

Pathology in Focus

A mixed thyroglossal cyst

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Abstract

The case is described of a boy who presented at age six months with symptoms and signs of a thyroglossal cyst, which seemed to be confirmed by ultrasound findings. The cyst slowly increased in size, and eventually the patient underwent Sistrunk's procedure at age four years. Histology showed that the cyst was in fact a mixed thyroglossal and dermoid cyst. This casts doubt on the doctrine that thyroglossal cysts and dermoid cysts are anatomically and histologically separate entities, and strengthens the view that these cysts should be more appropriately named 'thyroglossal abnormalities'.

Key words: Thyroglossal Cyst; Dermoid Cyst; Child

Introduction

Standard textbooks clearly define thyroglossal cysts in terms of clinical presentation, aetiology, treatment and complications. They result from the epidemiological development of the thyroid gland and its descent behind the hyoid bone in the neck, with the persistence of duct remnants along the tract. Classically, they exhibit movement on both swallowing and tongue protrusion, and are usually asymptomatic. Recommended treatment is usually Sistrunk's procedure, involving dissection of the thyroglossal tract remnants and removal of the middle third of the hyoid bone to prevent recurrence.

However, a closer look at the pathology of these cysts sometimes reveals a more complex situation. We present the case of a four-year-old boy with classic symptoms of a thyroglossal cyst, who underwent Sistrunk's procedure.

Case report

Patient U.K. developed a small lump in the neck at age six months, which was situated to the left of the midline and was asymptomatic. He had no other relevant medical history. U.K. was regularly reviewed by his local ENT department, and the cyst appeared slowly to increase in size with age. An ultrasound scan at 15 months showed a normal thyroid gland, with a smooth-walled solid mass of reduced echogenicity measuring $10 \times 10 \times 7$ mm directly superior to the thyroid gland.

Patient U.K. was then referred to Great Ormond Street Hospital and was seen there at age two years, by which time the enlargement seemed to have stabilized. There were no symptoms of discomfort or infection, and there was no sinus or discharge. The lump was left of the midline and moved on tongue protrusion and swallowing. U.K.'s parents decided to delay surgery until he was older, and he underwent a Sistrunk's procedure at age four years. A small cyst

measuring 4 mm in diameter was removed from just below the hyoid bone, along with the middle third of the hyoid bone and a cuff of tissue extending down to the thyrohyoid membrane containing the remnant of the thyroglossal tract.

U.K. made a good recovery and was discharged. Macroscopic examination of the specimen showed hyoid bone and soft tissue. Within the latter was a cyst 0.4 cm in diameter with soft yellowish material in the lumen. Histologically, the soft tissue component contained several nodules of thyroid tissue (Figure 1) and two closely apposed small cystic spaces. The cysts were lined by keratinizing squamous epithelium, contained keratinous debris, and showed focal rupture with a foreign-body-type giant cell reaction to released keratin. Skin adnexal structures were seen in continuity with the intact cyst wall (Figure 2). The picture was thus that of a mixed thyroglossal and dermoid cyst. The hyoid bone showed no evidence of cystic structures. A small reactive lymph node was also present.

Discussion

Thyroglossal cysts are usually held to be a well-defined surgical entity. Histologically, they do not necessarily have an intact lining, but show the presence of epithelial tract or thyroid follicles. They originate from the downward migration of the thyroid gland from the third week of development. The gland descends from the base of the tongue at the foramen caecum, along the midline of the neck, between the first and second branchial arches, to lie in its normal position below the hyoid bone. The gland remains connected to the foramen caecum by the thyroglossal duct – failure of this duct to obliterate results in the formation of a thyroglossal cyst.¹

Dermoid cysts are also well categorized histologically. They are benign congenital lesions which are lined with

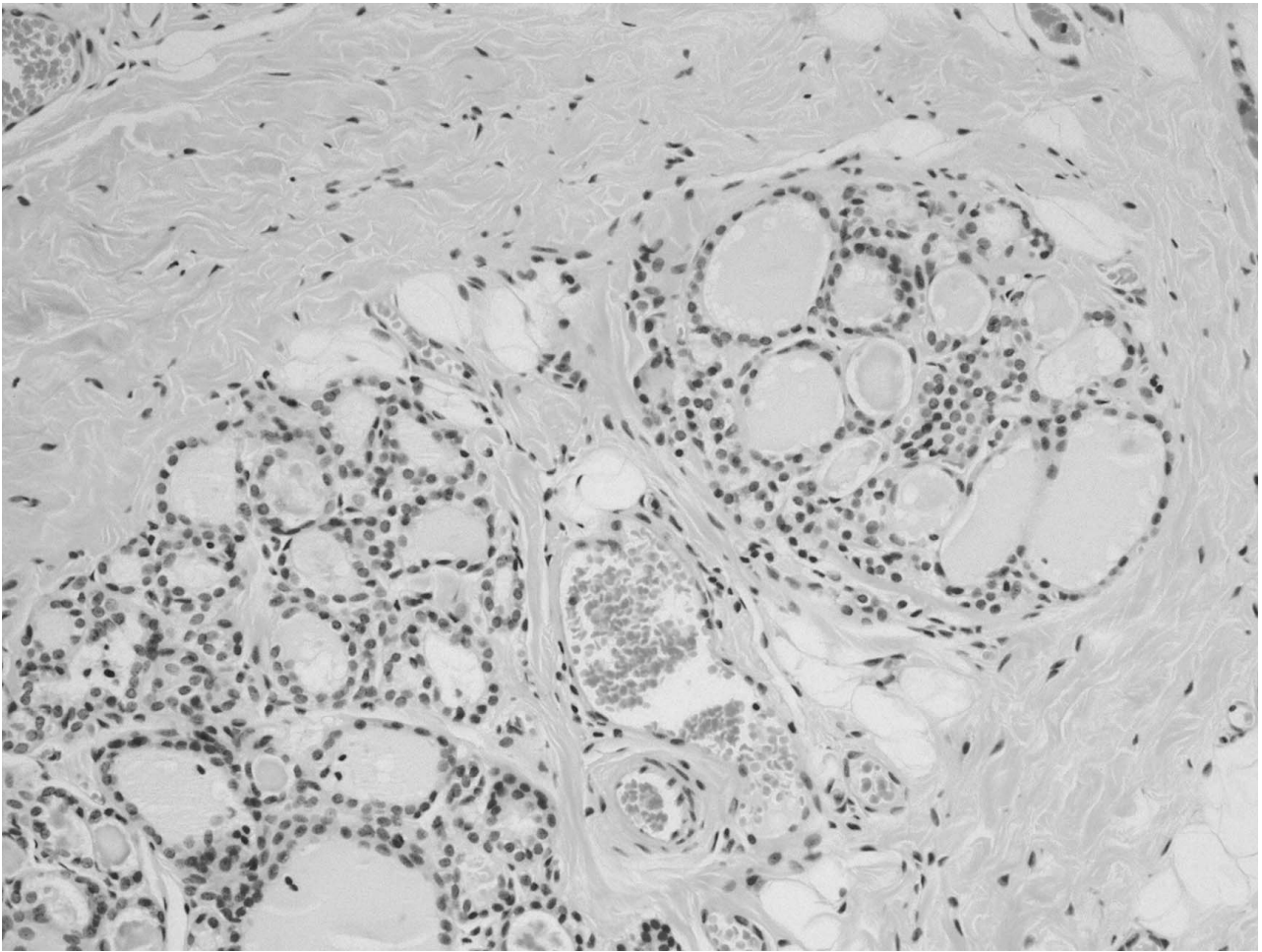


FIG. 1

Microscopic view of excised cyst, showing nodules of thyroid tissue.

stratified squamous epithelium and, in contrast with acquired epidermoid cysts, show the presence of skin adnexae such as sebaceous glands and hair follicles. Their aetiology is unclear, but theories include acquired traumatic implantation of dermal and epidermal elements, congenital presence of dermal and epidermal layers in deeper tissue, and growth from 'rests' of ectopic totipotent cells.²

- **Not all clinically diagnosed thyroglossal cysts are confirmed as such by histological examination**
- **This case, occurring in a 4-year-old child, was found to exhibit histological evidence of a mixed thyroglossal and dermoid cyst**
- **This casts doubt on the doctrine that thyroglossal cysts and dermoid cysts are anatomically and histologically separate entities**
- **The authors suggest that the expression 'thyroglossal abnormalities' would be appropriate**

It was noted in 1984 that deep cervical dermoid cysts may easily mimic the symptoms of thyroglossal cysts, as they may be attached to the hyoid bone and hence will move with tongue protrusion and swallowing.³ However, it was still felt that dermoid cysts were histologically distinct from thyroglossal cysts, even though the presentation and

treatment were the same. Cases have been reported of thyroglossal and dermoid cysts existing in association in the anterior midline of the neck^{4,5} and sublingually.⁶

Later work attempted histologically to classify 75 midline cervical masses removed from children. Most were classifiable as either thyroglossal or dermoid cysts – however, there were six that showed features of both dermoid cysts (skin appendages) and thyroglossal cysts (epithelial tract or thyroid follicles). Thyroglossal duct tissue may contain ectodermal or endodermal tissue trapped during the descent from the base of the tongue,⁷ and the authors suggested that all these cysts had a common embryological origin. They concluded that lesions should be grouped together under the eponym of 'thyroglossal anomalies'.⁸

Histological analysis retrospectively showed that our patient had a mixed cyst, which could be named a 'thyroglossal anomaly'. Histological findings made no difference to the operation of choice in this case, but revealed a more complicated situation than was previously supposed. They hint at a more complicated aetiology of these cysts than the traditional explanations given by textbooks and ingrained in the minds of many surgeons.

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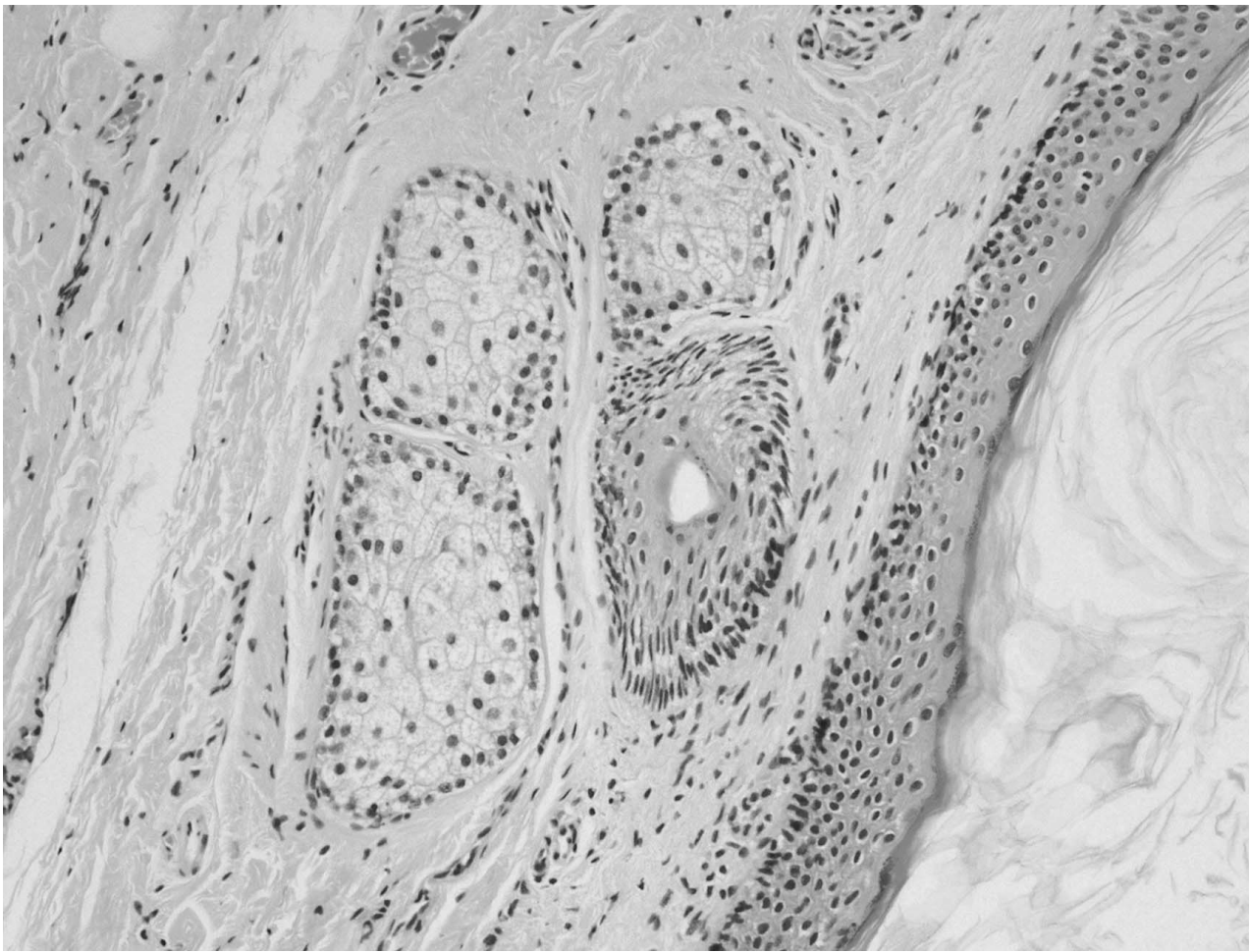


FIG. 2

Microscopic view of excised cyst, showing skin adnexal structures in continuity with the intact cyst wall.

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