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Intrahyoid thyroglossal cyst

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Abstract
A rare case of an intrahyoid thyroglossal duct cyst in a 63-year-old woman is reported. The pertinent literature is discussed.

Introduction

Thyroglossal duct cyst is one of the most frequently encountered benign cervical masses in childhood (Telander and Deane, 1977). Embryologically the thyroid gland is first seen on about the 17th day of development and descends in front of the pharynx as a bilobular diverticulum. During this migration the diverticulum remains patent and it is known as the thyroglossal duct (Langman, 1963; Telander and Deane, 1977; Mickel and Calcaterra, 1983). By the eighth to tenth week the thyroglossal duct usually disappears.

The duct is closely related to the hyoid bone which originated from the second and third arches (Langman, 1963; Telander and Deane, 1977). The duct can be located anteriorly or posteriorly to the hyoid bone.

We thought it to be of interest to report a rare case in which the cyst was located within the hyoid bone.

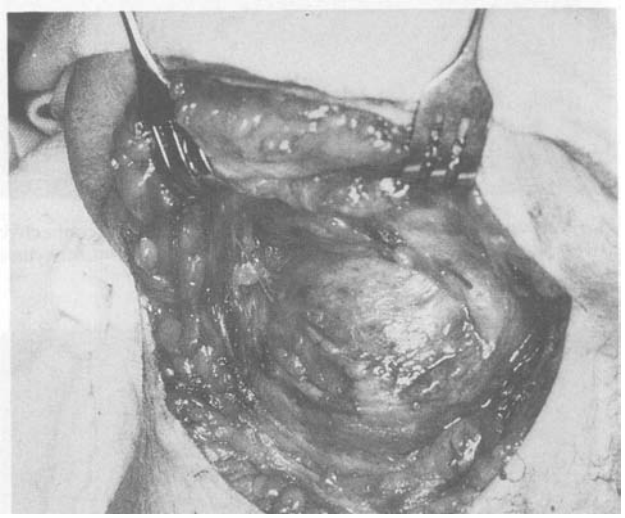
Case report

A 63-year-old woman was admitted for a painless mass in the anterior neck which had grown insidiously during a period of three months. The ENT examination was normal except for a 3 × 3 cm. mass in the anterior neck, on the level of the hyoid bone. The physical examination, laboratory tests, thyroid scan and chest x-ray were normal.

A fine needle aspiration from the mass yielded brownish fluid; the cytopathological examination of the fluid was inconclusive. A CT scan of the neck showed a cystic structure within the hyoid bone (Fig. 1).



FIG. 1
CT scan of the neck showing a cystic structure in the hyoid bone.



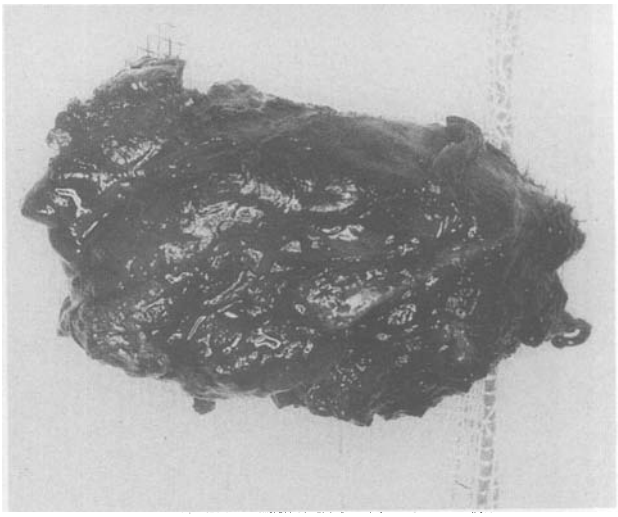


FIG. 2
(a) Showing the intra-operative location of the cyst. (b) The excised specimen.

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FIG. 3

Low power view of cyst wall showing epithelial lining, connective tissue layer, bony plate and outer fibro-muscular envelopment (Haematoxylin and eosin ×30).



FIG. 4a

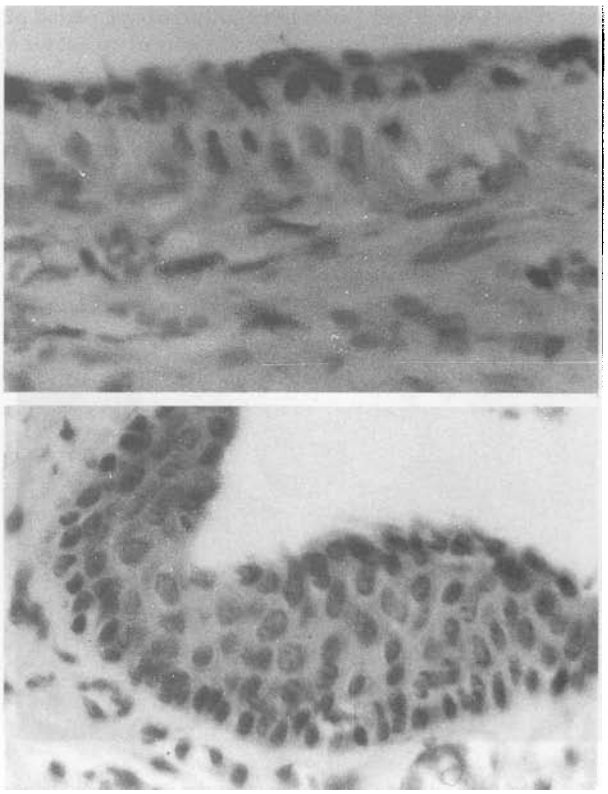


FIG. 4b

FIG. 4

(a) Debris and cholesterol granuloma abutting on bony plate. ×80. (b) Bilayered and cuboidal (upper) and multilayered and squamous or transitional (lower) epithelium lining inner aspect of cyst (Haematoxylin and eosin ×310).

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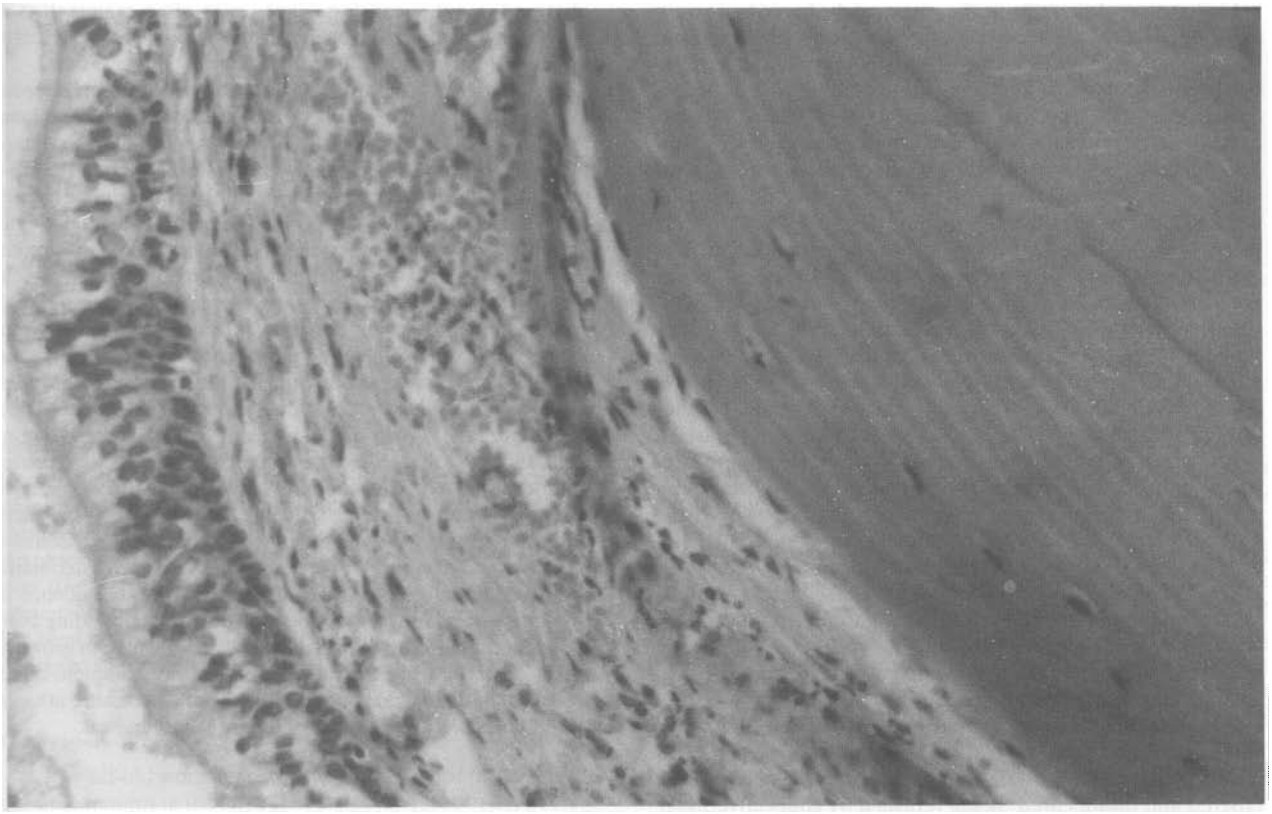


FIG. 5

Ciliated respiratory epithelium and lamina propria-type of connective tissue with subjacent lamellar bone (Haematoxylin and eosin ×310).

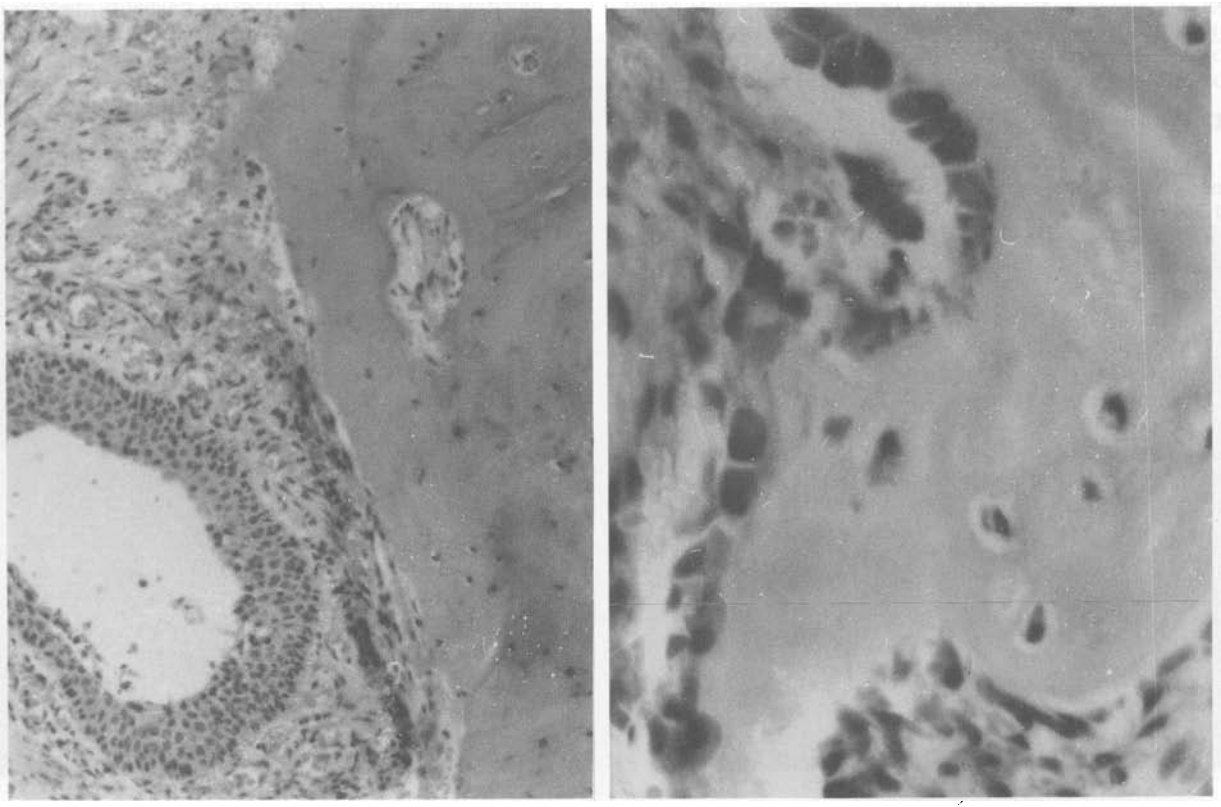


FIG. 6a

FIG. 6b

FIG. 6

(a) Epithelium-lined inlet approximating bony plate. ×80. (b) Irregular osteoid trabecule rimmed by cuboidal osteoblasts (Haematoxylin and eosin ×310).

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Under general anaesthesia the mass and the hyoid bone were excised (Fig. 2a, b). The post-operative course was uneventful.

The operative specimen consisted of a cystic nodular structure, measuring 4.5 × 2 × 2 cm. and containing clear straw-colored fluid. The cyst wall varied from 0.1 to 0.5 cm. in thickness. About one-third of the mural circumference was of firm, elastic consistency, whereas the remaining two-thirds gave the impression of a hard bony plate on palpation. The internal surface of the cyst was mostly smooth and glistening, though in places it was roughened by a yellowish, fine granulation. The cystic structure was surrounded in its entirety by a thin layer of fibro-muscular tissue.

Histological examination showed the cyst wall to be composed of three layers in most of its circumference, namely, an inner epithelial lining, a middle, well-vascularized connective tissue, which varied somewhat in its width, and an outer osseous plate (Fig. 3). The fibro-muscular elements, apparent on the external aspect, were obviously considered not to constitute part of the cyst wall. The bony plate and/or inner epithelial lining were absent in certain segments. Where the internal aspect was devoid of epithelium, debris and cholesterol granuloma abutted on the bony plate (Fig. 4a).

The characteristics of the epithelial lining varied haphazardly from one area to another, though ciliated respiratory epithelium predominated (Fig. 5). Elsewhere, the epithelium was monolayered and flat, bilayered and cuboidal or multilayered and either squamous or transitional (Fig. 4b). The inner covering was irregular and in places its inlets approximated the bony plate (Fig. 6a). Though the bony plate was generally of the same width in most regions, in other areas it tapered and disappeared, being replaced by connective tissue (Fig. 3). The normal cortical and spongiotic architecture was nowhere discernible. In its stead, an irregular and tortuous osseous lamella was present, which, on polarization microscopy, was found to consist of mixed lamellar and woven bone. Moreover, newly formed bone and osteoid, rimmed by cuboidal osteoblasts (Fig. 6b) were apparent all along the bony plate.

Discussion

If thyroglossal duct cysts are common in childhood, they are not often encountered in the adult (Jaffe, 1972). Brown and Judd (1961) in their review of 381 cases of thyroglossal duct cyst, found 72 per cent of the patients to be under 40 years of age. Telander and Deane (1977) found less than 10 per cent of cases of thyroglossal cysts in patients over 60 years, and Mickel and Calcaterra (1983) found only one patient over sixty.

Besides the age of our patient, an interesting feature is the location of the cyst.

The intraosseous lesion described herein has been diagnosed as a thyroglossal duct cyst because of (1) its characteristic cervical presentation, (2) relationship to the hyoid bone and (3) the typical appearance of a cyst lined by respiratory and stratified squamous epithelium. That thyroid tissue has not been observed is not surprising, since, even after examination of serial sections, thyroidal elements are found in less than half of the cases (Verbin and Barnes, 1985).

Perusal of the literature evinces the rarity of an intraosseous location of a thyroglossal duct cyst. We have no ready explanation for this fact, particularly in view of the well recognized embryogenesis of the thyroid gland. During migration of the thyroidal anlage from the pharyngeal floor, the duct descends to the level of the final location of the thyroid gland. The duct varies in its relationship to the hyoid bone so that it may be not only anterior or posterior to it but may, on occasion, be present within the substance of the bone (Verbin and Barnes, 1985).

We would like to submit that the intraosseous microenvironment is not conducive to the persistence of an embryological epithelial anlage and, hence, the intraosseous segment of the duct involutes almost without exception. The thyroglossal duct cyst in our case is surrounded all along its periphery by a bony shell and it is, therefore, highly unlikely that a cystic benign malformation could secondarily involve the hyoid bone to eventuate in such a unique structure. Histologically, the encircling bony plate is attenuated and exhibits enhanced turnover, namely, woven pattern in large portions and much osteoblastic activity. Undoubtedly, these findings constitute evidence of pressure effects of the cyst contents on the surrounding bony tissue, inasmuch as the thyroglossal duct cyst has been growing, albeit slowly, during the recent past without complete disappearance of the original hyoid bone. That is, pressure atrophy of the bone has been counteracted by bone renewal.

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