

## SURGERY, TRAUMATOLOGY, AND ORTHOPAEDICS: INTERNATIONAL SCIENTIFIC CONFERENCE ON MEDICINE AND HEALTH SCIENCES OF THE UNIVERSITY OF LATVIA, 2026

On 26 April 2026, the University of Latvia, in Riga, hosted the International Scientific Conference on Medicine and Health Sciences.

The selected presentations of the Surgery, Traumatology, and Orthopaedics session of the Conference offer a focused view of clinically relevant research grounded in everyday decision-making — where technique choice, timing, and postoperative management are linked to measurable outcomes.

Several abstracts address perioperative pathways and comparative effectiveness in general surgery and gastroenterology. These include a randomised comparison of oral versus intravenous antibacterial therapy after complicated appendicitis, and a real-world comparison of two one-stage laparoscopic approaches to common bile duct stone management, with attention to safety and length of stay. Long-term follow-up after laparoscopic repair of giant hiatal hernia with Toupet fundoplication and biosynthetic mesh highlights the relationship between radiological findings and patient-reported symptoms.

Complex infection management is represented by a cohort study on liver abscess treatment strategies (predominantly percutaneous drainage), exploring clinical outcomes and factors linked to septicemia and prolonged hospitalisation. On the oncologic side, outcomes research includes a risk-stratified comparison of intravesical BCG versus TURBT alone in non-muscle-invasive bladder cancer, and a comparison of laparoscopic versus open gastric resections, focusing on complications, recovery metrics, and survival analysis.

Traumatology and orthopaedics are highlighted through studies on time-to-surgery and surgical outcomes, including acetabular fracture fixation timing and reduction quality, short-term functional and radiographic outcomes after stemless total shoulder arthroplasty comparing cemented versus cementless glenoid fixation, and spine surgery imaging research evaluating Modic changes and their relationship to recurrent lumbar disc herniation over mid-term follow-up.

Together, these talks emphasise practical, outcome-oriented questions that matter to patients and surgical teams across Riga East Clinical University Hospital, Pauls Stradiņš Clinical University Hospital, and Hospital of Traumatology and Orthopaedics.

*Sergejs Zadorožnijs*

# COMPARATIVE STUDY OF OCCUPATIONAL RADIATION EXPOSURE IN FLUOROSCOPY-GUIDED ORTHOPAEDIC TRAUMA PROCEDURES ACROSS ANATOMICAL REGIONS

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**Background.** Fluoroscopy-guided imaging systems (C-arms) are an essential component of orthopaedic trauma surgery, enabling real-time visualisation of anatomical structures during fracture fixation and implant placement. However, fluoroscopy results in occupational radiation exposure, which may vary depending on the anatomical region and procedural complexity. In routine practice, occupational radiation doses are commonly assessed using passive dosimetry, providing cumulative dose without procedure-specific detail. This may limit the ability to identify high-exposure procedures and their specificity. Therefore, procedure-specific dose assessment is important for understanding exposure patterns and to improve radiation protection strategies.

**Aim.** The aim of the current study was to evaluate occupational radiation doses received by orthopaedic trauma surgeons during fluoroscopy-guided procedures involving different anatomical regions and to compare the results with previously published data.

**Methods.** Radiation doses from 60 fluoroscopy-guided orthopaedic trauma procedures were measured and analysed. The procedures were categorised according to the anatomical region involved: upper limb (shoulder and humerus), forearm and hand, hip and pelvis, knee and tibia, and ankle and foot. Procedures were selected to reflect routine clinical practice. The study was conducted at Vilnius University Hospital Santaros Klinikos between 2024 and 2025. Occupational radiation doses, expressed as the personal dose equivalent  $H_p(10)$ , were measured using DMC 3000 active

personal dosimeter (Mirion Technologies). The measured values were used for the estimation of annual effective doses and risk analysis. Dosimeters were worn at chest level over personal radiation protective equipment during all procedures. Statistical analysis was performed using the R statistical environment (Rstudio), applying descriptive methods to evaluate dose distribution across anatomical regions and to compare with other author results.

**Results.** The highest median radiation dose for orthopaedic surgeons was observed during hip and pelvis procedures (4.4  $\mu\text{Sv/procedure}$ ; IQR: 1.9–7.7  $\mu\text{Sv}$ ), which were also associated with the longest fluoroscopy times (44 s; IQR: 30–58 s), while procedures involving other anatomical regions resulted in 4–8 times lower occupational radiation doses (< 1.5  $\mu\text{Sv/procedure}$ ). A similar pattern of dose distribution across anatomical regions was observed when comparing the present findings with previously published data from other countries. Estimated annual doses were below dose limits.

**Conclusions.** Occupational radiation doses during fluoroscopy-guided orthopaedic trauma procedures vary across anatomical regions. Procedure-specific dosimetry enables more accurate estimation of annual effective doses and supports risk analysis compared with cumulative passive monitoring, contributing to informed radiation protection practices.

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## PATIENT EXPERIENCED PROBLEMS BEFORE AND AFTER SURGERY: A COMPARATIVE ANALYSIS OF PAIN, INSOMNIA, RISK OF COMPLICATIONS, AND LACK OF INFORMATION

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**Background.** Patients frequently encounter a range of challenges both before and after surgery, which can significantly influence their recovery process, adherence to medical recommendations and overall well-being. Among the most common problems are pain, sleep disturbances, fear of postoperative complications and lack of information regarding the surgical procedure and recovery expectations.

**Aim.** The aim of the current study was to compare whether problems like pain, insomnia, risk of complications and lack of information are more important for patients before or after surgery.

**Methods.** Patients were given an anonymous survey of 28 questions about various factors that can give an impact on

their well-being before and after surgery, their answers were based on a Likert Scale. Analysis was performed using IBM SPSS v29. Wilcoxon test and Spearman correlation were used for statistical analysis.

**Results.** The study included 25 patients (20% women,  $n = 5$ ; 80% men,  $n = 20$ ). Age ranged from 36 to 82 years, with a median age of 61 years. When comparing preoperative and postoperative assessments, the perceived risk of complications was rated higher after surgery in 72% of patients ( $n = 18$ ), while pain was rated higher after surgery in 48% ( $n = 12$ ). In contrast, difficulties falling asleep were more frequently rated higher in the preoperative period, with 32% of patients ( $n = 8$ ) reporting greater preoperative severity. For lack of information and sleep difficulties, 60% of patients ( $n = 15$ ) reported identical ratings before and after surgery, indicating no change in perceived importance be-

tween the two periods. Spearman's rank correlation analysis showed a statistically significant moderate positive correlation between difficulties falling asleep and perceived risk of complications after surgery ( $\rho = 0.48$ ,  $p = 0.01$ ). Additionally, lack of information was positively correlated with pain both before surgery ( $\rho = 0.50$ ,  $p = 0.01$ ) and after surgery ( $\rho = 0.42$ ,  $p = 0.03$ ).

**Conclusion.** While fear of complications and pain dominate the postoperative period, sleep difficulties are more characteristic of the preoperative phase. The persistence of information-related problems across both periods highlights the need for improved patient education and communication throughout the entire surgical care pathway.

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

## PERIOPERATIVE AND POSTOPERATIVE OUTCOMES OF CAROTID REVASCULARISATION AT PAULS STRADIŅŠ CLINICAL UNIVERSITY HOSPITAL

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**Background.** Carotid endarterectomy and carotid artery stenting represent the cornerstone interventional strategies for the management of carotid artery stenosis and the prevention of ischemic stroke. The Vascular Surgery Centre of Pauls Stradiņš Clinical University Hospital is a high-volume tertiary referral centre and one of the leading institutions for carotid revascularisation in Europe. Given the large procedural volume and the clinical heterogeneity of treated patients, systematic analysis of perioperative outcomes and complication profiles provides valuable insight into real-world clinical practice and treatment safety.

**Aim.** To evaluate perioperative events and clinical outcomes following carotid endarterectomy and carotid artery stenting.

**Methods.** Patients undergoing carotid revascularisation (2022–2024) were identified via PSKUS electronic health records. This dual-phase study combined a retrospective chart review with prospective telephone interviews to identify late postoperative complications. Statistical analysis was performed using IBM SPSS, following data compilation in Microsoft Excel.

**Results.** The study cohort comprised 822 patients, predominantly male (64.2%), with a mean age of  $69 \pm 8.7$  years. Asymptomatic carotid artery stenosis was present in 52.3% of cases, while 47.7% were symptomatic. High-grade stenosis was common, with 70–95% stenosis in 72.2% and near-

occlusive 95–99% stenosis in 27.1%. Carotid endarterectomy was performed in 97.8% of cases, whereas carotid artery stenting accounted for 2.2%. Postoperative complications occurred in 9.7% of patients ( $n = 80$ ), most frequently dysesthesia (2.1%) and hypoesthesia (1.8%), followed by voice changes (1.3%), cervical hematoma (1.0%), dysphagia (0.5%), infection (0.5%), restenosis (0.4%), cranial nerve injury (0.2%), and cerebral hyperperfusion syndrome (0.1%). Cerebrovascular events were observed in 1.8% of patients, including ischemic stroke (1.5%), transient ischemic attack (0.2%), and amaurosis (0.1%), predominantly within the middle cerebral artery territory (91.7%). A higher risk of postoperative ischemic stroke was noted in patients with high carotid bifurcation compared with normal anatomy (3.6% vs. 1.0%;  $p = 0.045$ ), as well as in patients with insulin-dependent versus non-insulin-dependent *diabetes mellitus* (6.1% vs. 0.0%;  $p = 0.026$ ).

**Conclusions.** Results confirm that carotid endarterectomy provides a safe and effective treatment for carotid stenosis. The comparable risk profiles between symptomatic and asymptomatic cohorts support the broad applicability of the procedure. Nevertheless, the significantly higher stroke risk observed in patients with insulin-dependent diabetes and high carotid bifurcation (above the C4 level) identifies these as critical risk factors for postoperative complications.

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# PERIOPERATIVE SYNDECAN-1 DYNAMICS AND ITS ASSOCIATION WITH INFLAMMATORY MARKERS IN CARDIAC SURGERY

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**Background.** Endothelial glycocalyx (EG) shedding occurs in various physiological and pathological states. During cardiac surgery, hypothermia–rewarming, cardiopulmonary bypass, and perioperative volume shifts induce inflammatory and oxidative stress responses, leading to endothelial dysfunction and glycocalyx degradation. Syndecan-1 (SDC-1), a structural component of the glycocalyx, can serve as a circulating marker of EG shedding. Evaluating SDC-1 dynamics alongside inflammatory markers may help identify factors associated with perioperative EG injury.

**Aim.** To evaluate associations between perioperative changes in SDC-1 and inflammatory markers during cardiac surgery.

**Methods.** In this prospective observational study, data from 147 patients undergoing coronary artery bypass grafting with cardiopulmonary bypass were analysed. SDC-1 concentrations were measured before surgery (S1), after aortic clamping (S2), after declamping (S3), on ICU admission (S4), and 24 h postoperatively (S5). Inflammatory markers (C-reactive protein (CRP), leukocytes, neutrophils, and lactate) were measured preoperatively (0), postoperatively (1), and 24 h after surgery (2). Perioperative changes ( $\Delta$ ) between time points were calculated. Infectious complications were recorded until discharge.

**Results.** Changes in leukocyte count were weakly but statistically significantly correlated with changes in lactate levels after surgery and at 24 h (Spearman's  $r = 0.254$ ,  $p =$

0.002). Postoperative neutrophil percentage (NeP) was not associated with early absolute SDC-1 values but showed weak inverse correlations with later SDC-1 measurements and perioperative changes, including S4 ( $r = -0.180$ ,  $p = 0.029$ ),  $\Delta S2-1$  ( $r = -0.169$ ,  $p = 0.041$ ),  $\Delta S4-1$  ( $r = -0.202$ ,  $p = 0.014$ ), and  $\Delta S5-1$  ( $r = -0.171$ ,  $p = 0.038$ ), indicating that higher NeP1 was associated with smaller biomarker changes over time. No significant associations were observed between CRP and SDC-1.

SDC-1 concentrations after aortic declamping (S3) and after surgery (S4) were positively correlated with postoperative and peak lactate levels. Perioperative increases in SDC-1 ( $\Delta S3-1$  and  $\Delta S4-1$ ) were associated with early and peak lactate, reflecting glycocalyx shedding during ischemia–reperfusion. Lactate measured 24 h postoperatively showed weaker and mostly non-significant associations with SDC-1 dynamics. Infectious complications were weakly associated with greater perioperative increases in  $\Delta CRP2-0$  ( $r = 0.192$ ,  $p = 0.020$ ) and  $\Delta CRP2-1$  ( $r = 0.180$ ,  $p = 0.029$ ), but not with SDC-1.

**Conclusions.** Perioperative SDC-1 release was associated with lactate elevation, suggesting that EG shedding is driven primarily by acute metabolic stress rather than systemic inflammation. CRP dynamics were linked to infectious complications but not to glycocalyx injury.

**Acknowledgements.** The authors declare no conflicts of interest.

# DIGITAL APPROACHES TO LOWER-LIMB PROSTHESIS OPTIMISATION USING LABORATORY GAIT ANALYSIS AND BIOMECHANICAL MODELLING

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**Background.** Lower-limb amputation poses long-term rehabilitation challenges, as prosthesis-related gait compensations and alignment deviations are often difficult to quantify using visual assessment alone. Objective digital gait analysis may provide clinically relevant insight into biomechanical adaptations affecting stability, load distribution, and movement efficiency during walking.

**Aim.** To demonstrate the application of integrated digital gait assessment and biomechanical modelling for identifying prosthesis-related biomechanical deviations relevant to evidence-based prosthesis optimisation.

**Methods.** A laboratory-based experimental study was conducted to demonstrate a digital assessment workflow for

prosthesis-related gait analysis. A transfemoral prosthesis user (male, 28 years, body mass 85 kg, height 1.95 m) participated. 3D kinematics were recorded using a marker-based optical motion capture system (12 cameras, 120 Hz) with synchronous ground reaction force measurement. Additional stance and plantar pressure assessment were performed using an instrumented treadmill with an integrated pressure sensor matrix (120 Hz). An OpenSim-based musculoskeletal modelling workflow was developed to support joint-level biomechanical interpretation. This study is intended as a methodological demonstration and does not aim to provide population-level inference.

**Results.** Laboratory gait analysis revealed pronounced inter-limb asymmetries. At toe-off, pelvic obliquity was  $-8.23^\circ$  on the prosthetic side compared to  $3.40^\circ$  on the healthy limb. Knee transverse-plane behaviour also dif-

fered, with prosthesis-side internal rotation of  $10^\circ$  versus  $-21.5^\circ$  on the healthy limb. Ankle-foot analysis demonstrated absent active push-off on the prosthetic side ( $3.6^\circ$  vs  $-28.2^\circ$  plantarflexion). Plantar pressure assessment indicated reduced prosthetic-side loading, and the modelling workflow supported joint reaction force-oriented interpretation.

**Conclusions.** An integrated digital gait assessment enables the objective identification of prosthesis-related compensatory strategies across pelvic, knee, and ankle-foot levels. Combining laboratory measurements with biomechanical modelling provides a practical pathway toward evidence-based prosthesis fitting and alignment optimisation in clinical rehabilitation settings.

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## THE IMPACT OF TIME TO DEFINITIVE FIXATION ON THE ACCURACY OF REDUCTION IN ACETABULAR FRACTURES

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**Background.** Acetabular fractures are complex injuries that usually result from high-energy trauma, such as traffic accidents, crush injuries, or falls from height. Initial management often follows the concept of Damage Control Orthopaedics, with temporary external fixation and resuscitation. Timely anatomical reduction and fixation are essential to restore hip function, yet the optimal timing for definitive fixation remains controversial.

**Aim.** The aim of the study was to evaluate the impact of time to definitive fixation on the quality of the reduction in patients with acetabular fractures.

**Methods.** A retrospective study was conducted of 61 patients with acetabular fractures admitted to Rīga East Clinical University Hospital between 2017 and 2025. Patients were divided into three groups according to the timing of definitive fixation: Group A ( $\leq 7$  days), Group B (8–14 days) and Group C ( $\geq 15$  days). Postoperative radiological results were analysed using standard radiographic measurement methods and compared between the groups.

**Results.** Outcomes were evaluated in 61 patients (5 females, 56 males), mean age  $49.1 \pm 16.7$  years, median time to surgery 9 (IQR 7–14) days. A Kruskal–Wallis test indicated statistically significant differences between the groups

for step ( $H = 12.45$ ,  $p = 0.002$ ) and gap ( $H = 11.62$ ,  $p = 0.003$ ). *Post hoc* Mann–Whitney U tests with Bonferroni correction showed that group A ( $\leq 7$  days) had significantly lower step and gap than group B (8–14 days;  $p = 0.015$  and  $p = 0.021$ , respectively) and group C ( $> 15$  days;  $p = 0.009$  for both). No significant differences were observed between groups B and C (step  $p = 0.324$ ; gap  $p = 0.555$ ). Spearman correlation demonstrated positive correlations between time to surgery and both step ( $r = 0.45$ ,  $p = 0.001$ ) and gap ( $r = 0.51$ ,  $p < 0.001$ ). Multivariable linear regression adjusted for age, fracture severity, trauma energy, and fixation type showed that time to surgery remained an independent predictor of reduction quality for step ( $\beta = 0.098$  mm/day, 95% CI 0.052–0.144,  $p < 0.001$ ) and gap ( $\bar{\alpha} = 0.085$  mm/day, 95% CI 0.034–0.137,  $p = 0.002$ ).

**Conclusions.** Early definitive fixation in acetabular fractures is associated with better reduction quality, reflected by lower residual step and gap. These findings suggest that, when the patient's physiological condition allows, earlier fixation may optimise anatomical alignment and clinical outcomes.

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## PREVALENCE OF MODIC CHANGES IN PATIENTS WITH RECURRENT LUMBAR INTERVERTEBRAL DISC HERNIATIONS

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**Background.** Recurrent lumbar intervertebral disc herniation remains a challenging complication in orthopaedic spine surgery with an estimated prevalence of 3–18% worldwide, up to 23 percent requiring reoperation. Modic changes, reflecting vertebral endplate and bone marrow alterations on magnetic resonance imaging (MRI), have been associated with disc degeneration, but their role in predicting disc reherniation remains inconclusive.

**Aim.** To evaluate the prevalence, distribution, and clinical relevance of Modic changes in patients undergoing lumbar microdiscectomy surgery in a single centre and their association with reherniation — the recurrence of disc herniation at the same spinal level after a prior lumbar discectomy with initial symptom improvement, during a 5-year postoperative period.

**Methods.** A retrospective single centre, single surgeon, single technique, and single rehabilitation protocol cohort study was conducted including 264 patients who underwent lumbar microdiscectomy in the Hospital of Traumatology and Orthopaedics between 2015 and 2019. Inclusion criteria were accessible preoperative MRI scans confirming disc herniation, denying prior surgery and accessible documentation confirming microdiscectomy as the performed treatment in Hospital of Traumatology and Orthopaedics. Patients operated based on CT imaging or absent preoperative MRI studies were excluded from the study. Patients were followed for 5 years to identify recurrent disc herniation at the operated level. Preoperative MRI scans were assessed for the presence and type of Modic changes (Types I–III) at

the index level using DATAMED internet database and treatment data was collected through “*Ārsta Birojs*” software. Operated levels and recurrence patterns were recorded. Statistical analysis was carried out using IBM SPSS Statistics.

**Results.** Lumbar disc herniation recurrence occurred in 38 patients (14.4%) within 5 years. Amongst reherniation patients, surgical levels were evenly distributed, with 19 patients (50%) undergoing L4–L5 microdiscectomy and 19 (50%) L5–S1 microdiscectomy. In the reherniation group, 14 patients (36.8%) demonstrated Modic changes on MRI and displayed no statistically significant association with MRI imaging proven recurrence through CHi-squared test ( $p = 0.424$ ). Of these, Modic Type II changes were present in 12 (85.8%) patients and Modic Type I changes in 2 (14.2%) patients; no Modic Type III changes were observed. In the study group, 109 (41.3%) patients exhibited Modic changes preoperatively, however, reherniation was not seen on imaging during the 5-year follow-up.

20 (52.6%) reherniation patients were reoperated in the primary institution, and 18 (47.4%) were lost to follow up.

**Conclusion.** Modic changes, albeit a substantial parameter, should not be considered as an independent predictor of lumbar disc reherniation and should be interpreted alongside other anatomic, surgical and patient-specific variables when assessing recurrence risk.

**Acknowledgements.** The authors declare absence of conflict of interest.

## IMMEDIATE PRIMARY RECURRENT LARYNGEAL NERVE REANASTOMOSIS AFTER IATROGENIC INJURY DURING THYROID SURGERY — THREE CASE REPORTS

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**Background.** Thyroidectomy is one of the most commonly performed endocrine surgical procedures, and injury to the recurrent laryngeal nerve (RLN) is one of its most serious complications. Permanent RLN palsy occurs in approximately 2–3% of cases and may result in hoarseness, vocal fatigue, dysphagia, and aspiration.

**Cases presentation.** Between 2024 and 2025, three patients undergoing total thyroidectomy at our institution sustained iatrogenic RLN injury. In all cases, the injury was identified intraoperatively using intraoperative nerve monitoring (IONM), allowing immediate microsurgical primary repair with end-to-end epineural anastomosis. On the first postop-

erative day, all patients reported hoarseness and vocal fatigue without dysphagia, and video-assisted laryngoscopy confirmed unilateral vocal cord paralysis.

**Results.** Five months after RLN reconstruction, all patients reported subjective improvement in voice quality comparable to the preoperative condition. Follow-up laryngoscopy revealed slightly limited vocal cord mobility in one patient, while the remaining two patients demonstrated vocal cord paresis with partially preserved tone. Patient follow-up is ongoing.

**Discussion.** Intraoperative nerve monitoring enables early identification of RLN injury and facilitates prompt surgical repair. The 2020 guidelines of the American Association of Endocrine Surgeons recommend attempting primary repair in cases of unilateral RLN transection during thyroid surgery. Although complete restoration of normal vocal cord mobility is uncommon, primary RLN reinnervation has been shown to improve long-term vocal outcomes.

**Conclusions.** Immediate primary RLN reanastomosis is a safe and effective option that may prevent vocal cord atrophy and contribute to preservation of vocal function following iatrogenic nerve injury.

## WHEN TIME MEETS PHYSIOLOGY: TRAUMA SYSTEM TIME METRICS AND SURGICAL DECISION-MAKING IN SURGICALLY TREATED POLYTRAUMA PATIENTS

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**Background.** Time-based metrics such as prehospital transport time and door-to-CT interval are widely used to assess trauma system performance and quality of care. While these parameters have been extensively reported in international trauma literature, data integrating prehospital timelines, in-hospital diagnostics and surgical decision-making remain limited.

**Aim.** To evaluate prehospital transport time, door-to-CT interval and surgical timing in a cohort of surgically treated polytrauma patients and to assess whether trauma system performance is comparable with international practice.

**Methods.** A retrospective analysis of 247 consecutive polytrauma patients admitted between January and December 2025 was performed. Surgically treated patients ( $n = 63$ ) were included. Prehospital transport time and door-to-CT interval were analysed. Delayed surgery was defined as the first operative intervention performed 24 hours after admission. Patients were compared between delayed and non-delayed surgery groups using Mann–Whitney U and Fisher’s exact tests, with proportions reported as 95% confidence intervals.

**Results.** The median age of surgically treated patients was 42 years (IQR 33–52.5). Musculoskeletal injuries were present in 95.2% (95% CI 84.8–97.5), neurological injuries in 22.6% (95% CI 13.7–33.9) and visceral injuries in 16.1% (95% CI 8.9–26.8). Alcohol intoxication was documented in 44.4% of cases (95% CI 32.8–56.7).

Median prehospital transport time was 72 minutes (IQR 60–89), while median door-to-CT time was 34 minutes (IQR 25–56). Median operative duration was 100 minutes (IQR 78–240). Operative duration showed a positive correlation with injury severity (Spearman’s  $\rho = 0.41$ ,  $p = 0.02$ ), indicating longer operative times in patients with higher ISS.

Delayed surgery ( $> 24$  h) was required in 38.1% of patients (95% CI 27.1–50.4). Patients managed with delayed surgical strategies underwent CT imaging significantly earlier than those undergoing non-delayed surgery [IQR 22–41] vs [IQR 31.5–63] minutes; Mann–Whitney U = 114.0;  $p = 0.0338$ ). Delayed surgery was strongly associated with higher injury severity: ISS  $> 16$  was present in 66.7% (95% CI 46.7–82.0) of delayed cases versus 25.0% (95% CI 12.0–44.9) in non-delayed cases (Fisher exact  $p = 0.0084$ ; OR = 6.0). Complications were observed more frequently in delayed cases (Fisher  $p = 0.106$ ), while in-hospital mortality did not differ significantly (Fisher  $p = 1.00$ ).

**Conclusions.** In this cohort of surgically treated polytrauma patients, time-based trauma system metrics were comparable to those reported by established European trauma centres, indicating competitive system performance. The association between injury severity and surgical timing, together with preserved access to CT imaging, supports severity-driven clinical decision-making rather than trauma system delay. These findings may inform further optimisation of trauma care pathways in regional centres.

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## A COMPARATIVE RETROSPECTIVE STUDY OF LAPAROSCOPIC CHOLEDOCHOSCOPY AND TRANSCYSTIC PAPILLARY BALLOON DILATATION IN MANAGEMENT OF CHOLEDOCHOLITHIASIS

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**Background.** One-stage laparoscopic management of choledocholithiasis has become an accepted alternative to staged endoscopic and surgical treatment. Laparoscopic choledochoscopy (LCC) and transcystic papillary balloon dilatation (TCPBD) are widely used, however, comparative data on their effectiveness and safety in routine clinical practice remain limited.

**Aim.** To investigate the effectiveness, safety, and hospitalisation outcomes of LCC and TCPBD in treatment of choledocholithiasis.

**Methods.** A retrospective comparative study included 110 patients who underwent surgical treatment for choledocholithiasis at Riga East University Hospital “Gaiļezers” between 2021 and 2025. Laparoscopic ultrasonography was used intraoperatively to confirm the presence of common bile duct stones. Patients were allocated into two groups: LCC ( $n = 39$ ) and TCPBD ( $n = 71$ ). Demographic data, clinical presentation, postoperative complications, and length of hospital stay were analysed.

**Results.** The median age of the cohort was 53.5 years (IQR 34–68). Most patients were male (73%) with moderate comorbidity (ASA II–III), without significant differences between groups. Preoperative biliary pathology, including acute cholecystitis, biliary pancreatitis, cholangitis, jaun-

dice, as well as common bile duct stone diameter and number, were comparable between groups (all  $p > 0.05$ ). Procedural success was achieved in 97% of patients undergoing TCPBD and in 92% of those treated with LCC ( $p = 0.344$ ). Postoperative complications occurred in 8.5% and 10.3% of patients, respectively, with a low incidence of major complications ( $p = 0.780$ ). However, the LCC group had three cases of moderate postoperative pancreatitis, but in the TCPBD group no cases of moderate postoperative pancreatitis were detected. There were no cases of conversion to laparotomy detected in both groups during laparoscopic approach. Postoperative and total hospital stay were significantly longer in the LCC group, with a median postoperative hospital stay of 3 days in LCC and 1 day in TCPBD group ( $p = 0.004$ ). Median total hospital stay also had statistically significant difference between LCC and TCPBD groups patients ( $p = 0.028$ ).

**Conclusions.** Both LCC and TCPBD appear to be safe and effective techniques for the management of choledocholithiasis. Although LCC is associated with longer hospitalisation and a tendency toward more severe postoperative complications.

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## FASCIAL EPICONDYLAR AUGMENTATION FOR ULNAR NERVE STABILISATION IN CUBITAL TUNNEL SYNDROME WITH ULNAR NERVE INSTABILITY

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**Introduction.** Cubital tunnel syndrome (CubTS) is one of the most common traction–compression neuropathies of the upper extremity. In most patients, the standard operation is simple *in situ* decompression with release of all potential compression sites. A subgroup of CubTS patients has clinically relevant ulnar nerve instability (UNI), where the nerve dynamically subluxates over the medial epicondyle. In these cases, conservative treatment and decompression alone are often insufficient. The most widely used surgical solution for UNI is anterior transposition of the ulnar nerve. We propose a technique developed at the Latvian Microsurgery Centre: stabilisation via fascial epicondylar augmentation, with the nerve preserved in its orthotopic position.

**Aim.** To assess outcomes following fascial epicondylar augmentation in CubTS with UNI.

**Materials and methods.** Since 2018,  $n = 113$  surgeries were performed. The study cohort comprised  $n = 92$  hands with  $\geq 2$  follow-up evaluations and a final assessment  $\geq 1$  year postoperatively. Inclusion criteria: age  $\geq 18$  years, intraoperatively confirmed ulnar nerve subluxation, and standard fascial epicondylar augmentation (FEA) performed. Exclusion criteria: age  $< 18$  years, classical decompression without FEA, or modified FEA. CubTS was confirmed clinically and by ultrasound (USG); UNI was confirmed by dynamic USG and intraoperatively during el-

bow flexion–extension. Unlike classical compressive neuropathies, severity grading for this dynamic neuropathy phenotype was not based on neurography; clinical decision-making prioritised patient complaints and USG findings. Outcomes were assessed with grip-strength dynamometry and pain using a visual analogue scale (VAS). Improvement was defined as patient-reported symptom relief with decreased VAS and increased dynamometric grip strength versus preoperative baseline at last follow-up. Hand therapy initiated postoperatively; full elbow flexion avoided for 6 months; ulnar nerve glide exercises performed from week 2 to week 12 at least.

**Results.** Mean patient age was 49 years (range 22–78). In the study cohort (n = 92), 33 (36%) patients were female

and 59 (64%) were male. Medial head of triceps resection was performed in 75 (82%) cases. Improvement in symptoms and grip strength was observed in 86 (94%) hands. Persistent symptoms were reported in 6 (7%) patients; ultrasound confirmed ongoing ulnar nerve subluxation. These six patients underwent submuscular transposition as a salvage procedure with subjectively satisfactory outcomes.

**Conclusions.** Fascial epicondylar augmentation demonstrated encouraging results for CubTS with UNI. The technique stabilises the nerve while maintaining an orthotopic position, aiming to preserve segmental vascularity and avoid jeopardizing innervation to the flexor carpi ulnaris. Keeping the nerve in place also allows postoperative ulnar nerve glide exercises.

## PATIENT-REPORTED QUALITY OF LIFE AFTER ANTERIOR ABDOMINAL WALL RECONSTRUCTION WITH MODIFIED MINI-OPEN SUBLAY REPAIR

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**Background.** Modified mini-open sublay (MILOS) repair is an increasingly applied surgical technique for anterior abdominal wall reconstruction with concomitant ventral hernia, combining the benefits of sublay mesh placement with reduced surgical trauma. Despite growing adoption, data on early postoperative recovery, pain dynamics, functional mobility, and patient-reported outcomes after MILOS surgery remain limited.

**Aim.** The aim of this study was to evaluate postoperative pain, functional recovery, quality of life, and patient satisfaction following MILOS surgery using structured patient-reported questionnaires during the early post-operative period.

**Methods.** A prospective observational study included 23 patients who underwent MILOS surgery for surgical treatment of rectus diastasis and accompanying hernia repair. Patients were surveyed at three time points: 2 weeks, 1 month, and 2 months postoperatively. Questionnaires assessed pain intensity using the Visual Analog Scale (VAS), postoperative mobility, self-care ability, daily activities, pain/discomfort, satisfaction with body appearance, quality of life, and willingness to recommend surgery. Descriptive statistical analysis was performed using IBM SPSS Statistics (version 29.0).

**Results.** Postoperative pain progressively decreased over time, with mean VAS scores improving from 68.3 at 2 weeks to 84.3 at 1 month and 93.5 at 2 months postoperatively. At 2 weeks, most patients reported minor to moderate mobility restrictions, while by 2 months the majority had regained full mobility without restrictions. Limitations in self-care and daily activities were uncommon at 2 months. Patient satisfaction increased over time, with all patients reporting being satisfied or very satisfied with surgical outcomes at 2 months. Quality of life improved compared to the preoperative period, and all patients indicated willingness to recommend MILOS surgery.

### Conclusions

1. MILOS surgery is associated with favourable early postoperative outcomes, characterised by progressive pain reduction and rapid functional recovery.

2. High patient satisfaction and improvement in quality-of-life support MILOS as an effective and patient-centred approach for anterior abdominal wall reconstruction.

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## PHYSICIANS' ASSESSMENT OF PATIENT PROBLEMS ACROSS THE SURGICAL TIMELINE: A PILOT STUDY

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**Background.** Surgical care involves not only adherence to clinical guidelines but also physicians' subjective appraisal of patient problems. Systematic assessment of changes in perceived problem severity from the pre-operative to post-operative period may provide insights into clinical decision-making, patient communication, and perioperative safety planning.

**Aim.** To compare how doctors rate four common patient problems before versus after surgery and to examine the association between professional experience and current emotional state.

**Methods.** We conducted an anonymous pilot survey of 25 physicians working in surgery. Participants rated the perceived severity (1–5 Likert scale) of four patient-related problems: lack of information, sleep disturbances, pain, and risk of complications, separately for pre-operative and post-operative contexts. Emotional state was assessed using the Geneva Emotion Wheel. Paired comparisons were performed using the Wilcoxon signed-rank test with Holm correction, and effect sizes were quantified using the rank-biserial correlation (rrb). Associations between years of pro-

fessional experience and positive emotional state were evaluated using Spearman's correlation.

**Results.** Significant pre- to post-operative differences were observed for two problems. Pain was rated higher post-operatively than pre-operatively (median 4 vs. 3; pHolm < 0.01), with a large effect size (rrb = 0.84). Perceived complication risk also increased after surgery (median 4 vs. 2; pHolm < 0.01; rrb = 0.86). No statistically significant differences were found for perceived information deficit or sleep problems. Greater professional experience was weakly associated with more positive emotional states, reaching borderline statistical significance ( $p = 0.050$ ).

**Conclusions.** This pattern suggests that physicians' appraisal of patient problems is context-dependent, with pain and risk becoming more salient after surgery, highlighting potential limitations of pre-operative risk communication. The observed association between clinical experience and positive emotional state should be interpreted with caution and requires confirmation in larger samples.

**Acknowledgements.** The authors declare no conflicts of interest.

## MANAGEMENT STRATEGIES AND CLINICAL OUTCOMES OF LIVER ABSCESES IN A TERTIARY SURGICAL CENTRE (2018–2025)

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**Background.** Liver abscesses are uncommon but potentially severe infections requiring timely diagnosis and source control.

**Aim.** To describe patient characteristics, management strategies and outcomes of liver abscesses in a university hospital department of surgery, and to explore factors associated with septicemia and prolonged hospital stay.

**Methods.** Retrospective single-centre cohort analysis of patients treated for liver abscess in a single university hospital (2018–2025). Descriptive statistics were used to summarise

patient characteristics, management strategies, and clinical outcomes.

**Results.** Altogether 111 patients were included (median age 66.0, 54.1% male). Median abscess size was 7.0 cm; 33.0% (35/106) had multifocal abscesses. Percutaneous drainage was the primary treatment in 96 cases, while surgery was performed in 8 cases. Salvage surgery after failed percutaneous drainage occurred in 6 cases (5.9% failure rate). Median length of stay (LOS) was 8.5 days. After treatment, median CRP decreased from 186.0 to 54.0 mg/l, and whitand white blood cell (WBC) count decreased from 12.0

to  $8.0 \times 10^9/l$ . LOS was longer for surgical intervention compared to percutaneous drainage (11.5 vs 8.0 days) and longest for salvage surgery (17.0 days). Septicaemia occurred in 19.8% of cases. Abscess size greater than 6.5 cm was associated with an increased risk of septicaemia. The most common isolated pathogen was *Klebsiella pneumoniae*, followed by *Escherichia coli*. Empirical antibiotic therapy primarily consisted of amoxicillin/clavulanate (52.3%), ciprofloxacin (22.5%), and metronidazole (17.1%).

**Conclusion.** Percutaneous drainage was the primary and effective treatment strategy for liver abscesses. Surgical intervention, particularly salvage surgery, was associated with a significantly longer hospital stay. Empirical antibiotic therapy primarily consisted of amoxicillin/clavulanate.

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## COMPARISON OF POSTOPERATIVE HERNIA REPAIR METHODS. RAKUS EXPERIENCE

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**Introduction.** Postoperative hernias are a significant complication of many conventional and even laparoscopic surgeries. It occurs in 12.8–30.0% of patients. These hernias are typically treated with various techniques, both laparoscopically and conventionally. Among laparoscopic methods, the IPUM (Intraperitoneal Underlay Mesh) and ventral TAPP (Transabdominal preperitoneal) approaches are the most popular. The LIRA (Laparoscopic Intracorporeal Rectus Aponeuroplasty) method is also gaining popularity.

**Aim.** Our study aims to investigate whether there is a significant difference in patient well-being after these surgeries.

**Methods.** The study is a retrospective anonymous analysis of the well-being of 30 patients who underwent incisional hernia repair between 2016 and 2025. Their well-being was assessed using the Carolinas Comfort Scale (CCS). Minimal follow-up duration after surgery was 6 months, the longest

follow-up duration was 9 years. Average follow-up time is 4.5 years. The recurrence rate was assessed using CT scan and Ultrasonography.

**Results.** Comparing the TAPP and IPUM techniques, patients after TAPP had less pain (6.20 vs 27.33 (CCS)). If we compare laparoscopic hernia plastic with open results show that IPUM had same pain as open RIVES STOPPA (27.33 vs 29.08 CCS), but LIRA had less pain than open RS (2.5 vs 29.08 CCS) and same pain intensity as TAPP (2.5 vs 6.2 CCS). Recurrence rate for RS was 2, for IPUM was 1, for TAPP was 0, for LIRA was 0.

**Conclusion.** In terms of patient comfort after postoperative hernia repair, the TAPP and LIRA methods are considered the most successful choices. Patients with IPUM had similar quality of life as open RS, considering this laparoscopic IPUM has no advantages to OPEN RS in terms of postoperative quality of life.

## LONG-TERM OUTCOMES AFTER LAPAROSCOPIC GIANT HIATAL HERNIA REPAIR WITH TOUPET FUNDOPLICATION AND PHASIX™ NON-ST MESH

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**Background.** Giant hiatal hernia represents a complex surgical condition with a wide clinical spectrum, ranging from mild gastroesophageal reflux symptoms to severe impairment of quality of life. Although laparoscopic repair is considered the treatment of choice, long-term outcomes and recurrence rates remain variable despite advances in minimally invasive techniques, particularly in the context of mesh reinforcement.

**Aim.** The aim of the current study was to evaluate long-term radiological and patient-reported outcomes after laparoscopic repair of giant hiatal hernia with Toupet fundoplication and crural reinforcement using a fully resorbable biosynthetic Phasix™ non-ST mesh.

**Methods.** A retrospective analysis was performed on 30 patients with giant hiatal hernia (hernia sac size 7–18 cm) who

underwent laparoscopic repair between 2019 and 2022. Long-term follow-up of 3–6 years included postoperative radiological assessment using computed tomography and/or contrast radiography, as well as symptom evaluation with the Modified Gastroesophageal Reflux Disease–Health-Related Quality of Life (GERD-HRQL) questionnaire. Radiological recurrence was defined as a hiatal hernia larger than 2 cm.

**Results.** Radiological recurrence was identified in 8 patients (26.7%), with the majority of recurrences being small in size (3–4 cm); only one recurrence measured 6 cm. Patient-reported outcomes were favourable: 25 patients (83.3%) reported good or satisfactory GERD-HRQL scores, while 5 patients (16.7%) reported moderate symptoms. No

patients reported poor quality-of-life outcomes. Radiological recurrence did not consistently correlate with symptom severity.

**Conclusions.** Laparoscopic repair of giant hiatal hernia with Toupet fundoplication and reinforcement using biosynthetic Phasix™ non-ST mesh provides satisfactory long-term symptom control with acceptable radiological recurrence rates. The lack of consistent correlation between radiological recurrence and clinical symptoms highlights the importance of patient-reported outcomes in long-term follow-up.

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## TREATMENT OUTCOMES AFTER INTRAVESICAL BCG THERAPY COMPARED WITH TURBT ALONE IN NON-MUSCLE-INVASIVE BLADDER CANCER

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**Background.** Non-muscle-invasive bladder cancer (NMIBC) is characterised by high rates of recurrence and a risk of progression despite transurethral resection. Intravesical *Bacillus Calmette–Guérin* (BCG) therapy is recommended for intermediate- and high-risk NMIBC.

**Aim.** To describe the demographic and clinicopathological characteristics of patients with NMIBC and to compare recurrence-free survival and progression outcomes between patients treated with intravesical BCG and transurethral resection of bladder tumour (TURBT) alone, in a risk-stratified cohort.

**Methods.** This retrospective single-centre study analysed data including patients diagnosed between 2021 and 2024. Patients with intermediate- or high-risk NMIBC were included, while low-risk and very high-risk disease was excluded. Baseline risk stratification was calculated using the EORTC risk calculator. Time zero was defined as the date of the first TURBT. The primary endpoint was first recurrence. Group comparisons were performed using the Mann–Whitney U test. Recurrence-free survival was estimated using Kaplan–Meier analysis and compared with the log-rank test.

**Results.** A total of 157 patients were included (99 treated with intravesical BCG and 58 with TURBT alone. The cohort was predominantly male (BCG: 76.8%; TURBT: 84.5%). The overall median age was 70.9 years (IQR 64.0–77.4); patients treated with TURBT were significantly

older than those receiving BCG (73.8 vs 68.8 years;  $p = 0.012$ ).

Baseline risk distribution was comparable between groups, with approximately three-quarters of patients classified as high risk and the remainder as intermediate risk; T1 stage and high-grade tumours predominated in both cohorts. Median follow-up was 22.7 months (IQR 15.3–31.7) in the BCG group and 20.1 months (IQR 12.6–31.5) in the TURBT group.

First recurrence occurred in 23.2% of BCG-treated patients and 48.3% of TURBT-treated patients. Kaplan–Meier analysis demonstrated significantly longer recurrence-free survival with BCG compared with TURBT alone ( $p = 0.001$ ). Progression was observed in 4.0% of BCG-treated patients and 10.3% of TURBT-treated patients; progression-free survival was numerically higher in the BCG group but did not reach statistical significance ( $p = 0.10$ ). Among BCG-treated patients, recurrence rates did not differ significantly according to cumulative BCG instillation burden within the high-risk group ( $p = 0.33$ ).

**Conclusions.** Intravesical BCG therapy was associated with significantly improved recurrence-free survival compared with TURBT alone. These findings support the continued use of BCG in intermediate- and high-risk NMIBC and highlight the importance of baseline risk-adjusted treatment strategies.

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## ORAL VS INTRAVENOUS ANTIBACTERIAL THERAPY IN PATIENTS WITH COMPLICATED APPENDICITIS

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**Background.** Acute appendicitis is the most common abdominal surgical emergency, with 15–32% of cases progressing to complicated appendicitis requiring surgical intervention. Postoperative management includes antibacterial therapy to prevent infectious complications. Although intravenous antibiotics are traditionally used, growing evidence supports oral therapy as a safe and effective alternative with potential benefits for patient comfort and healthcare resource utilisation.

**Aim.** To evaluate the effectiveness, safety, and potential benefits of postoperative oral antibacterial therapy compared with intravenous therapy in patients undergoing appendectomy for complicated appendicitis.

**Methods.** Prospective randomised controlled study was conducted at Riga East University Hospital between November 2024 and November 2025. 68 patients who underwent appendectomy for complicated appendicitis were included. Patients were randomly assigned to receive either postoperative oral or intravenous antibacterial therapy. Data on demographic and anthropometric characteristics, operative details, length of hospital stay, and postoperative outcomes were collected using structured questionnaires on follow-up. Patients with diffuse peritonitis, abscess, and after laparotomy were excluded from the study.

**Results.** The mean length of hospital stay was significantly shorter in the oral therapy group compared with the intravenous group (2.56 vs 3.44 days;  $p = 0.0016$ ). Postoperative complications within 7 days were observed in 26 patients (38.2%), with a lower incidence in the oral therapy group than in the intravenous group (26.5% vs 50%). The most common complications were dysbiosis (26.47%) and wound infections (14.71%), while thrombophlebitis (7.35%) and one case of readmission due to intra-abdominal abscess occurred only in the intravenous therapy group. No significant association was found between postoperative complications and patient weight ( $p = 0.14$ ), age ( $p = 0.54$ ), or Charlson Comorbidity Score ( $p = 0.95$ ).

Oral antibacterial therapy was associated with substantially lower daily hospital costs (euro 2.06 vs euro 10.47 per patient) and required significantly less nursing time (approximately 10 minutes vs  $\geq 1$  hour per patient per day) compared with intravenous therapy.

**Conclusion.** Our study analysis found no evidence that postoperative oral antibacterial therapy is less effective than intravenous therapy following appendectomy for complicated appendicitis. Oral therapy was associated with shorter hospitalisation, fewer complications, and reduced healthcare resource utilisation.

## CAUSES AND PREDICTORS OF WORK-RELATED MUSCULOSKELETAL DISORDERS AMONG OPERATING THEATRE SPECIALISTS IN LATVIA

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**Background.** Scientific studies conducted internationally indicate that approximately one-third of all disease cases among healthcare personnel are attributable to work-related musculoskeletal disorders (WRMSDs) (Yizengaw *et al.*, 2021). This may be explained by the frequent performance of work tasks in non-ergonomic postures and by overtime work (Tolu and Basaran, 2019). Surgery is a physically demanding profession that involves prolonged standing in static postures; moreover, to gain access to the operative field, personnel often must adapt to situational constraints by adjusting and contorting their body posture while performing procedures (Chambers and Gill, 2020; Tavakkol *et al.*, 2020; Yizengaw *et al.*, 2021).

**Aim.** To analyse the causes of WRMSDs and to identify biomechanical and organisational predictors among operating theatre specialists.

**Methods.** Cross-sectional survey of operating theatre specialists (surgeons  $n = 22$ , anaesthesiologists  $n = 16$ , operating room nurses  $n = 36$ ; total  $n = 74$ ) was performed. It covered the following domains: demographic characteristics; WRMSDs during work tasks; psychosocial and biomechanical risk factors potentially influencing WRMSDs; organisational factors (working hours, number of surgeries per shift, rest breaks, workload distribution); and leisure-time activities, including physical activity. Means  $\pm$

SD with 95% CI and multivariable logistic regression were used. Ethics approval by University of Latvia Faculty of Medicine and Life Sciences (No. 71-35/154, 23 November 2024).

**Results.** Mean age was  $41.6 \pm 11.3$  years (95% CI 39.0–44.2); length of service  $15.2 \pm 8.1$  years (95% CI 13.4–17.0); BMI  $25.8 \pm 3.9$  kg/m<sup>2</sup> (95% CI 24.9–26.7). High workload was most common in the low back (61/74, 82.4%), legs (58/74, 78.4%) and shoulders (52/74, 70.3%). End-of-shift pain/discomfort (0–10) was highest in the low back ( $7.8 \pm 1.5$ ; 95% CI 7.5–8.1), neck ( $6.9 \pm 1.7$ ; 95% CI 6.5–7.3) and legs ( $6.1 \pm 1.9$ ; 95% CI 5.7–6.5). In the past 12 months, neck/shoulder symptoms lasting 5–7 days were re-

ported by 34/74 (46.6%) and low-back symptoms by 33/74 (44.6%).

**Conclusions.** WRMSDs are highly prevalent among operating theatre specialists, with the greatest load in the low back, neck, shoulders, and legs. Prolonged forced postures were the most consistent modifiable predictor, supporting ergonomically adjustable workstations/instrument positioning and planned micro-breaks.

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## LAPAROSCOPIC VS. OPEN GASTRIC RESECTIONS. 5-YEAR COMPARISON OF SURVIVAL RATES AND COMPLICATIONS IN RĪGA EAST UNIVERSITY HOSPITAL

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**Background.** In many hospitals, the primary surgical treatment for gastric cancer is an open approach rather than laparoscopy. This preference is often attributed to the steep learning curve associated with laparoscopic gastrectomy, which is believed to result in higher complication rates compared with open gastrectomy.

**Aim.** In this study we evaluated the laparoscopic gastrectomy overall complication rate and 5-year survivability vs. open approach in Rīga East University Hospital

**Methods.** In a retrospective study we analysed patients with gastric adenocarcinoma stage I–IV who underwent laparoscopic (Lap-group) or open (Open-group) gastric resections. 205 patient cases from 2020–2021 who underwent gastric resections for gastric cancer at Rīga East University Hospital. 20 of them had laparoscopic gastric resections and 185 of them had open gastric resections. We analysed clinico-pathological factors, 5-year overall survivability, complication rates, hospital stay, time when patients started peroral feeding and passage of gas.

**Results.** When performing demographical analysis both groups had similar age, sex and gastric resection type distribution, both groups had similar tumour locations which was in *corpus* and *antrum*. In Lap-group and open group had

similar amount of dissected lymph nodes median = 30, IQR [4.0–92.0],  $p = 0.879$ . Using independent samples t-test showed that lap-group had a significantly shorter hospital stay than open group (open group  $14.9 \pm 11.3$  days vs. Lap. group  $6.95 \pm 1.146$  days),  $t(3.12)$ ,  $p = 0.002$ . It was seen that lap-group had a significantly longer mean operation time compared with open group (lap. group:  $345.5 \pm 70$  min vs. open group:  $223.3 \pm 55.1$  min),  $t(21.63) = 7.43$ ,  $p < 0.001$ . There is a statistically significant association between open group and early and late complications ( $\chi^2(1, N = 205) = 4.40$ ,  $p = 0.036$ ,  $\phi = 0.167$ ); ( $\chi^2(1, N = 205) = 2.89$ ,  $p = 0.043$ ,  $\phi = 0.043$ ) respectively. Kaplan–Meier analysis showed a significant difference in 5-year overall survival in lap group 100% survival and in open group 47% (log-rank  $p = 0.001$ ).

**Conclusions.** Laparoscopic gastric resections have less complications compared to open group, also its overall survival is higher than in open group. The length of stay is shorter. Laparoscopic gastric resections are safe and should be used more frequently even for advanced gastric carcinoma where it is appropriate.

**Acknowledgements.** The authors declare no conflict of interest.

# INCIDENCE, TYPE OF INJURIES AND RETURN TO SPORT AFTER INJURY DURING THE HOCKEY TOURNAMENT “RIGA HOCKEY CUP 2025”

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**Background.** Ice hockey is a high-contact sport associated with a substantial risk of injury due to high speed, physical collisions, falls, and equipment-related factors. Injury patterns in youth ice hockey differ across age groups and may be influenced by growth-related biomechanics changes, training intensity and technical skills. Systematic injury surveillance during tournaments is essential to identify high-risk age groups, injury mechanisms and anatomical distribution in order to guide preventive strategies and optimise medical support.

**Aim.** The aim of this study is to evaluate the incidence, anatomical localisation and mechanisms of injuries sustained during *Riga Hockey Cup 2025* among youth ice hockey players aged 8–18 years and to identify age-related injury patterns.

**Methods.** The observational descriptive study included all injuries requiring medical assistance during *Riga Hockey Cup 2025*. Injury data were collected prospectively using the International Ice Hockey Federation (IIHF) Injury Surveillance Form. Players were categorised into age groups from U9 to U18. Recorded variables included age group, injury localisation, injury mechanism, and clinical severity indicators (including suspected concussion and emergency medical service involvement). Only anonymised data were analysed. The study was approved by the Ethics Committee

of the Faculty of Medicine and Life Sciences, University of Latvia.

**Results.** A total of 438 injuries were recorded. The highest injury incidence was observed in the U14 age group (23.3%), followed by U13 (19.6%). Injuries most frequently affected the upper and lower extremities (57.1%), followed by head injuries (18.0%), face and neck injuries (12.8%) and trunk injuries (12.1%). Head injuries 18.0% (n = 79) including concussions were most common in the U14 30.3% (n = 24) and U13 28.4% (n = 22) groups. Regarding injury mechanisms, the most frequent cause was impact with puck, stick or ice (46.6%), followed by contact with opponent (29.2%) and collisions with the boards (18.9%). Fractures of extremities (3.2%) and sprains/dislocations (2.0%) were relatively rare, indicating that most injuries were mild to moderate in severity.

**Conclusions.** Injuries during *Riga Hockey Cup 2025* predominantly occurred in early adolescence, with the highest risk observed in the U13–U14 age groups. Extremity and head injuries were most common, and injury mechanisms were largely related to high-impact play and physical contact. The findings highlight the importance of targeted injury prevention strategies, proper protective equipment use, and focused education on safe play techniques in youth ice hockey.

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# COMPARISON OF EARLY POSTOPERATIVE OUTCOMES AFTER TOTAL THYROIDECTOMY FOR MULTINODULAR TOXIC GOITRE AND GRAVES' DISEASE AT PAULS STRADIŅŠ CLINICAL UNIVERSITY HOSPITAL

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**Background.** Multinodular toxic goitre (MNTG) and Graves' disease (GD) are both causes of hyperthyroidism for which total thyroidectomy (TT) is an established definitive treatment. Despite sharing the same surgical indication, these entities differ in tissue characteristics and vascularity,

which may influence operative complexity and postoperative outcomes.

**Aim.** To evaluate and compare operative and postoperative outcomes of TT in patients with MNTG and GD.

**Methods.** A retrospective analysis of the Eurocrine® registry (2015–2025) was conducted, with all data retrieved from patients treated at Pauls Stradiņš Clinical University Hospital, Endocrine Surgery Unit. Demographic characteristics, operative parameters, and early postoperative outcomes were analysed. Intraoperative nerve monitoring became routine in 2018, and nerve outcomes were analysed from that point onward. Group comparisons used the Mann–Whitney U and Fisher’s exact tests, with multivariable logistic regression for adjusted analyses.

**Results.** A total of 356 patients were included, of whom 210 had MNTG and 146 had GD. Female patients predominated in both groups (91.4% vs 87.7%,  $p = 0.29$ ). Patients with MNTG were significantly older than those with GD (median age 60 vs. 44 years,  $p < 0.001$ ). Operative duration was longer in GD than in MNTG (median time 135 vs. 125 minutes,  $p < 0.05$ ). Intraoperative nerve monitoring was used in more than 92% of procedures in both groups and postoperative nerve paresis confirmed by laryngoscopy occurred in 3.8% of patients with MNTG and 4.5% of those with GD ( $p = 0.78$ ). Although postoperative hypocalcaemia requiring calcium supplementation was more frequent in

patients with GD than in those with MNTG (39.7% vs. 34.3%), this difference did not reach statistical significance ( $p = 0.31$ ). Similarly, the need for postoperative vitamin D supplementation did not differ between GD and MNTG (34.0% vs. 31.0%,  $p = 0.56$ ). Hypocalcaemia was significantly associated with longer operative duration and was independently predicted by operation time rather than underlying diagnosis. Finally, rates of re-bleeding requiring re-operation were low and comparable between MNTG and GD (2.1% vs. 1.4%,  $p = 0.69$ ), and postoperative wound infection occurred at similar rates in both groups (1.4% in each,  $p = 1.00$ ).

**Conclusions.** TT for GD is associated with increased operative complexity, but comparable postoperative complication rates when compared with MNTG. These findings support the safety of TT in both conditions when performed in experienced centres.

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## CLINICAL AND RADIOLOGICAL SHORT-TERM RESULT COMPARISON BETWEEN CEMENTED AND CEMENTLESS GLENOID FIXATION IN TOTAL SHOULDER ARTHROPLASTY WITH STEMLESS ANATOMICAL IMPLANT

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**Background.** Stemless shoulder arthroplasty has gained popularity due to bone-preserving properties. Anatomical stemless prosthesis provides joint with better range of motion; however, due to greater motion there is an increased risk of glenoid component loosening. Glenoid component loosening is the most common complication after total shoulder arthroplasty (TSA). Earlier research demonstrates that cemented glenoid fixation has greater stability. Surgery technology development ensures improved glenoid fixation. Although comparative data between cemented and cementless glenoid fixations remain limited.

**Aim.** The aim of the study is to compare short-term radiological and clinical outcomes following stemless anatomical TSA with cemented and cementless glenoid fixations.

**Methods.** This retrospective study was conducted in Valdoltra Orthopaedic Hospital. Study included 63 patients who underwent primary stemless TSA between years 2022 and 2025. Patients were categorised into two groups based of the fixation type of glenoid: cemented and cementless fixation. Constant Score and ASES score were evaluated preoperatively and at the last follow-up post surgery. Radio-

graphs were evaluated for glenoid loosening according to the Lazarus grade. Humeral component lucency evaluation was performed using the 5-zone method. Data were gathered and evaluated using SPSS IBM Statistics 22 software.

**Results.** A total of 63 patients with an average age of 65.2 years were included in the study, 21 in the cemented glenoid fixation group and 42 cementless glenoid fixation group. Mean follow-up was 24 months post surgery for cemented glenoid fixation group and 21 months for cementless glenoid fixation group. The evaluation of Constant Score proved no statistically significant difference between both fixation type groups ( $p = 0.87$ ). No statistically significant difference in ASES score improvement was demonstrated between both groups. Cementless glenoid fixation group improved by 40.1 points and cemented glenoid fixation group by 43.3 points ( $p = 0.43$ ). Lazarus grade method confirmed no loosening in both groups. In cemented glenoid fixation group two cases exposed humeral radiolucent lines in zone I (non-symptomatic) while in cementless glenoid fixation group there was one case revealed. Due to postoperative trauma one revision surgery was per-

formed in cementless glenoid fixation group. Cemented glenoid fixation group patients returned to work post-surgery on average 21 days later than cementless group ( $p = 0.42$ ).

**Conclusion.** Both cemented and cementless glenoid fixation groups provided excellent short-term functional outcomes with low complication and radiographic failure rates.

Fixation choice can be selected by patient specific factors and surgeon preference.

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