Ranula and its various methods of surgical management: A review literature

Correspondance to: Dr. Vijay ebenezer[1],
professor and head of the department of oral and maxillofacial surgery, Sree balaji dental college and hospital, pallikaranai, chennai-100.
Author Details:
Dr. Vijay ebenezer[1], Dr. Balakrishnan Ramalingam[2],
professor and head of the department of oral and maxillofacial surgery, Sree balaji dental college and hospital, pallikaranai, chennai-100.
professor in the department of oral and maxillofacial surgery, Sree balaji dental college and hospital, pallikaranai, chennai-100.

Abstract:
Background:
Ranula is pathological condition where there is no particlar common treatment protocol for it. It is characterized by frog like belly appearance of swelling especially in the floor of the mouth caused by the abnormal accumulation of salivary mucins[1,2]. There are lot of treatment method proposed for ranula that includes excision with or without removal of the involved salivary gland, marsupialization, cauterization of the roof of the lesion , drainage of the contents of the lesion and micro-marsupialization. Since there is wide varity of treatment procedure available, sometimes there will be difficulty in arriving into particular treatment procedure for the given condition. But this situation is slowly changing. This review article aimed to throw insight into the concepts and consensus revolving revolving around the management of ranula.

Conclusion:
Ranulas are extravasation cysts. In conclusion ranulas are found to arise majorly from the sublingual salivary gland; This condition is not a common occurrence probably we can encounter one lesion per year of our practice. A simpler approach will be marsupialization with the addition of packing. Recurrence rates seem to be reduced to a reasonable level. Persistent recalcitrant lesions should be dealt with by sublingual gland excision. Micro marsupialization is the advanced technique that has provided simplicity of execution, low invasiveness and the fact that no special care is required during recovery make this technique a good treatment option, especially in pediatric patients.

Keywords: Extravasation cyst, floor of the mouth, sublingual gland, micro marsupialization…

1. Introduction:

It would seem the vast majority of ranulas are extravasation cysts[3]. Which means it is a pseudo cyst and doesn't necessarily contains cystic lining. If it is a small lesion it can be excised and drained easily but if it is a large plunging ranula, large openings must be created. Ranula doesn't have that much capacity to recur when the involved duct and gland is removed. Apart from rare exceptions or iatrogenic injury to the submandibular duct, the vast majority of ranulas arise from the sublingual gland. This sub lingual salivary gland has very small amount of salivary tissue found in the continuity with the submandibular gland and projects upward and forward from the posterior border of the mylohyoid to the lateral aspect of the floor of the mouth.

The anatomy is complex and varies between individuals. The initial portion running forward with the submandibular duct is accessory submandibular tissue. The sublingual gland is visible in the anterior floor of the mouth and below the mid portion of the submandibular duct and is only present in about one third of

individuals. The former discharges into the mouth through numerous small ducts and the latter drains into the submandibular duct[4,5]

Micro marsupialization is a new technique evolved from the traditional ones seems to be promising now-a-days. Francisco Aurelio et al in his study selected 7 patients presenting with ranula for treatment using this technique. He proposed modifications to the technique that include an increased number of sutures, a decreased distance between the entrance and exit of the needle, and a longer period during which the sutures are maintained. Lot of sutures are used to increase the quantity of new epithelialized drainage pathways. The size of the lesion will determine the exact number of sutures. The sutures must be maintained for period of 30 days for the formation of a new permanent epithelialized tract.
In the modified micro-marsupialization technique, the maximum possible number of successive 4.0 silk sutures in the superior portion of the lesion. Care must be taken taken while tying the knots to avoid excessive compression of the lesion, which causes loss of blood supply in that area, resulting in necrosis of the tissue. The sutures were maintained until the lesion heals completely.

2. Discussion:

Mark mcgurk et al proposed that management of a ranula depends on a number of factors but predominantly its size and position. In the process of removing stones from the hilum of the submandibular gland he reviewed consecutive series 150 cases a technique has been developed that requires the sublingual gland to be mobilized and rotated laterally in the floor of the mouth[3]. The medial aspect of the sublingual gland is incised and on 3 occasions a ranula has developed. In these instances the condition has been recognised early (1 to 2 cm in diameter) and local excision of the cyst with adjacent local sublingual tissue had proved successful.

Consequently small, well-localized ranulas will respond to local excision much same as the mucoceles on the lower lip. Similarly small obstructive cysts associated with the orifice of Wharton's duct can be dealt with by ductoplasty. In clinical practice, most of ranulas are comparatively large at the time of presentation and the source of salivary secretion is necessarily not the sub lingual gland. More frequently ranulas are presented unilaterally involving one side of the floor of the mouth and often they presented in the colour of blue. If the diagnosis is in doubt, needle aspiration will confirm the diagnosis through its raised amylase count.

Mark mcgurk et al in his lierature suggested that there is a risk of injury to Wharton's duct (2%), bleeding (1% to 2%), infection (1% to 2%), or paraesthesia of the lingual nerve (2% to 12%). A number of more conservative approaches that are compatible with office practices have been suggested; these include laser de-roofing [6,7] cryotherapy, suture ligation, and variation on marsupialization[8]. Simple de-roofing of the cyst cavity is associated with a high recurrence rate (60%). This is because the soft tissues in the floor of the mouth fall together such that the roof of the oral cavity soon heals.

Baurmash et al and Morton RP et al [9,10] has suggested the technique of packing the cyst cavity and his experience is that the incidence of recurrence drops from 60% to approximately 10%. The advantage of this approach is that surgery is relatively simple. The negative aspect is that the results are unpredictable and the pack that is kept for 7 to 10 days is uncomfortable. The presence of the pack causes irritation and fibrosis around the cyst cavity and seals the portion of the sublingual gland feeding the cyst. From this perspective, marsupialization is unsatisfactory because the success of surgery is a matter of chance. If the incidence of recurrence is confirmed at 10%, however, a pragmatic approach would be to adopt this technique as the initial treatment option.

Pandit and Park et al and Delban et al [11,12] advocated removal of the ranula and sublingual glands as the treatment of choice for all ranulas, to preclude reappearance of the lesion. According to Baurmash et al[13] conservative management of ranula must be preferred with marsupialization and gauze packing. This

author's opinion, adopting a conservative appraoch to treating or this lesion and reserving aggressive treatment for recurrent lesions looks comparatively better. Haberal et al[14] found that there was no significant difference between the excision of the ranulas to marsupialization of ranula.

Francisco aurelio et al proposed modified micro-marsupialization technique and reported that it is simpler to perform, causes less postoperative discomfort, and does not require special care to avoid postoperative complications. In author's previous experience, cases treated by the classical micro-marsupialization technique had unsuccessful outcomes. The lesions that are treated by single suture along their widest diameter and for less than 15 days failed to heal and reappeared within 30 days. On the basis of physiological characteristics of epithelial tissue, author believe that maintaining the sutures for 30 days is necessary to permit the formation of new permanent epithelialized tracts along the path of the sutures.

Francisco et al found that micro-marsupialization with modifications provides good results. This modified technique avoids almost all of the complications associated with the surgical management of ranula reported by Zhao et al [15] except recurrence. Nevertheless, in his reports even the initially unhealed lesions were resolved at the second attempt using our proposed technique. There are higher chances of occurrence of ranula during probing of the tract unintentionally.

3. Conclusion:

Ranulas are extravasation cysts. So, in conclusion the majority of ranulas arise from the sublingual gland; The condition is uncommon and few surgeons will encounter more than one lesion each year and reliable eradication of the ranula comes from removal of the sublingual gland but the surgery is demanding and there is a definite complication rate and morbidity. A simpler approach will be marsupialization with the addition of packing. Recurrence rates seem to be reduced to a reasonable level. Persistent recalcitrant lesions should be dealt with by sublingual gland excision. Micro marsupialization is the advanced technique that has provided simplicity of execution, low invasiveness and the fact that no special care is required during recovery make this technique a good treatment option, especially in pediatric patients.

4. References:

[1] McGurk M, Escudier MP, Brown JE: Modern management of salivary calculi. Br J Surg 92:107, 2005
[2] Zenk J, Bozzato A, Winter M, et al: Extracorporeal shock wave lithotripsy of submandibular stones: evaluation after 10 years. Ann Otol Rhinol Laryngol 113:378, 2004
[3] Leppi TJ: Gross anatomical relationships between primate submandibular glands. J Dent Res 46:359, 1967
[4] McGurk M: Surgical release of a stone from the hilum of the submandibular gland: a technique note. Int J Oral Maxillofac Surg 34:208, 2005
[5] Zbao Y-F, Jia J, Jia Y: Complications associated with surgical management of ranulas. Am J Oral Maxillofac Surg 63:51, 2005
[6] Barak S, Horowitz I, Katz J, et al: Experiences with the CO2 laser in the surgical treatment of intraoral salivary gland pathology. J Clin Laser Med Surg 9:295, 1991
[7] Mintz S, Barak S, Horowitz I: Carbon dioxide laser excision and vaporization of nonplunging ranulas. A comparison of two treatment protocols. J Oral Maxillofac Surg 52:370, 1994
[8] Toida M, Ishimaru JI, Hobo N: A simple cryosurgical method for treatment of oral mucous cysts. Int J Oral Maxillofac Surg 22: 353, 1993
[9] Baurmash HD: Mucoceles and ranulas. J Oral Maxillofac Surg 61:369, 2003
[10] Morton RP, Bartley JR: Simple sublingual ranulas: Pathogenesis and management. J Otolaryngol 24:253, 1995
[11] Delbem ACB, Cunha RF, Vieira AEM, et al: Treatment of mucus retention phenomena in children by the micro-marsupialization technique: Case reports. Pediatr Dent 22:155, 2000
[12] Pandit RT, Park AH: Management of pediatric ranula. Otolaryngol Head Neck Surg 127:115, 2002

[13] Baurmash HD: Marsupialization for treatment of oral ranula: A second look at the procedure. J Oral Maxillofac Surg 50:1274, 1992
[14] Haberal I, Göçmen H, Samim E: Surgical management of pediatric ranula. Int J Pediatr Otorhinolaryngol 68:161, 2004
[15] Zhao YF, Jia J, Jia Y: Complications associated with surgical management of ranulas. J Oral Maxillofac Surg 63:51, 2005