



PLUNGING RANULA-TRANSORAL MICROSCOPIC EXCISION ANBUKARASI

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Abstract : A Ranula is a retention cyst in the sublingual salivary gland that occur on the floor of mouth. It may extend through the mylohyoid muscles into the neck and it is known as Plunging Ranula. A 16 year old female patient presents with swelling in floor of mouth and neck, diagnosed to be a case of Plunging Ranula. Complete excision with microscope and radiofrequency cauterly was done.

Keyword : Plunging Ranula, Cyst, Excision, Radiofrequency

INTRODUCTION:

Ranula is an extravasation cyst found in the floor of the mouth. They develop from extravasation of mucous after trauma to sublingual gland or ducts. Plunging ranulas are mucous retention cysts from sublingual gland or duct with extension into submandibular space. Complete excision of plunging ranula is essential to prevent the recurrence.

CASE REPORT:

A 16 year old female patient reported with two months history of swelling in floor of the mouth left side and left submandibular region . There was a history of gradual increase in size of swelling. There was no history of pain. On examination , General condition was good and vitals signs were stable. Intra oral examination: There was a large 6*4*4 cm dome shaped bluish mass present over the left side floor of the mouth, which was fluctuant, non tender, freely mobile, bimanually palpable and extending to left submandibular region of neck .Brilliantly transilluminant. There was no pulsation or bruit. Gingiva was normal, good oral hygiene.



Fig 1 : Pre op picture showing bluish swelling in the floor of mouth.

Neck examination(extra oral): A diffuse , soft, fluctuant, non tender swelling about 6*5cm in size was present in left submandibular region, which was extended to neck from floor of mouth.

An Initiative of The Tamil Nadu Dr. M.G.R. Medical University
University Journal of Surgery and Surgical Specialities



Fig 2 : Picture showing swelling in left submandibular region. The patient had taken computed tomography(CT) which showed a well defined cystic mass lesion in submandibular space.



Fig 3 : CT Neck

Based upon the clinicoradiological findings, a diagnosis of plunging ranula was made. After necessary investigations patient has taken up for surgery. Under general anesthesia and orotracheal intubation in Rose's position ,Doyen's mouth gag applied, mouth opened widely, tongue retracted upwards. Using radiofrequency cauterly under microscopic guidance incision made over the cyst and the cyst was delineated from the surrounding structure with radiofrequency .submandibular duct was running over the cyst and the same was delineated from the cyst and kept aside. Now the content of the cyst was evacuated , the cyst wall was separated from the underlying tissue and cyst was removed in toto . The specimen was sent for histopathological examination. Post op period uneventful.



Fig 4 : Per op picture of cyst.



Fig 5 : Intra op picture showing the submandibular duct running over the cyst.

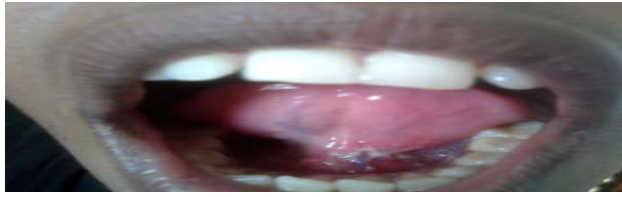


Fig 6 : Post op picture.

DISCUSSION:

A Ranula by definition is a mucus filled cavity, a mucocele, in the floor of mouth in relation to the sublingual gland[1,2]. The name "ranula" has been derived from the latin word "rana" which means "frog belly". Ranulas are characteristically large(>2cm) and appear as a tense fluctuant dome shaped vesicle, sometimes with a bluish hue. The most common site is the lateral floor of the oral cavity. A plunging ranula occurs when the fluid pressure of the mucin dissects through a perforation in the mylohyoid muscle in the submandibular space[3,4,5]. Females are slightly more affected than males(1:1.4) and it presents most frequently in second or third decades of life. Ranula can present at any age. It has reported from 3-61 years of age. The etiology is unknown but it has been described in association with congenital anomalies, trauma and disease of the sublingual gland[6]. Ranulas are formed from extravasation of mucus after trauma to sublingual salivary gland or obstruction of ducts[7,8].

Hypertension in the duct due to obstruction leading to acinar rupture in the salivary gland and then extravasation of the mucus. The initial stage is a traumatic rupture of the excretory duct and the second stage is the extravasation and subsequent accumulation of saliva within the tissue, as shown by experimental studies[9]. When the these extravasation cysts extends into submandibular or sublingual space, they are called plunging ranula. The cause of the plunging ranula is unknown, but anomalies or obstruction of the salivary gland duct and naturally occurring defects in mylohyoid muscle have been shown to be prerequisites for the extravasation. These cysts commonly extend into the submandibular triangle, occasionally they may extend superiorly into the parapharyngeal space as far as the base of the skull. They may extend inferiorly to the supraclavicular area and upper mediastinum or posteriorly into the retropharyngeal space[6,10,11]. Ranula is a clinical diagnosis, and imaging studies are done mainly to know the extension of swelling prior to surgery. On CT, the simple ranula is usually a roughly ovoid shaped cyst with a homogenous central attenuation region of 10-20 HU. The cyst wall is either very thin or not seen, and the lesion is positioned lateral to the genioglossal muscles and above the genial muscle[12,13,14].

The plunging ranula often infiltrates the adjacent tissue planes, extending inferiorly and dorsally to the submandibular gland region, while ventrally it may cross the midline to the contralateral floor of the mouth. Although a plunging ranula may extend into submandibular triangle and displace the submandibular gland, it does not intrinsically affect this gland. computed tomography and specifically the presence of "tail sign" is pathognomic for the plunging ranula. This tail is due to extension behind the mylohyoid muscle and confirms the ranula to arise from the sublingual gland [12,13,14]. MRI is most sensitive to evaluate to the sublingual gland and its status. On MRI the ranula's characteristic appearance is usually dominated by its high water content[15]. Histopathologically, the cervical ranula appears identical to the mucus extravasation phenomenon. Biopsy of the lateral part of the neck may reveal only amorphous material with rare inflammatory cells and predominant histiocytes, which stains positive for mucin. Biochemical analysis of fluids shows its high amylase and protein content. Differential diagnosis of cervical ranula must include thyroglossal duct cyst, branchial cleft cyst, cystic hygroma, submandibular sialadenitis, intramuscular hemangioma, cystic or neoplastic thyroid disease, infectious cervical lymphadenopathy, hematoma, lipoma, laryngocele and dermoid cyst. Surgery is the main stay for the

management of ranulas. These include complete excision of ranula, incision and drainage, marsupialization with packing or complete excision of the sublingual gland [9]. Morton and bartely stated that ranula can be treated by placing silk suture in the dome of the cyst[17]. Later on delbem et al. utilised the micromarsupialization technique for the treatment of ranula. This technique involve topical anesthesia of the lesion for 3 minutes and use of a single 4-0 black silk suture passed through the internal part of the lesion along its widest diameter. The suture was removed after 7 days[18]. Sandrini et al. performed modified micro-marsupialization for the treatment of ranula. The modification include increased number of sutures, decreased distance between the entrance and exit of the needle followed by maintenance of sutures for longer duration approximately 30 days. The basic idea of micro marsupialization is to establish drainage of saliva and formation of new permanent epithelized tract along the path of sutures. This technique is a good option especially in pediatric patients[19].

Baurmash advocated that radical surgery should be reserved only for plunging ranula and recurrent cases. He recommended against the sublingual gland removal as a primary treatment modality of ranulas. He advocated marsupialization followed by positive pressure gauze packing as the primary modality. The marsupialization procedure leads to evacuation of the mucus only. The positive pressure gauze packing into the cavity not only seal the initial leak, but also evoke a inflammatory response sufficient enough to initiate fibrosis to permanently seal the leak, leading to acinar atrophy and healing. With this addition to the un-roofing technique for treatment of the deep ranula, the recurrence rate was reduced to 10% to 12%[20,21]. Pandit and Park suggested that submandibular duct dissection with relocation appears to enhance exposure to the floor of the mouth[22]. Bridger et al and Catone et al[7] recommended sublingual gland excision as the primary treatment modality irrespective of the size of ranula,. However, Crysdale et al. suggested that lesions larger than 1 cm should be treated with gland removal[23].

Galloway et al. described a safer surgical approach to ranula by elevation of a mucoperiosteal flap from the lingual surface of the mandibular alveolar process [24]. Kaneko recommended that during treatment of ranula, the sublingual gland should be removed through intraoral approach rather than from cervical approach because of the accessibility to the sublingual gland, lack of scar formation on the skin and lack of danger of injury to marginal mandibular nerve [25]. Patel et al. in their retrospective study also concluded that definitive treatment yielding lowest recurrence and complication rates was transoral excision of the ipsilateral sublingual gland with ranula evacuation[26]. Zhao et al. recommended insertion of a large lacrimal probe or indwelling catheter into the Wharton's duct to facilitate identification of this structure during surgical exposure and removal of the sublingual gland[27]. Takimoto et al. recommended meticulous dissection of the ranula in continuity with the sublingual gland of origin. After evacuation of the mucus, fibrin glue was injected into the cystic space. This prevents the collapse of wall of lesion during surgery and facilitates the surgical procedure by clearly outlining the involved area and sharply delineating its thin wall [28]. In the treatment of ranula Choi and Oh used hydrodissection technique, which involves the injection of saline and lidocaine with 1:100000 of epinephrine under pressure into the dissection planes. The reported advantages include less bleeding, fewer incidents of neural & soft tissue damage and lower recurrence rate[29]. The reported

recurrence rates after various treatment modalities are: incision and drainage (70% to 100%), marsupialization (36.4% to 80%), excision of ranula only (18.7% to 85%), and excision of ranula along with sublingual salivary gland (0% to 3.8%)[16,27]. Beside surgical management, CO₂ laser, Er,Cr :YSG laser has been used to vaporize ranulas. Vaporization of ranula by various types of laser is also widely practiced. The minimal lateral tissue damage seen with laser minimizes the risk. In addition, the bloodless nature of surgery in the vascular area adds to increased safety by allowing more visibility of the surgical field [30]. Intra cystic injection of sclerotherapy agents like OK-432 (a lyophilized mixture of low virulence group A streptococcus pyogenes with penicillin G potassium) has been reported to be highly effective in the management of intraoral ranulas [31]. A clinical study evaluating the efficacy of OK-432 sclerotherapy of plunging ranula in 21 patients stated that it is a safe and potentially curative procedure that may be used as a primary treatment for plunging ranula before considering surgery. The only contraindication to use of OK-432 is in patients having allergy or hypersensitivity to penicillins. The complication includes fever, mild pain at the injection site and odynophagia [32]. A recent study found orally administered Nickel Gluconate-Mercurius Heel-Potentised Swine Organ Preparations D10/D30/D200, a hemotoxicological agent to be an effective treatment modality for ranulas [33]. Risk for paresis and paralysis of the marginal mandibular nerve is the most common complication following surgical therapy of ranula[27].

CONCLUSION:

Though the usual treatment was complete excision of ranula, here we used the microscopic assisted excision of ranula which helped to differentiate the cyst wall from the surrounding mucosa and important structures like submandibular duct. Radiofrequency assisted dissection, made the field bloodless and minimal tissue damage. The complete intra oral excision of plunging ranula aid to prevent recurrence.

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