

# Thyroglossal Duct Cyst: Is Thyroid Scanning Necessary in the Preoperative Evaluation?

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**Key words:** radioisotope, thyroglossal duct, thyroid scintiscanning, ultrasound, ectopic thyroid

## Abstract

**Background:** Evaluation of thyroglossal duct cysts before surgical excision traditionally includes hormonal evaluation, ultrasound of the neck, and thyroid scanning.

**Objective:** To evaluate the need for thyroid scanning in cases of thyroglossal duct cysts scheduled for operation.

**Methods:** A retrospective chart review of 100 cases of thyroglossal duct cyst between 1988 and 1995 was carried out.

**Results:** No cases of ectopic thyroid were detected.

**Conclusion:** Our goal was to document the presence of normal thyroid tissue by non-invasive tools such as ultrasound, rather than to rule out the existence of ectopic thyroid tissue by radionuclide scanning. Radionuclide scanning is justified in cases of lingual thyroid and where a normally located thyroid gland cannot be detected.

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Thyroglossal duct cyst is one of the most common causes of anterior midline neck masses in childhood [1]. Embryologically, the TGDC creates the tract of descent of the thyroid gland to its normal pretracheal position. Usually it undergoes atrophy between the 5th and 10th embryonic week [2,3]. Failure to atrophy results in the persistence of TGDC. Histological evaluation of TGDCs will reveal thyroid tissue in about 5% [4,5]. It is critical to distinguish between ectopic thyroid tissue and the thyroglossal duct cyst. An ectopic thyroid gland is defined as the presence of all functioning thyroid tissue in an aberrant location along the embryologic line of descent of the gland. It may be located at the base of the tongue (lingual thyroid), in a thyroglossal cyst, or as an ectopic focus low in the neck.

Excision of the ectopic thyroid tissue may cause permanent hypothyroidism, necessitating exogenous thyroid hormone replacement. The most accurate test to rule out cases of ectopic thyroid tissue is radionuclide thyroid scanning, however the use of routine radionuclide scanning in the evaluation of TGDC has evoked controversy among otolaryngologists. The purpose of this retrospective study was to evaluate the need for preoperative thyroid scanning in cases of thyroglossal duct cyst.

TGDC = thyroglossal duct cyst

## Patients, Methods and Results

The study group comprised all pediatric patients diagnosed with thyroglossal duct cyst at the Assaf Harofeh Medical Center between 1 January 1988 and 31 December 1995. A retrospective chart review of 100 children with thyroglossal duct cyst was carried out. The youngest child was 6 months old and the oldest 15 years old (mean 5 years) [Table 1].

All the children underwent the Sistrunk operation, with the findings of a cyst or cyst and duct [Table 2]. The postoperative diagnosis of TGDC was documented histologically in all children. No cases of thyroid tissue were found in the pathological specimens. The preoperative evaluation included serum thyroid function testing (free thyroxine, thyroid-stimulating hormone) and was conducted in about 50% of the children. No cases of abnormal laboratory findings were noted [Table 3]. All the patients underwent ultrasound evaluation of the neck, focusing on the upper neck, the midline, and the

**Table 1.** Age distribution

6 mo–4 yr	20
4–8 yr	38
8–12 yr	23
12–15 yr	19
Total	100

**Table 2.** Surgical findings

Age	Cyst	Cyst and duct
6 mo–4 yr	68%	32%
4–8 yr	38%	62%
8–12 yr	19%	81%
12–15 yr	9%	91%

**Table 3.** Laboratory tests and radiological findings

TSH (mu/L)	Triiodothyronine (mol/L)	No. of patients
0.5–2	0.8–1.2	20
2–4	1.2–1.8	15
4–5	1.8–2.2	15

No correlation was found between laboratory findings and surgical intraoperative findings. There were no abnormal thyroid laboratory findings

presence of a normal thyroid location. No cases of abnormally located thyroid were documented. All the children underwent preoperative scanning with radioactive iodine. No cases of absent or ectopic thyroid tissue were observed.

## Discussion

“We recommend preoperative radionuclide scanning because of the likelihood of encountering this lesion” [6]. “We will therefore not obtain routine preoperative thyroid scanning in patients with thyroglossal duct cyst” [7]. These two divergent points of view encouraged us to investigate our own experience concerning the need for preoperative thyroid scanning. None of the 100 patients demonstrated ectopic thyroid tissue in the thyroglossal duct cyst or elsewhere. Thus, we are in agreement with Stevens et al. [7] that there is no need for routine preoperative thyroid scanning in cases of TGDC. However, the 1–2% incidence of ectopic thyroid has to be borne in mind. Ectopic thyroid is usually discovered as a cyst at the base of the tongue rather than in the anterior aspect of the neck. In patients with symptoms of hypothyroidism, abnormal thyroid function tests, or elevated TSH levels, there is a role for preoperative thyroid scanning [7].

Radowski et al. [8] and Batsakis [9] stated that the finding of a TGDC implies a thyroid gland in a more distal location, since the gland is the leading element in the descent of the tract. For this reason, thyroid scanning is indicated only in those cases of lingual TGDC where the gland cannot be located in its anatomical site. However, ectopic thyroid is found in only 1–2% of all TGDCs [2].

TSH = thyroid-stimulating hormone

Bearing in mind the possibility of ectopic thyroid, we recommend performing a thyroid scan only in a selected group of patients: in those with abnormal thyroid hormone evaluation and in those where ultrasound cannot detect thyroid tissue in the neck.

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