Indian Journal of Dental Sciences.
March 2015
Issue:1, Vol.:7

www.ijds.in

Review Article

Indian Journal
of Dental Sciences

E ISSN NO. 2231-2293 P ISSN NO. 0976-4003

Management Of Salivary Gland Tumors: A Review

[1] Pooja Rani
[2] Praveen Kumar Dass
[3] Divye Malhotra
[1] Assistant Professor,
Dept. of Oral & Maxillofacial Surgery
Himachal Dental College, Sundernagar
[2] Assistant Professor, Dept of Anatomy
Lady Hardinge Medical College,New Delhi
[3] Associate Professor,
Dept. of Oral and Maxillofacial Surgery
Himachal Dental College,Sundernagar
Address For Correspondence:
Dr. Pooja Rani
Deptt. of Oral & Maxillofacial Surgery
Himachal Dental College Sundernagar,HP
Submission : 4th May 2014
Accepted : 3rd January 2015

Quick Response Code

Abstract
Salivary gland tumors are relatively uncommon, corresponding to approximately 3% to 10% of neoplasms of the head and neck region. These tumors occur commonly in the parotid gland (from 34% to 86%), but other major and minor salivary glands also may be affected. Minor salivary gland malignancies are uncommon accounting for between 10% and 15% of all salivary tumors. Unlike the major salivary glands where approximately 80% of tumors are benign, 80% or more of minor salivary gland tumors are malignant. Surgical excision represents the standard option in the treatment of resectable tumors of both major and minor salivary glands.

Key Words
Salivary gland tumors; parotid; submandibular; sublingual

Introduction

Salivary gland pathology is complex and is predominantly inflammatory or neoplastic. Neoplastic pathology may be benign or malignant with multiple complex histologic subtypes displaying widely differing behavioral characteristics.[1] Salivary glands, major and minor, are susceptible to a wide variety of pathological conditions. [2]

Salivary gland tumors are relatively uncommon, corresponding to approximately 3% to 10% of neoplasms of the head and neck region .The incidence of salivary gland tumors may be very low (1.8%) and claims to be influenced by geographic and racial factors. These tumors occur commonly in the parotid gland (from 34% to 86%), but other major and minor salivary glands also may be affected.[3]

Of all salivary gland neoplasms, those of the submandibular gland account for about 10%, whereas 80% involve the parotid gland. There is, however, a higher incidence of malignancy in the former. Neoplasms of the submandibular and sublingual salivary glands are much less numerous than those of the parotid gland, but they are more often malignant: nearly 50% for the submandibular and 80% for the sublingual glands.[4] Tumors arising in the sublingual glands are rare, and most of these tumors are malignant neoplasms.[5]

Minor salivary gland malignancies are uncommon accounting for between 10% and 15% of all salivary tumors. Unlike the major salivary glands where approximately 80% of tumors are benign, 80% or more of minor salivary gland tumors are malignant and they tend to have a great variation in presentation and histology. There are between 450 and 750 minor salivary glands in the head and neck region, scattered throughout the sinonasal cavities, oropharynx, larynx and trachea with the majority being found in the oral cavity. Heterotopic minor salivary glands can also occur at unexpected sites including lymph nodes, the capsule of the thyroid gland, facial bones and the hypophysis. All types of salivary tumors, both benign and malignant, can occur at any of these sites, including heterotopic locations thus accounting for their varied presentation.[6]

Surgical excision represents the standard option in the treatment of resectable tumors of both major and minor salivary glands. Radiotherapy may be a treatment option for inoperable locoregional disease. Surgery, irradiation or re-irradiation are treatment options for local relapse, whereas radical neck dissection is indicated for regional relapses. Metastatic disease may be either treated with radiotherapy or palliative chemotherapy, depending on the site of metastases.[7]

Management of parotid tumors

Parotid tumors are mostly benign, but their evaluation and treatment require a thorough knowledge of the relevant anatomy and pathology. Surgical treatment of benign tumors is aimed at complete removal of the mass with facial nerve preservation. Complete superficial parotidectomy is unnecessary in the treatment of benign localized parotid tumors. Limited parotidectomy is associated with very low rates of morbidity and recurrence.[8]

Parotid tumors are uncommon, with the majority presenting as discrete lumps arising within the superficial portion of the gland. Conventional teaching prescribes removal of these tumors by superficial parotidectomy, which encompasses facial nerve identification and en bloc removal of the superficial portion of the gland. Extracapsular dissection (ECD) is an alternative approach to the removal of such lumps involving meticulous dissection immediately outside the tumor capsule while still preserving the facial nerve, and is distinct from enucleation. As the needs for reducing morbidity and maintaining facial aesthetics increase, ECD represents the current limit of conservative parotid surgery. ECD is a scientifically valid and oncologically safe approach to the management of the clinically benign parotid lump.

Extracapsular dissection is a viable alternative to superficial parotidectomy for the majority of parotid tumors, associated with reduced morbidity without oncological compromise.[9]

Conservative surgical management for salivary gland cancers concerns only parotid gland cancers. For submandibular, sublingual and accessory salivary glands cancers, ablative surgery must always be radical. Conservative surgical management for parotid gland cancers means preservation of glandular (deep lobe), nervous (facial and other nerves) and vascular (intraparotid vein) components of the parotid surgical space. Technically, there is not any specific difficulty to achieve this goal, the surgical rules being the same as for conservative surgery of benign parotid tumors. Reconstructive surgery concerns the facial nerve, rarely the skin. If after skin resection, classical reconstruction methods must be applied (mostly local and free flaps), the facial nerve reconstruction remains controversial.[10]

In the surgery of malignancies of the parotid gland the management of the facial nerve and of the neck is very important. In fact, many authors declared as the surgery of parotid gland can be considered as the surgery of facial nerve and others underlined the role of the neck management in a complete treatment of these neoplasms. The neoplasms of the parotid gland can be treated sparing the facial nerve when it is clearly not involved without making worse prognosis; on the other side planning a neck dissection should be mandatory in case of high degree malignancies, and/or of tumors larger than T2, and/or of involvement of the facial nerve, and/or of the skin and/or cervical lymph nodes. [11]

Cervical lymph node metastases in patients with parotid gland carcinoma are not rare. Regional metastases have a significant influence on the prognosis of these patients. In spite of the clinical relevance of lymphogenous metastases, the indications for elective treatment of the neck are not well defined. An elective neck dissection is recommended in carcinomas with high percentage of lymphatic spread also in the N0 neck. Consideration of additional parameters (> T2, lymphangiosis carcinomatosa) is appropriate to perform also a neck dissection in carcinomas with low risk for lymphogenous metastases. An elective neck dissection should include levels I, II, III and upper V .[12]

Management of tumors of submandibular gland

Surgical management of the submandibular gland has proven itself over the past 35 years and has remained the same despite other advances in the field of head and neck surgery. Nevertheless, surgical management of submandibular gland diseases has always been a challenge. It carries a considerable risk of injury to the mandibular branch of the facial nerve, the hypoglossal nerve, and the lingual nerve .Complete surgical extirpation of the gland is standard in the treatment for all tumors of the submandibular gland. Excision of the entire gland with meticulous preservation of the tumor capsule is the therapy of choice for benign tumors .Submandibular sialadenectomy is a safe operation with a low rate of complications. Operations for a tumor should be performed without delay considering the high rate of malignant tumors. Generally, more limited exploratory excisions or biopsies must be avoided in neoplastic disease of the submandibular gland.[13]

Standard therapy for benign submandibular tumors involves extirpation of the diseased gland. Depending on the surgical technique used, the course of certain nerves in the submandibular region has to be considered (i.e. the marginal branch of the facial nerve, as well as the hypoglossal and lingual nerves).These nerves are at considerable risk during total excision of the gland, and have to be protected from injury. Extirpation of the diseased gland is considered to be the therapy of choice for benign tumors of the submandibular gland.[14]

The treatment of choice for benign tumors of the submandibular gland is surgery. Extirpation of the gland along with the tumor should always be performed. Benign submandibular gland tumors, although rare manifest a mild course of disease and local excision along with the gland is a safe and effective mode of treatment .Malignant tumors show a mild symptomatology resulting in late diagnosis, treatment should be a combination of radical surgery and postoperative radiotherapy .[15]

Malignancies arising in the submandibular gland consist of a high percentage of aggressive tumor types and have a poorer prognosis compared to parotid gland malignancy. Since benign and malignant disease can usually only be differentiated histologically, early and aggressive treatment for suspected submandibular gland neoplasia is advocated. [2]

Several clinical problems after surgery through the transcervical approach have been described. Hong and Kim introduced a new intraoral surgical approach for excision of the submandibular gland indicated in the chronically inflamed salivary gland with or without calculus and benign mixed tumor of the submandibular gland. Thirty-one cases of submandibular gland excision through the intraoral approach were reviewed, analyzing surgical technique and morbidity. Early postoperative discomforts developed, such as a temporary lack of function of lingual nerve and a temporary limitation of tongue movement, but recovery was within a short period of time in all patients involved. No symptomatic late complications appeared, such as residual inflammation of Wharton's duct and neurologic sequelae. They suggested that this approach can be extended to the excision of the submandibular gland as an alternative to the transcervical approach. The major advantages of this approach are the avoidance of an external scar and injury to the marginal mandibular nerve or the hypoglossal nerve .[16]

An endoscopic intraoral approach for excision of the submandibular gland is described by Guerrisi et al. This procedure is anatomically safe and can be made with minimal morbidity; a transcervical incision is avoided. Both specific instruments and solid anatomical knowledge are necessary to perform a safe and efficient glandular endoscopic excision.[17]

Although submandibular sialadenectomy with a minimal incision improves overall cosmetic outcomes, visualization of the surgical field exposure is relatively limited as compared with that in the conventional procedure. To overcome this limitation, endoscope system can be applied to the submandibular sialadenectomy. An

EASS (Endoscope Assisted Submandibular Sialadenectomy) with bipolar dissection is technically feasible and secures a better surgical view through a minimal incision. However, for patients with severe adhesion to the adjacent tissues, conversion to the wide-open procedure would be safer.[18]

Management of tumors of sublingual gland

The fact that tumors rarely arise in the sublingual salivary glands has long been appreciated. Batsakis has estimated that 80% of sublingual tumors are malignant .It is interesting to note that one of the first clear descriptions of a sublingual tumor by Brunschwig in 1930 proved to be a carcinoma arising in a benign pleomorphic adenoma.[19]

The majority of tumors of the sublingual gland are malignant, with adenoid cystic carcinoma and mucoepidermoid carcinoma being the most frequent. Many other malignant tumor types have also been reported. The sublingual gland anatomically is not a unit organ and while it is described anatomically as being confined to the anterior floor of the mouth, salivary tissue may be located laterally along the submandibular duct and posterior floor of the mouth. Diagnosis should be suspected when any thickening or raised lesion presents in this area and a biopsy performed to confirm malignancy before planning further treatment. Surgery is the treatment of choice, and should include an en-block resection of the anterior floor of mouth as a minimum, and may include a portion of mandible, as well as a supraomohyoid neck dissection. Adjuvant radiotherapy should be considered in most of the patients after surgical excision.[20]

In small tumors an adequate local excision is sufficient and when the tumour exceeds 2cm, a more aggressive en-block resection in pull through manner is desirable, especially considering the predominance of adenoid cystic histology. This will often necessitate the resection of lingual nerve with frozen section examination of the proximal line of transection. When the tumor involves the periosteum, a marginal mandibulectomy will usually suffice. Obvious bone involvement will occasionally necessitate a segmental mandibulectomy. Although the risk of nodal involvement is quite small, a selective level 1,2,3 node dissection is easily added to the procedure and may occasionally prove useful. The uncommon patient with obvious nodal involvement may require a more comprehensive neck dissection.

Postoperative radiation therapy is appropriate for selected patients with high stage, high grade tumors, or when there is concern about the adequacy of the resection. For small tumors, postoperative radiation therapy has no proven role unless the surgeon or the pathologist is concerned about the tumor margins.[19]

Management of minor salivary gland tumors

Tumors arising in the minor salivary gland accounts for 22% of all salivary gland neoplasms. Majority of them are malignant with only 18% being benign. Of the benign tumors pleomorphic adenoma is the commonest. The most common site of a pleomorphic adenoma of the minor salivary gland is the palate followed by lip, buccal mucosa, floor of mouth, tongue, tonsil, pharynx, retromolar area and nasal cavity.

The treatment of pleomorphic adenoma is essentially surgical. Though these benign tumors are apparently well encapsulated, resection of the tumor with an adequate margin of grossly normal surrounding tissue is necessary to prevent local recurrence as these tumors are known to have microscopic pseudopod like extension into the surrounding tissue due to "dehiscences" in the false capsule. Spiro reported a recurrence in 7% of 1342 patients with benign parotid neoplasms and 6% of patients with benign minor salivary gland tumors.[21]

The minor salivary gland malignancies often present as a submucosal swelling and have been reported at all anatomic subsites of the head and neck. Complete resection is the treatment of choice. Unfortunately, given the proximity of essential structures, the need to balance functional and cosmetic with oncologic consequences can interfere with an adequate “clear margin.” The neck should be treated when there is evidence of regional metastasis or when subclinical metastatic risk exceeds 15%. Surgery alone cures most low-stage, low-grade tumors, all other stages and grades require postoperative radiotherapy. Systemic treatment for locoregional and distant failure remains disappointing.[22]

References

1. Lawler B, Pierce A, Sambrook PJ, Jones RHB, Goss AN. The diagnosis and surgical management of major salivary gland pathology. Australian Dental Journal 2004; 49: 9-15.
2. CrabtreeGM, Yarington CT. Submandibular gland excision. Laryngoscope 1988 ; 98:1044-1045.
3. Ansari MH. Salivary gland tumors in an Iranian population: a retrospective study of 130 cases. J Oral Maxillofac Surg 2007;65:2187-2194.
4. Batsakis JG. Carcinomas of the submandibular and sublingual glands. Ann Otol Rhinol Laryngol 1986 ;95:211-212.
5. Yamada S, Baba N, Kawasaki G. High-grade papillary cystadenocarcinoma of the Sublingual Gland. J Oral Maxillofac Surg 2007; 65: 1223-1227.
6. Strick MJ, Kelly C, Soames JV, McLean NR. Malignant tumors of the minor salivary glands-a 20 year review. The British Association of Plastic Surgeons 2004; 57:624-631.
7. Guzzo M1, Locati LD, Prott FJ, Gatta G, McGurk M, Licitra L. Major and minor salivary gland tumors. Crit Rev Oncol Hematol. 2010 May;74(2):134-48.
8. O'Brien CJ. Current management of benign parotid tumors-the role of limited superficial parotidectomy. Head Neck 2003; 25:946-952.
9. McGurk M, Thomas BL, Renehan AG. Extracapsular dissection for clinically benign parotid lumps: reduced morbidity without oncological compromise. Br J Cancer 2003; 89:1610-1613.
10. Fossoin E, Reychler H, Siciliano S, Karengera D. Conservative and reconstructive surgery for salivary gland cancer. Acta Oto-rhino-laryngologica belgica 1999;53: 151.
11. Longo F, Manola M, Villano S , De Vivo S , De Maria G, Pascale A, et al. Treatment of the facial nerve and the neck in malignant parotid gland tumors. Tumori ; 89:257-259.
12. Teymoortash A. Werner JA.Value of neck dissection in patients with cancer of the parotid gland and a clinical N0 neck. Onkologie 2002; 25:122-126.
13. Preuss SF, Klussmann JP, Wittekindt

C, Drebber U, Beutner D, Guntinas-Lichius O. Submandibular gland excision :15 years of experience. J Oral Maxillofacial Surg 2007;65:953-957.
14. Laskawi R, Ellies M, Arglebe C, Schott A. Surgical management of benign tumors of the submandibular gland: a follow-up study. J Oral Maxillofacial Surg 1995; 53:506-508.
15. Rapidis AD, Stavrianos S, Lagogiannis G, Faratzis G. Tumors of the submandibular gland : clinicopathologic analysis of 23 patients. J Oral Maxillofacial Surg 2004 ;62:1203-1208.
16. Hong KH, Kim YK. Intraoral removal of the submandibular gland :a new surgical approach. Otolaryngol Head Neck Surg 2000; 122:798-802.
17. Guerrissi JO. Endoscopic excision of the submandibular gland by an intraoral approach. The J Craniofacial Surg 2001;12:,299-303.
18. Baek CH, Jeong HS. Endoscope assisted submandibular sialadenectomy: a new minimally invasive approach to the submandibular gland. Am J Otolaryngol 2006; 27:306-309.
19. Spiro RH. Treating tumors of the sublingual glands, including a useful technique for repair of the floor of the mouth after resection. The American Journal of Surgery 1995; 170:457-460.
20. Rinaldo A. Management of malignant sublingual salivary gland tumors. Oral Oncology 2003;40:2-5.
21. Varghese BT, Sebastian P, Abraham EK, Mathews A. Pleomorphic adenoma of minor salivary gland in the parapharyngeal space. World J Surgical Oncology 2003;10: 1477-1478.
22. Poorten V V, Hunt J , Bradley P J, Haigentz M, Rinaldo A, Mendenhall W, et al. Recent trends in the management of minor salivary gland carcinoma. Head Neck 2014 ; 36: 444–455.

Source of Support : Nill, Conflict of Interest : None declared