THYROGLOSSAL DUCT CYST - OLD AND NEW SURGICAL APPROACH

A. Vasilescu¹,², C. Bradea¹,², Mihaela Blaj¹,², Felicia Crumpei¹, Delia Rusu¹,², Madalina Palaghia¹,², N. Danilă¹, C. D. Lupascu¹,²

“Sf. Spiridon” County Clinical Emergency Hospital Iasi, Romania
¹. First Surgical Clinic
“Grigore T. Popa” University of Medicine and Pharmacy Iasi, Romania
Faculty of Medicine
². Department of Surgery (I)

*Corresponding author. E-mail: bradeacostel@yahoo.com

THYROGLOSSAL DUCT CYST - OLD AND NEW SURGICAL APPROACH (Abstract): The thyroglossal duct cyst (TDC) results from a failure in obliterating the embryogenic duct produced during thyroid migration and it represents the most common type of developmental cyst encountered in the neck region. Material and methods: In the First Surgical Clinic from “Sf. Spiridon” County Clinical Emergency Hospital Iasi, Iasi, between 1998 to 2021, 21 patients with thyroglossal duct cyst were diagnosed and treated. All medical records were reviewed. Results: The thyroglossal duct cysts are located as midline cysts of the neck in all cases. The mean age was 39.2 years (13-66 years). The treatment performed was a variant of Sistrunk’s procedure in which the thyroglossal tract was excised to a variable extent, with central hyoidectomy. The size of the cyst ranged from 1.2 to 4 cm (mean 2.6 cm). Postoperative course was uneventful in all cases. No recurrence was recorded in this series. We describe a case, a 42 years old women, with asymptomatic mass in the anterior part of the neck found a 6 months before, when the patient was referred us with lithiasic obstructive jaundice (we performed ERCP + laparoscopic cholecystectomy). The treatment performed was a variant of Sistrunk’s technique in which the thyroglossal tract was excised by minimally invasive video-assisted approach, variation of Miccoli’s technique. Postoperative course was uneventful. The follow-up 1 and 2 years no recorded recurrence and thyroid scintigraphy was normal. Conclusions: The standard surgical approach to TDC is Sistrunk’s operation with low recurrence rates. Although the results and the operative time are the same as in traditional surgery, minimally invasive video-assisted approach has better cosmetic result and a less painful course. Keywords: THYROGLOSSAL DUCT CYST, MINIMALLY INVASIVE VIDEO-ASSISTED APPROACH, SISTRUNK’S OPERATION.

The thyroglossal duct cyst (TDC) is a developmental abnormality who results from a failure in obliterating the embryogenic duct during thyroid migration and it represents the most common type of cyst from neck region (1). The location of the cyst can be intralingual, suprahoid, thyrohyoid or suprasternal region or even in hyoid bone (2). TDCs are diagnosed in children but there is also a small percentage of the adult population. A cyst is a mobile, painless mass in the anterior midline of the neck and most patients present inside the cyst ectopic thyroid tissue which in rare cases can cause the development of neoplasms. The mean rate of overall recur-
rence reported in literature is 11% and the Sistrunk procedure appears to be the better choice for the therapy of TGDCs to avoid recurrences (3).

**MATERIAL AND METHODS**

In the First Surgical Clinic from “Sf. Spiridon” County Clinical Emergency Hospital Iasi, between 1998 to 2021, twenty-one patients with TDCs were selected and all medical records were reviewed.

In twenty cases with TGDCs we performed traditional Sistrunk’s surgery and in one case the thyroglossal cyst was excised by minimally invasive video-assisted approach. The inclusion criteria were diagnosis of a TGDC by physical examination and ultrasound scan. All patients provided informed consent after the advantages and disadvantages of each procedure.

The statistical data were compared with *SPSS for Windows 10* and a p-value of <0.05 was considered statistically significant.

**RESULTS**

There were 18 females (85.7%) and 3 males (14.3%) with mean age 39.2 years ± 12.5 years (13-66 years) with no significance differences between female and male patients. The mean age of onset of symptoms was 24± 2.5 years. The history of the disease varied from 1 month to 36 years. 20 patients with thyroglossal duct cysts are described as midline cysts of the neck and only in one case the cyst was located laterally.

The commonest reasons for seeking treatment were cystic neck mass which moved with protrusion of the tongue and could be transilluminated (17 cases), neck swelling (2 cases), neck infection (1 case) and dysphagia (1 case). The level of the cysts in the neck was as follows: 2 in the suprahyoid region, 12 in the prehyoid region, 6 at the level of the thyroid cartilage without any statistical significance related to age, sex or size (t-student, χ², p>0.05). One case was diagnosed with an external fistula with recurrence of 10 years after cyst removal. In three cases thyroid pathology (goiter) was associated.

In this series all patients were operated on, only one case initially was treated with antibiotics for infected thyroglossal cysts. The treatment performed was a variant of Sistrunk’s procedure in which the thyroglossal tract was excised to a variable extent. We performed a 4-5 cm horizontal skin incision in the cervical region and created a flap that extended 1 cm above the hyoid bone, divided the median raphe of the strap muscles, dissected and cut the hyoid bone with careful dissection of the tract, extending to the tongue base.

The size of the cyst ranged from 15 to 60 mm (mean 29 mm ± 18.33 mm). The mean blood loss was 25 mL. (ranging from 10 to 57 mL) being statistically significant related to the size of the cyst (t student, p=0.008). Postoperative course was uneventful in all cases. The mean hospital stay was 4.8 ± 2.56 days. Although there were no significant differences in terms of cyst location and hospital stay length (χ², p>0.05). In this series no recurrence was recorded. The cysts were successfully removed in all cases, and the pathology results indicated that all of the cysts were TGDCs.

In one case the histopathologic diagnosis was a papillary carcinoma evolving from a TDC. Initial we didn’t do anything because the clinical exam, ultrasound and scintigraphy of the thyroid was normal, but after ten years the patient developed a nodular goiter and we performed total thyroidectomy.

We describe a case in view in order to highlight of the new therapeutic option for the surgical management. 42-year-old woman was admitted in emergency in the First Surgical Clinic, “Sf. Spiridon” County Clinical Emergency Hospital Iasi with lithiasic
obstructive jaundice for which it was performed endoscopic retrograde cholangiopancreatography (ERCP) with endoscopic sphincterotomy and extraction of gallstones of 1 cm and laparoscopic cholecystectomy with uneventful postoperative course. At the clinical examination of the patient we discovered an asymptomatic mass in the anterior part of the neck. Ultrasound scan revealed a cystic mass of 37 mm.

After 6 months the patient had referred us and the clinical diagnosis discovered a cystic mass 3 cm, fibroelastic, which moved with protrusion of the tongue mobile and during swallowing. The cyst is located towards the front of the midline neck and could be transilluminated. Ultrasound scan revealed a slight increase in the size of the cyst to 37 mm with a thick content and thyroid gland was within normal limits (fig. 1). The thyroid scintigraphy was normal. CT scan was not performed.

The treatment performed was a variant of Sistrunk’s procedure by minimally invasive video-assisted central neck approach, variation of Miccoli’s technique. The patient was positioned on the operating table in dorsal decubitus, without neck hyperextension. A horizontal incision is made 2 cm above the suprasternal notch, in an existing skin fold, and created a working space by retraction with 2 divergent Farabeuf retractors (fig. 2). Under visual control the cyst was excised with clip application to the base of the thyroglossal tract and suturing in anatomical layers (fig. 3). The operation time was 45 minutes, blood loss was minimal and without drainage.
Postoperative course was uneventful and the patient was discharged after two days. The histopathologic exam revealed presence in cyst of ectopic thyroid tissue. The follow-up 1 and 2 years no recorded recurrence and thyroid scintigraphy was normal.

**DISCUSSION**

The failure of obliteration of thyroglossal duct in the 10th week of fetal life may result in the development of a cystic dilatation at any time in life. TDCs are localized towards the midline between the base of the tongue and the pyramidal lobe of the thyroid gland. Most of them are diagnosed in in the pediatric age group and few cases are diagnosed in adulthood (1).

The clinical diagnosis reveals a non-tender, mobile neck mass, which was painful at swallowing in the anterior midline of the neck, usually in close proximity to the hyoid bone and in rare cases the cysts are located laterally (1, 3).

Usual preoperative evaluation of thyroglossal duct cyst includes a cervical radiography, ultrasound scan, scintigraphy with 131I, thyroid function tests and for cases with malignancy and ectopic cysts, Computed tomography has also been performed for selected cases.

The standard surgical approach to TDCs is Sistrunk’s operation: removal of the mid-portion of the hyoid bone in continuity with the TDC and excision of a core of tissue between the hyoid bone and the foramen cecum. This procedure remains the gold standard for surgical management of TGDCs.

The first video-assisted neck surgery, namely a subtotal parathyroidectomy, was performed by Michel Gagner in 1996 and minimally invasive video-assisted central neck approach was first described by Miccoli in 1998 for thyroid pathology. The first thyroidectomy by minimally invasive video-assisted approach (MIVAT) in Romania was performed in 2009 at the First Surgical Clinic, “Sf. Spiridon” Hospital by Bradea and Târcoveanu (4).

About minimally invasive video-assisted approach in thyroglossal duct cyst there are few references in the literature. Huang Z et al. describe no recurrences after 15 endoscopic thyroglossal duct cystectomy (5). Woo SH et al. considering the
embryological development of TGDCs, can open a new access route to these cysts. Performed endoscope-assisted transoral removal in 13 cases with mean operation time 67.33 ± 17.26 minutes, no scars and also no recurrences (6). Han P et al. performed surgical resection using a submaxillary vestibular approach in 16 cases with TDCs with good results: no postoperative complications and no conversions of the operation (7). Byeon HK et al. describe first robot-assisted approach for synchronous occurrence of thyroglossal duct carcinoma and thyroid carcinoma (8).

When a histopathological examination reveals a malignancy, the thyroid gland must be studied radiologically and scintigraphically. Sistrunk’s procedure would suffice if the thyroid gland was found to be normal (9). The occurrence of carcinoma of the thyroglossal duct is reported to be less than 1%. The clinical diagnosis of thyroglossal duct cyst is completed by ultrasound (US) scan and fine-needle aspiration cytology (FNAC) in order to plan the correct surgery for a possible carcinoma. In these cases, total thyroidectomy should be associated with Sistrunk procedure (SP) to permit the correct treatment and follow-up (10). For patients with thyroglossal duct cyst carcinoma and a normal thyroid gland, a mutational marker BRAFV600E positivity seems to be predictive of locally advanced disease mandating radioactive iodine ablation (RIA) therapy, therefore total thyroidectomy, in addition to Sistrunk’s procedure (11).

CONCLUSIONS
The standard surgical approach to TDC is Sistrunk’s operation with low recurrence rates. Although the results and the operative time are the same as in traditional surgery, minimally invasive video-assisted approach is a safe and effective procedure with better cosmetic outcomes and a less painful course.

CONFLICT OF INTEREST AND FUNDING
The authors declare that there is no conflict of interest, and they received no specific funding regarding this scientific research.
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NEWS

**CARDIAC MYXOMA AS CYTOKINE PRODUCING TUMOUR: A REVIEW**

Cardiac myxoma is the most common primary cardiac tumor. Many cytokines participate in the pathophysiology and growth of cardiac myxoma. Inflammatory cytokines, including interleukin-1, interleukin-4, interleukin-6, interleukin-8, interleukin-12, tissue necrosing factor-α, and interferon-γ, contribute to the development of inflammation and inflammation-related symptoms and further affect tumor growth. Growth factors, including vascular endothelial growth factor, basic fibroblast growth factor, insulin-like growth factor 1, and epidermal growth factor, contribute to angiogenesis and tumor growth and interfere with the inflammatory response. This review summarizes the current knowledge of cardiac myxomas as cytokine-producing tumors (Ajiro Y. Cardiac myxoma as cytokine producing tumor: A review. *Interv Cardiol* 2021; 13(S3): 58-63).

**DIAGNOSIS OF MYOCARDIAL INFARCTION AT AUTOPSY: AECVP REAPPRAISAL IN THE LIGHT OF THE CURRENT CLINICAL CLASSIFICATION**

Ischemic heart disease is one of the leading causes of morbidity and death worldwide. Consequently, myocardial infarctions are often encountered in clinical and forensic autopsies, and diagnosis can be challenging, especially in the absence of an acute coronary occlusion. Precise histopathological identification and timing of myocardial infarction in humans often remains uncertain while it can be of crucial importance, especially in a forensic setting when third person involvement or medical responsibilities are in question. A proper post-mortem diagnosis requires not only up-to-date knowledge of the ischemic coronary and myocardial pathology, but also a correct interpretation of such findings in relation to the clinical scenario of the deceased. For these reasons, it is important for pathologists to be familiar with the different clinically defined types of myocardial infarction and to discriminate myocardial infarction from other forms of myocardial injury. This article reviews present knowledge and postmortem diagnostic methods, including post-mortem imaging, to reveal the different types of myocardial injury and the clinical pathological correlations with currently defined types of myocardial infarction (Michaud K, Basso C, d’Amati G, et al. Diagnosis of myocardial infarction at autopsy: AECVP reappraisal in the light of the current clinical classification. *Virchows Archiv* 2020; 476: 179-194).