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*AJNR Am J Neuroradiol* 1986, 7 (4) 657-664

<http://www.ajnr.org/content/7/4/657>

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# Rare Presentations of Ordinary Lipomas of the Head and Neck: A Review

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The ordinary lipoma is the most common neoplasm of mesenchymal origin. Only 13% of them arise in the head and neck region and most of these occur subcutaneously in the posterior neck. Rarely, they can develop in the anterior neck, infratemporal fossa, and in or around the oral cavity, pharynx, larynx, and parotid gland. Clinically, they can be confused with other benign lesions; however, CT allows a specific diagnosis to be made in virtually all cases. This article reviews the CT appearance and differential diagnoses of lipomas in these rare locations and discusses the rare infiltrating lipoma and the relationship between parotid lipomatosis and sialosis.

The solitary, ordinary lipoma, which is composed of mature fat, has evoked relatively little interest in the literature. This is not entirely surprising when one considers that most grow insidiously and cause few symptoms other than the effects of localized mass [1]. Many of these lesions remain unrecorded and most come to the attention of a physician only when they are large and cause a cosmetic problem or interfere with function because of their anatomic location. As such, the number of reported cases of lipomas is probably much lower than the actual incidence. Nonetheless, lipomas far outnumber all other soft-tissue tumors and are the most common neoplasms of mesenchymal origin. Of the variety of lipomatous benign tumors that occur, over 80% are ordinary lipomas and about 13% of them occur in the head and neck, most commonly in the posterior neck [1-3]. Rarely, lipomas can occur in the anterior neck, infratemporal fossa, oral cavity, pharynx, larynx, and parotid gland. The literature on these lesions has primarily been in the form of case reports without CT documentation. The purpose of this paper is to review the CT appearance and the differential diagnoses of some rare lipomas that occur in unusual locations in the head and neck in order to recognize when they can cause diagnostic problems.

## Materials, Methods, and Results

In the head and neck region, lipomas most commonly occur in the posterior neck. Since 1978, CT scanning has shown 16 such lipomas. By comparison, in the same period of time, 21 cases of CT-documented lipomas that occur in other, uncommon locations in the head and neck were seen at our hospital. The locations of these lesions and the approximate number of cases of other uncommon head and neck lipomas reported in the literature are presented in Table 1.

There were 11 males and 10 females in our study, ranging in age from 7 to 70 years (mean, 51.4 years). In most of these patients, the lipoma was an incidental CT finding; thus, the true incidence of such posterior neck lipomas in our patient population cannot be determined by this random sampling. Because of their unique low attenuation values, lipomas are virtually all diagnosed by CT scanning. Only the rarity of these lesions in certain areas of the head and neck prompts a differential diagnosis. Although some patients were referred to our hospital for consultation

Received October 23, 1985; accepted after revision January 2, 1986.

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*AJNR* 7:657-664, July/August 1986  
 0195-6108/86/0704-0657

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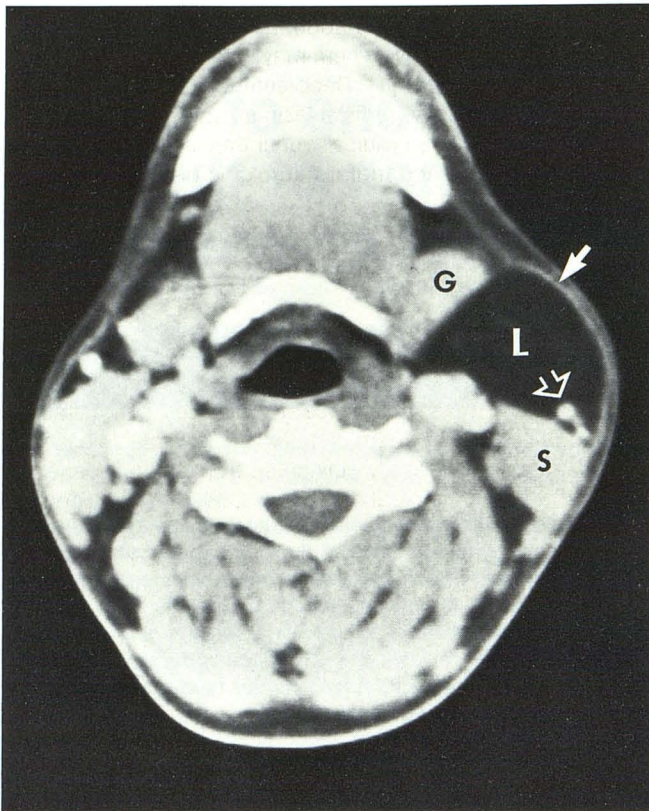


Fig. 1.—Postcontrast axial CT scan shows ordinary lipoma (L) in left neck just anterior to sternocleidomastoid muscle (S), displacing submandibular gland (G) medially. The lipoma lies deep to the platysma (*closed arrow*) and encompasses external jugular vein (*open arrow*). Although a definite capsule is not seen, the lipoma is clearly defined from adjacent structures.

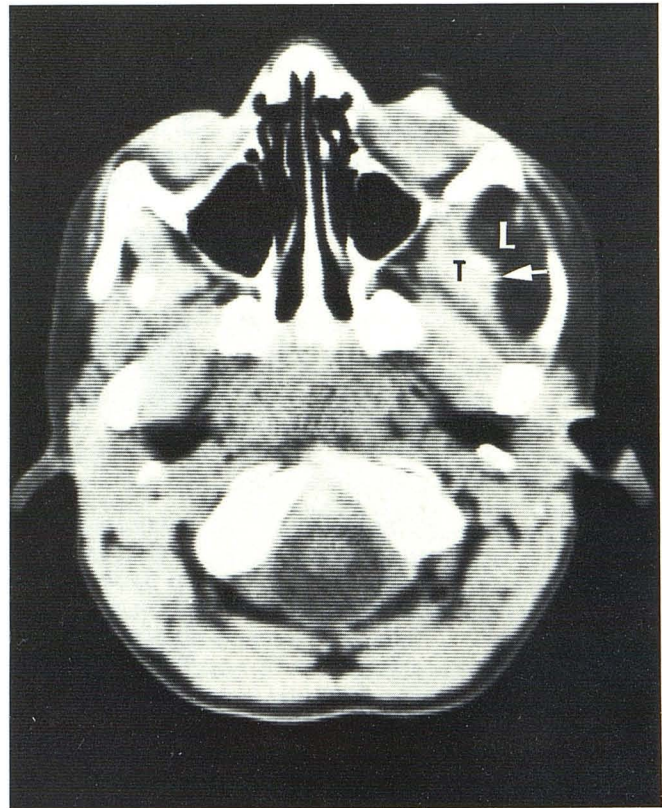


Fig. 2.—Postcontrast axial CT scan shows infiltrating lipoma (L) in left upper infratemporal fossa lying adjacent to deep portion of temporalis muscle (T). There is irregularity in interface (*arrow*) between lipoma and temporalis muscle indicating infiltration of muscle.

TABLE 1: Cases of Lipomas in the Head and Neck

Location	No. of Our Cases	No. of Cases Reported in Literature
Cheek	2	<100
Tongue	1	<35
Parotid	5	<25
Periparotid	4	<20
Retropharynx	1	<20
Larynx	1	<20
Anterior neck and infratemporal fossa	7	<40
Total	21	

and already had CT scans performed on a variety of different scanners, the large majority of CT examinations in the study were performed on GE 8800 and GE 9800 scanners.

**Discussion**

Lipomas are rare in the first two decades of life, usually developing in the fifth and sixth decades when fat begins to

accumulate in inactive, underexercised individuals. In general, the tumor is more common in obese people and can increase in size during a period of rapid weight gain; however, after the initial growth period most lipomas increase little in size. Conversely, in cachectic patients or during periods of starvation, the size of the lipoma is rarely affected, which suggests that the fat in these lesions is largely unavailable for the general metabolism [1, 2].

Below the clavicles, lipomas are more common in obese female patients over 40 years old; but, in the head and neck region, males in their seventh decade are most often affected [1, 3]. The development of lipomas in patients on corticosteroid therapy, or with Cushing's disease, or at the site of insulin injections, suggests an endocrine relationship that is often reversible [1, 4, 5].

Ordinary lipomas are benign lesions that recur locally in less than 5% of the cases [1-3]. Those lesions that recur are either deeply placed and less accessible to the surgeon, or infiltrating lipomas that have microscopically invaded adjacent structures that were not resected at the time of initial surgery. If only the infiltrating type of lipoma is considered, the recurrent rate may be as high as 62.5% [6-9].

Lipomas are usually composed of mature fat and are en-

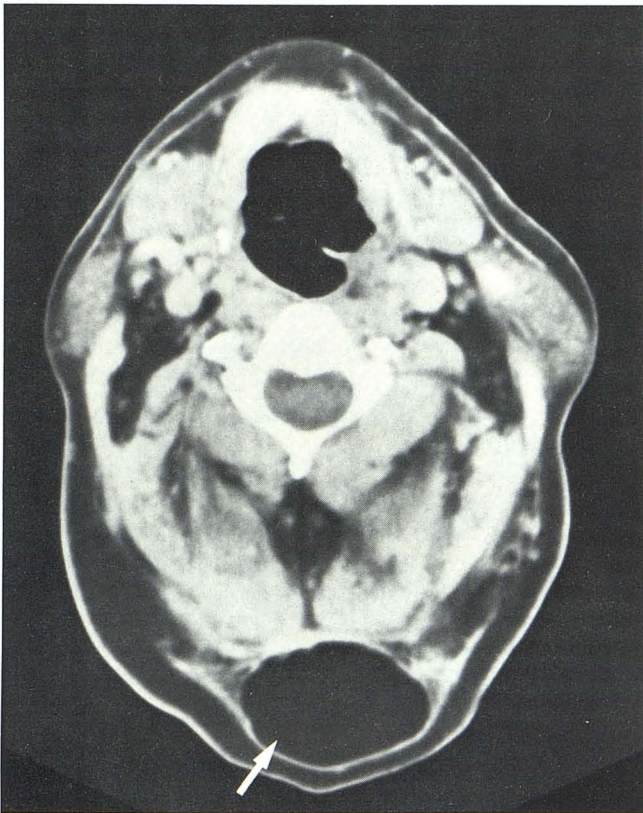


Fig. 3.—Postcontrast axial CT scan shows well-circumscribed ordinary lipoma in posterior neck (*arrow*). This is most common location for lipomas that occur in the head and neck.

capsulated [1, 3]. Most are subcutaneous and superficial in location, and the skin over them may feel cool because of the insulating quality of fat [1]. Deep-seated lipomas are rare in comparison with the superficial lesions, and the deeper ones may not be discovered clinically until they are quite large [1, 3]. Rarely, sensory and motor neurologic disturbances have been reported [1, 3, 6, 8, 10, 11]. Most such disturbances are due to compression by large lipomas, and the deficits resolve after the lesion is excised. Even more rarely, the neurologic symptoms are caused by infiltration of the nerve by fat [3].

CT provides a definitive diagnosis of lipoma in virtually all cases. The typical CT characteristics are a homogeneous, low-attenuation mass that usually measures between  $-65$  and  $-125$  H [12–18]. There is no clearly identifiable capsule, yet most lesions are easily delineated from the adjacent soft tissues (Fig. 1). In the great majority of these ordinary lipomas, the clearly defined CT appearance correlates well with a lack of marginal microscopic infiltration, although such extension, when present, is well beyond the resolution capability of CT scanners and most often goes unnoticed by the surgeon. It is this microscopic infiltration that probably accounts for many of the recurrences [6–9]. By comparison, a grossly infiltrating lipoma can be identified on CT by its poorly defined margins [9] (Fig. 2). Hemorrhage or fibrotic changes occur rarely in a portion of the lipoma, causing a localized area of increased density [18]. A lipomatous mass that is overall more heterogeneous, and slightly denser than an ordinary lipoma, may represent a liposarcoma [12].

Of the lipomas that occur in the head and neck, most are

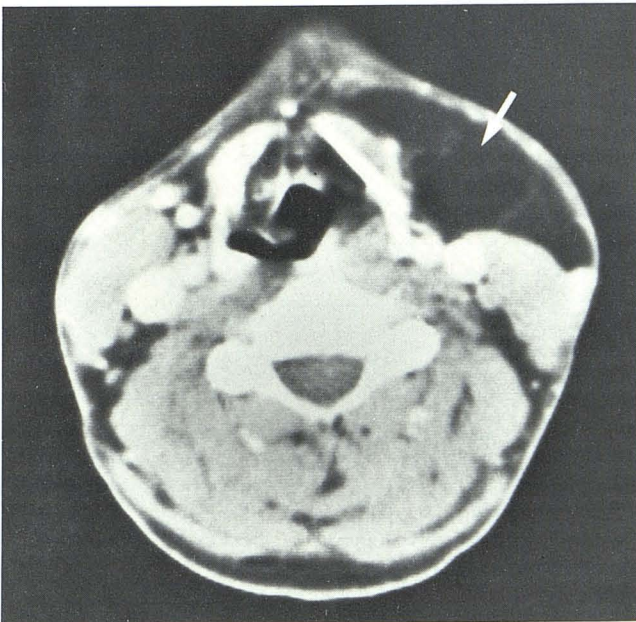


Fig. 4.—Postcontrast axial CT scan shows left anterior neck lipoma (*arrow*) that extends almost to midline. On more cranial scans, lipoma extended into suprahyoid midline neck and floor of mouth. Normal internal septal structure can be seen within lipoma.

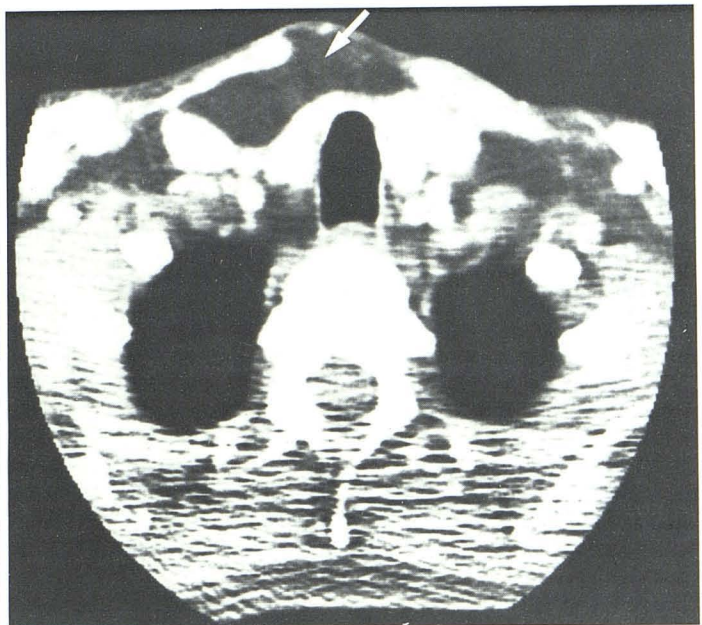


Fig. 5.—Postcontrast axial CT scan shows right anterior and midline low-neck lipoma (*arrow*). Clinically, this lesion was thought to represent a cystic hygroma.

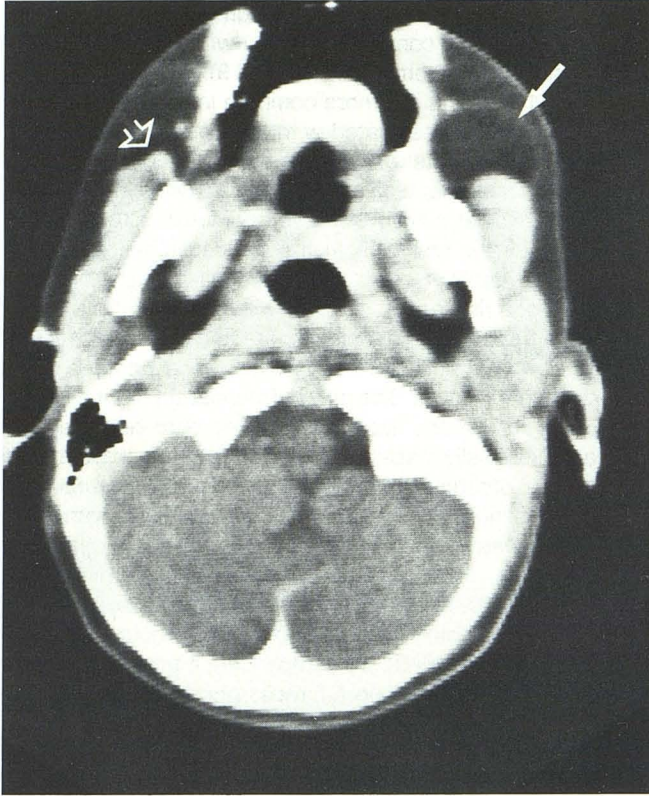


Fig. 6.—Axial CT scan shows left buccal lipoma (closed arrow) and normal right buccal fat pad (open arrow).

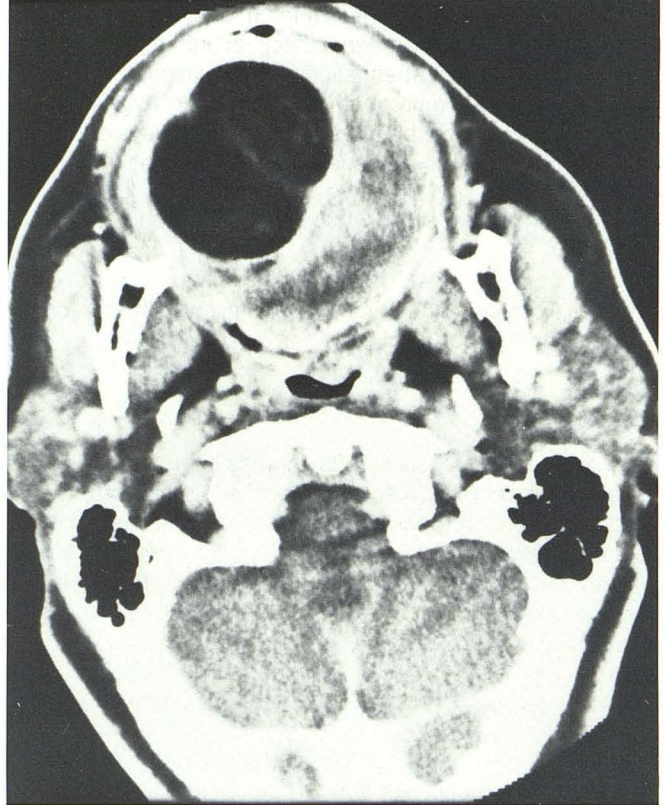


Fig. 7.—Postcontrast axial CT scan shows some internal septation within a lipoma located in right lateral anterior tongue margin.

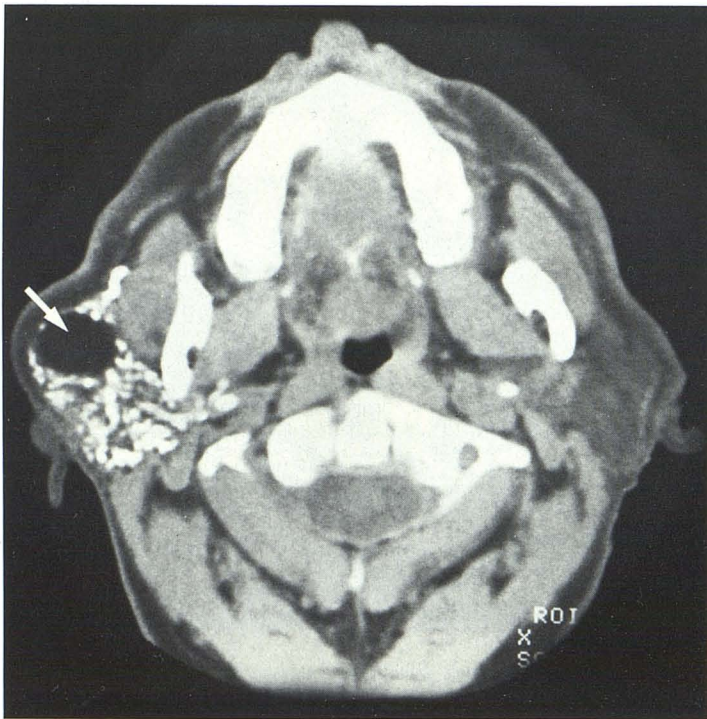


Fig. 8.—Axial CT scan shows right parotid lipoma (arrow) that is completely outlined by contrast-filled parotid gland.

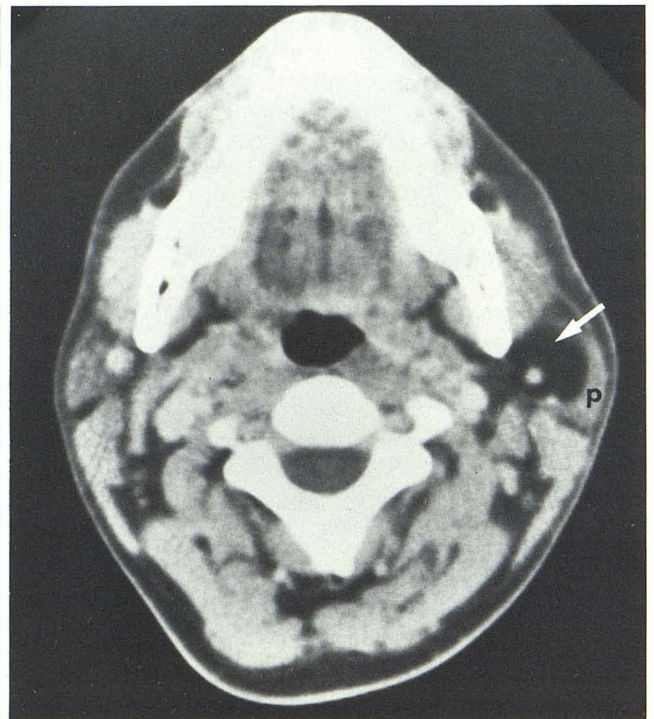


Fig. 9.—Postcontrast axial CT scan shows left parotid lipoma (arrow) with rim of parotid gland (p) overlying lateral margin. Posterior facial vein and external carotid artery are well seen lying within lipoma.

superficial in the posterior neck (Fig. 3). Uncommonly, lipomas are discovered in the anterior neck or infratemporal fossa (Figs. 1–5). The low attenuation values exclude most differential diagnoses. Neurofibromas and cystic hygromas can have low attenuation, but these are almost always above 0 H and these two entities usually occur as multiple lesions. Abscesses, parenchymal cysts, and necrotic nodes all have definable rims around low-attenuation centers that are never in the low lipoma range. Clinical history will also help differentiate these lesions. The remaining lipomas in the head and neck as a group are rare and occur primarily in the oral cavity, pharynx, parotid gland, and larynx.

#### Oral Cavity

In the oral cavity, about 225 lipomas have been reported. These represent between 1–4.4% of all benign oral tumors and 1% of benign tongue neoplasms [19–25]. In descending order of frequency, they occur in the cheek, tongue, floor of mouth, buccal sulcus, palate, lip, and gingiva. Between one-third and one-half of these cases occur in the cheek (buccal mucosa) [1, 19] (Fig. 6). Of the lesions that occur in the tongue, most arise in the anterior two-thirds along the lateral glossal edge, and multiple lipomas have been reported [20] (Fig. 7).

The low attenuation of the lipoma virtually eliminates a differential diagnosis. An intraglossal thyroglossal duct cyst occurs in the midline, whereas the lipomas are laterally positioned. In the floor of the mouth, a ranula or dermoid might most easily be confused with a lipoma.

#### Hypopharyngeal

Hypopharyngeal lipomas are uncommon, with approximately 72 reported cases in the literature [1, 26]. The precise number of cases is difficult to determine because a number of lesions initially classified as laryngeal in origin actually were hypopharyngeal. In a review of 70 laryngeal cases, 54 lesions were actually extrinsic, or hypopharyngeal, in origin [27]. In descending order of occurrence, these lesions are found at the edge of the aryepiglottic folds, in the postcricoid region, in the pyriform sinus, in the lateral hypopharyngeal wall, and in the arytenoid region [16]. These tumors are often polypoid and have been reported to grow up to 23 cm in length [1]. Because of potential prolapse into the esophagus or trachea, patients may be either asymptomatic or complain of dysphagia, a foreign body sensation, a change in quality of voice, or have sudden transient attacks of dyspnea [1, 3, 28]. Sleep apnea secondary to airway compression has also been reported [29].

#### Parotid

In the parotid gland and the periparotid area, at least 40 cases of lipomatous lesions have been reported [1, 30–35], of which 57% were intraparotid and 43% arose in the immediate region around this gland [30]. About 90% of the cases were ordinary lipomas and the rest were examples of diffuse fatty infiltration or lipomatosis of the parotid gland [32].

The discrete lipomas have a benign clinical presentation and are most often confused clinically with Warthin's tumors or pleomorphic adenomas (Figs. 8 and 9). The lesions vary in size from 1 to 8 cm, are more common in females by a 10:1 ratio, and are not associated with lipomas elsewhere in the body [31]. Complete excision is curative. The differential diagnosis is again limited by the unique low attenuation of the lipoma. Branchial cleft cysts, cystic Warthin's tumors, and abscesses are conceivably in the differential diagnosis, but can be distinguished by the higher central attenuation, the presence of a rim, and associated clinical findings.

The infiltrating type of lipoma is rare and its CT appearance is one of a fatty infiltration that replaces all or part of the parotid gland (Fig. 10). The only differential diagnostic consideration might be lipomatosis of the parotid; however, this process is usually bilateral. Although some parotid glands may have a greater fat content than others, the normal gland never has a homogeneous fat attenuation, and portions of the ductal system and the interstitial tissue of the gland can be identified.

Lipomatosis represents poorly defined areas of mature adipose tissue that have infiltrated the parotid gland and are interspersed between lobules of normal parotid tissue [35–37]. This usually is a bilateral process and no other areas of the body are affected. This entity is quite possibly a manifestation of sialosis (sialoadenosis) without an obvious associa-

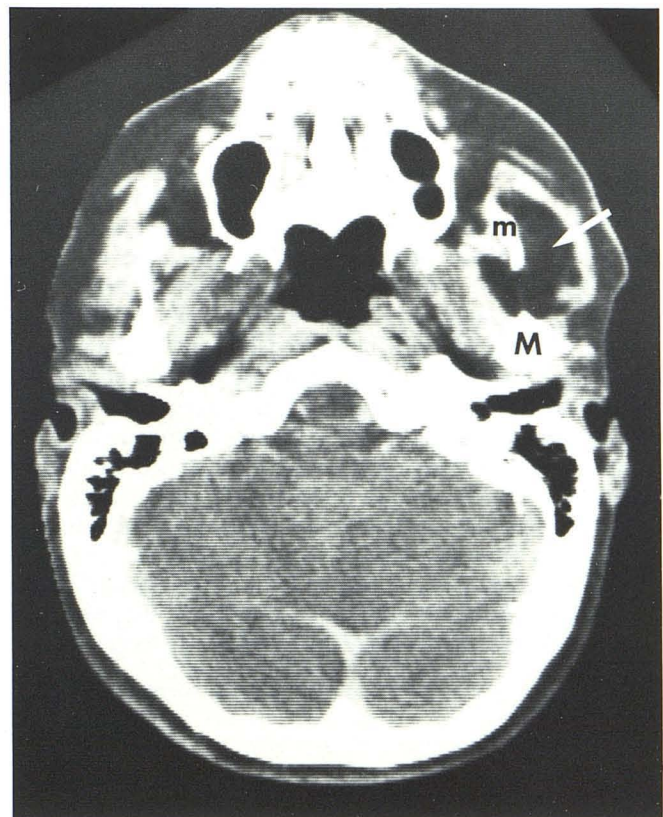


Fig. 10.—Axial CT scan shows infiltrating-type lipoma (arrow) in left parotid gland. Lesion has virtually replaced all parotid tissue and has extended medially through mandibular notch situated between coronoid process (m) and condylar process (M).

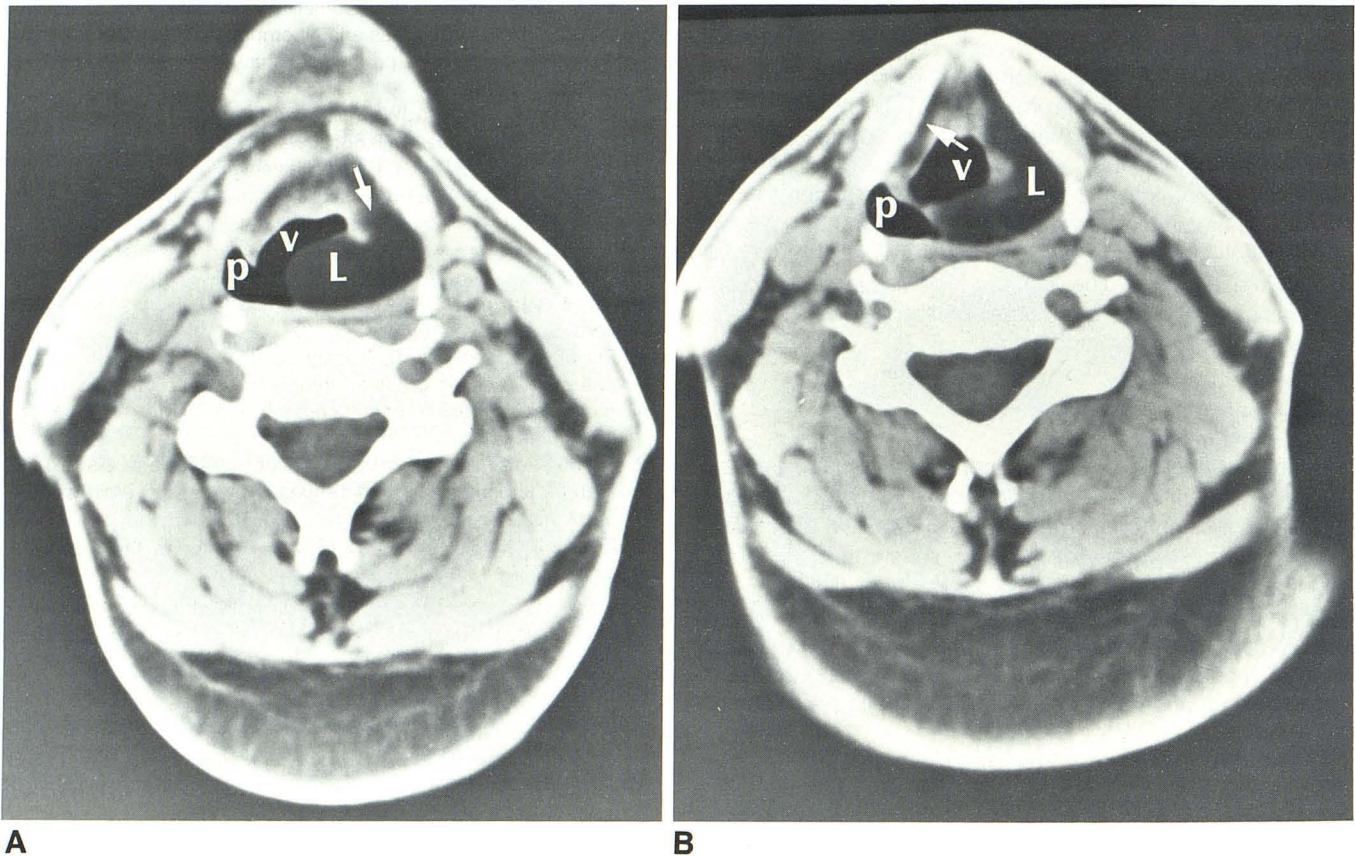


Fig. 11.—A, Axial CT scan at level of cephalad aspect of supraglottic larynx reveals cystic-appearing lipoma (L) that bulges into hypopharynx (P) and upper vestibule (V) and extends anteriorly into paralaryngeal space of larynx (arrow). B, Axial CT scan more caudal than in A shows lipoma (L) involving entire left

paralaryngeal space and fat. This results in widening of left supraglottic larynx encroaching slightly upon vestibule (v). Normal paralaryngeal fat (arrow) is seen on right side. P = right pyriform sinus.

tion with a systemic or metabolic process. Sialosis is defined as a nonneoplastic, noninflammatory enlargement of the parotid glands [36]. It is almost always a bilateral process and is often associated with hormonal disturbances (which are chiefly ovarian), with thyroid and pancreatic (diabetes) dysfunctions, or with malnutrition, primarily cirrhosis and chronic alcoholism. Drug-induced sialosis has also been reported with phenylbutazone drugs, iodide-containing compounds, thiouracils, catecholamines, and so on [36]. The parotid gland normally involutes through a lipomatous degeneration [37], and it may be that the mechanism of this process is accelerated by the associated systemic dysfunction. The possibility of an allergic element manifested in the parotid glands is often clinically suggested. If this is true, lipomatosis may represent an unusual reaction to an as yet unidentified allergen.

#### Periparotid

Periparotid lipomas may not be clinically distinguishable from parotid lesions. However, in most cases, CT can easily resolve the true origin of the process.

#### Larynx

Lipomas of the larynx are rare, with less than 20 undisputed cases in the literature [27, 38, 39]. They usually arise from the false cords and less commonly are reported in the aryepiglottic folds and epiglottis. They can prolapse into the glottis causing dyspnea and a change in the quality of the voice. In the supraglottic larynx, the CT appearance is unique because of the low attenuation of the lipoma (Fig. 11). The differential diagnosis includes retention cysts, laryngoceles, and mucoceles [40].

#### Retropharyngeal

Retropharyngeal lipomas are rare, with less than 20 documented cases [1, 41–43] (Fig. 12). They can grow to be quite large, apparently because they arise in a relatively silent area clinically. They have been reported to interfere with both deglutition and respiration. Rare cases of lipomas in the paranasal sinuses, nose, bones, cranial cavity, face, scalp, and orbit have also been reported [44–48].

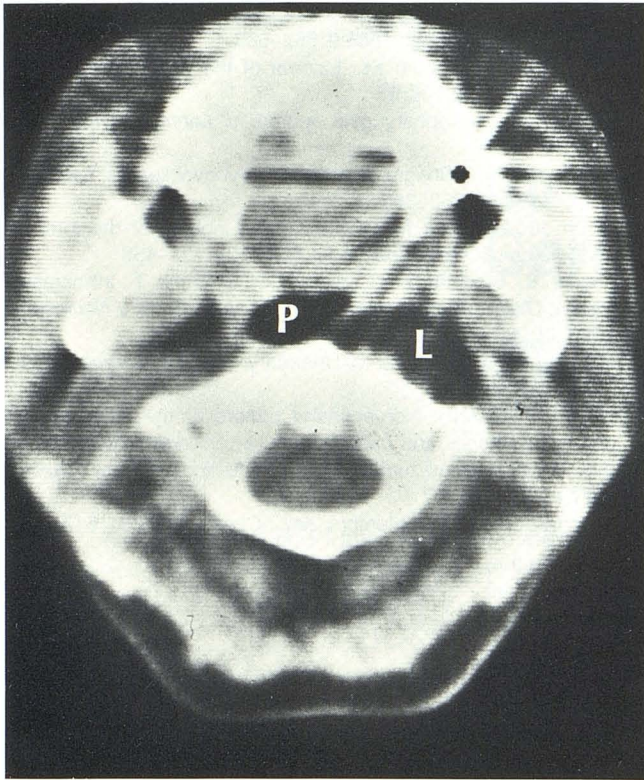


Fig. 12.—Axial CT scan shows left retropharyngeal lipoma (L). No capsule is seen. P = air in pharynx.

### Summary

CT has allowed the radiologist to make a definitive diagnosis of a lipoma in almost all cases. The characteristic CT appearance is described and the radiologist should not hesitate to make a diagnosis solely because of the unusual anatomic location of the process. In some cases, the accurate mapping of the lesion and confirmation of the clinically suspected diagnosis is a sufficient contribution to the case. In other patients, the diagnosis of a benign lipoma can alter a treatment approach and correct an erroneous clinical impression. Rare lipomas in the anterior neck, infratemporal fossa, nasopharynx, cheek, tongue, and larynx are presented.

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