are hard to find in the esophagus”.

1. Morais R, Marques M, Macedo G. Endoscopic treatment of a foreign body-associated colonic perforation. Int J Colorectal Dis. 2020 Jan;35(1):165-167.
2. Zeng L, Shu W, Ma H, Hu J. Aortic injury caused by esophageal foreign body-case reports of 3 patients and literature review. Medicine (Baltimore). 2020 Jun 26;99(26):e20849.

3. Jiang D, Lu Y, Zhang Y, Hu Z, Cheng H. Aortic penetration due to a fish bone: a case report. J Cardiothorac Surg. 2020 Oct 2;15(1):292.

Changes in the text: Page3-4 Line60-63

Comments 4:

"We searched the PubMed and Web of Science databases for articles related to thyroid foreign bodies published from January 1910 to November 2021 with the keywords "thyroid gland" and "foreign body", and 34 items were identified. After full consideration of the detailed contents, 19 relevant articles were selected. Furthermore, an additional 14 articles were identified by searching the references and supplementary materials from these 19 articles, and a total of 21 references containing 25 cases were included in the present research for review." These sentences should be explained in methods and results sections of your article. Please refer to systematic review (PRISMA) reporting guidelines.

Additionally, I see that your search methods are now outdated (searched through Nov 2021). Please update your search and results accordingly. Below are two unincluded articles that should have been considered for your review:

Lee TH, Park SW, Ryu S, Cho KJ, Won SJ, Park JJ. Two cases of extraluminal migration of fishbones into the thyroid gland and submandibular gland. Ear Nose Throat J. 2022 Apr 29;1455613221098787. doi: 10.1177/01455613221098787. Epub ahead of print. PMID: 35487204.

Hendricks A, Meir M, Hankir M, Lenschow C, Germer CT, Schneider M, Wiegeling A, Schlegel N. Suppurative thyroiditis caused by ingested fish bone in the thyroid gland: a case report on its diagnostics and surgical therapy. BMC Surg. 2022 Mar 9;22(1):92. doi: 10.1186/s12893-022-01542-x. PMID: 35272656; PMCID: PMC8908564.

Reply 4: We thank the reviewer for this professional comment. The search strategy has been modified according to the systematic review (PRISMA) reporting guidelines in the Introduction section. We searched the PubMed, Web of Science, Embase and Google scholar databases for articles related to thyroid foreign bodies published from January 1910 to August 2022. The articles up to August 2022 were collected from PubMed, Google scholar, Embase, Web of Science. The keywords were ("Foreign Bodies" OR "Foreign-Body Migration") AND ("Thyroid Gland" OR "Neck" OR "Neck Injuries"). In addition, reference lists of the retrieved articles were reviewed to identify other eligible studies. The search strategy created 479 relevant articles after removing duplicates. After screening titles and abstracts and excluding duplicate references, 127 articles were identified. We found that some of those studies were relevant to other Foreign Bodies instead of fish bone. Then, a full-text review was conducted to exclude those not meeting inclusion criteria, and 23 studies (including two studies you recommended before: *Ear Nose Throat J. 2022 Apr 29;1455613221098787*; *BMC Surg. 2022 Mar 9;22(1):92*) containing 27 cases were identified.

Changes in the text: Page4 Line65-73

Case Presentation:

Comments 1:

Please remove all dates (e.g., “On August 10, 2021”). This is a violation of patient privacy and HIPAA. I recommend stating when things occur in relation to initial patient presentation. E.g., “1 week after presentation” rather than “August 18, 2021.”

Reply 1: We thank the reviewer for this professional comment. All dates that may violate patient privacy or HIPAA has been removed as you recommend.

Changes in the text: Page4-5 Line79-91

Comments 2:

Examination Paragraph:

Please specify “routine blood tests.” Would these be CBC and BMP?

Reply 2: We thank the reviewer for this professional comment. The description of routine blood tests may be ambiguous and has been changed to complete blood count (CBC), which includes the count of Hemoglobin, blood platelet, red blood cell, and white blood cell ^[1].

Reference:

1. Jia X, Yang T, Miao J et al. Blood routine examination: a simple way for differential diagnosis of immunoglobulin A vasculitis with abdominal involvement and appendicitis in children. Updates Surg 2022 Jun 23.

Changes in the text: Page5 Line94-95

Comments 3:

Treatment paragraph:

“closed to” should be “close to.” Furthermore, please make sure you use past tense. For example “It is difficult” should be “It was difficult.”

I believe you probably did not do a “laparoscopy” for this patient.

Reply 3: We thank the reviewer for this professional comment. As the patient had already undergone laryngoscopy earlier in another institution, we did not perform endoscopy preoperatively. Meanwhile, to ensure the safety of the operation, we performed intraoperative endoscopy examination. Additionally, in order to avoid ambiguity, we have modified this description of laparoscopy.

Changes in the text: Page5-6 Line105-108

Discussion:

Comments 1:

First paragraph is all information that should be in your introduction section.

Reply 1: We thank the reviewer for this professional comment. We have modified the manuscript based on your suggestions.

Changes in the text: Page3-4 Line45-64

Comments 2:

“Therefore, it is important to pay more attention to the patient's left cervical complaints when making the diagnosis.” I disagree with this statement. It's good to know that there is physiologic reason for

the left thyroid lobe to be at greater risk of penetration. However, 64% of 25 patients does NOT adequately support your claim. Furthermore, for a new patient, I would give both thyroid lobes equal consideration given that you don't know which lobe may be impacted until you check both.

Reply 2: We thank the reviewer for this professional comment. Fishbones penetrating the esophagus and sticking into the thyroid are rare and dangerous, thus both thyroid lobes deserve equally considered because we don't know which lobe may be impacted. Indeed, as the sample size limited, statistical bias may existed. So, we deleted the statement *"In 64% (16/25) of patients, the fishbones were stuck in the left lobe of the thyroid. Anatomically, the cervical esophagus is left-sided, and the outer wall of the esophagus is closer to the left side of the thyroid, resulting in greater chances of fishbones penetrating the left lobe of the thyroid (15). Therefore, it is important to focus on the patient's left cervical complaints when making the diagnosis."*

Changes in the text: Page7 Line134

Comments 3:

"It is important to note that other conditions causing neck pain and discomfort also need to be identified, including epiglottitis cysts, tonsillitis, acute epiglottitis, etc (30,31)." A deep dive into the differential diagnosis is needed for a review such as yours. In other words, do not use "etc." Please list out the differential and how you would best rule out these diseases vs rule in thyroid lobe penetration. I think the physical exam and physical palpation of the neck is very valuable and deserves more attention. Perhaps for fishbone ingestion, it should be common practice to palpate the neck.

Reply 3: We thank the reviewer for this professional comment. The differential diagnosis with thyroid lobe penetration includes epiglottitis cysts, tonsillitis, acute epiglottitis. To better distinguish these diseases, physical exam and physical palpation of the neck is very valuable and deserves more attention. Patients with thyroid lobe penetration have increased pain when palpating the front of the neck, which is different with other diseases mentioned above.

We have made the corresponding changes to the description in the discussion section of the manuscript, as follows:

"It is important to note that other conditions causing neck pain and discomfort also need to be identified, including epiglottitis cysts, tonsillitis and acute epiglottitis."

"To distinguish these diseases, clear histories of foreign body ingestion and physical examination especially palpating of the neck require additional attention."

Changes in the text: Page7 Line134-138

Comments 4:

"To identify these diseases, clear histories of foreign body ingestion require additional attention." I believe you mean "To distinguish these diseases...."

Reply 4: We thank the reviewer for this professional comment. We have modified our statement as you recommended.

Modified statement: *"To distinguish these diseases, clear histories of foreign body ingestion and physical examination especially palpating of the neck require additional attention."*

Changes in the text: Page7 Line136-138

Comments 5:

“According 157 to previous reports, X-rays, CT and ultrasonography seem to be more suitable for diagnosis, and the diagnostic accuracy of X-rays is approximately 85.71% (18/21) and that of CT or ultrasonography is approximately 100%.” Is this statement referring specifically to thyroid foreign bodies? Please specify.

Reply 5: We thank the reviewer for this professional comment. Above statement refers specifically to fishbones sticking into the thyroid. We have modified our statement as you recommended.

Modified statement: *“Based on the statistics of previous studies, the diagnostic accuracy of X-rays, CT, and ultrasonography are 18/22(81.8%), 24/24(100%), and 12/12(100%) respectively”*

Changes in the text: Page7 Line145-147

Comments 6:

“In the present study, the most important reason for misdiagnosis was that the laryngoscope did not reveal any obvious foreign body.” This is untrue. The most important reason for misdiagnosis is that laryngoscopy found the epiglottic cyst (which was on the differential diagnosis) served as a distractor and was presumed to be the etiology of symptoms. Please additionally write that the history from the patient regarding fish bone ingestion did not match the epiglottic cyst finding, and thus truly further workup should have been considered earlier.

“Removing foreign bodies is the basis for improving associated symptoms and avoiding secondary injurie (32). Due to the many important blood vessels and nerves in cervical tissue, surgical operations require professional surgeons who are familiar with the anatomy of the thyroid and surrounding tissues. The use of nerve detectors during surgery can more accurately determine whether there is damage to important nerves (33). It is particularly important to evaluate the location of foreign bodies and their adjacent relationship with surrounding tissues preoperatively (34). Additionally, to avoid secondary injury, open surgery may have greater advantages compared to laparoscopic surgery.” This paragraph is unnecessary. The focus of your paper should be on the workup of diagnosing the foreign body. The surgery is similar enough to thyroidectomy that your paragraph states what is considered obvious to the trained otolaryngologist or thyroid surgeon. However, your following paragraph presents useful information to the surgeon.

Reply 6:

We thank the reviewer for the detail review and this professional comment. The corresponding part of the *Discussion* section in this manuscript has been modified to *“In the present study, the most important reason for misdiagnosis was that laryngoscopy found the epiglottic cyst served as a distractor and was presumed to be the etiology of symptoms. Therefore, the history from the patient regarding fish bone ingestion did not match the epiglottic cyst finding, and thus further workup should have been considered earlier.”*

In addition, the statement that *“Removing foreign bodies is the basis for improving associated symptoms and avoiding secondary injurie (32). Due to the many important blood vessels and nerves in cervical tissue, surgical operations require professional surgeons who are familiar with the anatomy of the thyroid and surrounding tissues. The use of nerve detectors during surgery can more*

accurately determine whether there is damage to important nerves (33). It is particularly important to evaluate the location of foreign bodies and their adjacent relationship with surrounding tissues preoperatively (34). Additionally, to avoid secondary injury, open surgery may have greater advantages compared to laparoscopic surgery” in Discussion section has been deleted.

Changes in the text: Page7-8 Line147-152

Comments 7:

No conclusion paragraph? Please add unless this journal does not require it.

Reply 7: We thank the reviewer for this professional comment. We have added the conclusion section in the revised manuscript.

Conclusion: The presence of migratory fishbone should be considered when the patient has a history of fishbone ingestion, but laryngoscopy or esophagoscopy is negative. Clinical presentation and palpation of the neck are essential to establish an initial consideration, and further workup examinations including X-rays, CT, ultrasonography should be taken into consideration to differentiate thyroid penetration and epiglottic cyst.

Changes in the text: Page8 Line164-169

Comments 8:

Table 1 would benefit from summary statistics. E.g. 10/18 (55.6%) had FBS.

Reply 8: We thank the reviewer for this professional comment. We have modified the *Table1* based on your suggestions.

Changes in the text: Summary section of Table 1

Review Comments (Round 2)

Major Comment 1:

Thank you for revising your paper according to my given comments. As the editor has mentioned, grammatical errors should be corrected. Once fixed, I believe your paper constitutes strong work that is valuable for publication.

Reply 1: We thank the reviewer for this valuable comment. We have corrected the grammatical errors in our manuscript as the editor recommended. Additionally, a qualified editor has been invited to help revise the grammatical problems in our manuscript.