

## VILNIAUS UNIVERSITETO DOKTORANTŪROS STUDIJŲ DALYKO SANDAS

<b>Field/s of Science (codes)</b>	Medical and Health Sciences (M 000): Medicine (M 001)			
<b>Faculty, Institute, Department /Clinic</b>	Faculty of Medicine, Institute of Clinical Medicine Clinic of Gastroenterology, Nephrourology and Surgery			
<b>Name of Subject (ECTS credits, hours.)</b>	<b>Endocrine Surgery</b> 8 credits (212 hours)			
<b>Study method</b>	<b>Lectures</b>	<b>Seminars</b>	<b>Consultations</b>	<b>Self-study</b>
Number of ECTS credits	-	-	2	6
<b>Method of the assessment (10 grades system)</b>	<p>Presentation and evaluation of the report: the report is presented on a target topic, which is coordinated with the coordinating lecturers (the doctoral student must analyse, review, and present the latest scientific publications related to the respective topic).</p> <p>Criteria for evaluating the report (minimum readable score - 5):</p> <p>(a) relevance, novelty and relevance of the material submitted (2 points);</p> <p>(b) general structure and scope of the report, clear presentation of the knowledge, reasoning, brevity and specificity (2 points);</p> <p>(c) Summary, presentation and justification of conclusions (1 point);</p> <p>(d) raising problematic issues, presenting the application of the reviewed knowledge in the dissertation (3 points);</p> <p>(e) organization of visual aids, ability to participate in a discussion, management of questions, oratory skills (2 points).</p>			
<b>PURPOSE OF THE COURSE UNIT</b>				
<p>To acquaint doctoral students with the surgical anatomy of endocrine glands, functional disorders, non-hormone-releasing, and hormone-releasing endocrine gland tumours. To examine the possibilities of surgical treatment of endocrine glands and the methods of operations. To enable doctoral students to properly choose a scientific problem and to successfully analyse and design it with independent scientific (doctoral) work.</p>				
<b>THE MAIN TOPICS OF COURSE UNIT</b>				
<p><b>Thyroid surgery:</b> Anatomy of the thyroid gland, reversible and upper laryngeal nerve, cervical lymphatic system. Diagnosis of thyroid surgical diseases: clinical, laboratory, instrumental examinations (ultrasound – TiRADS system), CT, MRI, scintigraphy, puncture thin needle and cytological examination, evaluation of cytological examination, cytological groups). Goiter forms: single-node, multi-node, diffuse. Thyroid function: euthyroidism, hypothyroidism, hyperthyroidism. Indications for thyroid surgery: indications for single-node, multi-node and diffuse thyrotoxic goiter surgery. Thyroid Surgery: Volumes of Single-Node, Multi-Node, and Diffuse Thyrotoxic Goiter Surgery. Thyroid surgery methods: traditional thyroidectomy, minimally invasive axillary-breast approach (ABA), bilateral axillary-breast (BABA), transoral endoscopic thyroidectomy vestibular approach (TOETVA), video-assisted thyroidectomy (MIVAT). Ablation: indications, contraindications Methods of ablation (radiofrequency, laser, microwave). Conditions for minimally invasive surgery Applications of thyroidectomy: trauma of the laryngeus recurrence nerve, violation of its integrity, superior laryngeal hemorrhage, transient and permanent hypocalcaemia, neurostimulation of laryngeus recurrens (indications, principle of the method), neuromonitoring (principle of the method, evaluation) Postoperative use of thyroid hormones. Forms of thyroid cancer: well-</p>				

differentiated cancer (papillary, follicular), medullary cancer, anaplastic. Thyroid cancer surgery: volumes of surgery for well-differentiated, medullary, anaplastic cancer, postoperative radioiodotherapy.

**Parathyroid surgery.** Anatomy, embryology, variants of the location, physiology of the parathyroid glands: the effect of parathormone (PTH) on calcium metabolism. Surgical diseases of the parathyroid glands: primary, secondary, tertiary hyperparathyroidism. Causes of primary hyperparathyroidism: parathyroid adenoma, parathyroid hyperplasia, parathyroid cancer. Biochemical changes in the blood caused by hyperparathyroid hormone: hypercalcaemia, hypophosphoremia, hyperchloraemia, hypercalciuria. Other causes of hypercalcaemia: paraneoplastic syndrome, bone metastases, prolonged immobilization, thyrotoxicosis, myeloma, vitamin D overdose. Diagnosis of primary hyperparathyroidism: clinic, laboratory tests (hypercalcemia, hyperparathyroid hormone), bone radiography, bone densitometry. Determination of parathyroid adenoma topography: ultrasound, 99mTc (MIBI) scintigraphy, computed tomography, selective cervical venous catheterization. Techniques for primary hyperparathyroidism: traditional, minimally invasive (video - assisted, focused, using radiolabels). Adenoma ablation (indications, conditions, advantages, and disadvantages of the method), choice of surgical method, advantages and disadvantages of traditional and minimally invasive surgery, determination of changes in PTH concentration during surgery and their evaluation. Pathogenesis of secondary hyperparathyroidism in renal insufficiency or afunction: vitamin D deficiency, decreased renal tubular calcium absorption, decreased intestinal calcium absorption, hyperparathyroidism, bone decalcification. Diagnosis of secondary hyperparathyroidism: laboratory blood tests, radiological changes in the bones (osteitis fibrocystica Recklinghausen). Secondary hyperparathyroidism. Indications for operation. Techniques for secondary hyperparathyroidism: removal of three glands and resection of the fourth, removal of all glands and autotransplantation of one of them (orthotopic or heterotopic). Pathogenesis of tertiary hyperparathyroidism: adenomatization of hyperplasia of the parathyroid glands. Surgical treatment of tertiary hyperparathyroidism.

**Adrenal surgery.** Anatomy of the adrenal glands, syntax, arterial and venous blood flow. Adrenal structure (cortex, core), adrenal hormones. Diagnosis of adrenal diseases: clinic, laboratory tests, ultrasound examination, computed tomography, scintigraphy. Methods of adrenal surgery: adrenalectomy through laparotomy (indications), laparoscopic adrenalectomy (adrenal size limit), endoscopic retroperitoneal adrenalectomy (indications - bilateral adrenal pathology, abdominal adhesions, obesity), SILS. Hormonally active tumours of the adrenal cortex: hyperaldosteronism (Cone adenoma), Cushing's syndrome (their pathogenesis, clinic, diagnosis, treatment). Hormonally active tumour of the core adrenal layer - pheochromocytoma (pathogenesis, clinic, diagnosis, preparation for medication for surgery, surgical treatment). Incidentaloma: diagnosis, indications for surgery, surgical treatment. Adrenal cancer: clinic, diagnosis, surgical treatment.

## RECOMMENDED LITERATURE SOURCES

1. SYSTEMATIC REVIEW article Front. Endocrinol., 12 August 2021, <https://doi.org/10.3389/fendo.2021.719397>, Outcomes of Minimally Invasive Thyroid Surgery – A Systematic Review and Meta-Analysis.
2. Transoral Endoscopic Thyroidectomy Vestibular Approach: A Series of the First 60 Human Cases. Anuwong A. World J Surg. 2016 Mar;40(3):491-7. doi: 10.1007/s00268-015-3320-1. PMID: 26546193.
3. Safety and Outcomes of the Transoral Endoscopic Thyroidectomy Vestibular Approach. Anuwong A, Ketwong K, Jitpratoom P, Sasanakietkul T, Duh QY. JAMA Surg. 2018 Jan 1;153(1):21-27. doi: 10.1001/jamasurg.2017.3366. PMID: 28877292 Free PMC article.

4. [Transoral thyroid and parathyroid surgery : Implementation and evaluation of the transoral endoscopic technique via the vestibular approach (TOETVA)]. Karakas E, Anuwong A, Ketwong K, Kounnamas A, Schopf S, Klein G. *Chirurg*. 2018. Jul;89(7):537-544. doi: 10.1007/s00104-018-0635-0. PMID: 29637242 German.
5. Indications, benefits and risks of transoral thyroidectomy. Zhang D, Park D, Sun H, Anuwong A, Tufano R, Kim HY, Dionigi G. *Best Pract Res Clin Endocrinol Metab*. 2019 Aug;33(4):101280. doi: 10.1016/j.beem.2019.05.004. Epub 2019 Jun 4. PMID: 31204296 Review.
6. [Tips and technical issues for performing transoral endoscopic thyroidectomy with vestibular approach (TOETVA): a novel scarless technique for neck surgery]. Zorron R, Bures C, Brandl A, Seika P, Müller V, Alkhazraji M, Pratschke J, Mogl M. *Chirurg*. 2018 Jul;89(7):529-536. doi: 10.1007/s00104-018-0658-6. PMID: 29922989 Review. German.
7. Chai YJ, Suh H, Woo JW, et al. Surgical safety and oncological completeness of robotic thyroidectomy for thyroid carcinoma larger than 2 cm. *Surg Endosc* 2017;31:1235–1240.
8. Kwon H, Yi JW, Song RY, et al. Comparison of bilateral axillo-breast approach robotic thyroidectomy with open thyroidectomy for Graves' disease. *World J Surg* 2016;40:498–504.
9. Paek SH, Choi JY, Lee KE, Youn YK. Bilateral axillo-breast approach (BABA) endoscopic Sistrunk operation in patients with thyroglossal duct cyst: technical report of the novel endoscopic Sistrunk operation. *Surg Laparosc Endosc Percutan Tech* 2014;24:e95–8.
10. Lee HS, Chai YJ, Kim SJ, Choi JY, Lee KE. Influence of body habitus on the surgical outcomes of bilateral axillo-breast approach robotic thyroidectomy in papillary thyroid carcinoma patients. *Ann Surg Treat Res* 2016;91:1–7.
11. G. Docimo, S. Tolone, S. Gili et al., "Minimally invasive thyroidectomy (MIT) indications and results," *Annali Italiani di Chirurgia*, vol. 84, pp. 617–622, 2012.
12. Z. Fik, M. Chovanec, M. Zabrodsky, P. Lukes, J. Astl, and J. Betka, "Conventional versus minimallyinvasive video-assisted thyroidectomy: limits and benefits of the minimally invasive approach," *Otorinolaryngologie a Foniatrie*, vol. 6, no. 1, pp. 3–12, 2012.
13. *Eur Thyroid J* 2021;10:185–197 European Thyroid Association and Cardiovascular and Interventional Radiological Society of Europe 2021 Clinical Practice Guideline for the Use of Minimally Invasive Treatments in Malignant Thyroid Lesions Giovanni Mauria, b Laszlo Hegedüsc Steven Bandulad Roberto Luigi Cazzatoe Agnieszka Czarnieckaf Oliver Dudeckg Laura Fugazzolah, i Romana Netea-Maierj Gilles Russk Göran Wallinl Enrico Papinim.
14. Intraoperative Neuromonitoring During Thyroid Surgery: The Effect of Surgical Positioning Jason E. Crowther, MD, PhD1 , Daniah Bu Ali, MD1 , Jeremy Bamford, PhD1 , San-Wook Kang, MD2 , and Emad Kandil, MD, MBA, FACS *Surgical Innovation* 2019, Vol. 26(1) 77–81

#### **CONSULTING LECTURERS**

1. Coordinating lecturer: Kęstutis Strupas (Prof. Habil. Dr.).
2. Gintaras Simutis (Prof. Dr.).
3. Virgilijus Beiša (Prof. Dr. HP).

#### **APPROVED:**

By Council of Doctoral School of Medicine and Health Sciences at Vilnius University: 29<sup>th</sup> of September 2022

Chairperson of the Board: Prof. Janina Tutkuvienė