NeuroScience Society

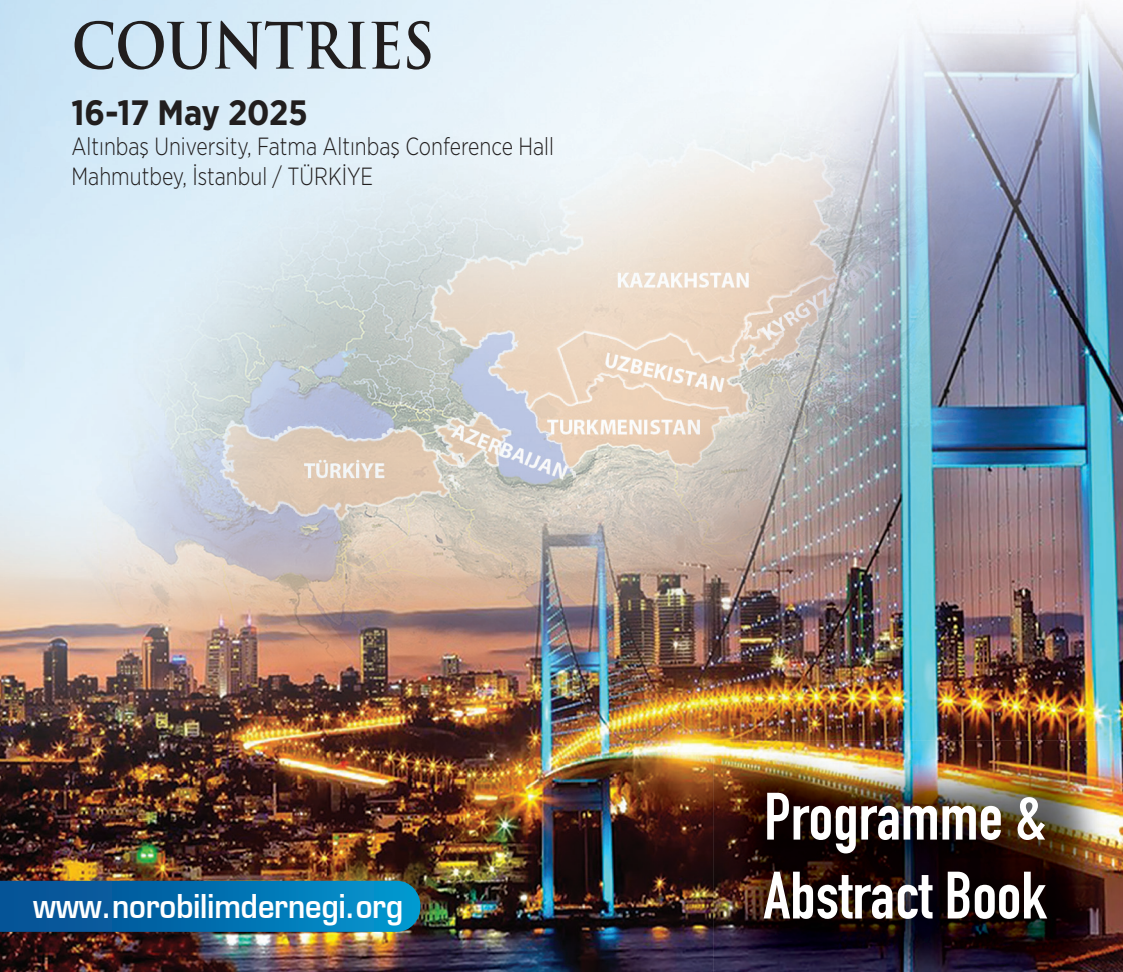
ALTINBAŞ UNIVERSITESI

MEDICALPARK

2nd NEUROMODULATION CONGRESS OF TURKISH SPEAKING COUNTRIES

16-17 May 2025

Altınbaş University, Fatma Altınbaş Conference Hall
Mahmutbey, İstanbul / TÜRKİYE



Programme & Abstract Book

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2nd Neuromodulation Congress of Turkish Speaking Countries (EMT-25-02920)
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President's Message

Dear Colleagues, Future Leaders in Neuroscience and Industry Representatives;

Welcome to the 2nd Neuromodulation Congress of Turkish Speaking Countries between the dates of 16-17 May 2025 in the magnificent city of Istanbul, where the crossroads of history and modernity meet, creating an inspiring backdrop for our gathering. We invite you to two days of scientific discovery, collaboration and unforgettable experiences.

Turkish-speaking countries have contributed significantly to various fields of science and technology. These contributions range from ancient knowledge to modern scientific developments. On the other hand, Istanbul not only bridges two continents but also embodies the spirit of connectivity and convergence – much like our scientific community. Here, in a city where East meets West, we find the perfect metaphor for our Congress – bringing together the old and the new, the tried and the innovative, the theoretical and the applied. As you navigate through this city, you will find that every corner has a story to tell, much like the diverse topics we will explore throughout the congress.

Neuromodulation Congresses of Turkish Speaking Countries are a collaboration between Neuroscience Society and all of the Turkish speaking countries. The first meeting in 2024 was held in the ancient city of Uzbekistan Samarkand, hosted by Dr. Mansur ALIYEV, and it was an excellent organization with a satisfying scientific content. At the 2025 Congress, expect outstanding plenary speakers, important current neuromodulation science topics, and special sessions too for extra interest on wider subjects such as education. On the first day of our congress, the treatment of movement disorders in which neuromodulative techniques are frequently applied will be discussed in detail, and on the second day, the place of neuromodulation in epilepsy will be discussed. In addition to neuromodulative techniques, it will be explained to the participants by speakers who are experts on medical and invasive surgical treatments.

To our junior researchers, your fresh perspectives infuse our discussions with vitality. To you, we say: 'Be bold – question assumptions, challenge the status quo. Let curiosity be your compass as you explore our sessions and engage with fellow scholars.' An oral presentation session will be

President's Message

held at our congress, and the aim is to develop scientific and academic perspectives, especially by discussing the experiences of our young colleagues.

Reflecting on words of Mustafa Kemal Atatürk, the founder of modern Türkiye – "Science is the most reliable guide in life" – let this Congress be a beacon for scientific exploration and discovery!

We are happy that dozens of highly experienced speakers from more than twenty different countries will attend our congress. We would also like to thank all industry companies and managers who supported the organization of our congress.

Welcome to 2nd Neuromodulation Congress of Turkish Speaking Countries in Istanbul – a symphony of science, a mosaic of cultures, and a celebration of curiosity.

Prof. Sait OZTURK, MD
Chair of the Congress

Assoc. Prof. Mansur ALIYEV, MD
Chair of the Congress

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Dr. Zinka HUSEINBEGOVIC	Bosnia and Herzegovina

Scientific Programme

16 May 2025, Friday

MOVEMENT DISORDERS AND SPECIAL TOPICS

08.40-09.00	**Welcome ceremony** Rector of Altinbas University - Prof. Dr. Cemal İBİŞ Rector of Samarkand State Medical University - Prof. Dr. Jasur RIZAYEV Dean of School of Medicine - Prof. Dr. Tunç FIŞGIN Chair of Congress - Prof. Dr. Sait ÖZTÜRK	
09.00-10.15	**SESSION 1** **Introduction to Movement Disorders** ***Chairs: Dr. Cholpon SHAMBETOVA, Dr. Abdurakhmon MAMADALIEV***	
09.00-0915	Parkinson's disease: Symptoms, diagnostic criteria and medical treatment	*Dr. Fowzia SIDDUQUI*
09.15-09.30	Essential Tremor: Etiology, clinical findings and medical treatment	*Dr. Aziza JURABEKOVA*
09.30-09.45	Dystonia –Tics & Tourette syndrome	*Dr. Mansour PARVARESH*
09.45-10.00	Piecing together the puzzle: Diagnosing movement disorders in children	*Dr. Emina V. SALIHBEGOVIC*
10.00-10.15	Medical treatment of movement disorders in children	*Dr. Danilo NONKULOVSKI*
10.15- 11.20	**SESSION 2** **Multidisciplinary Approach to Movement Disorders** ***Chairs: Dr. Fatih S. EROL, Dr. Guive SHARIFI***	
10.15-10.25	Anatomy of basal ganglia and deep brain nuclei	*Dr. Abuzer GÜNGÖR*
10.25-10.35	Vascularity and 3D structures of deep brain nuclei	*Dr. Sabri GÜRBÜZ*
10.35-10.45	Genetics of movement disorders	*Dr. Cholpon SHAMBETOVA*
10.45-11.10	Which of the movement disorder patients are proper for the DBS surgery?	*Dr. Emir RUŞEN*
11.10-11.20	Discussion	
11.20-11.40	Coffee Break	

16 May 2025, Friday

MOVEMENT DISORDERS AND SPECIAL TOPICS

11.40- 12.45	**SESSION 3** **Surgical Treatment of Movement Disorders** ***Chairs: Dr. Sait ÖZTÜRK, Dr. Mansur ALIYEV***	
11.40-11.50	History of surgical treatment of movement disorders	*Dr. Murat ULUTAŞ*
11.50-12.00	Lesion Surgery for the treatment of movement disorders	*Dr. Danier BAGAUTDINOV*
12.00-12.15	DBS Surgery and management of DBS complications	*Dr. Mansur ALIYEV*
12.15-12.30	MRgFUS: Magnetic resonance-guided focused ultrasound surgery	*Dr. Mehmet TONGE*
12.30-12.45	Discussion	
12.45-14.00	Lunch	
14.00- 15.30	**SESSION 4** **Post-Operative Management of DBS** ***Chairs: Dr. Fowzia SIDDUQUI, Dr. Gayrat KARIEV***	
14.00-14.45	Programming of DBS systems, medical management after DBS and management of stimulation related side effects	*Dr. Dilek İNCE GÜNAL*
14.45-15.00	Deep brain stimulation: Present, past, future	*Dr. Ersoy KOCABIÇAK*
15.00-15.30	Discussion	
15.30-16.00	Coffee Break	
16.00-17.15	**SESSION 5** **Functional Neurosurgery - Special Topics** ***Chairs: Dr. Edip GÖNÜLLÜ, Dr. Elham PARAANDAVAJI***	
16.00-16.10	Stereotactic biopsy vs Neuronavigation assisted biopsy	*Dr. Ali AKAY*
16.10-16.20	Baclophene pump implantation	*Dr. Hakan ÇAKIN*
16.20-16.30	Essentials of pain management	*Dr. Seyed Masoud HASHEMI*
16.30-16.40	Spinal cord stimulation: How I do it?	*Dr. Mohammad Hossein DELSHAD*
16.40-16.50	SIJ Dysfunction: Diagnosis and managament	*Dr. Mohammad E. MAJD*
16.50-17.00	Gamma Knife radiosurgery for the treatment of trigeminal neuralgia	*Dr. Ümit A. DERE*
17.00-17.15	Discussion	

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EPILEPSY

08.45-10.15	**SESSION 1** **Introduction to Epilepsy** ***Chairs: Dr. Faezeh MOUSAVINIA, Dr. Zinka HUSEINBEGOVIC***	
08.45-09.00	Anatomy of temporal lobe, hippocampus and corpus callosum	*Dr. Catarina FIGUEIREDO*
09.00-09.15	Epilepsy: History, diagnostic criteria and medical treatment	*Dr. Admir MEHICEVIC*
09.15-09.30	Genetics of epilepsy	*Dr. Sabina S. DELIBEGOVIC*
09.30-09.45	Drug resistant epilepsy: Definition and management	*Dr. Nino GZIRISHVILI*
09.45-10.00	New generation anti-seizure treatments	*Dr. Tuğçe AKSU UZUNHAN*
10.00-10.15	Discussion	
10.15- 11.30	**SESSION 2** **Surgical Treatment of Epilepsy** ***Chairs: Dr. Salko ZAHIROVIC, Dr. Elma S. LJUBOVIC***	
10.15-10.30	Selecting proper patients for epilepsy surgery	*Dr. Türkan UYGUR ŞAHİN*
10.30-10.45	How I do it: Temporal lobectomy + SAH	*Dr. Guive SHARIFI*
10.45-11.00	How I do it: Hemispherotomy and corpus callosotomy	*Dr. Gokhan KURT*
11.00-11.10	How I do it: Deep Brain Stimulation for the treatment of drug resistant epilepsy	*Dr. Sait ÖZTÜRK*
11.10-11.40	**SATELLITE SYMPOSIUM**	LivaNova
	Vagal nerve stimulation surgery / Closed loop stimulation	*Dr. Sait ÖZTÜRK*
11.40-11.45	Coffee Break	

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EPILEPSY

SESSION 3

11.45- 13.30 **Early and Long Term Result of Epilepsy Surgery**
Chairs: Dr. Tuğçe UZUNHAN AKSU, Dr. Türkan UYGUR ŞAHİN

11.45-12.00	Pharmacotherapy management after epilepsy surgery	*Dr. Türkan UYGUR ŞAHİN*
12.00-12.20	Long term result of resective and disconnective surgery in epilepsy patients	*Dr. Fowzia SIDDUQUI*
12.20-12.40	Long term result of VNS surgery in epilepsy patients	*Dr. Serkan KIRIK*
12.40-13.00	Long term result of DBS surgery in epilepsy patients	*Dr. Faezeh MOUSAVINIA*
13.00-13.30	Discussion	

13.30-14.00 Lunch

SESSION 4

14.00-15.00 **Oral Presentations 1**
Chairs: Dr. Amirkul SHODIEV, Dr. Oğuz Kağan BULUT

OP-01 Analysis of Body Weight Changes in Parkinson's Patients Who Underwent STN-DBS
Selman Kök, Güngör Çevik, Akın Aytekin, Sait Öztürk

OP-02 Our Experience with Anesthesia in Deep Brain Stimulation (DBS) Surgeries: A Retrospective Observation and Clinical Approaches
Sevim Şenol Karataş, Oğuz Kağan Bulut

OP-03 Comparison of Direct and Indirect Targeting Coordinates of Subthalamic Nucleus with Deep Brain Stimulation for the Treatment of Parkinson's Disease in Population of Anatolia, Central Asia and Middle East
Fatih Demir, Selman Kok, Bilal Ertugrul, Mansur Aliyev, Sait Ozturk

OP-04 Evaluation of the Impact of Pneumocephalus on Lead Migration During Deep Brain Stimulation Surgery
Tayfun Uzunaslan, Adem Kiris, Emir Rusen, Sait Ozturk

OP-05 To Assess and Contrast the Efficacy of Traditional Anchoring Methods, Stimloc™, and TouchLoc Systems in Ensuring Electrode Stability for Deep Brain Stimulation (DBS)
Saliha Alikhail, Sarah Alabasi, Maroua Rania Rahmoune, Heyam Ghaleb Hantouli, Sait Ozturk

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OP-06 Evaluation of Anesthesia Practices in Epileptic Patients Undergoing Vagal Nerve Stimulator Implantation
Oğuz Kağan Bulut, Sait Fatih Öner, Selman Kök

OP-07 Variation of the Vagal Nerve in Cervical Region and Surgical Management of Variations in Vagal Nerve Stimulation Surgery
Heyam Ghaleb Hantouli, Sarah Alabasi, Saleha Alikhail, Maroua Rania Rahmoune, Sait Ozturk

OP-08 Evaluation of Long Term Clinical Outcomes in Resistant Epilepsy Patients with Vagal Nerve Variation
Güngör Çevik, Selman Kök, Fatih Demir, Fatih Serhat Erol, Serkan Kırık, Sait Öztürk

OP-09 Non Invasive Neuromodulation Modalities
Rümeysa Büşra Doğan

OP-10 Evaluation of Postoperative Infection Rates Following Neurostimulator Implantation: Experience from a Multicenter Study Involving 723 Cases
Gökhan Yıldırım, Ahmet Cemil Ergün, Sait Öztürk

SESSION 5
15.00-16.12 Oral Presentations 2
Chairs: Dr. İrem BULUT, Dr. Hakan CAKIN

OP-11 Skin Complications and Surgical Management of Deep Brain Stimulation
Bilal Ertuğrul, Fatih Demir, Selman Kök, Sait Öztürk

OP-12 Surgical Treatment of the Patient with Parkinson's Disease
Khulkar Kholiyorovna Kholmurodova, Munis Akbar Ugli Nurmatov, Juraev Anvar Mamatmurodovich

OP-13 Spinal Cord Stimulator Implantation with Four and Three Leads via a Single Epidural Access: A Report of Two Cases
Munis Akbar Ugli Nurmatov, Edip Gonullu, Mansur Abdukhalikovich Aliev, Khulkar Kholiyorovna Kholmurodova, Nurbek Nematovich Boymatov

OP-14 Effects of Facet Joint Injection on Low Back Pain
Rıdvan Açıkalın

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OP-15 Frame-Related Complications and Surgical Management in Patients Undergoing Stereotactic Surgeries
Ahmet Cemil Ergün, Fatih Demir, Selman Kök, Bilal Ertuğrul, Sait Öztürk

OP-16 Comparison of the Different Stereotactic Softwares
Maroua Rania Rahmoune, Saleha Alikhail, Sarah Alabasi, Heyam Ghaleb Hantouli, Sait Ozturk

OP-17 Comparison of Different Stereotactic Frames: Advantages and Disadvantages
Sarah Mudheher Alabasi, Maroua Rania Rahmoune, Saliha Ali Khail, Heyam Ghalib Hantouli, Sait Ozturk

OP-18 Surgical Treatment of Pediatric Drug-resistant Epilepsy. Experience of the National Children's Medical Center
Olim Zaribovich Akramov, Liliya Aleksandrovna Nazarova, Sherzod Rikhsiddin Ogli Khusniddinov, Nargis Zafarovna Usmonova, Umida Abduvahitovna Shamsieva

OP-19 Investigation of 112 Emergency Service Usage Status of Elderly People in Eastern City of Turkey
Irem Bulut, Ezgi Yarasir, Ramazan Gurgoze

OP-20 Modern Principles and Prospects for the Development of Prehospital Emergency Medical Care
Odiljon Maxmudovich Umarov

OP-21 Seizure Control Outcomes of Vagus Nerve Stimulation in Patients with Developmental and Epileptic Encephalopathy
Serkan Kırık, Yavuz Ataş, Selman Kök

Oral Presentations

OP-01 **Brain - Invasive Stimulation » Movement Disorders**

ANALYSIS OF BODY WEIGHT CHANGES IN PARKINSON'S PATIENTS WHO UNDERWENT STN-DBS

Selman Kök[1], Güngör Çevik[1], Akın Aytekin[1], Sait Öztürk[2]
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[2]Medical Park Bahçelievler Hospital Department of Neurosurgery, Altınbaş University Faculty of Medicine, Istanbul, Turkey

INTRODUCTION/PURPOSE: Parkinson's disease is a neurodegenerative disease that occurs due to a decrease in dopamine production due to a decrease in the number and activity of dopamine-producing neurons in the nigrostriatal area. In the advanced stages of this disease, deep brain stimulation technique is a very effective treatment method. In this study, we aimed to examine the possible weight changes in our patients who underwent subthalamic nucleus (STN) deep brain stimulation (DBS).

METHOD: Age and gender information of Parkinson's patients who underwent prospective STN-DBS between 2016 and 2025, and their body weights before and every month until the first year after the operation were recorded.

FINDINGS: A total of 431 cases underwent STN-DBS surgery (210 male, 221 female, mean age: 61.8). Preoperative, postoperative 3rd month, postoperative 6th month and 1st year weight analyses showed an average of 72.1, 77.3, 80.8 and 78 kilograms, respectively (Figure 1). When the data were examined in percentage terms, an average weight gain of 7% was detected in our patients at the end of the 3rd month, 12% at the end of the 6th month and 8% at the end of the 1st year compared to the preoperative weight gain.

CONCLUSION: Patients who underwent STN-DBS experience postoperative weight gain. These findings may be due to decreased energy consumption and less stimulation of the hypothalamic area, which is known to play an important role in metabolism and body weight control. Overweight individuals in particular should be informed about postoperative weight gain.

Keywords: Parkinson, deep brain stimulation, weight, subthalamic nucleus

OP-02 **Brain - Invasive Stimulation » Movement Disorders**

OUR EXPERIENCE WITH ANESTHESIA IN DEEP BRAIN STIMULATION (DBS) SURGERIES: A RETROSPECTIVE OBSERVATION AND CLINICAL APPROACHES

Sevim Şenol Karataş, Oğuz Kağan Bulut
Elazığ Fethi Sekin City Hospital, Department of Anesthesiology and Reanimation

INTRODUCTION / OBJECTIVE: Deep Brain Stimulation (DBS) is a surgical intervention that improves the quality of life in patients with Parkinson's disease who are resistant to medical treatment. This study aims to evaluate the anesthesia methods preferred in DBS surgeries performed in our clinic.

MATERIALS AND METHODS: The medical records of patients who underwent DBS in our clinic between January 2022 and April 2025 were retrospectively reviewed. A total of 28 patients, consisting of 6 females and 22 males aged between 38 and 77 years, underwent DBS procedures. All patients had a stereotactic frame placed and were administered sedation analgesia in the operating room. Conscious sedation was achieved using dexmedetomidine and midazolam. Upon reaching the surgical target, verbal commands were given to the patients for target verification, after which general anesthesia was initiated. All patients were awakened after the procedure and transferred to the post-anesthesia care unit.

RESULTS: In all patients, adequate cooperation was achieved throughout the surgical procedure. Hemodynamic stability and safe spontaneous respiration were generally maintained during sedation. In two patients, sedation was reduced due to insufficient cooperation. No serious complications related to sedative agents occurred. Dexmedetomidine was used as the primary sedative agent during anesthesia management.

DISCUSSION AND CONCLUSION: Parkinson's disease is characterized neuropathologically by the loss of dopaminergic neurons in the substantia nigra, leading to impaired voluntary movement and significant motor dysfunction (1). DBS targeting the subthalamic nucleus can improve symptoms such as tremor, rigidity, and bradykinesia that are responsive to dopaminergic therapy and allows for a reduction in medication dosage postoperatively (2).While pharmacological treatment is effective in early-stage disease, DBS is often preferred in advanced stages (3). The core principle of DBS is to modulate the activity of specific anatomical regions based on their function and connectivity to alleviate symptoms caused by dysfunction in these regions (4). DBS surgeries require special anesthetic approaches. Conscious sedation allows communication with the patient for accurate surgical targeting while maintaining respiratory safety. Accurate titration of sedative drug dosages is therefore crucial. In our clinic, dexmedetomidine is the most frequently used agent in DBS procedures. Literature suggests that dexmedetomidine can be safely used during DBS surgeries (5). Comprehensive preoperative evaluation and thorough patient education regarding the procedure are essential for enhancing the success of the intervention.

Keywords: Parkinson's disease, Deep Brain Stimulation, Sedoanalgesia

OP-03 **Brain - Invasive Stimulation » Movement Disorders**

COMPARISON OF DIRECT AND INDIRECT TARGETING COORDINATES OF SUBTHALAMIC NUCLEUS WITH DEEP BRAIN STIMULATION FOR THE TREATMENT OF PARKINSON'S DISEASE IN POPULATION OF ANATOLIA, CENTRAL ASIA AND MIDDLE EAST

Fatih Demir[1], Selman Kok[2], Bilal Ertugrul[1], Mansur Aliyev[3], Sait Ozturk[4]
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[2]Faculty of Health Sciences, Elazig Fethi Sekin City Hospital, Department of Neurosurgery, Elazig, Turkey
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[4]Altınbas University, School of Medicine, Department of Neurosurgery, Istanbul, Turkey

INTRODUCTION: Deep brain stimulation (DBS) targeting the subthalamic nucleus (STN) is a widely accepted treatment for motor symptoms in Parkinson's disease. While the dorsolateral STN is the most commonly targeted region, the ideal stimulation site is still debated. Targeting methods include direct identification using high-resolution MRI, indirect targeting based on anatomical landmarks, and template-based approaches using population data. This study aims to compare direct and indirect targeting coordinates in a Turkish-speaking population, emphasizing anatomical variability and clinical relevance.

METERIAL AND METHODS: This retrospective study included 118 patients who underwent DBS for Parkinson's disease between 2020 and 2025. Preoperative 3 Tesla MRI scans were evaluated. The anterior commissure (AC), posterior commissure (PC), and mid-commissural point (MC) were identified in each patient. A point believed to represent the optimal stimulation site in the dorsolateral STN was manually marked on the MRI. The mediolateral, anteroposterior, and superoinferior distances between the marked point and the MC were measured. These individual coordinates were compared with the standard indirect targeting values: 12 mm lateral, 2 mm posterior, and 4 mm inferior to the MC point.

RESULTS: For the left STN, average distances from the MC point were 12.39 mm lateral (range: 9.75–16.77), 3.05 mm posterior (range: 0.05–5.8), and 4 mm inferior (range: 1.5–8). For the right STN, the averages were 12.25 mm lateral (range: 9–15.09), 3.05 mm posterior (range: 0.32–4.56), and 4 mm inferior (range: 1–6.87). The mean values closely matched the standard indirect coordinates, particularly in the inferior dimension. However, individual variability in the lateral and posterior directions was notable.

CONCLUSION: The findings demonstrate that while average direct targeting coordinates align well with standard indirect values, significant inter-individual variability exists. This suggests that indirect methods, based on population averages, may not be optimal for all patients. Direct targeting using high-resolution MRI can provide a more personalized approach and potentially improve DBS precision and outcomes. Especially in populations with specific anatomical traits, such as Turkish-speaking patients, individualized planning may enhance therapeutic effectiveness.

Keywords: deep brain stimulation, subthalamic nucleus, direct targeting, indirect targeting

OP-04 **Brain - Invasive Stimulation » Movement Disorders**

EVALUATION OF THE IMPACT OF PNEUMOCEPHALUS ON LEAD MIGRATION DURING DEEP BRAIN STIMULATION SURGERY

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INTRODUCTION: Deep brain stimulation (DBS) surgery is an effective treatment for various movement disorders. Optimal neuroanatomical lead position is a critical determinant of clinical outcomes in DBS surgery. Pneumocephalus is considered one of the risk factors that can contribute lead migration. This single center study investigates the impact of pneumocephalus on lead positioning during DBS surgery.

METHODS: Patients after DBS surgery performed CT for early postoperative bleeding control. Axial and sagittal images were used to measure the dimensions of air and thus pneumocephalus volumes were measured with the formula of ABC/2. The distance between targeted and early postoperative lead tip position was measured with axial images. Chi-square test was used for statistical analysis to determine the association between the pneumocephalus volume and lead migration.

RESULTS: Data from 100 patients with early postoperative CT scans were analyzed. Regarding pneumocephalus, the maximum and minimum volume were found 135,5 cm^3 and 0,7 cm^3 respectively. Regarding lead migration, the maximum distance was found 2,9 mm and the minimum distance was found 0. The mean volume of pneumocephalus was 41 cm^3 and the mean lead migration distance was 0,6 mm. A positive correlation was observed between the pneumocephalus volume and the lead migration distance (p= 0,003).

CONCLUSIONS: When the volume of pneumocephalus increases the lead displaces from the targeted position. Despite millimetric lead migrations, our clinical responses to DBS surgery were satisfactory. No significant clinical effects were observed due to this complication.

Keywords: Deep Brain Stimulation, Neuromodulation, Parkinson Disease, Pneumocephalus, Lead migration

OP-05 **Brain - Invasive Stimulation » Movement Disorders**

TO ASSESS AND CONTRAST THE EFFICACY OF TRADITIONAL ANCHORING METHODS, STIMLOC™, AND TOUCHLOC SYSTEMS IN ENSURING ELECTRODE STABILITY FOR DEEP BRAIN STIMULATION (DBS)

Saliha Alikhail[1], Sarah Alabasi[1], Maroua Rania Rahmoune[1], Heyam Ghaleb Hantouli[1], Sait Ozturk[2]
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MATERIALS AND METHODS: This study conducted a comparative analysis of DBS electrode fixation systems using data from clinical trials and published literature from 2020 to 2025. Metrics included mean lead shift, system advantages, and disadvantages.

Traditional Anchoring METHODS: use of sutures, adhesives, and mechanical techniques.
Stimloc™ System: Features a burr hole cover with an integrated locking mechanism.
TouchLoc System: Incorporates a flexible anchoring design for enhanced stability.

RESULTS: Traditional methods are associated with higher migration rates, averaging 1.52 ± 1.05 mm. Stimloc™ significantly reduces migration, with a mean shift of 0.29 ± 2.42 mm. TouchLoc provides minimal migration, with a mean shift of 0.43 ± 0.55 mm, and offers advanced stability features. Advanced systems demonstrated marked improvements in stability and reduced migration compared to traditional methods, highlighting their clinical effectiveness.

CONCLUSION: Electrode fixation is a critical factor in DBS success. Advanced systems such as Stimloc™ and TouchLoc demonstrate superior performance compared to traditional methods. The choice of fixation system should consider patient-specific needs, cost, and surgical expertise. Future research should focus on cost-effective innovations and long-term performance to make advanced systems more accessible globally.

Keywords: Deep Brain Stimulation, Electrode Fixation, Stimloc™, TouchLoc, Neurological Disorders

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OP-06

Brain - Invasive Stimulation » Epilepsy

EVALUATION OF ANESTHESIA PRACTICES IN EPILEPTIC PATIENTS UNDERGOING VAGAL NERVE STIMULATOR IMPLANTATION

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INTRODUCTION / OBJECTIVE: This study aims to evaluate the anesthesia techniques used during vagal nerve stimulator (VNS) implantation surgeries performed on epilepsy patients in our clinic.

MATERIALS AND METHODS: The medical records of patients who underwent VNS implantation at our clinic between January 2022 and April 2025 were retrospectively reviewed. A total of 42 patients—15 females and 27 males—aged between 2 and 40 years, including 17 pediatric patients, underwent the procedure. All patients received general anesthesia via endotracheal intubation. Postoperatively, all patients were awakened and transferred to the post-anesthesia care unit.

RESULTS: In the majority of patients, intraoperative hemodynamics remained stable. No major complications were observed. Transient bradycardia occurred in two patients. Prior to extubation, vocal cords were evaluated in all patients, and no vocal cord paralysis was detected.

DISCUSSION AND CONCLUSION: The inability to control seizures despite antiepileptic drug therapy is defined as drug-resistant epilepsy (DRE) (1). In such cases, vagal nerve stimulation (VNS) is used as an important treatment option. First introduced into clinical practice in 1988, this method has seen expanded indications in recent years (2). Several studies have investigated its potential therapeutic effects in treatment-resistant anxiety, migraine, and obesity (3). The VNS device delivers regular electrical impulses to the brain via electrodes placed around the cervical vagus nerve, resulting in a significant reduction in seizure frequency and severity. Although the exact mechanism of action remains unclear, VNS is believed to influence monoaminergic nuclei in the brainstem (e.g., locus coeruleus, raphe nuclei) and modulate functional connectivity in various brain regions through activation of the limbic system (4). The device is typically implanted on the left vagus nerve to avoid the higher risk of cardiac side effects associated with the right vagus nerve, which innervates the sinoatrial node more extensively (5). General anesthesia is the most commonly preferred method during VNS implantation. Although rare, serious cardiac side effects such as bradycardia and asystole may occur during stimulation (2). Additionally, transient left vocal cord paresis due to vagus nerve injury during electrode placement has been reported, with rare instances of permanent paralysis (6).To minimize perioperative seizure risk, a thorough preoperative evaluation is essential. Seizure type, frequency, and triggering factors should be carefully assessed, and the anesthetic plan should be tailored accordingly. Patients should also be clearly instructed to take their antiepileptic medications without interruption on the morning of surgery.

Keywords: Epilepsy, Vagal Nerve Stimulation, Anesthesia

OP-07

Brain - Invasive Stimulation » Epilepsy

VARIATION OF THE VAGAL NERVE IN CERVICAL REGION AND SURGICAL MANAGEMENT OF VARIATIONS IN VAGAL NERVE STIMULATION SURGERY

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AIM: The aim of this study is to appraise the anatomical variations of the cervical vagal nerve region and their implications in the surgical outcome in Vagal Nerve Stimulation (VNS) for pharmacoresisetant epilepsy.

MATERIAL-METHODS: a retrospective multicenter analysis of patients who underwent VNS implantation between January 2019 and November 2024. A total of 290 patients who had drug-resistant epilepsy received surgeries focused on targeting the mid-cervical vagal nerve (C4-C6) using microsurgical techniques. Investigates the crucial importance for understanding the complex cervical anatomy including rare variation. Intra-operative for vagal nerve variations have been recorded from data of each participating institute along with other demographic details, pre-and postoperative seizure frequencies, duration, and severity.

RESULT: the study of 290 patients, 5 individuals (1.7%) experienced notable anatomical variation of the left vagus nerve, including one case with a Y-shaped nerve, two instances of vagal nerves situated outside their protective sheath, and two cases of a non-recurrent laryngeal nerve. The average postoperative follow-up was 34 months (3 to 70 months) with an overall reduction of seizure frequency and duration of 59%. However, those patients with the nerve variations experienced less clinical improvement than the average. These anatomical differentiations are important for surgeons to avoid nerve damage and place stimulation leads accurately.

CONCLUSION: vagus nerve is a critical mixed nerve with parasympathetic, sensory, motor roles thus the cornerstone of the success of VNS depends on the importance of understanding the cervical anatomy, anticipating variations, if founded to have a much higher frequency than previously reported. These differences have an essential impact in reducing risks, complications and enhance therapeutic efficacy. Therefore, Microsurgical techniques are essential to all patients undergoing VNS implantations to minimize nerve injury and improve surgical outcomes.

Keywords: VNS Implantation, pharmacoresistant epilepsy, cervical variation, neuromodulation surgery

OP-08

Brain - Non-Invasive Stimulation » Epilepsy

EVALUATION OF LONG TERM CLINICAL OUTCOMES IN RESISTANT EPILEPSY PATIENTS WITH VAGAL NERVE VARIATION

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BACKGROUND: The vagus nerve is the longest nerve in the body. It has motor and sensory functions. It provides innervation of many organs and systems. It has various variations due to its wide distribution in the body. It is necessary to master the variations of the vagus nerve, whose clinical importance increases after Vagal Nerve Stimulation (VNS) surgery, to prevent possible complications that may occur during surgery. In our study, we aimed to describe the variations we encountered during surgery in patients who underwent VNS.

METHODS: Between 2018 and 2025, 310 patients who underwent multicentre VNS surgery were analysed intraoperatively and the variations seen were noted.

RESULTS: In the literature, there are studies that classify the nervus vagus according to its position in relation to the carotid artery, as well as studies that define it according to its different shapes and locations. In the analysed studies, more variation rates were observed on the left side. This is important for neurosurgeons since the left vagus nerve is worked on in VNS surgery. In our patients in whom we performed VNS surgery, we observed 1 y-shaped, 2 non-carotid sheath vagus nerve and 2 nonrecurrent laryngeal nerve variations intraoperatively. We did not encounter any complications by making our intraoperative planning accordingly and no difference was observed between our surgical success rates.

CONCLUSIONS: The vagus nerve may rarely show different variations due to its very long course. During surgical exploration, it should always be kept in mind that an unusual course may be encountered and surgical preparation should be made accordingly to prevent a possible complication.

Keywords: Vagal Nerve, Vagal Nerve Stimülation, Epilepsy

OP-09 **Brain - Non-Invasive Stimulation » Neurorehabilitation**

NON INVASIVE NEUROMODULATION MODALITIES

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Neuromodulation means changing the plasticity by changing the excitability of neurons. There is evidence that electric catfish of the Nile is used for pain like headache in the ancient Egypt. There are types of neuromodulation techniques as transcranial direct current stimulation (tDCS), transcranial alternating current stimulation (tACS), transcranial magnetic stimulation (TMS), transcranial ultrasound stimulation (TUS). There are also invasive neuromodulation techniques as deep brain stimulation (DBS), spinal cord stimulation (SCS), vagus nerve stimulation (VNS). When TMS applied to the primary motor cortex (M1), motor evoked potentials amplitudes changes during the stimulation. Repetitive protocols may be caused to long term potentiation and long term depression. TMS used specially in psychiatry and neurology in the diseases such as Parkinson, Multpile Sclerosis, Tinnitus, Major Depressive Disorder, Obsessive Compulsive Disorder. Studies shows dorsolateral prefrontal cortex is the optimal area in the scalp. tDCS generally applied 2 electrode as anod and cathod. Both of them changes resting membrane potentials. While anodal increases cortical excitability, cathodal reduces. In the pscychiatric disease like Major Depressive Disorder, Schizophrenia, Post Traumatic Stres Disorder, tDCS can reduce symptoms and make changes in the electroencephalography (EEG). tACS is variant of tDCS, using sinusoidal current. Non invasive neuromodulation techniques also using in the studies and could combine with EEG and fMRI. It is promising treatment and method for studies and need more multidisiplinary approach.

Keywords: tDCS, TMS, tACS, non invasive neuromodulation

OP-10 **Basic Science of Neuromodulation**

EVALUATION OF POSTOPERATIVE INFECTION RATES FOLLOWING NEUROSTIMULATOR IMPLANTATION: EXPERIENCE FROM A MULTICENTER STUDY INVOLVING 723 CASES

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INTRODUCTION - OBJECTIVE: Neurostimulator implantation has become a frequently performed surgical procedure following the rapidly increasing use of Vagal Nerve Stimulation (VNS) and Deep Brain Stimulation (DBS) surgeries in recent years. As the number of implantations rises, procedure-related complications are encountered more frequently. Among these, postoperative infection is a significant issue that may require removal of the implanted neurostimulator. This study aims to assess the postoperative infection rates following neurostimulator implantation and to demonstrate how the rates observed in our patient group were significantly lower than those reported in the literature.

MATERIALS-METHODS: A total of 723 patients who underwent either VNS (n=310) or DBS (n=413) surgeries between 2018 and 2025 across multiple centers were retrospectively analyzed. Systemic comorbidities, perioperative management, and postoperative wound condition and fever monitoring were systematically documented for each patient.

RESULTS: No postoperative infections were observed among the 310 patients who underwent VNS surgery. Among the 413 patients who underwent DBS procedures, only two developed purulent wound infections. The first patient had a history of rheumatoid arthritis and diabetes mellitus and was receiving immunosuppressive therapy. Infection occurred on postoperative day 21. The second patient had diabetes mellitus alone and developed infection on postoperative day 35.

Discussion - CONCLUSION: While postoperative infection rates following neurostimulator implantation are reported in the literature to range between 1% and 6%, the infection rate in our patient cohort was significantly lower. Several strategies contributed to this outcome:

- Short-duration preoperative hospitalization and early discharge (typically same-day for VNS cases).
- Use of a single-dose intravenous antibiotic before and after surgery, followed by oral antibiotics.
- A dedicated neuromodulation nurse assisting in all cases.

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• Restriction of personnel and operating room traffic during the procedure.
• Use of sterile drapes and delaying the opening of implants until the implantation phase.
• Glove change prior to handling the implant, with intrapocket vancomycin application.
• Preferential placement of the device in the subclavicular region (given ~70% axillary Staphylococcus aureus carriage in Türkiye)

Our findings suggest that minimizing intraoperative contamination risks, applying effective sterilization protocols, utilizing appropriate antibiotic strategies, and maintaining close postoperative communication with patients can substantially reduce infection rates associated with neurostimulator implantation.

Keywords: Neurostimulation, Infection, Implantation

OP-11 **Basic Science of Neuromodulation**

SKIN COMPLICATIONS AND SURGICAL MANAGEMENT OF DEEP BRAIN STIMULATION

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INTRODUCTION: Deep brain stimulation (DBS) is a safe and proven treatment for patients with movement disorders and

neuropsychiatric disorders. Although it is an effective procedure, like other neurosurgical procedures, it is associated with a risk of complications. Skin complications in DBS surgery are a problem in routine practice. The aim of our study was to identify skin complications in patients undergoing DBS surgery and to determine their surgical management.

METHODS: 438 patients who underwent DBS surgery between 2016 and 2024 were retrospectively evaluated for skin complications.

RESULTS: Skin complications were observed in only 13 of 438 DBS patients. Erosion at the battery site developed in 6 cases, erosion at the burr hole site in 2 cases, CSF accumulation at the battery site in 3 cases, and excessive fibrosis along the shunt path in 1 case. The DBS system was removed in 1 patient when the skin erosions did not improve (Figure 1). In our surgical management of skin complications, surgical strategies were used in the presence of erosion, including wound debridement in the first stage and flap design to preserve the DBS system. In the second stage, appropriate antibiotics were started and in the third stage, plastic surgery consultation was sought if necessary.

CONCLUSION: Postoperative skin complications are a serious side effect of DBS surgery. Therefore, it is important for surgeons to be aware of the potential manageable problems with optimal surgical management.

Keywords: Deep brain stimulation, Skin complications, surgical management

OP-12 **Basic Science of Neuromodulation**

SURGICAL TREATMENT OF THE PATIENT WITH PARKINSON'S DISEASE

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We have data of 50 patients which were admitted in the neurosurgery department of the Samarkand state medical university in last one year. From 50 patients 35 were women, 15 were men, by age category there were the highest age was 71 years and smallest 35 years. They have history of tremors, bradykinesia, loss of functional movements, speech difficulties, rigid and stiff muscles, walking difficulties, sleep disorders etc. In 23% of the patients the onset of symptoms was unilateral (one arm, one leg or mixed) and in 77% of patients it is bilateral (both arms, both legs or mixed). We have performed the deep brain stimulation surgery in these patients. We have implanted the electrodes in the deep brain tissue for purpose of controlling neural function in order to treat the neurological symptoms. The electrodes are implanted using stereotactic techniques and these electrodes are connected to the IPG (implantable pulse generator). This IPG is placed sub-dermally under the clavicle. IPG contains battery which delivers the electrical stimulus to the brain tissue and this stimulation can be externally controlled by the clinicians. RESULTS: All the 50 patients in which deep brain stimulation surgery was performed, Data was collected and they reported that on stimulation there was 50% reduction in UPDRS motor scores (Unified Parkinson's Disease Rating Scale), also in 70% of patient, on day 6 of post operative surgery was found to stable control of segmental symptoms without dyskinesia and also shown improvement in axial symptoms. We performed EMB tremor analysis, Epilepsy and tremors was totally cured after the surgery and the muscles movement and walking abnormalities was also reduced to the remarkable extent. The patients were kept under 24 hours observation and there was drastic changes in their symptoms after the surgery was performed. Neurological medication can treat Parkinson's disease but to limited extent and the medication also leads to various side effects in most of the patients which leads to problems related to other organs of the body hence the deep brain stimulation surgery is the best way to cure Parkinson's disease with minimum side effects we achieved the best results in the patients after the surgical procedure was performed.

Keywords: neuromodulation, parkinson's disease, non-motor symptoms, tremors.

OP-13 **Spinal Cord » Pain**

SPINAL CORD STIMULATOR IMPLANTATION WITH FOUR AND THREE LEADS VIA A SINGLE EPIDURAL ACCESS: A REPORT OF TWO CASES

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A 56-year-old male presented with axial spinal pain and radicular pain in both upper and lower extremities following failed back and neck surgeries. His medical history included two lumbar and two cervical operations. At presentation, he was receiving pregabalin 600 mg/day, tramadol 300 mg/day, paracetamol 2 g/day, and naproxen 1500 mg/day, yet his pain Visual Analog Scale (VAS) score remained 9 despite medical therapy. Prior interventional pain palliation attempts had proven unsuccessful. Given the concurrent cervical and lumbar pain, a four-port SCS implantation was planned. Via a single L1-T12 epidural access, two leads were positioned at the C2-C7 segment and two at the T8-T11 segment under fluoroscopic guidance. The leads were connected to an implantable pulse generator (IPG) placed subcutaneously. Post-procedure, the patient's VAS score decreased to 3. Key advantages of this approach include the elimination of cervical epidural access-related injury risks, reduced bleeding and infection rates due to minimal incisions, and improved cosmetic outcomes.

A 58-year-old male sustained a T6 vertebral fracture from a motor vehicle accident, resulting in spinal cord injury and paraplegia. He exhibited neuropathic pain in both lower extremities and urinary incontinence. His pain regimen included pregabalin 550 mg/day, morphine 120 mg/day, and paracetamol 2 g/day, with a pre-procedure VAS score of 10. SCS implantation was planned to address neuropathic pain, incontinence, and motor deficits. Through an L1-T12 epidural entry, two leads were placed at the T4-T6 segment and one at the T8-T10 segment. A fourth lead was inserted via the left S3 foramen to manage incontinence. Post-procedure, the VAS score decreased to 4.

Keywords: fracture, pain, epidural space, electrods, spinal stimulation

OP-14 **Spinal Cord » Pain**

EFFECTS OF FACET JOINT INJECTION ON LOW BACK PAIN

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This study aims to investigate the effects of facet joint injection therapy on male and female patients, analyzing pre- and post-procedure Visual Analog Scale (VAS) scores by gender to evaluate treatment efficacy.

INTRODUCTION: Facet joint injection is an invasive treatment method targeting the facet joints in the lumbar and cervical regions, commonly used for chronic spine-related pain. This therapy offers a significant option for pain reduction and improving patients' quality of life. However, the influence of gender on the response to this treatment remains unclear. The objective of this study is to evaluate the response to treatment among male and female patients, statistically (Table 1).

METHODS: This study evaluated a total of 37 patients, divided into two groups based on gender (Male = 21, Female = 16). Facet joint injections were administered, and VAS scores were recorded before the procedure, as well as at 1 and 3 months post-procedure. An Independent Samples t-Test was used to assess differences between genders (Table 2).

RESULTS: Statistical analysis revealed no significant differences in pre- and post-procedure VAS scores between male and female patients:

- Pre-procedure VAS: No significant difference between males and females ($p = 0.718$).
- 1-month VAS: No difference between genders ($p = 0.237$).
- 3-month VAS: No significant difference found ($p = 0.589$).

DISCUSSION: The results indicate that facet joint injection demonstrates similar efficacy across different genders. A reduction in VAS scores over time was observed, and this decrease appears to occur independently of gender. The Independent Samples t-Test supports the absence of a significant difference between genders. These findings suggest that gender may not be a critical factor in treatment planning.

CONCLUSION: This study demonstrates that the effects of facet joint injection are comparable between male and female patients. Statistically, gender does not appear to significantly influence treatment efficacy. Therefore, gender and disease stage should not be considered as critical determinants when planning facet joint injection therapy.

Keywords: Back pain, Facet joint, injection

OP-15 **Stereotactic Hardwares and Softwares**

FRAME-RELATED COMPLICATIONS AND SURGICAL MANAGEMENT IN PATIENTS UNDERGOING STEREOTACTIC SURGERIES

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INTRODUCTION - OBJECTIVE: Stereotactic frame systems play a critical role in the diagnosis and treatment of neurological diseases. These systems are widely used in procedures requiring high-precision spatial targeting such as deep brain stimulation (DBS), biopsy, and radiosurgery. Despite their high accuracy, technical challenges and complications may occur during their use. This study aims to evaluate the complications associated with various stereotactic frame systems used in neurosurgical procedures and to share our surgical management experiences related to these complications.

MATERIALS-METHODS: We retrospectively analyzed data from approximately 574 patients who underwent stereotactic frame placement between 2016 and 2025. The frame systems used included Inomed (n=268), Leksell G Frame (n=219), Cosman-Roberts-Wells (CRW) frame (n=24), and Leksell Vantage (n=63). Among these, only the Inomed system featured a torque-controlled screwdriver; all others utilized standard screwdrivers. Frame-related complications and their surgical management strategies were analyzed.

RESULTS: Frame-related complications were observed in 5 patients. Three patients developed localized skull depression fractures at the site of frame placement. None of these cases required surgical intervention. One of these patients was pediatric and had undergone Inomed frame placement, while the other two were adults who had Leksell G Frame placement. In two adult patients, improper positioning of the Z-arm of the Leksell G Frame obstructed the intended trajectory, preventing electrode placement. No complications were observed with the use of Leksell Vantage or CRW systems.

DISCUSSION - CONCLUSION: Frame-related complications reported in the literature include skin necrosis, infection, screw-induced laceration, pain at the screw site, depression fractures, misalignment causing targeting errors, and symptoms related to increased intracranial pressure. In our study, a total of five patients (1%) experienced complications, three cases of depression fractures and two related to frame positioning. Our findings suggest that despite the use of torque-controlled screwdrivers, pediatric patients remain at risk of depression fractures with the Inomed system. Additionally, incorrect Z-arm positioning with the Leksell G Frame can significantly impact surgical planning. The CRW and Leksell Vantage systems demonstrated high safety profiles. Patient characteristics and potential mechanical constraints should be considered when selecting a frame system.

Keywords: Stereotactic Surgeries, Complications, Neurosurgery

OP-16 **Stereotactic Hardwares and Softwares**

COMPARISON OF THE DIFFERENT STEREOTACTIC SOFTWARES

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AIM: Comparing functionality, imagine performance, and practical advantages of the most widely used stereotactic planning software systems: brain lab, IPS 6, and StealthStation S8.

MATERIALS-METHOD: A retrospective analysis was conducted on over 600 stereotactic procedures performed using Brainlab, IPS 6, and StealthStation S8 software (minimum of 200 cases per system). All three platforms offered standard image fusion capabilities. Specific attention was given to advanced features such as distortion correction, 3D object management, and vascular visualization. Comparative evaluation was based on clinical applicability, imaging precision, and user interface efficiency.

RESULT: While all three softwares provided reliable stereotactic planning and image fusion, Brainlab demonstrated superior performance due to its integrated distortion correction feature, 3D object management system, and complete venous 3D vascular anatomy visualization. These features contributed to enhanced surgical accuracy and preoperative planning confidence. IPS 6 and StealthStation S8, although robust, lacked some of these high-resolution visualization tools.

CONCLUSION: Brainlab stereotactic software offers significant advantages in neurosurgical planning, particularly in cases requiring precise anatomical mapping and vascular detail. Its advanced imaging tools may contribute to improved surgical outcomes when compared to IPS 6 and StealthStation S8. However, all three systems remain effective and clinically viable, and the choice may depend on institutional needs and surgeon familiarity.

Keywords: Stereotactic surgery, neurosurgical navigation, brainlab, stealthstation S8, IPS planning software.

OP-17 **Stereotactic Hardwares and Softwares**

COMPARISON OF DIFFERENT STEREOTACTIC FRAMES: ADVANTAGES AND DISADVANTAGES

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AIM: The aim in this study is to compare between five different stereotactic frames used in DBS surgery.

MATERIALS-METHODS: An observational study was conducted using Inomed ZD, Inomed Susy, Leksell Vantage, Leksell G, CRW frames. Each frame was used at least 10 times in DBS surgeries. In this study, weight, inner diameter, time needed for mounting, artifacts on CT, skull fracture, and patient's comfort and anesthesiologist during intubation.

RESULTS: Inomed Susy frame showed the lightest weight and the CRW frame was the heaviest and in terms of inner diameter Inomed titanium has the widest inner diameter. Artifacts on CT were minimal with Leksell Vantage, Inomed Susy, and Inomed ZD. Inomed due to their design showed the least skin fractures. As for patient comfort, Inomed showed a good amount of comfort because of the lightweight plus they offered easier access during intubation for anesthesiologists because of their open design from the front.

CONCLUSION: The Inomed Susy frame was the lightest and had the biggest inner diameter, which helped anesthesiologists intubate patients more easily and improve patient comfort. High-quality imaging with the Leksell Vantage, Inomed Susy, and Inomed ZD frames showed low CT artifacts. Furthermore, less skull fractures were caused by the Inomed Susy and Inomed ZD frames due to their design. Overall, the lightweight design and open front of the Inomed Susy frame made intubation easier and improved patient comfort.

Keywords: stereotactic frames, skull fractures, comparison.

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Other

SURGICAL TREATMENT OF PEDIATRIC DRUG-RESISTANT EPILEPSY. EXPERIENCE OF THE NATIONAL CHILDREN'S MEDICAL CENTER

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INTRODUCTION: Drug-resistant epilepsy (DRE) affects 25% of all epileptic patients, and quality of life decreases in these patients due to their seizures. Early detection is crucial in order to establish potential treatment alternatives and determine if the patient is a surgical candidate. Neurosurgical treatment may improve seizures in children and adolescents with drug-resistant epilepsy, but additional data are needed from randomized trials.

OBJECTIVE: Our objective was to describe factors associated with referral for epilepsy surgery at the National Children's Medical Center (NCMC), Tashkent, Uzbekistan, to identify differences in DRE and identify areas for improvement.

METHOD: Pediatric patients diagnosed with DRE between November 1, 2021 and March 22, 2025. Patients treated with antiseizure medications (ASMs) only, Patients treated with antiseizure medications (ASMs) plus vagus nerve stimulation (VNS), and ASMs plus cranial epilepsy surgery were studied regarding access to epilepsy surgery and disparities in care. All patients underwent Magnetic Resonance Imaging (MRI) 3T, according to the epiprotocol and electroencephalography (EEG). This study used Engel classification (EC) to describe seizure outcomes. Preoperative factors studied included epilepsy treatment type, age, sex, patient type, epilepsy type, and presence of pediatric complex chronic conditions (PCCCs).

RESULTS: A total of 33 patients were identified; 25 treated with ASMs, 3 treated with ASMs + VNS, and 30 treated with ASMs+cranial epilepsy surgery. Main studied factors: Age: from 15 days to 9 years (50%) and up to 18 (50%); Sex: 11 female (33,33%), 22 male (66,66%); have a focal/partial epilepsy diagnosis 23 (69.69%), with generalized FRE 10 (30,30). Type of cranial surgery: VNS 3 (9,09%), Focal Cortical Dysplasia (FCD) surgery 20 (60,60%), Callosotomy 6 (18,75%), functional hemispherectomy 1 (3,03%), other surgical technique 3 (9,09%) Seizure results according to the Engel scale:

- 53,12% EC I;
- 40,68% EC II,
- 6,2% EC IV.

CONCLUSION: In this single-center trial, children and adolescents with drug-resistant epilepsy who had undergone different types of epilepsy surgery had a significantly higher rate of freedom from seizures and better scores with respect to behavior and quality of life than did those who continued medical therapy alone. The surgery resulted in expected neurological deficits related to the area of brain resection.

Keywords: Drug-resistant epilepsy, Vagus nerve stimulation, Pediatric neurosurgery, Epilepsy surgery

OP-19 **Other**

INVESTIGATION OF 112 EMERGENCY SERVICE USAGE STATUS OF ELDERLY PEOPLE IN EASTERN CITY OF TURKEY

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Emergency Health Services include ambulances and other services that provide an entry point to health services. Individuals aged 65 and over are defined as elderly.This study aimed to retrospectively evaluate the use of 112 emergency health services by elderly individuals who applied to the 112 Emergency Service.The universe of the descriptive type of research consisted of 112 Emergency Service applications of elderly people in Elazığ province between January 2020 and December 2022. Ambulance Case Forms filled out by Elazığ 112 Ambulance Services were used to collect data. These forms include information such as gender, application date, application time, ambulance arrival time to the scene, preliminary diagnosis of individuals, reasons for ambulance calls, and results of ambulance calls for ambulance calls for 65 years and over who applied to the 112 Emergency Health Service. While evaluating the findings obtained in the study, SPSS 22.0 package program was used for statistical analysis. Percentage, mean and chi-square tests were used according to the characteristics of the variables in statistical evaluations and $p<0.05$ was accepted as statistical significance.It was determined that the number of people aged 65 and over who used 112 emergency health services between 2020-2022 was 56096 (33.1%). When the distribution of cases aged 65 and over who benefited from the service was examined by gender, it was determined that 50.2% were male in 2020, 52.7% were female in 2021 and 52.5% were female in 2022. 44.6% of the cases in 2020, 42.0% in 2021 and 41.0% in 2022 were reached within the first 10 minutes. Of the cases aged 65 and over; In 2020, 65.1%, in 2021, 64.9%, and in 2022, 65.8% were transferred to the hospital. On-site intervention rates were 0.5%, 0.4%, and 0.3%, respectively, over the years.When the distribution of ambulance exits according to call reasons was examined, it was determined that 81.9% were medical reasons.It was observed that cases between the ages of 75-84 benefited from emergency health services more in the summer months ($p<0.05$). As a result, it was determined that people aged 65 and over frequently benefited from emergency health services. The fact that medical reasons were at the forefront revealed that individuals over the age of 65 should be monitored more frequently in terms of chronic diseases. Prioritizing protective and preventive measures against diseases for individuals aged 65 and over in primary health care services may lead to a decrease in the number of cases.

Keywords: Emergency Service, Elderly, Old age, Emergency healthcare use

OP-20 **Other**

MODERN PRINCIPLES AND PROSPECTS FOR THE DEVELOPMENT OF PREHOSPITAL EMERGENCY MEDICAL CARE

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From 2021 to 2023, 3090 patients with combined injuries were treated at the Fergana branch of the RSCEMA and its sub-branches. The age of the patients ranged from 4 to 91 years. There were 1913 men (61.9%) and 1177 women (38.1%). 1913 patients were delivered by the ambulance service, and 117 came independently. In the sub-branches, the victims were examined radiologically, with ultrasound, and by a surgeon and traumatologist. If necessary, neurosurgeons, vascular surgeons, and other specialists were called to all district sub-branches via sanitary aviation to provide emergency medical care on site. Standard radiological studies were performed on all 3090 patients.

As a clarifying method, computed tomography was performed in 208 (6.7%) cases, according to the results of which the nature of traumatic brain injury, maxillofacial region, chest, and abdominal cavity was determined in more detail, and hidden injuries of bone structures and soft tissues, as well as internal organs, were identified if necessary.Suspicion of a combined injury was assumed in the following cases:

- if the patient fell from a height of more than 5 meters;
- ejection from a car upon impact;
- death of people sitting nearby in the car;
- significant deformation of the car's passenger compartment;
- crushing of the victim;
- burial by earth.

The tactics of medical measures were carried out according to the principle of priority: In the first minutes after the injury, there was no drop in blood pressure. Signs of internal bleeding increased gradually, therefore, the most important condition for providing assistance to victims with abdominal injuries is their rapid delivery to the hospital. In case of gross deformities of the extremities, reduction was performed with subsequent splinting of the limb. Narcotic analgesics were administered beforehand. 60 (1.9%) victims had respiratory failure, requiring intubation with a double-lumen tube, which allowed for effective oxygenation and lung ventilation.

In providing assistance in combined injuries at the prehospital stage, it is important to conduct infusion therapy with crystalloids and colloids to improve microcirculation and to maintain normal transport and oxygen supply to tissues. Our analysis showed that the most severe injuries as a result of road traffic accidents were received by patients in areas with highways connecting large cities, as well as in large cities such as Fergana, Kokand, and Margilan.

Keywords: Immobilization of the spine, transportation of the patient, elimination of pain syndrome.

OP-21

Other

SEIZURE CONTROL OUTCOMES OF VAGUS NERVE STIMULATION IN PATIENTS WITH DEVELOPMENTAL AND EPILEPTIC ENCEPHALOPATHY

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INTRODUCTION: Developmental and epileptic encephalopathies (DEE) represent a heterogeneous group of disorders typically emerging in early childhood, characterized by frequent and drug-resistant epileptic seizures accompanied by neurodevelopmental impairment. In these disorders, epileptic activity not only causes seizures but also directly hinders cognitive and behavioral development. The etiology of DEE is frequently genetic, with mutations in genes such as SCN1A, SCN2A, IQSEC2, STXBP1, ARX, TSC1/2, and SLC2A1 playing a role in epileptogenesis by affecting neuronal development and synaptic activity. Pathological EEG findings (e.g., hypsarrhythmia, slow spike-and-wave patterns) are often associated with cognitive decline. This suggests that continuous epileptiform activity, in addition to seizures themselves, may negatively impact brain development. Vagus nerve stimulation (VNS) is an effective neuromodulation strategy with the potential to reduce seizure frequency and improve quality of life in these patients. In this study, we aimed to contribute to the literature by presenting the outcomes of VNS therapy in DEE patients followed at our tertiary center.

METHODS: We retrospectively analyzed six consecutive children diagnosed with drug-resistant DEE who underwent VNS treatment between February 2021 and April 2025 and were not candidates for epilepsy surgery such as callosotomy. A responder was defined as a patient with more than 50% reduction in seizure frequency. Variables including sex, EEG patterns, neurodevelopmental status, time to VNS initiation, genetic mutations, MRI findings, and epilepsy syndromes were evaluated.

RESULTS: A total of six patients were included in the study. Two had IQSEC2, two had SCN2A, one had TSC1, and one had SCN1A mutations. All patients showed >50% reduction in seizure frequency following VNS therapy. Notably, there was a near-complete resolution of myoclonic-atonic drop seizures. Improvements were also observed in sleep regulation and cognitive abilities. None of the patients required hospitalization due to status epilepticus or uncontrolled seizures within six months after VNS initiation.

CONCLUSION: VNS therapy is increasingly utilized in the management of drug-resistant epilepsy such as DEE. Our findings are consistent with current literature, indicating a favorable response to VNS. Additionally, improvements in quality of life and reduced hospitalizations are of considerable importance.

Keywords: vagal nerve stimulation, developmental epileptic encephalopathy, pediatric

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