Isolated hypopharynx lipoma: a case presentation and literature review

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Abstract

Background: Lipomas are the most common benign mesenchymal tumors. They are defined as subcutaneous neoplasms of mature adipocyte cells that can occur wherever fatty tissue is. Lipomas are rare in the upper aerodigestive tract. Usually asymptomatic, they may be painful, uncomfortable, or even life-threatening especially if voluminous and located in the upper aerodigestive tract.

Case presentation: A 67-year-old female patient has presented with dyspnea on mild effort and chronic orthopnea. The physical examination was normal while the fiber optic endoscopy revealed a submucosal round-shaped mass rising from the left side of the post-cricoid region. CT scan revealed a well-circumscribed fatty mass of the left piriform sinus for which the patient underwent an endoscopic transoral approach for a complete removal with good results.

Discussion and conclusion: Pharyngeal lipomas are rare entities that might be life-threatening. Although clinical manifestations are not specific, imaging techniques, especially MRI, help set the diagnosis showing a fatty mass of the upper aerodigestive tract. However, pathology examination is crucial to rule out low-grade liposarcomas. Surgical management is not well-coded and has benefited from the development of endoscopic techniques.

Keywords: Lipoma, Hypopharynx, Pyriform sinus, Larynx, Endoscopy
during swallowing and respiration. The mass filled the supraglottic region during inspiration and disappeared during swallowing (Videos 1 and 2).

For further characterization of the tumor, a cervical CT scan with contrast injection was ordered. It showed a low-attenuation mass that rose from the left aryepiglottic fold (Figs. 1 and 2) with very thin septa, scattered small areas of soft tissue density, and thin capsule which made it hard to distinguish from the surrounding air in the upper aerodigestive tract.

The patient underwent an endoscopic transoral approach under general anesthesia for the complete removal of the tumor and the exceeding overlying pharyngeal mucosa. The tumor has a small peduncle with a narrow base originating from the post-cricoid area (Fig. 3). No sutures were placed in the root of the peduncle. The postoperative course was uneventful. The patient received antibiotics and paracetamol for 1 week and anti-reflux medication until complete healing of the wound. A feeding tube was used for 3 days; then, oral feeding was allowed; and the patient was discharged from the hospital. However, non-spicy mixed food was recommended for 2 weeks.
Histopathology examination (Fig. 4) confirmed the diagnosis of lipoma characterized by the presence of lobulated, mature adipocytes with minimal connective tissue stroma, enclosed in a thin, fibrous capsule with no cellular atypia.

The patient’s episodes of care timeline is reported in Fig. 5.

Discussion

Lipomas are the most common benign mesenchymal tumors [1]. They are usually presenting as subcutaneous neoplasms of mature adipocyte cells. However, they can occur wherever fatty tissue is found. In 80% of cases, they are typically subcutaneous lipomas with no particularities [1, 2]. Head and neck lipomas count for 13% of all cases, mainly located in the nuchal area [6]; less frequently in the anterior cervical region, infratemporal fossa, oral cavity, and parotid gland; and even more rarely in the upper aerodigestive tract [5]. In our case, the lipoma originated from the anterior wall of the left pyriform sinus.

Lipomas are usually described as painless, slow-growing soft tissue tumors of different sizes that are characterized by an insidious evolution. In fact, they usually remain silent and are often discovered fortuitously during a clinical examination or a radiology test. Nevertheless, lipomas of the upper aerodigestive tract may go unnoticed on CT scans due to the similarity of density between the air and the fatty portion especially in the pedunculated forms. They are most often sporadic in isolated cases. However, in 5–15% of patients, lipomas are multiple, thus described as lipomatosis, and approximately a third of these will be familial [7] as well as associated with other syndromes and diseases such as Gardner’s syndrome, Bannayan-Zonana syndrome, Derickum syndrome, Cowden syndrome, Proteus syndrome, and Madelung’s disease [8].

Clinically, lipomas may remain asymptomatic for a long period until reaching a considerate size; consequently, they are discovered at an advanced stage. On the other hand, for the symptomatic forms, and more precisely in the pharyngeal ones, clinical features depend on the location and the impact of these lipomas on the adjacent structures. The patient may describe a simple throat discomfort, a pharyngeal foreign body sensation or heaviness, dysphagia, and swallowing difficulty. Furthermore, some may experience life-threatening dyspnea, especially in the pedunculated forms, due to laryngeal obstruction, a complete externalization through the oropharynx as the case described by Gilberto et al. [9], or in the huge compressive forms. In this context, one case of death has been reported following asphyxia which was secondary to a voluminous and obstructive hypopharyngeal lipoma [10]. On the optic endoscopy, the lipoma appears as a well-limited, round-shaped, submucosal mass. It may be pedunculated or sessile.

Fig. 5 Patient’s case management timeline
Table 1  Chart summarizes all hypopharyngeal lipomas reported in the literature to date

| Authors            | Year | Country     | No. of cases | Age/sex | Location                          | Symptoms                                                                                                                                                                                                 | Treatment                                                                                                                                                                                                 | Outcome               |
|--------------------|------|-------------|--------------|---------|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Kramer [17]        | 1934 | New York    | 36a          | –       | Hypopharynx and esophagus (n = 6), hypopharynx (n = 26), doubtful (n = 4) | Lump or pressure in the throat, intermittent erosion of the mass into the mouth, dysphagia, and dyspnea                                                                                                     | Most of the cases endorally, some operated upon externally                                                                                                                                             | –                     |
| Max et al. [18]    | 1952 | New York    | 1            | 57/M    | Right pyriform fossa              | Tickling while swallowing                                                                                                                                                                                 | Resection                                                                                                                                  | Second episode after 02 years                                                                                                           |
| David et al. [19]  | 1987 | USA         | 1            | 66/M    | Hypopharynx                       | Intermittent dysphagia for solids and coughing                                                                                                      | Laser excision                                                                                                                           | Symptoms’ resolution                                                                                                                          |
| Nash et al. [20]   | 1989 | –           | 1            | 58/M    | Hypopharynx                       | Dysphagia                                                                                                                                                                                               | Endoscopic resection                                                                                                                      | Symptoms’ resolution                                                                                                                          |
| Fyfe et al. [10]   | 1991 | USA         | 1            | 77/M    | Left aryepiglottic fold           | Sudden death                                                                                                                                                                                             | –                                                                                                                                          | –                     |
| Iwasaki et al. [21]| 1992 | Japan       | 2            | 44/M    | Right edge of the epiglottis      | Sudden death                                                                                                                                                                                             | –                                                                                                                                          | –                     |
| Gutsch et al. [22] | 1993 | Poland      | 1            | 51/F    | Hypopharynx and larynx            | Expiration dysphagia and change of the voice                                                                                                                                                            | Per os resection                                                                                                                          | Complete cure                                                                                                                              |
| Hellin et al. [23] | 1994 | Spain       | 1            | 40/M    | Parapharyngeal space              | Obstructing the airway                                                                                                                                                                                  | –                                                                                                                                          | –                     |
| Eckel and Jungehulsing [11] | 1994 | Germany | 3            | –       | Left pyriform sinus               | Intermittent dysphagia for solids                                                                                                                                                                         | Endoscopic resection by CO2 laser                                                                                                           | Uneventful                                                                                                                                  |
| Zbaren et al. [24] | 1995 | Switzerland | 1            | 47/M    | Larynx                            | Airway obstruction, dysphagia, pharynx throat discomfort, and a sensation of excessive secretion in the pharynx                                                                                             | –                                                                                                                                          | –                     |
| Wenig [12]         | 1995 | USA         | 3            | 28/F    | Supraglottic larynx and piriform sinus | Airway obstruction, dysphagia, pharynx throat discomfort, and a sensation of excessive secretion in the pharynx                                                                                             | –                                                                                                                                          | –                     |
| Jack et al. [25]   | 1996 | USA         | 1            | 36/M    | Retropiriformyx                   | OSAS                                                                                                                                                                                                     | Transoral resection                                                                                                                       | Symptom-free                                                                                                                                |
| Welinder et al. [26]| 1996 | Denmark     | 1            | –       | Vallecula epiglottica             | Fatal airway obstruction                                                                                                                                                                                 | –                                                                                                                                          | –                     |
| Gao et al. [27]    | 1997 | China       | 1            | –       | Hypopharynx                       | Dysphagia, throat discomfort, and airway obstruction                                                                                                                                                     | –                                                                                                                                          | –                     |
| Nwaorgu et al. [28]| 1997 | Nigeria     | 1            | 25/M    | Pharynx                           | Intrathoracic mass and respiratory obstruction necessitating tracheotomy                                                                                                                                  | Left lateral pharyngotomy                                                                                                                 | –                     |
| Nishimura [29]     | 1998 |             | 1            | 61/M    | Pharynx                           | OSAS                                                                                                                                                                                                     | –                                                                                                                                          | –                     |
### Table 1 (continued)

| Authors | Year | Country   | No. of cases | Age/sex | Location                        | Symptoms                                                                                     | Treatment                                      | Outcome         |
|---------|------|-----------|--------------|---------|---------------------------------|---------------------------------------------------------------------------------------------|-----------------------------------------------|-----------------|
| Barry et al. [30] | 2000 | France    | 5            | M and F | Pharynx and larynx              | Dysphagia, throat discomfort, and airway obstruction                                        | –                                             | –               |
| Jungehülsing et al. [31] | 2000 | Germany    | 7            | M and F | Hypopharynx and larynx          | –                                                                                           | –                                             | –               |
| Maged and Riad [32] | 2000 | Scotland   | 1            | 50/M    | Larynx                          | Hoarseness and dyspnea                                                                      | –                                             | –               |
| Srinivasan and Davies [33] | 2000 | UK         | 1            | 57/M    | Pharynx and larynx              | Snoring and intermittent choking                                                              | –                                             | –               |
| Nishiyama et al. [34] | 2001 | Japan      | 1            | 82/F    | Hypopharynx                     | Wheezing and intermittent breathlessness                                                      | –                                             | –               |
| Cantarella et al. [35] | 2001 | Italy      | 1            | 77/F    | Right pyriform sinus and the right arytenoid | Dysphagia and difficulty swallowing and occasional nasal regurgitation of food               | Complete resection during suspension microlaryngoscopy | Full recovery |
| Hockstein et al. [36] | 2002 | USA        | 1            | 64/M    | Retropharyngeal                 | OSAS                                                                                        | Not operated                                  | No growth during the 5-year follow-up |
| Grützenmacher et al. [37] | 2002 | Germany    | 1            | 42/M    | Left aryepiglottic              | Throat discomfort and airway fold obstruction                                                | –                                             | –               |
| Miloudi et al. [38] | 2005 | Morocco    | 1            | 57/F    | Epiglottis                      | Dyspnea and dysphagia                                                                        | –                                             | –               |
| Singhal et al. [39] | 2005 | India      | 1            | 56/F    | Epiglottis                      | Fatal airway obstruction                                                                     | –                                             | –               |
| Namyslowski et al. [40] | 2006 | Poland     | 1            | 40/M    | Retropharynx                    | Increasing snoring and apnea during sleep, morning headache, daytime sleepiness, and swallowing difficulty | External cervical approach | Symptoms’ amelioration |
| Dereky et al. [41] | 2007 | Turkey     | 1            | 63/F    | Tonsil                          | Confusion, disorientation, and difficult intubation                                         | –                                             | –               |
| Mitchell et al. [42] | 2007 | UK         | 1            | 62/F    | Oropharynx                      | Stridor                                                                                     | –                                             | –               |
| Mattioli et al. [43] | 2008 | Brazil     | 1            | 58/M    | Larynx                          | Hoarseness and dyspnea                                                                        | –                                             | –               |
| Minn i and al [44] | 2008 | Italy      | 1            | 48/M    | Paraglottic space               | Hoarseness and soft voice                                                                     | –                                             | –               |
| Silvia et al. [45] | 2010 | Italy      | 1            | 44/M    | Hypopharynx                     | Sudden death during sleep                                                                    | –                                             | –               |
| Eyigor et al. [46] | 2011 | Turkey     | 1            | 60/M    | Vocal fold and vocal process of the arytenoids | Hoarseness                                                                                   | –                                             | –               |
| Evcimik et al. [47] | 2011 | Turkey     | 1            | 51/F    | Left pyriform sinus             | Mass in the throat and difficulty in swallowing                                             | Complete resection using suspension microlaryngoscopy | Full recovery |
| Nader et al. [48] | 2012 | Iran       | 1            | 63/M    | Right aryepiglottic fold        | Intermittent stridor and snoring                                                              | –                                             | –               |
| Pena-Valenzuela et al. [49] | 2012 | Colombia   | 1            | 66/M    | Left cricopharyngeal region     | Progressive dysphagia                                                                        | Endoscopic complete resection                 | Complete recovery |
| Authors                         | Year | Country     | No. of cases | Age/sex | Location                             | Symptoms                                                                 | Treatment                                                                 | Outcome                                           |
|--------------------------------|------|-------------|--------------|---------|--------------------------------------|---------------------------------------------------------------------------|----------------------------------------------------------------------------|---------------------------------------------------|
| Lee et al. [50]                | 2013 | South Korea | 1            | 53/M    | The lateral wall of the right pyriform sinus | Mild dyspnea on exertion                                                  | Transoral robotic approach                           | Good results                                      |
| D’Antonio et al. [51]          | 2013 | Italy       | 1            | 65/M    | Left vocal cord                      | Hoarseness, choking spells, stridor, and dyspnea                          | Endoscopic complete resection                           | Complete recovery                                  |
| Babasundaram [52]              | 2013 | USA         | 1            | 76/M    | Hypopharynx                          | Obstructive sleep apnea                                                  | Complete resection                                     | Episodic sleep apnea and snoring resolved         |
| Kazunori et al. [53]           | 2015 | Japan       | 1            | 64/M    | Hypopharynx                          | Snoring and daytime sleepiness [obstructive sleep apnea syndrome (OSAS)] | Complete resection                                     | Improvement of apnea-hypopnea index (AHI index)   |
| Wolf-Magele et al. [54]        | 2015 | Austria     | 1            | 52/M    | Larynx                               | Acute stridor and dyspnea                                                | Complete resection with the carbon dioxide laser | Full recovery                                     |
| Al Abdulsalam et al. [55]      | 2016 | Saudi Arabia| 1            | 38/M    | Left pyriform sinus                  | Progressive dysphagia                                                     | Complete resection with the carbon dioxide laser | Full recovery                                     |
| Aydin et al. [56]              | 2016 | Turkey      | 1            | 24/M    | Retropharynx                         | Progressive dysphagia and obstructive sleep apnea                        | Transoral surgical excision                             | Symptom-free                                      |
| Acquaviva et al. [9]           | 2016 | Italy       | 1            | 63/F    | Right pyriform sinus                 | Voluminous mass, partially protruding from the mouth                     | Endoscopic resection                                    | Full recovery                                     |
| Jabbr et al. [57]              | 2017 | United Arab Emirates | 1      | 58/M    | Right pyriform sinus                 | Progressive voice change and paroxysmal coughing spasms with swallowing difficulty and foreign body sensation in the throat | Endoscopic complete resection                             | Absence of recurrence with good follow-up results |
| Jia et al. [58]                | 2018 | UK          | 1            | 63/M    | Hypopharynx                          | Food regurgitation, dysphagia, and weight loss                           | –                                                            | –                                                |
| Yoseph et al. [59]             | 2018 | USA         | 1            | 60/M    | Left pyriform sinus                  | Throat irritation and a pharyngeal foreign body sensation                  | Transoral robotic surgical (TORS) excision of the mass | Full recovery                                     |
| Cukic et al. [60]              | 2019 | Serbia      | 1            | 66/M    | Left posterolateral pharyngeal wall and obliterating the left piriform fossa | Foreign body sensation in the throat                                     | Trans-cervical excision                                 | Full recovery                                     |
| Liang et al. [61]              | 2021 | China       | 1            | 56/M    | From the left pyriform to the oral cavity | Vomiting out of a smooth and giant mass in the oral cavity             | Resection using transoral suspension laryngoscopy            | No recurrence was found after 5 months of follow-up |

* Literature review  
* Case report
Histologically, simple lipomas can be distinguished, based on their stroma, from the other benign variants including myolipoma, chondrilipoma, angiomyolipoma, adenolipoma, myxolipoma, and spindle cell lipoma [11] on the one hand. On the other hand, it is also important to rule out some malignant histology types such as liposarcoma in particular the well-differentiated cell form [12].

Concerning radiology features, lipoma is typically a well-circumscribed, round-shaped mass with homogeneous characteristics corresponding to a fat imaging with a thin capsule, very thin septa (< 2 mm), and some scattered small areas of soft tissue density. On ultrasounds, they are mostly isoechoic (28–60%) and hyperechoic (20–50%), yet they are hypoechoic in about 20% of the time [1] with no acoustic shadowing and no or minimal color Doppler flow [13]. If encapsulated, the capsule may be difficult to identify sometimes and to be distinguished from the air around in the pharyngolaryngeal area [7].

Calcification may also be present in up to 11% of cases, although more commonly associated with well-differentiated liposarcoma [7]. Moreover, avidly enhancing, thick/nodular septa or evidence of local invasion in addition to heterogeneous echotexture, more than minimal color Doppler flow, suggests malignancy.

The diagnosis is usually indicated by clinical features and ultrasound results. However, in the upper aerodigestive tract, CT scan and MRI imaging may be helpful for a better evaluation of the mass and the surrounding structures. On CT scan, lipomas presented as fatty, homogeneous, low-attenuation masses with minimal internal soft tissue component occasionally. It may also show some areas of fat necrosis, blood vessels, and muscle fibers whereas a liposarcoma is eliminated firstly [7]. MRI can also be used as a diagnosis tool and show a high-signal mass on both T1 and T2 with saturation on fat-saturated sequences. In fact, MRI represents the main imaging tool for lipoma diagnosis with or without atypical features. As a matter of fact, when no suspicious features are present, MRI is 100% specific regarding the diagnosis of lipoma [14]. In the opposite case, if suspicious features of malignancy are present, the specificity of MRI is lower since some masses with atypical features will nonetheless be simple lipomas, while the sensitivity is still 100% [14].

Well-differentiated liposarcomas, which represent the main and most dangerous differential diagnosis of lipomas, have high chances of local recurrence and a possibility of delayed dedifferentiation after the initial treatment [15]. Because of the differences not only in the treatment's modalities, but also concerning the prognosis and the follow-up protocols, it is very important to distinguish simple lipomas from well-differentiated liposarcomas. In fact, immunohistochemistry describes the liposarcoma subtypes disclosing different morphologies, genetics, clinical behavior, pattern of disease progression, response to treatment, and 5-year survival rate [15, 16].

In the upper aerodigestive tract, surgical management presents a challenge regarding the security of the upper airways, the possibility of intubation, the possibility of jet ventilation use, and endoscopic surgery settings. Since this is a rare entity, each case should be considered unique and have to be managed individually. Nonetheless, it seems that hypopharyngeal lipomas tend to rise from the post-cricoid region [15, 16]. Therefore, securing the upper airways might be challenging if the tumor is large and has no peduncle which implies a transitory tracheostomy. Also, the lent of the peduncle base might condition the necessity or not to put mucosal sutures or surgical glue in order to prevent salivary fistula. Surgical excision might be performed using endoscopic cold instruments (micro scissors, sickle). However, CO2 laser offers better ergonomics especially regarding bleeding control.

Table 1 summarizes all hypopharyngeal lipomas reported in the literature to date.

**Conclusion**

Pharyngeal lipomas are rare entities that might be life-threatening. Although clinical manifestations are not specific, imaging techniques, especially MRI, help set the diagnosis showing a fatty mass of the upper aerodigestive tract. However, pathology examination is crucial to rule out low-grade liposarcomas. Surgical management is not well-codified and has benefitted from the development of endoscopic techniques.

**Patient’s perspective**

I recently had breathing difficulty so I went seeing my cardiologist. After routine work up, he advised me to see an otolaryngologist as my results were normal. In the ORL outpatient clinic, doctor performed a fibroendoscopy and discovered a tumor. I was scared of being diagnosed with cancer. I must say that I had swallowing difficulties that I didn't took seriously. I had a CT scan and the ORL told me I had a fatty mass that he can remove pretty easily. I got the surgery. Post operatively, I had mild pain but my swallowing and breathing difficulties were resolved. I was discharged from the hospital within 3 days. I went back to see my doctor within 10 days for pathology results. He appeased my worries as the tumor was benign. Since surgery my breathing and swallowing symptoms were completely resolved.
Acknowledgements
Not applicable.

Authors’ contributions
NO was involved in the diagnosis, surgery procedure, and manuscript drafting. OQ was involved in the literature review and drafting of the manuscript. NH was involved in the pathology study and reviewed the manuscript. OA was involved in the surgery procedure and reviewed the manuscript. MNA reviewed the manuscript for insightful remarks. The authors read and approved the final manuscript.

Funding
Not applicable.

Availability of data and materials
The datasets generated and/or analyzed during the current study are not publicly available due to patient’s data confidentiality but are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate
Not applicable.

Consent for publication
An informed consent for publication purposes was obtained from the patient.

Competing interests
The authors declare that they have no competing interests.

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