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Best Practice

When Do Ranulas Require a Cervical Approach?

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QUESTION

Ranulas are a diverse set of disorders that may be congenital or acquired, intraoral and/or cervical, true cysts and/or pseudocysts, and primary or recurrent. Whereas some ranulas are amenable to intraoral procedures, others appear refractory to a variety of surgical interventions. When do ranulas require a cervical approach?

BACKGROUND

A ranula is a mucocele arising in the floor of the mouth, secondary to the obstruction of the salivary ducts of the sublingual glands. "Plunging" ranulas present as masses involving the submandibular triangle or other neck spaces, secondary to herniation of a portion of the sublingual gland through dehiscences in the mylohyoid muscle. The cervical component of a ranula is a pseudocyst lined by granulation or connective tissue that is without a true epithelial lining. Another hallmark feature of plunging ranulas is the lack of respect for tissue planes, often following the previous elevation of neck flaps or extending deeply into the soft tissues and fascial planes of the neck. Ranulas may result from any type of traumatic or iatrogenic injury to the sublingual gland or its ducts.

Ranulas uniformly arise from the sublingual gland, which constitutively secretes saliva with high protein content. A ranula will increase in size when lymphatic drainage and clearance by macrophages recruited in the inflammatory response are insufficient to keep pace with the extravasation of mucous.[1] Spontaneous regression has been reported, and some authors suggest deferring surgery until the lesion has been present for 6 months, particularly in recurrent cases where the diagnosis is clear.[2]

Fine needle aspiration (FNA) is routinely used by some authors for diagnosis of ranulas based on aspiration of mucous, presence of amylase in the fluid, and/or cytology consistent with inflammation.[1–3] However, FNA under local anesthesia may not be well tolerated by children. Imaging is not uniformly necessary, but it may be useful to confirm diagnosis.[4] With ultrasound, ranulas appear as hypoechoic cystic masses with internal echoes. For plunging ranulas, a dehiscence in the mylohyoid muscle is characteristically observed. For recurrent lesions or plunging ranulas, computed tomography or magnetic resonance imaging may be helpful to localize the lesion and exclude other etiologies. However, imaging may not always give a definitive diagnosis. For example, lesions such as dermoid cysts may also appear as well-circumscribed, low attenuation masses.

Intraoral treatment options for ranulas include simple incision and drainage, marsupialization, excision of the ranula with or without excision of the sublingual gland, or excision of the sublingual gland with "evacuation" of a plunging ranula.[1] External cervical approaches include needle aspiration of the cervical component, excision of the submandibular gland, excision of the pseudocyst, or external incision and drain placement, all of which may be combined with intraoral approaches. Use of OK-432, various lasers, and robotic surgery have also been reported. Many case series are small; and many reports combine pediatric and adult cases, intraoral and plunging ranulas, primary and recurrent cases, and a variety of surgical approaches, contributing to a lack of clarity in the literature.

LITERATURE REVIEW

Very small, well-encapsulated lesions are amenable to simple intraoral excision. The consensus in the literature supports the excision of the sublingual gland for all other ranulas, with excision of any intraoral component of the ranula.[1] For plunging ranulas, most authors agree that complete removal of the entire pseudocyst wall is unnecessary, as granulation tissue will resolve once the flow of mucous has stopped.[2–4] However, 76% of the American Head and Neck Society members surveyed reported a preference for a cervical approach for the excision of plunging ranulas, most commonly with excision of the sublingual gland, an approach also utilized in nine of 10 of the authors' own cases.[2]

For plunging ranulas, there is less clarity in the literature regarding the best method to achieve adequate drainage of the cervical fluid collection. In a series of 95 plunging ranulas, most cervical pseudocysts were drained intraorally without placing a drain; however, postoperative

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TABLE I.
Evaluation and Management of Simple Intraoral Ranula Versus Plunging Ranula.

Type of Ranula	Physical Exam	Diagnostic Imaging	Surgical Approach	Drain
Simple Intraoral	Intraoral mass	Ultrasound or none	Intraoral excision of sublingual gland and ranula	No
Plunging	Submandibular mass with or without intraoral mass	CT or MRI	Intraoral excision of sublingual gland with cervical incision and drainage	Yes, through cervical incision

infections developed in four patients, requiring hospital readmission for drainage of a cervical fluid collection.[2] Use of an intraoral drain sutured to the floor of mouth has been reported, but intraoral drains lack dependent drainage and are less well tolerated by patients.

Drainage of the cervical pseudocyst may be difficult to achieve at the time of sublingual gland removal, particularly in revision cases with extensive scarring or in lesions without an intraoral component. Successful evacuation of the pseudocyst through an intraoral incision was reported in 21 pediatric cases, with "retrograde" placement of a small suction drain through the neck.[2] A drain placed from the sublingual and submandibular space out through a small cervical incision will provide postoperative drainage and promote sealing of the leak. A pressure dressing to the neck for 24 to 48 hours is advised to promote adherence of the pseudocyst walls.[2]

While it is well accepted that the sublingual gland rather than the submandibular gland is the source of the ranula, excision of the submandibular gland with or without excision of the sublingual gland is still commonly performed.[1,5] Surgeons may be more familiar with identifying the lingual and hypoglossal nerves through a cervical rather than an intraoral approach. Iatrogenic injury to the submandibular duct at the time of primary surgery may result in postobstructive sialadenitis of the submandibular gland, further confusing the picture.

A cervical approach also allows for verification of the diagnosis as lymphangiomas, hemangiomas, congenital cysts, dermoids, and benign and malignant tumors such as pleomorphic adenomas, schwannomas, or sarcomas may be initially misdiagnosed as ranulas. These lesions would be expected to persist after excision of the sublingual gland, and confirmation of fluid with pathological examination of a portion of the cyst wall will be diagnostic.

BEST PRACTICE

A summary of recommendations is presented in Table I. Intraoral excision of the ipsilateral sublingual gland is recommended for most ranulas. Plunging ranulas may be amenable to the evacuation of contents through the intraoral incision, but in revision cases or large pseudocysts a cervical incision is advised to confirm diagnosis, and to allow placement of a drain through the neck with application of a neck pressure dressing. Complete excision of the pseudocyst wall is not necessary.

LEVEL OF EVIDENCE

One comprehensive review article of case reports and case series was reviewed, as well as four individual retrospective case series (level 4). A clinical practice guideline for treatment of ranulas would be beneficial, given that individual surgeons may not have extensive experience with these lesions.

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