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CASE REPORT

Plunging Ranula Causing Airway Compromise in a Child: A Rare Case

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ABSTRACT

A plunging ranula is a rare cause of neck swelling. Typically, ranula presents with a gradual course and rarely causes acute respiratory impairment. We report the case of a 10-year-old Malay girl who presented with a rapidly enlarging right-sided neck swelling with symptom of upper airway obstruction for one day. Examination revealed submandibular and submental swelling on the right side and elevation of the floor of the mouth with medialization of the right pharyngeal wall. Computed tomography scan of the neck revealed a ranula lesion. The patient underwent marsupialization followed by external excision of the ranula. A plunging ranula is rare in children and is always misdiagnosed. Surgical excision is a treatment of choice with a low recurrence rate.

KEYWORDS: Plunging ranula, ranula, sublingual, marsupialization

INTRODUCTION

A plunging ranula is a rare mucus-filled cavity in the floor of the mouth in the submandibular region. The prevalence is unknown, but various writers claim the prevalence rate for simple ranula is 0.2 cases per thousand people. [1-3]. The disease usually appears after 30 years of age, less commonly at a young age [3], and typically develops insidiously [4]. It is rare to present with acute presentation, thus making us report this case.

CASE PRESENTATION

A 10 years old Malay girl with a history of right neck swelling for the past 2 months, which reduced after taking antibiotics, presented with sudden onset of right neck swelling on the day of admission. The swelling rapidly increased in size, accompanied by symptoms of upper airway obstruction, including shortness of breath, hoarseness, and noisy breathing. She also experienced odynophagia and an irritable cough. Otherwise, she denied any trauma to the neck or intraoral area. On examination, the child was tachypneic with chest recession but no stridor. Clinical examination revealed right submandibular and submental swelling with cystic consistency (Figure 1a,1b). There was a raised floor of the mouth more on the right side with medialisation of the right pharyngeal wall (Figure 2). Computed tomography (CT) scan of the neck was performed, which showed a well-defined homogenous hypodense lesion occupying the right submental, sublingual, and submandibular region that insinuates into the right parapharyngeal space (Figure 3). The child received treatment for an infected right plunging ranula due to progressive increasing neck swelling within 24 hours, the presence of an upper respiratory tract infection (URTI), and elevated total white cell count (TWC) of 18.0 x10⁹/L. This necessitates the administration of an

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empirical antibiotic to the patient. The following day after admission, she underwent direct laryngoscopy and marsupialization of the right floor of the mouth. After the procedure, the neck swelling partially reduced; however, it began to increase again within one week. She successfully underwent external excision of the right plunging ranula with the sublingual gland after one week of completing the antibiotic. Histological examination was reported to be consistent with the ranula.

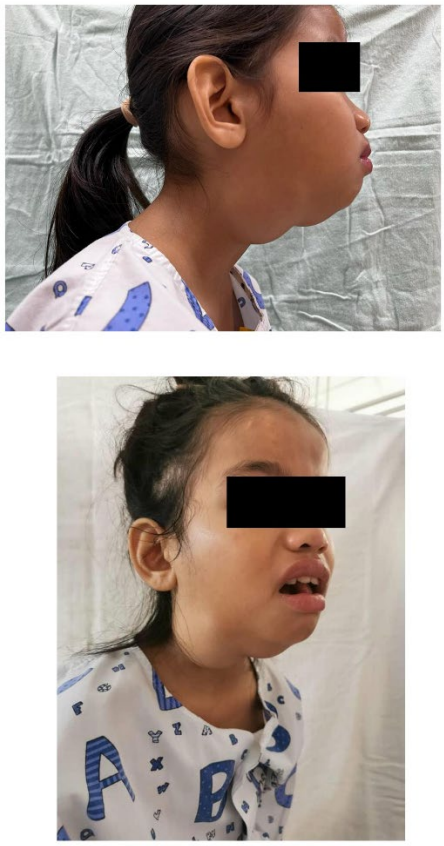

Figure 1 Right submandibular swelling extended to the submental area

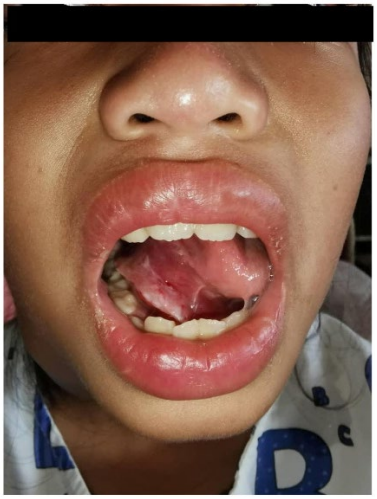

Figure 2 Raised right floor of the mouth

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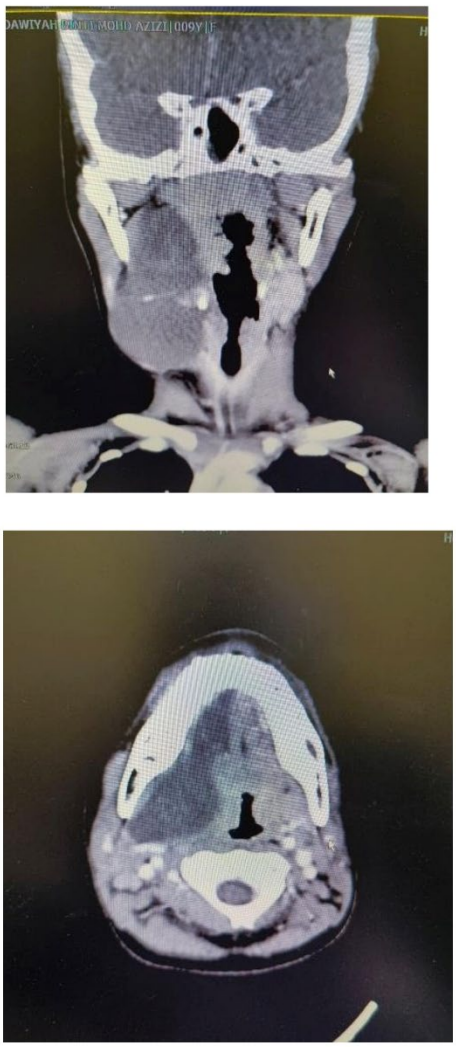

Figure 3 A well-homogenous hypodense lesion occupying the right submandibular, sublingual, and submental region that extends the right para pharyngeal space (Axial CT)

DISCUSSION

Ranula is the retention or extravasation of the collection of salivary secretions from the sublingual gland. It appears a translucent bluish swelling under the tongue. This appearance resembles the underside of a frog, giving it the name "ranula" which is from the "Latin" word "rana" for the frog [2]. A plunging ranula is mostly due to some retention of collection extravasation through or around the mylohyoid muscle deep into the neck [2]. Ranula is an uncommon disease with a prevalence of about 0.2 cases per 1000 people [5]. The prevalence of plunging ranulas is thought to be significantly low, but the exact number is unknown [1-3].

A previous study found that the most prevalent cause of ranulas is trauma, which causes direct injury to the duct or sections of the sublingual gland, resulting in mucus extravasation and the creation of the pseudocyst, followed by obstruction of the sublingual duct [1]. A plunging ranula typically manifests as a neck lump with or without swelling over the floor of the mouth [5]. The plunging ranula has three mechanisms that arise in the neck. First, the sublingual gland may project through the mylohyoid muscle, or the presence of an ectopic sublingual gland exists on the cervical side of the mylohyoid muscle. This mechanism explains why most ranulas exist without an oral component. Second, the cyst may penetrate through a dehiscent mylohyoid muscle, typically found in the anterior two-thirds of the muscle. Third, the sublingual gland duct may join with

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the submandibular gland duct or the gland itself. This explains why the ranula can access the neck from behind the mylohyoid muscle [4].

An imaging procedure needs to be performed to confirm the diagnosis and for surgical intervention planning. Computed tomography (CT) and magnetic resonance imaging (MRI) studies are diagnostic tools [2]. It will be seen as a well-defined, unilocular, homogenous, non-enhancing cystic mass with fluid attenuation and signal intensity located in submandibular space and always touching the ipsilateral of sublingual space and/or parapharyngeal space [6]. The communication of a cystic mass between the sublingual is called a 'tail sign'. This sign is specific for plunging ranula and differentiates it from other cystic lesions such as cystic hygroma, thyroglossal duct cyst, second branchial cleft cyst, epidermoid cyst, and submandibular space [6]. These features of CT scan are found in this case. To establish the diagnosis of plunging ranula, fine-needle aspiration cytology (FNAC) and demonstration of mucus and high amylase content should be performed [2]. However, it was not carried out in this patient.

The cervical ranula mostly presents as asymptomatic and most cases are stable. Previous studies reported five cases presented with acute presentations and three of the five cases had respiratory distress [7-9]. Urgent surgery is a must in patients who came with an acute presentation [7]. In this case, our patient came with sudden onset of cervical swelling with an airway compromise, which was shortness of breath, hoarseness of voice, and noisy breathing. The cyst was infected, thus explaining the patient came with rapidly increasing size of cervical neck swelling. This patient proceeded with marsupialization on the next day, and surgical excision was performed after one week of completing the antibiotic.

According to Zhao et al. (2004), the excision of the ranula has a 57.6% recurrence rate, whereas the marsupialization approach has a high recurrence rate of 66.7%. They recommended excising the cyst with a sublingual gland because it has a low recurrence rate of 1.2% [10]. Surgical approaches for surgical excision consist of two: transoral and transcervical. The transcervical approach is most commonly used because of the difficulty in obtaining a substantial cervical extension through the intraoral approach. However, there is a probability of injury in the marginal mandibular nerve, lingual nerve, and hypoglossal nerve using the transcervical approach [2]. In this case, the transcervical technique was used to remove the sublingual gland along with the cystic lesion, without any nerve injury. The submandibular gland, however, was left in place as it appeared healthy. The patient experienced no further recurrence during the 7 months of follow-up.

CONCLUSION

Plunging ranula rarely presents with acute progression that rapidly leads to airway compromise. However, when it does, it can become life-threatening, particularly with large neck swelling, requiring urgent surgical intervention. The preferred treatment for a plunging ranula is the excision of both the cyst and the sublingual gland to prevent recurrence.

Conflict of Interest

Authors declare none.

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Authors' contribution

FK was involved in writing the case report while SSM, NKNM, and LSG contributed to the critical review of this case report. All authors read and approved the case report before submission.

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