

83rd INTERNATIONAL SCIENTIFIC CONFERENCE ON MEDICINE AND HEALTH SCIENCES OF THE UNIVERSITY OF LATVIA: CLINICAL MEDICINE

On 25 April 2025, the University of Latvia in Rīga is hosting the International Scientific Conference on Medicine organised within the frame of the 83rd International Scientific Conference of the University of Latvia (see for details: Leja, M., Stonāns, I. 83rd International Scientific Conference on Medicine and Health Sciences of the University of Latvia: Basic Medical Science and Pharmacy, p. 19, this issue).

The “Clinical Medicine” section brings together a diverse range of clinical investigations and applied research, reflecting the current scope and depth of medical science in advancing diagnostics, treatment, and patient-centred care across multiple clinical disciplines.

Ophthalmology-related submissions focus on both functional and structural aspects of visual assessment. The included studies examine changes in intraocular pressure, the impact of systemic comorbidities on ocular health, outcomes of cataract surgery, and innovations in glaucoma diagnostics. These works demonstrate the importance of early detection, patient stratification, and objective visual function monitoring in preventing irreversible vision loss.

Anaesthesiology and reanimatology are represented through studies on pain management, pre-operative risk assessment, and post-anaesthesia care. The abstracts focus on multimodal analgesia, ventilatory parameters during sedation, and perioperative haemodynamic stability. Such studies contribute to improving safety protocols and optimising clinical outcomes in surgical and intensive care settings.

The section on surgery, traumatology, and orthopaedics covers a range of interventions and techniques. Topics include orthopaedic trauma management, craniofacial surgery techniques, 3D imaging and modelling in preoperative planning, and the use of robotic systems in minimally invasive procedures. These contributions demonstrate the growing influence of personalised surgical approaches and precision medicine in achieving functional recovery and reducing postoperative complications.

In the broader field of general clinical medicine, the abstracts address diagnostic and therapeutic challenges across internal medicine, endocrinology, and infectious diseases. Investigations explore the clinical relevance of hormonal markers, vitamin deficiencies, and the interplay between metabolic conditions and immune response. Public health-oriented research highlights issues of antimicrobial resistance, patient-reported outcome measures (PROMs), and the implementation of digital health technologies, including AI-supported decision-making tools. Together, these contributions emphasise evidence-based practice and the integration of emerging technologies in routine care.

Daiga Šantare

OPHTHALMIC CONSEQUENCES OF FACIAL SKELETON TRAUMA

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Background. Orbital trauma is one of the most common traumas in the midface area. According to data, orbital traumas make up 16% of all facial skeleton traumas. Treatment and diagnosis require the involvement of two specialists: an ophthalmologist and a maxillofacial surgeon.

Aim. The aim of the research is to determine and assess the most common ophthalmological complications in patients with orbital and facial bone fractures, as well as identify the leading causes of loss of sight following orbital trauma.

Methods. A study of data from medical documentation of patients with orbital fractures was conducted to determine the most common ophthalmological complications and identify the leading causes of loss of sight following orbital trauma. The research is based on medical records of 100 patients with isolated or combined orbital fractures treated at the Department of Maxillofacial Surgery at Pauls Stradiņš Clinical University Hospital.

Results. The study reveals that the most common ophthalmological complications are periorbital haematoma, sub-

conjunctival haemorrhage, and eyelid oedema. Orbital trauma can cause permanent loss of sight. The study determines three potential causes of loss of sight: a traumatic optic neuropathy, a choroidal rupture, and an optic nerve tear. A statistically significant correlation ($p = 0.03$) has been proven between a patient's age and sustaining orbital fracture. Intraocular lens (IOL) dislocation is a relatively rare complication, occurring in 10% of cases. A statistically significant correlation ($p < 0.05$) has been proven between a patient's age and sustaining IOL dislocation. The study also proves that the mechanism of trauma and sustaining orbital fracture does not alter the risks of developing traumatic mydriasis, retrobulbar haematoma, and optic neuropathy.

Conclusion. Maxillofacial surgeons have to be aware of the possible ophthalmological complications, primarily of their diagnostics. Ophthalmologists have to be able to identify surgical pathologies requiring immediate surgical intervention.

ANALYSIS OF DIAGNOSTIC AND MANAGEMENT APPROACH IN ACUTE CORNEAL ULCERS IN EYE EMERGENCY DEPARTMENT IN RĪGA EAST UNIVERSITY HOSPITAL

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Background. Infectious corneal ulcer is a common ocular disease and is also considered an ocular/medical emergency. There is a lack of diagnostic methods that would be sensible and fast in identifying pathogens in keratitis. This is forcing the treatment method to be empiric therapy. In many countries, there is a lack of data on incidences and information about the most common pathogens.

Aim. To evaluate the most common etiology and effectiveness of empiric therapy in the case of acute corneal ulcers.

Methods. This study was retrospective. It included data from 90 patients admitted to Riga East Clinical University Hospital, Biķernieki Clinic, Ophthalmology Department, from the beginning of 2017 till the end of 2022. All the patients were hospitalised, and the data used from these patients are from the hospitalisation period.

Results. It was found that bacterial pathogens are the most common pathogen causing infectious corneal ulcers in Latvia. A bacterial pathogen was reported in 13 cases. We also found out that cultures lack sensibility. In our study, cul-

tures had a sensibility of approximately 38%. We also calculated the minimum incidence of infectious corneal ulcers in Latvia, approximately 0.8 cases per 100,000 yearly. With empiric therapy, the majority of patients showed improvement in visual acuity. Visual acuity improvement was approximately 0.211.

Conclusion. Infectious corneal ulcer is a challenging ocular emergency. The problem is that no fast and sensible diag-

nostic method exists to identify pathogens. More sensible and faster diagnostic methods are needed if we want to increase the cases where more targeted therapy can be used. With broad-spectrum antimicrobial therapies, most community-acquired infectious corneal ulcers can be treated, but emerging bacterial resistance can be a problem in the future.

RED REFLEX TEST FOR CHILDREN UNDER FIVE YEARS

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Background. Visual impairment has a negative impact on a child's quality of life. The red eye reflex test, also known as the Bruckner test, is an effective, non-invasive examination method that helps with various eye diseases such as cataracts, glaucoma, retinoblastoma, and retinal pathologies. These are the most common preventable causes of blindness in newborns.

Aim. The purpose of this retrospective study is to highlight the importance and benefits of the red eye reflex test (rapid, non-invasive test) in children under the age of 5 years.

Methods. The eye red reflex was determined for each child during a visit to a paediatric ophthalmologist. Data from pa-

tients' medical histories of test results, children's comorbidities, family history of eye disease were collected and analysed.

Results. Out of 60 children, the red eye reflex of 46 eyes was normal. In 13 children, the test showed that they had refractive errors, i.e. myopia, hyperopia, or astigmatism. Only one child had leukocoria detected and after examination he was diagnosed to have a punctate cataract.

Conclusions. The red eye reflex is a fast, non-invasive, and pain-free test that can be used to detect various eye diseases.

THE INCIDENCE OF CATARACT SURGERY ONE YEAR AFTER DIFFERENT TYPES OF GLAUCOMA SURGERY

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Background. Glaucoma is the second leading cause of blindness worldwide, second only to cataracts. As diseases, both glaucoma and cataracts serve as major public health challenges, as both tend to progressively impair the affected person's vision. Both glaucoma and cataracts can be treated surgically; however, treating one of the conditions can affect the other. The surgical management of glaucoma has been found to increase the rate of development and progression of lens opacities, while the surgical treatment of cataracts often leads to decreases in intraocular pressure, with increased intraocular pressure known to be the greatest risk factor for the development of glaucoma.

Aim. The aim of this study was to investigate the extent to which glaucoma surgery influences the necessity of cataract surgery, within one-year after the glaucoma surgical proce-

dure. Secondly, we attempted to find other patient- and treatment specific factors, alongside the performed glaucoma surgery, which might have additionally contributed to the rate of cataract progression in these patients, to the point that surgical treatment was required.

Methods. The study was conducted in a retrospective manner by gathering essential patient data from the electronic patient data system at Riga East Clinical University Hospital, Department of Ophthalmology. Data was collected according to ICD-coding of glaucoma [H40]. Information on prior glaucoma surgeries, cataract surgeries, and other variables, hypothesised to potentially influence the progress of cataracts was collected. Statistical analysis on the collected data was carried out using the data science programming language "R".

Results. A total of 100 eyes of 97 patients were included in this study. All 100 eyes had received surgical treatment for glaucoma between 01.01.2021–07.09.2022. Two surgical techniques were employed, 72% (n = 72) had undergone trabeculectomy and 28% (n = 28) had undergone Gonioscopy-Assisted Transluminal Trabeculectomy (GATT) with a 5.0 polypropylene suture. Out of these 100 eyes, 29% were surgically treated for cataracts during the first year following their glaucoma surgery, a rate significantly higher than that seen in the general population. No significant difference in increased cataract risk was found between trabeculectomy and Gonioscopy-Assisted Transluminal Trabeculectomy (GATT).

Conclusion. The study revealed that the incidence of cataract surgeries within one year following glaucoma surgery

greatly surpasses the rate of cataract surgeries typically observed in the general population. From additionally analysed treatment- and patient specific factors, differences in patient age and pre-existing cataracts were most significant in further increasing the risk of cataract development.

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Comments. It is not possible to change font or spacing in the submission text box. If you wish to have the abstract with strict requirements followed (title font 14, institutions font 10, text font 12, spacing after paragraphs 6 etc.) I can provide you with the Microsoft Word document, in which formatting is fully correct. Here it is impossible to follow all requirements as the text box does not allow to make changes.

PATIENT SATISFACTION WITH ND: YAG LASER POSTERIOR CAPSULOTOMY TREATING SECONDARY CATARACTS

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Background. Posterior capsular opacification (PCO) is one of the most common late complications after cataract surgery, appearing in around 50% of cases in 5-year time. Due to epithelial proliferation and connective tissue deposition in the posterior capsule, frequent and disturbing complaint is a reduction of visual acuity. The standard treatment requires creating an optically clear, centred opening in the posterior capsule by neodymium:yttrium-aluminium-garnet (Nd:YAG) laser. Regardless the rare adverse effects of Nd:YAG, there is an increase of resources required from the patient and healthcare system to provide consultation and treatment improving the function of vision and quality of life.

Aim. The aim of the current study was to estimate the improvement of best-corrected visual acuity and overall satisfaction in patients after Nd:YAG laser capsulotomy.

Methods. This prospective study included 31 patients (45 eyes) with the history of cataract surgery. All patients underwent examination of best-corrected visual acuity (BCVA) before the procedure exact day and one month after, including a subjective questionnaire. Patients were divided and analysed based on their overall satisfaction (OvS, five-point Likert scale) and time from the surgery to the laser procedure (TsTl). TsTl groups were defined as less than

1 year (group A), 1 to 5 years (group B), and more than 5 years (group C). The obtained data was analysed using IBM SPSS v27.0 and presented as medians with the interquartile range (IQR (25%; 75%)).

Results. The median age of participants in our study was 76 (69; 82). TsTl frequencies were 1 (2.2%), 24 (53.3%), 20 (44.4%) for groups A, B, and C, respectively. There was a statistically significant improvement of BCVA comparing pre-procedure and after-procedure ($p < 0.001$). Comparing OvS there were 10 (22.2%) patients with no change in OvS, 15 patients (33.3 %) who were satisfied with procedure outcomes and 20 (44.4%) patients were very satisfied. While comparing differences in BCVA before and after procedure, there was found a statistically significant higher OvS rate in patients with a highest difference in improvement of BCVA ($p < 0.001$).

Conclusion. Our study indicates that most patients marked their OvS as very satisfied one month after the Nd:YAG capsulotomy procedure. While analysing satisfaction rate, higher OvS was observed in patients with the highest increase in BCVA after procedure. Objective measures of visual function may not necessarily reflect the subjective viewpoint of patients regarding PCO treatment outcome.

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EFFICACY OF COMBINED THERAPY IN RETINAL VEIN THROMBOSIS

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Background. Retinal vein occlusion (RVO) is the second most common retinal disease after diabetic retinopathy and the fifth leading cause of blindness, affecting over 16 million people, especially those over 65. Men are at higher risk. Treatment includes C, glucocorticoid injections, and laser photocoagulation, used alone or in combination. Assessing the efficacy of combined therapy is crucial.

Aim. To evaluate the efficacy of combined therapy in retinal vein thrombosis.

Methods. A retrospective study of 190 patients with retinal vein thrombosis treated with intravitreal bevacizumab and combination therapy over three months. Patients were divided into two groups: 94 received combination therapy, and 96 received anti-VEGF (vascular endothelial growth factor) alone. Best-corrected visual acuity (BCVA), intraocular pressure, arterial hypertension, and central reti-

nal thickness (CRT) were assessed before and after treatment.

Results. The anti-VEGF group had an average age of 60, while the combined therapy group averaged 56. BCVA significantly improved in both groups ($p = 0.001$). Initial intraocular pressure (IOP) was 18.8 mmHg (anti-VEGF) and 16.98 mmHg (combined therapy). In the anti-VEGF group, BCVA negatively correlated with macular oedema thickness ($r = -0.56$), and IOP positively correlated with CRT after three months ($r = 0.60$). In the combined therapy group, BCVA positively correlated with macular oedema thickness before ($r = 0.60$) and after treatment ($r = 0.69$).

Conclusion. Combined therapy significantly improves visual acuity and reduces macular oedema thickness. Arterial hypertension increases the risk of RVO.

CORRELATION BETWEEN VISUAL ACUITY AND RETINAL ANATOMICAL CHANGES IN PATIENTS WITH EPIRETINAL MEMBRANE AFTER PARS PLANA VITRECTOMY

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Background. Epiretinal membrane (ERM) is a transparent avascular fibrocellular membrane that proliferates on the inner surface of the retina. Its development leads to disruption of the normal anatomical structures of the retina and macular dysfunction. Its incidence increases with age, especially after 75 years. Two types of ERM are distinguished — idiopathic, which is not associated with eye diseases or associated only with posterior vitreous detachment, and secondary — which occurs due to pathological conditions of the eye. ERM symptoms depend on the severity stage, in the early stages ERM may not cause any symptoms. However, as the disease progresses, common symptoms such as decreased visual acuity and metamorphopsia develop. Currently, the only treatment option for the treatment of this condition, is pars plana vitrectomy (PPV) surgery. Thanks to this surgery, it is possible to prevent the progression of ERM with subsequent retinal damage, improve visual acuity, and reduce symptoms of metamorphopsia.

Aim. To determine the relationship between changes in best-corrected visual acuity (BCVA) and changes in central retinal thickness (CRT) in patients after PPV surgery. Evaluation of PPV surgical outcomes.

Methods. A retrospective study was conducted at Riga East Clinical University Hospital “Bīķernieki” Ophthalmology Clinic. Data on 101 patients was obtained from patient med-

ical records, optical coherence tomography system, and database. The study analysed data on patient age and gender, symptoms; changes in BCVA and CRT (preoperative, 1 month, 3 months, and 6 months after surgery), invasive intraocular manipulations, and other ocular diseases in the medical history.

Results. The average age of the study participants was 67.6 ± 8.14 years. Of the total number of patients, 69% of patients were female and 31% were male. The average age of female patients was 67.06 ± 8.36 years, the average age of male patients was 68.7 ± 7.62 years. A negative correlation is found between changes in BCVA and CRT. As CRT increases, BCVA decreases. The presence of cataract ($p = 0.011$), diabetic retinopathy ($p = 0.001$), vitreoretinal traction ($p = 0.05$), and history of intravitreal injections ($p = 0.026$) significantly influenced BCVA outcomes after surgery. None of the factors analysed in the study significantly affected CRT outcomes after the surgery.

Conclusions. PPV is a safe method for ERM therapy, resulting in progressive improvement in BCVA and reduction in CRT at 1, 3, and 6 months postoperatively.

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CHANGES IN THE ANTERIOR CHAMBER ANGLE IN GLAUCOMA PATIENTS AFTER GONIOSCOPY-ASSISTED TRANSLUMINAL TRABECULOTOMY WITH A POLYPROPYLENE SUTURE IN PHAKIC AND PSEUDOPHAKIC EYES

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Background. Glaucoma is a chronic, progressive degenerative disease of the optic nerve, leading to retinal ganglion cell loss and gradual visual field loss. It is the leading cause of irreversible blindness worldwide. Currently, glaucoma affects 76 million people globally, and it is projected that by 2040, the number of glaucoma patients will increase to 111.8 million. There is limited data on anterior chamber angle changes after gonioscopy-assisted transluminal trabeculotomy (GATT) with a polypropylene suture in phakic and pseudophakic eyes.

Aim. To compare changes in the anterior chamber angle and influencing factors in phakic and pseudophakic glaucoma patients before GATT with a polypropylene suture and one month after surgery.

Methods. 30 patients were included in the study and were divided into two groups: one group included 20 patients (20 eyes) with cataract who needed GATT surgery (GATT-KAT), and the other group included 10 patients (10 eyes) without cataract with IOL implantation before and who needed GATT surgery (GATT-IOL). All patients were examined before and one month after surgery with an ANTERION Heidelberg engineering anterior segment optical coherence tomograph, 24-2, SITA (Carl Zeiss HFA3 850) computerised visual field, ICare IC100 tonometer and

KONAN CellCheck20 specular microscope. The obtained data were analysed using the IBM SPSS Statistics version 25.0.

Results. The median intraocular pressure (IOP) score significantly changed postoperatively ($PMV = 1.46 \times 10^2$). The anterior chamber depth decreased significantly ($p < 0.05$) only in the GATT-KAT group, while no anterior chamber angle narrowing was observed in either group. Lens thickness increased in phakic eyes post-GATT ($p < 0.05$), indicating potential cataract progression. IOP reduction was comparable between groups, confirming the efficacy of GATT. Corneal thickness and endothelial cell count changes were statistically significant, but did not indicate corneal compromise. Eye length remained unaffected.

Conclusion. GATT effectively lowers IOP in both phakic and pseudophakic eyes. However, in phakic patients, the anterior chamber becomes shallower, and lens thickening may contribute to cataract progression. Preoperative or combined cataract surgery with GATT may mitigate post-operative complications. GATT with polypropylene suture remains a safe option for glaucoma management without corneal adverse effects.

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OPTICAL COHERENCE TOMOGRAPHY MACULAR AND PERIPAPILLARY VASCULAR DIFFERENCES IN MIGRAINE PATIENTS

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Background. Migraine is a common primary disabling headache disorder, with an overall prevalence of 14.7% in the general population. It is characterised by recurrent attacks of moderate to severe pain, lasting for 4 to 72 hours, preceded or accompanied by focal neurological and generalised symptoms. Although the pathophysiology of migraine is not fully understood, the complex interaction of vascular and neural factors is fundamental. Optical coherence tomography (OCT) and OCT angiography (OCTA) are imaging technologies for anatomical and vascular micro-visualisation of the macula and optic nerve. Advances in non-invasive ophthalmic imaging could potentially be the most available biomarker for migraine.

Aim. To evaluate microvascular changes in the retina and optic nerve in migraine patients and healthy individuals.

Methods. The study group included 68 patients aged 18 to 40 years. Patients were divided into three groups: the first group contained patients with migraine with aura (20 patients, 40 eyes), the second group contained patients with migraine without aura (17 patients, 34 eyes), and the third group included a control group of healthy individuals (31 patients, 62 eyes). Patients underwent OCT and OCTA examination of the macula and optic nerves of both eyes. In addition — age, sex, best corrected visual acuity, aura symptoms, number of headache days per month — were

fixed. The obtained data were analysed using the IBM SPSS Statistics version 25.0.

Results. Patients with migraine with aura had statistically significantly lower macular superficial vascular central perfusion density (cPD, $p = 0.03$) and central vascular density (cVD, $p = 0.01$), compared to healthy subjects. Retinal nerve fibre layer (RNFL) thickness, central macular thickness (CMT), optic nerve disc (RND) peripapillary perfusion, foveolar avascular zone (FAZ) showed no statistically significant difference between groups in any of the comparisons. However, looking at the measurement data of RNFL and CMT, it can be observed that these scores are slightly

higher in the control group. Likewise, FAZ measurement was lower in the control group.

Conclusion. The obtained data shows that OCTA could be used as an objective and rapid tool in the detection of macular microvascular changes in migraine patients with aura, but not in migraine patients without aura. The reduction of cPD and cVD of the superficial macular vessels could be used as one of the markers of migraine with aura damage in the future, but additional studies are needed.

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IMPACT OF ACCELERATED CORNEAL CROSS-LINKING ON ENDOTHELIAL CELL DENSITY AND MORPHOLOGY IN CENTRAL AND PARACENTRAL REGIONS AFTER SIX MONTHS

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Background. Keratoconus (KC) is a progressive ectatic corneal disease (ECD) involving conical bulging and thinning of the corneal stroma due to a biomechanical weakening of the tissue. Corneal collagen cross-linking (CXL) is the only procedure to halt the progression of KC. During CXL, the strongest radiation effect is targeted at the anterior 300 μm of corneal thickness and should not penetrate deeper. Nevertheless, the risk of UVA exposure to the endothelium remains.

Aim. To compare the endothelial cell density and morphology in the central and paracentral points of the cornea before and six months after accelerated CXL.

Methods. This study evaluated 22 eyes of 20 adult patients who underwent accelerated CXL using a protocol of 9 mW/cm^2 for 10 minutes to treat progressive KC at the Department of Ophthalmology, Hospital of the Lithuanian University of Health Sciences, between 2021 and 2024. Endothelial cell density (ECD), the coefficient of variation in cell size (CV), and the percentage of hexagonal cells (HEX) were quantitatively assessed preoperatively and at six months postoperatively at both central and paracentral corneal regions using a non-contact specular microscope

(NIDEK, USA; CEM-530). Statistical analyses were performed using IBM SPSS Statistics 26.0, with descriptive methods and the Wilcoxon signed-rank test. p -values less than 0.05 were considered statistically significant.

Results. The mean age of KC patients was 27.15 ± 6.976 years. Sixteen cases were males (80%) and four cases were females (20%). There was a statistically significant increase in CV at six months postoperatively at each paracentral location (0° , $p = 0.02$; 90° , $p = 0.003$; 180° , $p = 0.009$; 270° , $p = 0.032$). Additionally, a statistically significant reduction in HEX was observed at both the central ($p = 0.016$) and paracentral points (90° , $p = 0.013$; 180° , $p = 0.017$) at six months postoperatively. Furthermore, a statistically significant decline in ECD was noted at the 0° paracentral location ($p = 0.016$).

Conclusion. The use of accelerated CXL may have a negative impact on corneal endothelial parameters at central and paracentral locations after six months. Further studies with larger sample sizes and longer follow-up periods are necessary.

Acknowledgements. No conflict of interest.

INTRAOBITAL LYMPHOMAS: A RETROSPECTIVE ANALYSIS OF BIOPSY-PROVEN CASES AT RĪGA EAST UNIVERSITY HOSPITAL (2020–2024)

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Background. Intraorbital lymphomas are rare orbital tumours, often masquerading as inflammatory conditions, leading to delayed diagnosis. This retrospective study examines biopsy-confirmed intraorbital lymphoma cases at Rīga East University Hospital (2020–2024) to evaluate diagnostic methods, and treatment outcomes.

Aim. To analyse the imaging findings, histopathological subtypes, and treatment outcomes of biopsy-proven intraorbital lymphomas at Rīga East University Hospital (2020–2024) to improve early diagnosis and management.

Methods. A retrospective review of patient records was conducted, analysing variables such as sex, age at diagnosis, histological subtype, and applied treatment. Data were categorised and analysed to identify trends in therapeutic approaches.

Results. Twelve cases were analysed, with a mean age of 67.42 years (range 26–89). Most patients were female (83.33%, $n = 10$), and the left eye was affected in 83.33% of cases. Marginal zone lymphoma was the most common diagnosis (41.67%, $n = 5$), followed by follicular lymphoma (25.00%, $n = 3$). Other subtypes included mantle cell, high-grade B-cell, and small lymphocytic lymphoma. Histopathological results were obtained in an average of 13.83 days (range 7–25 days). Three patients (25.00%) had unknown treatment information, with two (16.67%) of them

showing up with relapse. Six patients (50.00%) were treated using the R-CHOP chemotherapy scheme, with outcomes as follows: one (8.33%) had a fatal relapse, one (8.33%) showed resistance to first-line therapy, one (8.33%) achieved complete metabolic remission, two (16.67%) had a good prognosis, and one (8.33%) had a poor prognosis. One patient (8.33%) was treated with Rituximab and experienced disease dissemination, one (8.33%) was treated with Rituximab and brachytherapy and has since relapsed, and one (8.33%) is about to begin radiation therapy.

Conclusions. Marginal zone lymphoma was the most common subtype of intraorbital lymphoma, with most cases affecting the left eye. R-CHOP as the first line therapy yielded mixed results, with some patients achieving remission, while others experienced relapse or resistance. Timely histopathological results (13.83 days on average) were crucial for treatment decisions, highlighting the need for early diagnosis and consistent follow-up.

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Conflicts of interest. The authors declare no conflict of interest.

Surgery, Traumatology and Orthopaedics

QUALITY OF LIFE AFTER MINIMALLY INVASIVE AND RADICAL PILONIDAL SINUS SURGERY: INTRODUCING A NEW ASSESSMENT TOOL

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Background. Pilonidal disease (PD) is a common acute or chronic condition, particularly affecting young adults, characterised by the presence of a sinus tract or cavity in the sacrococcygeal region. It often results in pain, recurrent infection, and reduced quality of life (QoL). Surgery is the primary treatment for PD. The optimal approach for manag-

ing chronic cases remains controversial due to the variety of techniques used worldwide. QoL tools are widely used to evaluate the impact of diseases and their treatments. Despite their importance, generic instruments may not adequately capture the unique challenges and symptoms of PD, limiting their reliability in guiding treatment decisions.

Aim. This study aimed to compare postoperative pain, QoL, and failed surgery rates between patients undergoing pit-picking (PP) surgery and radical excision (E) without wound closure.

Methods. A total of 100 adult patients with chronic symptomatic PD were enrolled in study. They were randomly divided into two groups: PP group and E group. Follow-up period was 6 months. The pain and QoL were assessed at different time intervals after surgery using a newly developed disease-specific QoL (SQoL) questionnaire, evaluating four key areas: pain, physical activity, wound-related symptoms, and psychosocial well-being. The adapted SQoL questionnaire has been proven effective for use in clinical practice.

Results. The two groups were homogeneous in terms of age, gender, BMI, harmful habits, duration of disease-related symptoms, pilonidal sinus size, and other baseline characteristics. Pain levels were significantly lower in the

PP group compared to the E group during the first postoperative week (median: 10.0 and 20.0, respectively ($p = 0.002$)), at the two-week follow-up (median: 4.0 and 10.0, respectively ($p = 0.013$)) and 1-month intervals (median scores of 0.0 and 4.0, respectively ($p < 0.05$)). QoL scores were also significantly better in the PP group at both the two-week (mean: 21.1 ± 17.8 SD and 29.0 ± 15.9 SD, respectively ($p = 0.033$)) and one-month follow-ups (mean: 11.9 ± 14.4 SD and 20.8 ± 14.6 SD, respectively ($p = 0.003$)). No significant difference was found between the two groups in terms of failed surgery rates.

Conclusion. Pit-picking surgery provides significant advantages, including reduced postoperative pain and faster improvement in quality of life, making it a favourable option for managing chronic pilonidal disease.

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EVALUATION OF THE EFFICACY OF TRANSVERSUS ABDOMINIS PLANE BLOCK FOR ANALGESIA AFTER ABDOMINAL SURGERY

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Background. The transversus abdominis plane (TAP) block is a widely utilised regional anaesthesia technique known for providing effective and sustained postoperative pain relief in abdominal wall surgeries, particularly hernia repairs, where the intensity of postoperative pain typically peaks within the first 24 hours.

Aim. This study aimed to evaluate the efficacy of the TAP block as a preferred analgesic method compared to multimodal analgesia without the inclusion of regional techniques.

Methods. A retrospective randomised trial was conducted, involving 30 patients who underwent abdominal surgery. Participants were divided into two groups of 15 each. The study group received ultrasound-guided TAP blocks (bilateral, right, or left, based on the surgical field and hernia type), while the control group was managed with multimodal analgesia alone. Patients in the control group who experienced insufficient pain control were administered intramuscular tramperidine. Both groups received standard multimodal analgesia consisting of metamizole sodium,

dexketoprofen or ketorolac, and paracetamol at regular intervals. Pain was assessed using the Visual Analog Scale (VAS), with a target score of 0 indicating complete pain relief. The data was processed using IBM SPSS Statistics (29.0 version) software.

Results. Postoperative pain scores differed significantly ($p < 0.001$) between the two groups at 2, 6, and 16 hours post-surgery. VAS scores in the study group ranged from 0 to 4, while those in the control group ranged from 2 to 8. The highest pain intensity was observed at 6 hours postoperatively, with mean VAS scores of 2.07 in the study group and 6.00 in the control group.

Conclusions. 1. The TAP block provides effective postoperative analgesia, with a rapid onset of action and sustained pain relief lasting over 16 hours.

2. It significantly reduces the need for opioid analgesics and painkillers, yielding favourable VAS scores without observed complications in patients undergoing hernia surgeries of the anterior abdominal wall.

THE IMPACT OF BODY MASS AND FAT DISTRIBUTION ON LUMBAR SPINE DEGENERATION: A CORRELATION STUDY USING MRI

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Background. The problem is of outstanding importance since obesity and increased fat deposition, including subcutaneous fat and muscle fat infiltration, are increasingly recognised as key contributors to musculoskeletal degeneration. The interrelationship between body mass index (BMI), subcutaneous and intramuscular fat, and spinal structural changes such as facet joint degeneration, ligament hypertrophy, and Modic changes remains poorly understood.

Aim. The aim of the current study was to investigate the associations between body mass, fat distribution (subcutaneous and muscle fat infiltration), and degenerative changes in the lumbar spine, including facet joint degeneration, ligament hypertrophy, and Modic changes.

Methods. Altogether, 32 patients aged 45 to 55 years were included in the study. MRI diagnostics were performed to assess lumbar spine structures, and anthropometric data were collected. Statistical analysis included Spearman correlation and *p*-value calculations to determine significant associations.

Results. Strong positive correlations were found between BMI and Weishaupt grade ($r = 0.654$, $p = 0.000056$), BMI and ligamentum flavum hypertrophy at L4-L5 ($r = 0.530$, $p = 0.0018$), and BMI and Modic changes ($r = 0.594$, $p = 0.00034$). Subcutaneous fat thickness showed moderate positive correlations with Weishaupt grade ($r = 0.406$, $p = 0.0213$) and ligamentum flavum hypertrophy ($r = 0.461$, $p = 0.0079$), while muscle fat infiltration at L4-L5 exhibited moderate correlations with Modic changes ($r = 0.432$, $p = 0.0135$). These findings suggest a link between fat accumulation and degenerative spinal changes.

Conclusion. The approach highlights the importance of evaluating fat distribution patterns in relation to spinal degeneration. Increased BMI and fat infiltration contribute to structural changes, emphasising the need for targeted interventions in overweight individuals to mitigate spinal deterioration.

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JEJUNAL WALL AND KIDNEY CORTICAL ZONE HYSTOPATOLOGICAL DAMAGE CAUSED BY ACUTE MESENTERIC ISHEMIA (AMI) IN RAT MODEL

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Background. Acute mesenteric ischemia (AMI) is a sudden loss of blood supply to the small intestine caused by inadequate blood flow, obstruction, or strangulation of the mesenteric arteries. Ischemic injury results from severe intestinal wall hypoxia, cellular acidosis and metabolic by-products. If untreated, AMI can quickly lead to bowel wall infarction and multi-organ dysfunction [1].

Aim. To study jejunal wall and kidneys cortical zone histopathological damage in different time intervals after ligation of superior mesenteric artery in rat model.

Methods. The experimental procedures – EU Directive 2010/EU/63, approved by the Food and Veterinary Service of Latvia (No. 120/2020). Under general anaesthesia in Wistar Hannover male rats ($n = 6-9$) superior mesenteric artery and vein was ligated, thus ischaemia for 15, 30, 60, 90, and 120 minutes was induced. In a 10% buffered forma-

lin obtained kidney and rat jejunal wall samples were fixed for 48 hours, then stained with haematoxylin and eosin. Under light microscope, small bowel mucosal injury was determined using Chiu classification, and kidney cortical zone damage was evaluated according to EGTI scoring system [2].

Results. Early jejunal wall hypoxic changes were observed already in 15 minutes: development of subepithelial (Gruenhagens) spaces near the apex of the villus to denuded villi with exposed lamina propria and dilated capillaries — in later time periods, mucosal damage deepened till the disintegration of lamina propria in 120 minutes. Kidney cortical zone time dependent damage started from 30 min — at that time, jejunal wall's mucosal injury ranged from development of subepithelial (Gruenhagens) spaces near the apex of villus and congestion in the capillaries to breaking into pieces of lamina propria with haemorrhage and ulceration.

Conclusion. Time dependent kidney cortical zone histopathological damage started when changes in jejunal wall affected lamina propria.

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References

1. Toprak, T., Sekerci, C. A., Aydin, H. R., *et al.* Protective effect of chlorogenic acid on renal ischemia/reperfusion injury in rats. *Arch. Ital. Urol. Androl.*, 2020, **92** (2). DOI: 10.4081/aiua.2020.2.153.
2. Sengul, I., Sengul, D., Guler, O., *et al.* Postconditioning attenuates acute intestinal ischemia-reperfusion injury. *J. Med. Sci.*, 2013, **29** (3), 119–127. DOI: 10.1016/j.kjms.2012.08.021.

CONTINUOUS CONTROLLED REGIONAL INTRA-ARTERIAL ADMINISTRATION OF DRUGS IN THE COMPREHENSIVE TREATMENT OF ACUTE DESTRUCTIVE PANCREATITIS

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Background. Acute destructive pancreatitis (ADP) is a widespread and potentially fatal inflammatory disease. The incidence of ADP increases annually, significantly exacerbating the economic burden on public healthcare systems. The prevalence of acute pancreatitis is rising globally, and in Kazakhstan. The proportion of patients with destructive pancreatitis accounts for 15–20%, ranking among the leading conditions in emergency surgery. Mortality rates remain above 20%, depending on the extent of pancreatic inflammation and disease severity. Nearly 30% of ADP patients experience complications due to pancreatic damage following the acute phase. This highlights an urgent need for specialised ADP treatment to improve survival rates, mitigate pancreatic damage, and reduce the burden on intensive care units. Therefore, developing the most effective methods for the comprehensive treatment of acute destructive pancreatitis remains a critical issue in modern surgery

Aim. To improve the outcomes of pharmacological treatment for patients with acute destructive pancreatitis.

Methods. Between 2020 and 2024, 80 patients with various clinico-morphological forms of acute destructive pancreatitis were included in a study conducted at the Multi-disciplinary City Hospital No. 2 in Astana. The cohort comprised 50 men (62.5%) and 30 women (37.5%). Upon

admission, all patients underwent examinations according to the clinical protocols for “Acute Pancreatitis” (Protocol No. 60, Ministry of Health of the Republic of Kazakhstan, March 29, 2019). Statistical analyses were performed using the Student’s t-test ($p < 0.05$).

Results. Among the 80 patients, 70 (87.5%) underwent surgery: laparoscopic cholecystectomy with omental sac drainage was performed on 38 patients, endoscopic papillotomy (EPT) on 20 patients, and gastropancreatocystostomy on 9 patients. In three clinical cases (4.3%), laparotomy with marsupialisation was performed; the remaining 10 patients (12.5%) received conservative treatment. All patients underwent cannulation of the splenic artery with subsequent programmed administration of medications (spasmolytics, vasodilators, protease inhibitors, and antibiotics) targeting the pancreas, including ulinastatin. The mortality rate in the study group was four patients (5.0%), compared to nine patients (11.25%) in the group treated using traditional methods ($p < 0.05$).

Conclusions. The developed method of controlled programmed pharmacological treatment for acute destructive pancreatitis significantly enhances the effectiveness of a comprehensive approach to managing this condition.

CEMENTLESS VERSUS CEMENTED FEMORAL FIXATION IN PRIMARY TOTAL HIP ARTHROPLASTY OF ELDERLY PATIENTS WITH OSTEOARTHRITIS: A RETROSPECTIVE REVIEW OF INTRAHOSPITAL COMPLICATIONS RATES

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Background. Total hip arthroplasty with cementless stems in elderly patients is debated due to the increased risk of early femoral periprosthetic fractures; however, cemented stems carry the risk of bone cement implantation syndrome. This study compares in-hospital complications between hy-

brid and cementless total hip arthroplasty in elderly patients with osteoarthritis.

Aim. Comparing in-hospital complications between hybrid vs. cementless total hip arthroplasty in elderly patients with osteoarthritis.

Methods. A retrospective study on patients ≥ 65 years old who underwent unilateral total cementless or hybrid hip joint arthroplasty due to osteoarthritis from February 2012 to the end of June 2023 was conducted in the Hospital of Traumatology and Orthopaedics (HTO). Exclusion criteria: other reasons for total hip arthroplasty include applying revision components, a BHR system, or a short femoral component. Patients were selected from the HTO arthroplasty register, and the complications data was added from their case histories.

Results. 773 patients (84.85%) underwent cemented femoral fixation, while 138 (15.15%) underwent cementless fixation. The cemented group was significantly older (median age 72.38 vs. 68.18, $p < 0.001$). Patients in the cemented group also had a higher preoperative ASA physical status range (1–4 vs. 1–3, $p = 0.022$) and more often used walking

aids preoperatively (46.44% vs. 21.74%, $p < 0.001$). Additionally, preoperative thromboprophylaxis was more frequently applied in the cemented group (54.72% vs. 44.93%, $p = 0.034$). The operation duration was longer in the cemented group (80 vs. 74 minutes, $p = 0.001$).

The cemented femoral fixation group experienced more complications per patient (1 vs. 0, $p = 0.003$) and a higher overall complication rate (56.92% vs. 47.10%, $p = 0.033$). Furthermore, haemodynamic reactions during surgery were more frequently observed in the cemented group (1 vs. 0, $p = 0.011$), particularly during acetabular component implantation (29.11% vs. 15.22%, $p = 0.001$).

Conclusion. Elderly patients with osteoarthritis who undergo hybrid total hip arthroplasty experience more complications than those who undergo cementless total hip arthroplasty.

RESTORATION OF HAND FUNCTION THROUGH FLEXOR CARPI ULNARIS TRANSPLANTATION: A CASE SERIES

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Background. In cases of forearm muscle function loss causing hand or finger extension or flexion deficits where tendon or nerve transfers are not feasible, free functional muscle transplantation becomes the indicated treatment option. The gracilis muscle transplantation is considered the gold standard procedure. The Flexor Carpi Ulnaris (FCU) muscle provides optimal characteristics in terms of length and innervation patterns for restoring both finger flexor and extensor function, typically yielding favourable functional outcomes.

Aim. To evaluate the effectiveness of FCU transplantation in restoring hand function in patients with severe upper limb injuries.

Methods. Three patients underwent FCU transplantation to address their specific functional deficits. Patient 1: A 25-year-old male, right-hand dominant, sustained injuries to the right biceps, brachialis, all flexors, median and ulnar nerves, and brachial artery due to a glass cut in the cubital fossa. The FCU was transplanted to the flexor digitorum profundus (FDP) of fingers II–V and the flexor pollicis longus.

Patient 2: A 38-year-old female, right-hand dominant, presented with Volkmann's contracture in left hand resulting in loss of function in fingers II and III. The FCU was transplanted to the FDP of these fingers. Patient 3: A 49-year-old

male, right-hand dominant, suffered war-related trauma in right hand leading to median and ulnar nerve injuries. The FCU was transplanted to the FDP of fingers II and III.

Due to the severity of injuries, all patients required multiple additional staged reconstructive procedures.

Results. In Patient 1, partial functional restoration was achieved across digits I through V, though not reaching full range of motion. Patient 2 demonstrated complete recovery with full flexion capacity in the second and third digits. In Patient 3, while functional activity was observed in the transplanted (FCU) muscle, additional intervention with lipofilling procedure is indicated to minimise transplanted muscle tendon adhesions to adjacent tissues and enhance tendon gliding mechanics for optimal functional outcomes.

Conclusion. All three patients who underwent FCU transplantation achieved favourable functional outcomes. Given the severity of injuries, FCU transplantation represents one stage in the comprehensive surgical treatment protocol. No functional donor site deficits were observed in any of the patients. When performing FCU muscle transplantation, the surgical focus should be directed toward maximising function in one or two digits rather than attempting to restore function to all digits simultaneously.

Acknowledgements. The authors declare no conflicts of interest related to this study.

INTRAOPERATIVE DIURESIS ACTIVATION AFTER KIDNEY GRAFT REVASCULARISATION AS A PREDICTIVE MARKER FOR GRAFT FUNCTION IN EARLY POST-OPERATIVE PERIOD AFTER KIDNEY TRANSPLANTATION

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Background. The experience of the Latvian Transplantation Centre indicates that the time of diuresis activation following kidney graft revascularisation is a predictive factor for renal graft function. Rapid diuresis activation during surgery is associated with better outcomes after kidney transplantation (KT).

Aim. This study aims to accurately determine the association between diuresis activation time after kidney graft revascularisation and kidney graft function during the early postoperative period following KT.

Methods. This retrospective study includes deceased donor (DD) KT cases performed at the Latvian Transplantation Centre between 01.01.2011 and 31.12.2012 ($n = 147$). Exclusion criteria included DD age > 55 years, DDs with diabetes and/or severe hypertension, paediatric donors and recipients, recipients undergoing a second or subsequent KT, highly sensibilised recipients, deviations in kidney graft anatomy, and cases with observed surgical complications in the early postoperative period. After applying these exclusions, 80 KT cases from 56 DDs were analysed. The study population was divided into two groups based on the time of diuresis activation after revascularisation: the early (< 20 minutes after revascularisation) diuresis activation (EDA) group ($n = 57$, control group) and the late (≥ 20 minutes after revascularisation) diuresis activation (LDA) group ($n = 23$, study group). The groups were compared based on daily

diuresis and daily serum creatinine concentrations during the first five postoperative days. Additionally, the groups were compared for cold ischemia time (CIT) and donor age to assess their impact on diuresis activation after kidney graft revascularisation.

Results. Late diuresis activation was observed in 23 cases (28.75%). Compared to EDA, LDA was associated with significantly reduced daily diuresis during the postoperative period: 1st day 6377 ± 591 ml vs. 3323 ± 497 ml; 2nd 5487 ± 405 ml vs. 2316 ± 483 ml; 3rd 3581 ± 268 ml vs. 2621 ± 323 ml; 4th 3075 ± 220 ml vs. 2139 ± 282 ml; 5th 2742 ± 189 ml vs. 1913 ± 236 ml ($p < 0.05$ in all cases); increased daily serum creatinine concentration 1st day 0.461 ± 0.026 mmol/l vs. 0.560 ± 0.040 mmol/l; 2nd 0.376 ± 0.027 mmol/l vs. 0.572 ± 0.055 mmol/l; 3rd 0.319 ± 0.028 mmol/l vs. 0.531 ± 0.061 mmol/l; 4th 0.276 ± 0.027 mmol/l vs. 0.454 ± 0.057 mmol/l; 5th 0.248 ± 0.024 mmol/l vs. 0.366 ± 0.049 mmol/l ($p < 0.05$ in all cases). CIT was similar between the control (18.5 ± 0.5 hours) and study (19 ± 1 hours) groups. Donor age was similar in the control (48.4 ± 1.6 years) and study (50.4 ± 2 years) groups.

Conclusion. LDA occurring more than 20 minutes after revascularisation is associated with reduced diuresis and poor creatinine elimination. LDA shows no isolated association with CIT or donor age, suggesting that it is a multifactorial condition.

OSTEOMYELITIS, PROSTHETIC JOINT INFECTION CAUSED BY MDR AND XDR GRAM-NEGATIVE BACTERIA: CLINICAL CHARACTERISTICS, TREATMENT COURSE, OUTCOME IN THE HOSPITAL OF TRAUMATOLOGY AND ORTHOPAEDICS FROM YEAR 2021 TO 2024

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Background. The significance of gram-negative bacteria (GNB) in the pathogenesis of osteomyelitis (OM) and prosthetic joint infections (PJI) is increasing today. GNB make the treatment of OM, PJI more challenging due to the patient's comorbidities and the specific antibiotic susceptibility of the microorganism. Nowadays, increasing concern is raised by antibiotic resistance, which significantly impacts treatment options. Cases of OM, PJI caused by resistant GNB have been little studied in the medical literature.

Aim. The aim of this study is to investigate cases of resistant GNB (MDR, XDR) OM, PJI, determine the pathogen, its resistance profile, clinical characteristics, antibiotics used, surgical procedures, length of hospitalisation, and treatment outcome.

Methods. A retrospective study, medical histories of 68 patients with diagnosis of OM and PJI hospitalised in the Hospital of Traumatology and Orthopaedics from year 2021 to 2024 were studied and analysed using IBM SPSS statistics.

Results. From 68 patients 40 met the research criteria. 33 were male (82.5%), 7 were female (17.5%). The mean age was 56.3 years. The length of hospitalisation in average was 44 days (minimum 2, maximum 194 days), 27.5% of patients were hospitalised repeatedly. 95% were hospitalised and 45% had data of antibacterial therapy used previously within past year. Approximately 30% of patients had diabetes, adiposity, chronic kidney disease. 32% had no previous medical history. The most important cause of OM was soft tissue infection (30%), followed by open fracture related OM (25%), osteosynthesis related infection (20%). The most frequent microorganisms were *Klebsiella* (52.5%), *Acinetobacter* (20%). 30% were polymicrobial. Enterobacteriaceae showed resistance to carbapenems 14.5% of cases, *Pseudomonas* and *Acinetobacter* — 100% of cases. Carbapenems were used in 50% of cases, for 16 days in average, maximum 42 days. Polymyxins was used in 42.5% of cases, for 27.5 days in average, maximum 52 days. 87% of cases had three or less operations, 80% got discharged from hospital without amputation.

Conclusion. Most of the patients with MDR or XDR GNB OM, or PJI were over 55-year-old, male, and had a history of prior hospitalisation. These patients underwent prolonged courses of intravenous antibacterial therapy and multiple surgical procedures, which serve as risk factors for further hospital-acquired infections.

CHOICE OF SURGICAL TREATMENT FOR COMPLICATIONS OF GALLSTONE DISEASE

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Background. In recent decades, there has been an increase in diseases of the hepatopancreatoduodenal zone, including gallstone disease (GSD). GSD complicated by acute cholecystitis is a common surgical pathology that develops due to obstruction of the bile ducts. The risk of gallbladder disease is higher in women, obese patients, pregnant women, and individuals over 40 years old. Additional risk factors include rapid weight loss, a sedentary lifestyle, and metabolic disorders such as diabetes mellitus. Gallstones form due to imbalances in bile composition, leading to cholesterol crystallisation and stone formation. Approximately 95% of people with acute cholecystitis have gallstones. Without timely treatment, acute cholecystitis can lead to gallbladder perforation, peritonitis, sepsis, or even death. With the widespread adoption of endovideosurgery, the number of operations performed on the gallbladder and bile ducts has increased, improving patient outcomes and reducing hospital stays.

Aim. To evaluate the effectiveness of endovideosurgical methods in treating complications of GSD, comparing different surgical approaches and their outcomes.

Methods. Between 2020 and 2024, the experience of surgical treatment of complicated GSD was studied in the departments of general surgery at Multidisciplinary City Hospital No. 1 and City Multidisciplinary Hospital No. 2 in Astana, Kazakhstan. The study included data from 1601 patients with complicated forms of GSD. The age of the patients ranged from 28 to 80 years; 597 (37.3%) were men, and 1004 (62.7%) were women. All patients were admitted as

emergency cases with acute abdomen symptoms. Upon admission, they underwent a full examination, including laboratory tests, ultrasound, computed tomography (CT) scans, and magnetic resonance cholangiopancreatography (MRCP) when necessary, in accordance with clinical protocols. Statistical analysis was conducted using methods of variation statistics with calculation of $M \pm SD$, and differences between comparison groups were analysed using standard deviation.

Results. 319 cases (20%) presented with choledocholithiasis without cholecystitis. 769 patients (48.0%) developed terminal choledochal duct strictures. 361 cases (22.6%) presented with mechanical jaundice. Mirizzi syndrome was observed in 89 patients (5.6%). Perivesical infiltrate with abscess formation occurred in 221 cases (14%). Biliary pancreatitis developed in 8 cases (0.5%). Only 80 patients (4.9%) underwent surgery for newly diagnosed GSD.

Minimally invasive treatment was used in 99% of cases. Laparoscopic cholecystectomy with bile duct drainage was performed in 77%, followed by endoscopic retrograde cholangiopancreatography (ERCP) with endoscopic sphincterotomy (EPT) (18%), percutaneous transhepatic cholangiography (PTC) (4%), and open laparotomy (1%).

Conclusion. Laparoscopic cholecystectomy remains the gold standard for the surgical treatment of GSD and its complications. ERCP with EPT plays a crucial role in managing bile duct obstruction. Further research is needed to optimise treatment strategies, particularly in severe cases.

ADHERENCE TO GUIDELINES FOR ANTIBIOTIC PROPHYLAXIS IN SPINE SURGERY PATIENTS

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Background. Surgical site infections (SSIs) are associated with high morbidity, mortality, and healthcare costs. The prevention of SSIs is based on a combination of preoperative preparation, surgical technique, and perioperative antibiotic prophylaxis. Despite an abundance of evidence demonstrating the effectiveness of antimicrobials to prevent SSIs, the use of antimicrobial prophylaxis in this clinical setting is associated with inappropriate timing and dosing.

Aim. The aim of this study was to evaluate adherence to the guidelines for antibiotic prophylaxis in spine surgery patients.

Methods. This cross-sectional study was performed using prospective data gathered from November 2022 to December 2024 from patients undergoing spine surgery. Antibiotic dose and timing of administration were compared with the hospital guidelines.

Results. A total of 239 patients were enrolled (mean age 48.5 ± 12.8 years; 47% male). Of these, 79% received cefazolin and 21% vancomycin prophylaxis. The timing of antibiotic administration was 59.1 ± 19.1 min for cefazolin and 79.8 ± 26.1 min for vancomycin ($p = 0.003$). Guidelines for antibiotic prophylaxis were followed in 93.7% of cefazolin cases and 84% of vancomycin cases.

Conclusions. The study revealed that many patients, especially those receiving vancomycin do not receive the appropriate antibiotic prophylaxis despite the fact that guidelines are in place.

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POSTOPERATIVE PAIN INTENSITY AFTER SCIATIC NERVE BLOCK, USING THREE DIFFERENT LOCAL ANAESTHETICS

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Background. Postoperative pain management remains a critical concern for patients, healthcare providers, and healthcare systems due to its impact on patient recovery and associated economic burden. One effective strategy for mitigating postoperative pain is the administration of regional nerve blocks preoperatively. Various local anaesthetic agents with differing onset times and durations of action are available, allowing for personalised analgesic approaches to optimise patient outcomes.

Aim. This study aims to analyse postoperative pain intensity over a 24-hour period following different ankle surgeries under sciatic nerve block in the popliteal approach before nerve *N. tibialis* and *N. peroneus communis* split and

compare the effects of three different diluted different acting local anaesthetic agents — lidocaine 1%, bupivacaine 0.25%, and ropivacaine 0.375%.

Methods. Sciatic nerve blockade was performed on ten consecutive patients undergoing orthopaedic surgery of the foot. Patients were randomly divided into three groups: group 1 received 20 ml lidocaine 1%, group 2 received 20 ml bupivacaine 0.25%, and group 3 received 20 ml ropivacaine 0.375%. Sciatic nerve block was performed with ultrasound and neurostimulation assistance. Surgery was performed using spinal anaesthesia with bupivacaine 10–15 mg.

with ultrasound and neurostimulation assistance. Surgery was performed using spinal anaesthesia with bupivacaine 10–15 mg.

After surgery, patients were instructed to complete pain intensity assessments every four hours using a subjective numerical scale ranging from 0 to 10, where 0 represented no pain and 10 indicated the worst pain experienced in their lifetime. Additionally, patients documented the time and necessity of requesting analgesic medication following surgery.

Results. The prospective study included 10 patients, of which 30% ($n = 3$) had sciatic nerve block with lidocaine, 30% ($n = 3$) with bupivacaine and 40% ($n=4$) with ropivacaine. In the lidocaine group, the most severe pain began at 4 hours postoperative with 5.33 in PNRS (Pain Numeric Rating Scale). In the bupivacaine group, the most

severe pain began at 24 hours postoperative with 2.67 in PNRS. In the ropivacaine group, the most severe pain began at 20 hours postoperative with 1.25 in PNRS.

Conclusion. Although participants in the bupivacaine group reported the most severe pain the latest, participants in the ropivacaine group experienced peak pain 4 hours earlier, but with a significantly lower intensity. The participants in the lidocaine group reported the earliest onset of maximal pain, occurring 4 hours after surgery, with the highest pain intensity among the groups.

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The authors declare the absence of the conflict of interest.

SYMPATHETIC MODULATION AND RESPIRATORY IMPLICATIONS OF INTERSCALENE BRACHIAL PLEXUS BLOCK: A PROSPECTIVE ANALYSIS OF INTRAOCULAR PRESSURE DYNAMICS AND PHRENIC NERVE INVOLVEMENT

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Background. Interscalene brachial plexus block (BPB) is a cornerstone of regional anaesthesia technique for upper extremity procedures, providing effective analgesia while reducing opioid use. Beyond pain control, it affects intraocular pressure (IOP) and may cause transient diaphragmatic paresis via phrenic nerve involvement. These effects are clinically relevant for patients with glaucoma or respiratory conditions, requiring careful perioperative evaluation.

Aim. This prospective observational study aimed to quantify the temporal relationship between interscalene BPB and ipsilateral IOP reduction, assesses the impact of postural variations (supine vs sitting) on IOP dynamics, and evaluate the incidence and magnitude of diaphragmatic dysfunction through ultrasonographic assessment of excursion.

Methods. Nine ASA I-II patients (18 years), scheduled for elective shoulder or clavicular surgery, received ultrasound-guided interscalene BPB with 15 ml of 0.375% ropivacaine. Intraocular pressure (IOP) was measured pre-block and at 10, 20, and 30 minutes post-block using a validated Pulsair IntelliPuff non-contact tonometer. Comparative analysis included ipsilateral versus contralateral IOP, supine versus sitting IOP (before and after general anaesthesia), and diaphragmatic excursion assessed via M-mode ultrasonography. Statistical analysis was performed using the Wilcoxon signed-rank test ($\alpha = 0.05$).

Results. Key findings included a sustained reduction in IOP on the blocked side at 30 minutes ($p = 0.018$), likely result-

ing from cervicothoracic sympathetic chain inhibition. Supine positioning led to a bilateral IOP increase due to reduced venous drainage, emphasising the interaction between hemodynamic and autonomic mechanisms. Ipsilateral Horner's syndrome was observed in 44% of patients, further supporting sympathetic involvement. In terms of diaphragmatic function, 67% (6/9) of patients experienced reduced ipsilateral diaphragmatic excursion. While this phrenic nerve paresis remained asymptomatic in normopneic individuals, careful evaluation is advised for those with limited respiratory reserve.

Conclusion. Interscalene BPB leads to a statistically and clinically significant IOP reduction within 30 minutes, likely due to sympathetic blockade. This effect may offer protective benefits for glaucoma-prone patients but requires caution in those with unstable IOP. Additionally, the 67% incidence of transient diaphragmatic paresis underscores the need for thorough preoperative respiratory evaluation, especially in individuals with COPD or obesity-hypoventilation syndrome.

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No conflict of interest declared.

PATIENT SATISFACTION ABOUT THEIR STAY IN THE INTENSIVE CARE UNIT AT THE HOSPITAL OF TRAUMATOLOGY AND ORTHOPAEDICS

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Background. Intensive care units (ICUs) play a vital role in ensuring patient safety and recovery following surgical procedures. During this phase, the interaction between medical staff and patients becomes a cornerstone of the healing process, influencing both physical and emotional recovery. In the postoperative ICU setting, patients often experience a wide range of physical and psychological challenges. Effective communication, adequate pain management, and emotional support are essential components of care that contribute to patient satisfaction. In Latvia, as in many other countries, patient satisfaction in ICU settings has gained increasing attention as healthcare systems strive to align with international standards of quality and patient-centred care.

Aim. The findings from this research will provide valuable insights into areas for improvement and help healthcare institutions enhance patient care standards. Moreover, understanding patient perspectives can foster a more empathetic and responsive approach in ICU care, ultimately improving outcomes and patient trust in the healthcare system. By investigating these factors, this study seeks to contribute to the broader discourse on patient satisfaction in intensive care, offering evidence-based recommendations to enhance the quality of postoperative care in Latvia.

Methods. The methods were cross-sectional, quantitative, non-experimental. Research instrument: survey questionnaire. All participants received the same survey. Sixty-three

patients who were transferred from the intensive care unit to the surgery unit participated in the study.

Results. Overall, 87.3% of patients were satisfied or very satisfied with their experience in the ICU. 4.8% rated it as neutral, 14% were dissatisfied, and no patient reported being very dissatisfied with their stay in the ICU. Patients who indicated that they fully trusted the medical staff in the ICU rated their overall experience in the ICU higher. The test results show a statistically significant relationship between patient's trust in medical staff and overall satisfaction ($\chi^2(6, n = 63) = 43.729, p < 0.001$). Analysis of further data revealed a statistically significant relationship between the attitude of the ICU staff and the patient's overall evaluation of their experience in the ICU ($\chi^2(6, n = 63) = 32.170, p < 0.001$). Additionally, an important factor that improves the patient's overall experience in the ICU is the medical staff's communication about the patient's health condition ($\chi^2(9, n = 63) = 29.242, p < 0.001$).

Conclusion. A positive patient experience in the ICU is closely linked to trust in the staff, their attitude, and the information provided, emphasising the need to focus on communication and building trust between medical staff and patients.

Acknowledgements. The authors declare the absence of a conflict of interest.

CEFAZOLIN CONCENTRATION IN INTERVERTEBRAL DISCS IN MULTILEVEL SPINE SURGERY

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Background. Prolonged operative duration raises the risk of surgical site infections, which, in spine surgery, are linked to chronic back pain, restricted daily activities, and a decline in the quality of life. Despite this correlation, there is limited data available on how prophylactic cefazolin is distributed into intervertebral discs during multilevel surgery.

Aim. This study aimed to assess the concentrations of cefazolin and the temporal pattern of cefazolin distribution in intervertebral discs during multilevel discectomy after intravenous preoperative prophylactic cefazolin administration.

Methods. This prospective observational study included 23 patients undergoing elective multilevel discectomy in the cervical or lumbar spine, with a median age of 54.5 (interquartile range (IQR) 39.0–62.75) years and a median weight of 85.0 (IQR 66.25–88.5) kg. Patients received 2 g intravenous cefazolin 30–60 minutes before incision. Venous blood was collected before administration of cefazolin and again at disc removal. Blood and intervertebral disc tissue were assayed by high-performance liquid chromatography to measure cefazolin concentrations. The study evaluated the relationship between the time elapsed since cefazolin administration and the pharmacokinetic profile of cefazolin across various intervertebral levels using linear regression analysis.

Results. Intervertebral disc concentrations peaked at a median of 9.25 (IQR 7.20–11.95) mg/l within 86.00 (IQR 70.25–99.50) min after the first cefazolin 24.8 (IQR 22.60–30.2) mg/kg dose. For patients who received a second cefazolin dose, the peak concentrations reached a median of 17.4 (IQR 6.8–24.0) mg/l after 268 (IQR 105–290) min. Linear regression analysis revealed a statistically significant relationship between the difference in cefazolin concentrations and the time elapsed between samples in minutes, with a coefficient estimate of 0.08921 ($p < 0.001$).

Conclusions. The recommended cefazolin dosing strategy for patients undergoing elective multilevel discectomy led

to a gradual rise in cefazolin concentrations over a 180-minute period. The administration of a second cefazolin dose resulted in a significant increase in its intradiscal concentration.

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ASSESSING SENSORY CHANGES IN SCIATIC NERVE BLOCK WITH DIFFERENT LOCAL ANAESTHETICS, USING ICE TEST AND SKIN TEMPERATURE CHANGES

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Background. Regional blocks are increasingly preferred over or as a supplement of spinal and epidural anaesthesia for a wide range of lower limb surgical procedures. Various local anaesthetic agents in different concentrations have been used for sciatic nerve block to achieve effective analgesia. Measurement of skin temperature can be used as an indicator of sympathetic blockade induced by peripheral nerve blockage.

Aim. The aim of this study was to evaluate the time of skin temperature response and the onset of a positive ice test after lidocaine 20 ml 1%, ropivacaine 20 ml 0.375% and bupivacaine 20 ml 0.25% administration for surgical anaesthesia and postoperative analgesia in sciatic nerve block.

Methods. Sciatic nerve blockade was performed on 18 consecutive patients undergoing orthopaedic surgery of the foot. Block performed with ultrasound and neurostimulation assistance. A temperature probe was positioned on the skin of the dorsal side of the foot metatarsal region and skin temperature registered just before sciatic nerve blockade and at 2-minute intervals thereafter, within 45 minutes. At 3-minute intervals after local anaesthetic injection, patients were assessed to determine the quality of sciatic nerve block and loss of sensation in the foot using cold sensory test.

Results. The prospective study included 18 patients, of which 39% ($n = 7$) had sciatic nerve block with lidocaine,

28% ($n = 5$) with bupivacaine, and 33% ($n = 6$) with ropivacaine. The average starting temperature without block was 24.4 °C. First sensory changes after the block with bupivacaine appeared at 13 minutes with temperature 31.3 °C; after the block with ropivacaine at 9 minutes with temperature 27.3 °C; after the block with lidocaine at 7 minutes with temperature 26.2 °C. Complete sensory changes after the block with bupivacaine appeared at 28 minutes with temperature 32.3 °C; after the block with ropivacaine at 20 minutes with temperature 29 °C; after the block with lidocaine at 16 minutes with temperature 27.8 °C. After 30 minutes, the block with lidocaine had the average temperature 30 °C with an increase of 2.2 °C after complete sensory loss. After 45 minutes, the block with bupivacaine had the average temperature 33 °C with an increase of 0.7 °C after complete sensory loss; the block with ropivacaine had the average temperature 32 °C with an increase of 3 °C.

Conclusion. Sciatic nerve block with lidocaine has a rapid onset with positive dynamics even after complete sensory loss. Sciatic nerve block with ropivacaine has faster onset of time than bupivacaine. Both local anaesthetics after 45 minutes have similar temperatures.

Acknowledgements. The authors declare the absence of a conflict of interest.

EVALUATION OF INVASIVE TREATMENT FOR CHRONIC PAIN USING A TERMOGRAPH

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Background. Sacroiliac joint pathologies are a relatively common cause for lower back pain. For pain management minimally invasive treatment can be used — radiofrequency (RF) ablation or injection (blockade) of a local anaesthetic (LA) and glucocorticoid (GC) into the sacroiliac joint. The use of thermography is a way to evaluate the effectiveness of the minimally invasive treatment.

Aim. The aim of the study was to quantitatively compare the minimally invasive treatment of chronic pain between RF ablation and LA and GC blockade in patients with SI joint pain using thermography.

Methods. The study included patients diagnosed with chronic sacroiliac joint pain who underwent either radiofrequency ablation or LA and GC blockade of the sacroiliac joints. Before starting minimally invasive treatment, the patient underwent a Hikmicro SP60 thermography. Immediately after and 20 minutes after treatment, the patient underwent repeated thermography of the SI joint area. The results were processed using Hikmicro Analyzer software.

Results. In the study, 11 patients were included. The RF ablation group (n = 4) demonstrated an immediate post-procedural rise in local temperature (28.8 °C to 30.5 °C), followed by a return to baseline after 20 minutes (28.8 °C). Regional temperatures progressively increased post-procedure (28.2 °C to 29.8 °C over 20 minutes). Relative local temperature changes post-RF varied widely among patients (range:

0.2–5.7 °C), while regional changes (R) at 20 minutes were inconsistent (range: –2.6–5.3 °C). The LA+GC group (n = 7) exhibited minimal immediate local temperature elevation (31.0 °C to 31.1 °C), with a decline to 30.4 °C at 20 minutes. Regional temperatures remained stable (30.5–30.8 °C), with modest interpatient variability in relative temperature changes (local: –3.1–4.2 °C; regional: –3.0–2.4 °C). Both groups showed a positive correlation between immediate post-procedural temperature and pain scores. Correlation inverted at 20 minutes, with higher temperatures associated with lower pain scores. Pain reduction was significant over time in both groups (RF: $p = 0.02$; LA+GC: $p = 0.001$). For RF, the most pronounced pain relief occurred between baseline and 20 minutes post-procedure ($p = 0.025$). For LA+GC, significant pain reduction was observed both immediately ($p = 0.002$) and at 20 minutes ($p = 0.008$), underscoring its rapid and sustained efficacy.

Conclusions. Both techniques demonstrate efficacy, but LA+GC appears superior for rapid pain control, while RF ablation may offer longer-term benefits. Monitoring regional temperature dynamics could enhance real-time assessment of treatment response in regional anaesthesia practice.

Acknowledgements. The study was conducted using HIKMICRO SP60 thermographic camera, which was obtained by SIA “Mikrotik” grant through the University of Latvia Foundation (2024).

PREVENTING POSTOPERATIVE DELIRIUM IN OLDER ADULTS WITH HIP FRACTURE: A RANDOMISED CONTROLLED TRIAL OF A REORIENTATION INTERVENTION

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Background. Hip fracture is a common injury in the geriatric population. Postoperative delirium is a significant concern affecting up to 40% of patients. This condition increases the 30-day postoperative mortality risk and healthcare expenditures. Despite its prevalence and impact on outcomes, evidence for non-pharmacological delirium prevention strategies are limited.

Aim. The aim of this study was to investigate whether an early postoperative patient reorientation intervention is effective in reducing incidence and duration of postoperative delirium after surgery for hip fracture in older adults.

Methods. This randomised controlled trial enrolled 62 patients aged 75 years or older undergoing hip fracture surgery. Participants were randomly assigned to either control group (n = 32) or intervention group (n = 30). Prior to surgery, all patients underwent cognitive assessment using the Montreal Cognitive Assessment (MOCA) or MOCA-Blind, as well as delirium screening using the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU). Both groups were evaluated with the CAM-ICU for seven consecutive days, commencing on the first postoperative day. The intervention group received daily structured orientation

sessions, which included reorientation to time, space, and identity, as well as updates on postoperative recovery, follow-up examinations, and encouragement to drink 150–200 ml of water. Additionally, patients in the intervention group received a daily five-minute news briefing.

Results. A total of 62 patients participated in the study, of whom 79% ($n = 49$) were women with a mean age of 82.0 ± 6 years. Preoperative cognitive impairment was found in 61.7 % of patients. Delirium developed in 23 per cent of the intervention group, as compared with 21.9 per cent of the control group ($p = 0.82$). The total number of days with delirium (4 vs. 6, $p = 0.02$) was significantly lower in the in-

tervention group. The incidence of delirium was not significantly affected by age ($p = 0.82$) or sex of the patient ($p = 0.66$), but was associated with preoperative cognitive impairment ($p = 0.02$). Patients in the intervention group were four times more likely to experience a resolution of delirium compared to those in the control group (RR:4.13, 95% CI: 1.16–14.67, $p = 0.03$).

Conclusion. The reorientation intervention strategy that we studied resulted in significant reduction in the duration of delirium in older patients undergoing hip fracture surgery. The intervention showed no effect on the overall incidence of postoperative delirium.

COMPARISON OF PAIN INTENSITY USING THE VERBAL PAIN INTENSITY SCALE AND ANALGESIA NOCICEPTION INDEX IN PATIENT WITH HIP FRACTURE AND LUMBAR ERECTOR SPINE BLOCK

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Background. For patients with hip fractures, one of the guiding principles is adequate and effective analgesia. It is important to reduce the patient's pain intensity and find and assess a correct pain therapy. Patients will undergo erector spine block (ESP) in the preoperative ward, and pain intensity changes will be measured using the verbal pain scale and the Analgesia Nociception Index (ANI).

Aim. The aim of the current study is to evaluate and compare the effectiveness of two different methods for measuring pain intensity — the Verbal Pain Intensity Scale (VPIS) and the Analgesia Nociception Index (ANI) — in patients with hip fractures undergoing ESP muscle block for pain management. ESP is a previously unused block for hip surgeries in Latvia. This study could help refine pain management protocols for patients with hip fractures, optimising both clinical assessment and treatment strategies.

Methods. A prospective, observational study was conducted at the Hospital of Traumatology and Orthopaedics from December 2024. The study includes patients sched-

uled for hip arthroplasty due to hip fracture who are eligible for the study and have consented.

Before surgery, patients were taken to the preoperative observation room, where they received a spinal flexor muscle block with 30 ml of 0.375% ropivacaine and ultrasound guidance. After that, at 5-minute interval for 30 min, they were asked to rate their pain intensity from 0 to 10, and the ANI data were recorded at the same time.

Results. At present, 6 patients are enrolled in the study. ANIm mean value before ESP block was 64.83 (48–81) and after 30 min 70.83 (57–94). VPIS before ESP block was 6.6 and after 30 min 1. Currently no statistically significant correlation has been found between ANI and VPIS before, during and after ESPB, but results are still pending.

Conclusion. Our case series firstly highlights that ESP might be an effective analgesic technique for hip fracture and surgery, while retaining motor function.

PAIN OUTCOMES AFTER SPINAL SURGERY: A COMPARISON WITH AN INTERNATIONAL PAIN OUT DATABASE COHORT

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Background. The number of spinal surgeries in the world and in Latvia increases. Patients undergoing spinal surgeries often experience severe postoperative pain, which can negatively affect patient mobility and delay rehabilitation. It is

believed that in Latvia, the treatment of acute postoperative pain is often suboptimal, however, there is a lack of research comparing the situation in Latvia and the world.

Aim. To compare the reported pain outcomes and perioperative pain management data of spinal surgery patients at the Hospital of Traumatology and Orthopaedics (HTO) with international patient cohort from the PAIN OUT database.

Methods. Using the PAIN OUT methodology, spinal surgery patient-reported pain outcomes, and perioperative pain management data were collected. An 11-point numerical rating scale assessed patient-reported outcomes. Data on intraoperative and postoperative opioid and non-opioid analgesic prescriptions were obtained. Data were divided into three groups: transpedicular fixation (TPF), anterior lumbar interbody fusion (ALIF) and discectomy, analysed separately comparing with a procedure-specific patient cohort from the PAIN OUT database using parametric independent sample comparison tests.

Results. 42 patients (16 TPF, 11 ALIF, 15 discectomy) provided first postoperative day data. Compared to PAIN OUT database, statistically significant differences were found in 4 of 13 patient-reported outcomes: least pain (TPF 1.8

(± 1.4) vs. 3.5), proportion of patients out of bed (TPF 75 vs 42%, ALIF 73 vs 50%, discectomy 87 vs. 40%), wish for more treatment (TPF 19 vs. 44%, discectomy 15 vs. 27%) and receiving information about pain treatment options (TPF 62 vs 75%, ALIF 64 vs. 84%). HTO patients received opioids less frequently postoperatively (45.8 vs. 71.2%), but non-opioid analgesics more frequently preoperatively (100 vs. 18.4%), intraoperatively (100 vs. 50.6%), and postoperatively (100 vs 47.9%).

Conclusions. HTO spine surgery patients reported better outcomes in several areas compared to the international PAIN OUT cohort, including less severe pain, higher mobility, and lower desire for additional treatment. However, they received less information about pain management options. TOS patients were prescribed opioids less frequently postoperatively, but received non-opioid analgesics more consistently throughout all perioperative stages. The findings highlight the effectiveness of HTO perioperative pain management approach, emphasising the potential benefits of prioritizing non-opioid analgesics.

DOES BUPIVACAINE CONCENTRATION AFFECT THE EFFICACY OF PARASTERNAL BLOCK AFTER CARDIAC SURGERY?

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Background. Postoperative pain management following cardiac surgery via sternotomy remains a significant clinical challenge. Inadequate analgesia may delay recovery, while excessive opioid use increases the risk of adverse effects, including respiratory depression, nausea, and prolonged hospitalisation. The parasternal block has emerged as an effective regional anaesthesia technique, offering opioid-sparing benefits. However, the optimal bupivacaine concentration remains uncertain. Identifying the most effective concentration could improve pain control while minimising the risk of local anaesthetic toxicity.

Aim. This study evaluates the impact of different bupivacaine concentrations on the analgesic efficacy of parasternal block after cardiac surgery, assessing its influence on postoperative pain scores and opioid consumption.

Methods. A prospective, randomised, single-blinded clinical study was conducted on 100 patients undergoing elective cardiac surgery with median sternotomy. Participants were assigned to receive a parasternal block with bupivacaine at three different concentrations: 0.375% ($n = 20$), 0.250% ($n = 20$), and 0.125% ($n = 20$), maintaining a fixed volume of 40 ml. Pain levels were assessed at predefined time points — 0, 4, 8, 12, 16, 20, and 24 hours postoperatively — using the Numerical Rating Scale (NRS; 0–10).

Opioid requirements and adverse effects were also analysed.

Results. At 12 hours postoperatively, the median NRS pain scores were 2 (IQR 0–3) in the 0.375% group, 1 (IQR 1–2) in the 0.250% group, and 1 (IQR 0–3) in the 0.125% group, with no statistically significant difference between groups ($p = 0.542$). Opioid consumption, measured in morphine milligram equivalents (MME) within the first 24 hours, was 0 mg (IQR 0–7.5) across all groups, also showing no significant difference ($p = 0.825$). No major adverse effects or complications were observed.

Conclusion. This study demonstrates that bupivacaine concentration does not significantly influence the efficacy of parasternal block when administered at a fixed volume. Given the similar pain scores and opioid consumption across all groups, a lower bupivacaine concentration may be preferable, as it maintains effective analgesia while reducing the risk of systemic toxicity. These findings support the safe and rational implementation of parasternal block as part of multimodal analgesia in cardiac surgery patients. Further large-scale, multicentre studies are warranted to confirm these results and optimise clinical guidelines.

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PREVALENCE OF DYSPNOEA IN MECHANICALLY VENTILATED PATIENTS IN INTENSIVE CARE UNITS

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Background. Dyspnoea is a frequent and intense symptom in intubated patients. The problem is that intensive care unit (ICU) patients are exposed to many sources of discomfort. Although growing attention has been given to the research and treatment of pain, very little has been given to detecting and treating dyspnea.

Aim. The aim of the study was to describe the prevalence and predictive factors for dyspnoea in the mixed ICU patient population.

Methods. The study involved 40 adult ICU patients. Patients receiving invasive ventilation were included. For communicative patients, a visual rating scale from 1 to 10 was presented to determine the severity of dyspnea. For non-communicative patients mechanical Ventilation–Respiratory Distress Observation Scale (MV-RDOS) was used

which included heart rate, breathing frequency, paradoxical breathing pattern, accessory muscle use, and look of fear.

Results. The study involved 40 patients, 28 men (70%). Ages 60.8 (+/- 15.1). Clinically important dyspnoea ≥ 4 presented in 16 patients (38%). Average dyspnoea score 3.75 (+/- 1.7) Dyspnoea correlated with RASS score ($\rho = 0.61$, $p < 0.001$), and temperature ($\rho = 0.75$, $p < 0.01$). Analysis revealed a positive correlation between dyspnoea and CO₂ levels ($\rho = 0.88$, $p < 0.01$). Dyspnoea did not present a correlation with ventilator modes.

Conclusion. Our findings highlight the importance of RASS score, temperature, and CO₂ levels when assessing dyspnea in critically ill patients.

Acknowledgements. No conflict of interest regarding the topic of the study.

OBSERVATIONAL QUALITY IMPROVEMENT STUDY ON THE DURATION OF PREOPERATIVE FASTING

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Background. The primary goal of preoperative fasting before anaesthesia is to reduce gastric volume and acidity, thereby minimising the risk of aspiration during surgery. Recent guidelines advocate for a shift from the traditional “nil per os after midnight” approach to a more lenient fasting policy that permits limited fluid intake up to one hour before surgery. Research has shown that prolonged fasting, particularly for liquids, is likely harmful to patients before, during, and after an operation. Harm from prolonged fasting for liquids includes dehydration, dysregulated blood sugar levels, increased stress response, and postoperative complications.

Aim. We hypothesised that excessive preoperative fasting is still common practice and we aimed to investigate the actual duration of food and liquid fasting practices amongst patients in our hospital. This research is part of the European multicenter THIRST study.

Methods. Adult patients scheduled for elective procedures and either requiring general anaesthesia or regional anaes-

thesia were eligible to participate. Data were collected from 02.12.2024 to 06.12.2024. After obtaining consent and screening for eligibility, the patients answered a short questionnaire regarding their last food and liquid intake. The type of procedure, type of anaesthesia, and time of arrival in the holding bay/operating room as well as the date and time at which clear liquids were last consumed was recorded. Inclusion criteria: 1) age ≥ 18 years; 2) patients undergoing elective surgery; 3) informed consent. Exclusion criteria: 1) age under 18 years; 2) urgent and emergency surgery.

Results. Altogether, 62 patients were enrolled in the study. The mean food fasting duration was 15.2 hours. The minimum observed fasting duration before surgery was 8.0 hours, and the maximum was 21.0 hours. The fluid hours mean result was 11.2 h, with a minimum of 2.0 hours and a maximum of 18.00 hours. The mean volume of intravenous fluids administered intraoperatively was 1246 ml, with a minimum of 110 and a maximum of 3250 ml.

Conclusion. The observed duration of preoperative liquid fasting significantly exceeds the recommended guidelines. Furthermore, the volume of intravenous fluids administered intraoperatively does not adequately compensate for the fluid deficit incurred during this period. This results in pa-

tient dehydration, which may negatively impact the postoperative recovery process.

Acknowledgements. A conflict of interest exists between patients, nursing staff, and anaesthesiologists regarding preoperative dietary recommendations.

DO PATIENTS REMEMBER THE EXPLANATION ABOUT ANAESTHESIA AND ANALGESIA AFTER SURGERY?

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Background. The problem is of outstanding importance since the most critical aspect of anaesthesia is the choice of method and its efficacy. Premedication, anaesthesia, and analgesia are essential tools to achieve painless and effective surgery. Unfortunately, many patients do not understand this process, which can affect their reliability, make them nervous, and complicate their recovery process. It is established that a lack of information increases the sensation of pain.

Based on data from the Pain Out study conducted at the Hospital of Traumatology and Orthopaedics, half of the patients reported that they did not receive information about pain management after surgery.

Aim. The aim of the current study is to gather data on how much patients remember the information given to them prior and after surgery.

Methods. Prospective, observational, quantitative study. Research instrument: survey questionnaire. All participants received the same survey. A total of 20 patients have been enrolled in the study so far. Before the surgery, patients were informed about the effects of anaesthesia and analgesia. For selected patients, it was emphasised at the end of the surgery what analgesia would be applied and when to request rescue medication. Patients were then required to complete a questionnaire with 29 questions next day after the surgery.

Results. A total of 20 patients have been enrolled in the study so far. 50% of the patients do not remember receiving any information prior to the surgery. 15% of patients do not recall getting medication for sleep and preventive analgesia. 45% of respondents do not remember the effects of anaesthesia.

Half of the respondents remembered that the anaesthesiologist provided information about the significance of premedication.

50% of the patients poorly remember the main advantages of effective analgesia, and only 25% agree that the information given helped them better understand the anaesthesia. 25% of the patients experienced inconveniences related to anaesthesia, and approximately 35% think the given information was insufficient to understand the meaning of analgesia.

75% of patients agree that the information provided was necessary for their recovery.

Conclusions. Approximately half of the patients do not remember anything about analgesia and do not recall talking to an anaesthesiologist, which corresponds to PainOut study data.

Acknowledgements. No conflict of interest regarding this study.

ATTITUDES OF HEALTHCARE PROFESSIONALS TOWARDS IMPLEMENTATION OF ADVANCE DIRECTIVES IN LATVIA

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Background. Patient rights are the cornerstone of ethical and compassionate health care, ensuring dignity, respect for autonomy, and justice. This study focuses on critical medical situations, such as those resulting from severe brain injury or terminal illness, where the patient is unable to express their wishes. Under these circumstances, advance directives from patients play a crucial role, guiding health care professionals in the administration, withholding, or withdrawal of treatment.

Aim. This study aims to assess Latvian health care professionals' understanding of and attitudes towards implementation of advance directives.

Methods. This descriptive cross-sectional study was conducted using an anonymous web-based survey, with data collected between 26 August 2024 and 31 October 2024. The questionnaire was distributed via professional associations as an email with the link to the QuestionPro platform.

Results. A total of 408 respondents participated in the study, including 312 physicians, 26 physician assistants, and 130 nurses. The responses showed a consensus among Latvian healthcare practitioners regarding the implementation of advance directives, with 83% (95% CI: 79–86%) supporting the proposal to update the e-health system to allow citizens to express their advance directives. Additionally, 76% (95% CI: 71–79%) indicated a personal willingness to complete such a document themselves. At the same time, only 20% (95% CI: 15–24%) of physicians re-

ported discussing the right to refuse surgical interventions with patients in end-of-life situations, while 13.16% (95% CI: 9–16%) discussed refusal of blood transfusions. 26.72% (95% CI: 22–31%) of physicians reported to never discussing with patients the options to refuse treatments or interventions such as Do Not Resuscitate orders, or refusing mechanical ventilation, organ replacement, artificial nutrition, or antimicrobial therapy. A major concern across all respondent groups was the potential for relatives to override patients' advance directives, creating significant legal challenges for healthcare professionals. Free-text responses highlighted legal risks as a major issue that must be addressed before adding a new functionality to e-health system.

Conclusions. For a successful, legally and ethically sound implementation of advance directives, it is necessary to organise training for healthcare professionals covering the medical, ethical, and legal aspects of futile treatment and advance directives, organisation of work, as well as communication with patients and their relatives. Additionally there is a need to educate the general public about patient rights, advance directives, and medical futility.

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DOES AN ELEVATED BODY MASS INDEX REALLY CORRELATE WITH INCREASED SURGICAL AND ANAESTHESIA RISK IN HIP JOINT REPLACEMENT?

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Background. Body mass index (BMI) is a crucial factor in assessing overweight and obesity, which can pose risks in anaesthesia and surgical procedures. Higher BMI levels can complicate airway management, ventilation, and lumbar punctures. In orthopaedic surgery, obesity can increase infection risks, complicate surgical techniques, and affect rehabilitation and prosthetic lifespan.

Aim. This study aims to analyse the correlation between BMI and perioperative morbidity and mortality. Addi-

tionally, it examines associations between patient comorbidities and other hospitalisation factors influencing treatment outcomes.

Methods. A retrospective study of 148 patients treated at the Hospital of Traumatology and Orthopaedics was conducted. Patients were divided into three BMI groups: Normal/Overweight (18.0–29.0, n = 55), Obese (30.0–39.0, n = 53), and Severely Obese (40.0, n = 40). Medical records were reviewed for comorbidities, including pulmonary arte-

rial hypertension (PAH), chronic heart disease (CHD), coronary heart disease (CD), and diabetes. The study assessed antibacterial treatment duration, blood transfusions, hospital stay length, and six-month readmission rates due to implant issues or infections. Anaesthesia-related difficulties, intraoperative hypotension, and surgery duration were analysed using Chi-Square tests, crosstabulation, and ANOVA.

Results. Among the 148 patients, 64.2% were female, and the largest age group was 60–69 years (35.8%). The majority (93.3%) received spinal anaesthesia, with only 5.4% undergoing endotracheal intubation. Hypotension occurred in 34.5% of patients, most commonly in the Normal/Overweight group (43.2%). Severe bradycardia, requiring Atropine usage occurred in 12.2% of cases, predominantly in the Normal/Overweight group (44.4%).

Surgery duration was longest in the Severely Obese group ($M = 92.18$ min, $SD = 20.98$), compared to the Nor-

mal/Overweight ($M = 79.44$, $SD = 20.40$) and Obese groups ($M = 78.57$, $SD = 13.35$) ($p < 0.001$). Blood transfusions significantly prolonged hospital stays (Chi-Square = 12.17, $p < 0.05$). Patients who did not receive transfusions stayed the shortest time. Patients receiving multiple transfusions (2 units) were more likely to stay longer than seven days. Age also influenced hospital stay, with older patients (70–79, > 80) experiencing longer admissions ($p < 0.05$).

Conclusion. BMI was not directly linked to increased complications, but longer hospital stays. Older age and blood transfusions significantly affected hospital stay duration and recovery. The results suggest that perioperative and postoperative outcomes are complex and extend beyond BMI alone.

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DETERMINING THE DURATION OF TIME NEEDED FOR SIGNIFICANT SKIN TEMPERATURE CHANGES AFTER *N. ISCHIADICUS* BLOCK WITH THERMOGRAPHY CAMERA

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Background. Determining success or failure of peripheral nerve blocks has always been a challenge. The available methods are mainly utilising subjective tests — cold sensation, motor block assessment, skin-prick sensation, etc., leaving room for potential errors in judgement on both sides. Objective, quantitative methods are needed, with thermography being the most promising one. However, unanswered questions for this method remain, with one being of great importance in clinical practice: for how long to wait to confirm the success of a block?

Aim. The aim of this study was to compare changes in skin temperature and loss of feeling to cold after *N. ischiadicus* blocks, using three different local anaesthetics, the ice test, and the thermographic method for obtaining data.

Methods. A prospective, randomised research was done in the Hospital of Traumatology and Orthopedics with 19 patients collected so far. Patients with surgery below the knee scheduled and eligible for *N. ischiadicus* block (as per Traumatology and Orthopedics Hospitals standard of practice) were randomly divided into three groups, with administration of: lidocaine ($n = 7$), bupivacaine ($n = 5$), and ropivacaine ($n = 7$). Nerve block using one of the three local anaesthetics in fixed volumes/concentration, ultrasound guidance, and peripheral nerve stimulator were performed. Both before and every minute after the nerve block for up to 45 minutes a picture of the anaesthetised foot was taken us-

ing HICKMICROSP60HP thermal camera. Sensation loss was determined using ice test and temperature around toe region was measured using a skin contact thermometer. Pictures were analysed using HICKMICRO official software programme, with statistics done by University of Latvia Statistics Laboratory. By using Wilcoxon range tests we tried to determine at which point in time does the increase in temperature on thermographic pictures have statistically significant meaning, compared to temperature before the nerve block.

Results. For lidocaine group, significance ($p < 0.05$) can be seen at minute 20 ($p = 0.026$), with $p = 0.063$ at minute 15; for ropivacaine group $p = 0.034$ can be seen at minute 25. For bupivacaine no statistical significance was found during the 45 minutes of observation.

Conclusion. Based on the data collected so far we concluded that for assessing block effectiveness using the thermography method, on average at least 15 minutes must pass for lidocaine group, 25 for ropivacaine group, and more than 45 minutes for bupivacaine group.

Acknowledgements. The study was performed using our faculty's HICKMICRO SP60 High Performance thermographic camera, which was obtained by SIA "Mikrotiks" grant through the University of Latvia Foundation (2024).

DIFFERENCES IN ONSET TIMES OF SKIN TEMPERATURE CHANGES AFTER *N. ISCHIADICUS* BLOCK FOR DIFFERENT LOCAL ANAESTHETICS AS OBSERVED WITH THERMOGRAPHY METHOD

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Background. Peripheral nerve blocks, by the effect of sympatholysis and vasodilation, will cause an increase in skin temperature distal to the block location. It is known that different local anaesthetics in peripheral nerve blocks have different speed of onset and duration, but how the speed of temperature increase differs between them is not well documented.

Aim. The aim of this study was to find a correlation of skin temperature increase after *N. ischiadicus* block between three different local anaesthetics by using linear regression models and thermographic camera.

Methods. A prospective, randomised research was done in the Hospital of Traumatology and Orthopedics with 19 patients collected so far. Patients with surgery below the knee scheduled and eligible for *N. ischiadicus* block (as per Traumatology and Orthopedics standard of practice) were divided into three groups, with administration of: lidocaine (n = 7), bupivacaine (n = 5), and ropivacaine (n = 7). Nerve block using one of the three local anaesthetics in fixed volumes/concentration, ultrasound guidance, and peripheral nerve stimulator were performed. Both before and every minute after the nerve block for up to 45 minutes a picture of the anaesthetised foot was taken using HICKMICROSP60HP thermal camera. Sensation loss was determined using ice test, and temperature around toe re-

gion was measured using a skin contact thermometer. Pictures were analysed using HICKMICRO official software programme, with statistics done by University of Latvia (UL) Statistics Laboratory.

Results. To predict temperature changes, linear regressions were used, and statistically the most significant results could be seen when analysing the first 30 minutes. During this time, the fastest temperature increase was seen in lidocaine group (slope coefficient(S) 0.221, coefficient of determination R² = 0.961), ropivacaine group (S 0.140, R² = 0.971) finally followed by bupivacaine group (S 0.085, R² = 0.963). When expanding the observation period to 45 minutes, the results were as follows: lidocaine group (S 0.130, R² = 0.857), ropivacaine group S 0.103, R² = 950), bupivacaine group (S 0.046, R² = 0.721).

Conclusion. Based on the data collected so far, the predictable increase in temperature will be the fastest in lidocaine group, followed by ropivacaine, and then bupivacaine group with the changes more pronounced in the first 30 minutes. The same correlation can be seen up to 45 minutes, albeit less pronounced.

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