ABSTRACT BOOK

Total Pancreatectomy is Associated with Inferior Short- and Long-Term Outcomes – a German Nationwide Matched-Cohort Study

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Introduction:
Pancreatic Ductal Adenocarcinoma (PDAC) is a leading cause of cancer-related deaths worldwide. Radical surgical resection remains the only curative treatment option and can be performed as pancreatoduodenectomy (PD) or total pancreatectomy (TPE) in case of pancreatic head malignancy.

Objectives:
This study aims to compare perioperative morbidity and mortality after PD or TPE for PDAC using German Cancer Registry data.

Methods:
Anonymized pooled data was retrieved from regional cancer registries participating in the German Cancer Registry Group of the Association of German Tumor Centers (GCRG/ADT). Included were patients diagnosed with pancreatic head adenocarcinoma between 2016 and 2023, receiving curative intent PD or TPE. Patients were propensity-score matched according to age, sex, and histopathology (T-, N-, L-, V status, grading). Primary endpoints were 30- and 90-day postoperative mortality. Secondary endpoints were administration of AC, patterns of recurrence, and long-time overall survival, analyzed using R.

Results:
808 patients per treatment group were matched for further analyses. R0-resection rate was comparable between PD and TPE (75 vs. 70%, p = 0.104). 30-day (4.7 vs. 9.5 %, p < 0.001) and 90-day postoperative mortality (11 vs. 18 %, p < 0.001) were significantly lower after PD compared to TPE. Following PD, more patients received AC (53.7 vs. 44.7 %, p < 0.001) compared to TPE. Long-term overall survival (p < 0.001) was worse after TPE, also in patients receiving AC (p = 0.013). The combined sites of recurrence were comparable between both groups (p = 0.082), but disease-free survival was worse after TPE (p = 0.025).

Conclusions:
This study shows higher perioperative morbidity and mortality after TPE compared to PD for pancreatic head adenocarcinomas. Also, long-term survival favored PD. These results emphasize the role of PD as a standard surgical procedure for pancreatic head malignancy and suggests that TPE should only be performed in selected patients.

Current Practices and Outcomes of Neoadjuvant Therapy for Pancreatic Cancer In Germany – Nationwide Observational Study

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Background:
Neoadjuvant therapy (NAT) was recently shown to improve outcomes of patients with "borderline-resectable" pancreatic ductal adenocarcinoma (PDAC). However, in less-advanced tumors and "resectable-disease", the benefit of NAT is controversially debated.

Objectives:
This study aims to evaluate the current clinical practice and outcomes for NAT in PDAC patients in Germany.

Methods:
Anonymized pooled data was obtained from clinical cancer registries participating in the German Cancer Registry Group of the Association of German Tumor Centers (GCRG/ADT). Patients diagnosed with PDAC since 2016 and absence of distant metastases, receiving NAT or upfront-surgery were selected and compared regarding epidemiological and histopathological characteristics and survival-rates using R.

Results:
6887 patients meeting the inclusion criteria were identified. Of these, 15.0% received NAT (n=847), 65.3% upfront surgery (n=2353), 19.7% were treated with palliative therapy. Within the NAT group, 46.3% of patients were resected. Of these, 47.2% received adjuvant therapy. Combined, only 21.8% of NAT patients received a guideline-conform therapy. Only UICC III stage was predictive of not being resected after NAT.
NAT-patients were significantly younger (65 vs. 70y, p<0.001) and had more advanced tumors (cT 3-4: 76.9 vs. 34.7%; cN+: 49.5 vs. 43.0%, p<0.001) compared to upfront-surgery. NAT induced a downstaging of tumors, as after resection, NAT patients showed less advanced histopathology (p<0.05).
Adjusting for confounding variables, NAT was not associated with OS (HR 1.09, p=0.097). Patients were further stratified according to UICC stages, showing no differences in the OS following NAT compared to upfront-surgery in any group.

Conclusions:
This analysis provides comprehensive insights into the current clinical practice and outcomes of NAT for PDAC in Germany. As only a minority of patients after NAT are resected, NAT fails to improve outcomes of patients irrespective of tumor stages. Therefore, careful selection of patients eligible for NAT is crucial and must be further addressed in prospectively randomized trials.

The role of anatomic anomalies of pancreatic duct in pediatric chronic pancreatitis

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Introduction:
The etiology of chronic pancreatitis (CP) in children is varied and includes anatomic anomalies (AA), gene mutations and others. AA of pancreas are very rare.

Objectives:
The aim of this study was to evaluate the role of AA of pancreatic duct in pediatric CP.

Materials and methods:
573 children with CP, hospitalized since 1990 to 2024, were enrolled into the study. The medical records of these patients were reviewed for data on the presentation, diagnostic findings, endoscopic and surgical treatment. All children had preceding imaging studies, including MRCP and/or ERCP. All children were screened for gene mutations.

Results:
AA were found in 102 children (17.8%). Pancreas divisum was observed in 63 (62%); ansa pancreatica in 19; ABPU in 9; annular pancreas in 2 children. In 9 children we observed very rare AA. 67 patients (66%) with AA had gene mutations (*PRSS1*-9 patient; *SPINK1*-34 patients; *CTRC*-24 patients; *CFTR*-18 patients; *LPL, TRPV6, CUZD1* and *UBR1* in 1 pt). There was no difference in age of the disease onset between AA group and non-AA group (8.4 vs. 8.7 years;NS). In children with AA ERCP had mean 2,1° Cambridge grade, vs. 1.6°, $p<0.05$. 43% patients with AA had calcifications in the imagine studies vs. 33%;$p<0.05$. Therapeutic ERCP was performed in 81 pts (79%; average 4x vs 47%;$p<0.05$). Surgical intervention was done in 26 children (25% vs 14%;$p<0.05$). Pancreatic duct stenting was done in 40 children (39% vs. 20%;$p<0.05$).

Conclusions:
1. AA of pancreatic duct are common etiologic factors of CP in children.
2. CP in patients with AA has worse clinical course than CP in children without AA.
3. CP is a multifactorial disease. In children with AA coexisting etiological factors, like gene mutations, should be investigated.
4. Children with CP and AA are often treated by endoscopic and surgical procedures.

Advancing Pancreatic Surgery with Indocyanine Green (ICG) Imaging: a Systematic Review

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Introduction:
In recent years, indocyanine green (ICG) has emerged as an important tool utilized in multiple aspects of pancreatic surgery providing valuable real-time intraoperative insight. However, the proper use of ICG in clinical practice is not exactly fully established. We conducted a systematic review to evaluate the clinical utility of ICG in pancreatic surgery.

Objectives:
To determine the most commonly used ICG dose, timing, administration route, purpose and effectiveness during pancreatic surgery.

Materials and methods:
PubMed database was searched for case reports and case series published between 2020 and 2025.
Results: A total of 28 articles encompassing 205 patients were included in the final review. The majority administered ICG intravenously (96.4%). In 16.6% of the cases, ICG was given both: intravenously and injected directly into the pancreatic parenchymal or biliary tree. Only 10 patients, who had lymphadenectomy, received ICG not intravenously but into the parenchyma in the anterior surface of the pancreatic head. In most cases (85.7%), ICG was administered intraoperatively, while in other instances, it was given between 15 minutes to 1 hour before the surgery. Regarding the dosage of ICG, 59.5% of studies used 2.5-7.5 mg total with the highest dosage being 25 mg total. ICG was applied for various purposes, including identifying pancreatic tumors, assessing vascular perfusion, visualizing the biliary tract, identifying the pancreatic stump margin, and detecting lymph nodes. Among all, biliary tract staining with ICG was predominant (31.7%) due to duodenum-preserving pancreatic surgery. The purpose of the ICG administration was achieved in 93.7% of the patients.

Conclusions:
The use of ICG in pancreatic surgery is very diverse. The dosage, timing and route of administration depends on the specific type of surgery and its objectives. However, it is undeniable that the use of ICG in pancreatic surgery is beneficial and holds great potential for the future.

Impact of EMT Transcription Factors Overexpression on Survival in Pancreatic Cancer

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Introduction

Pancreatic ductal adenocarcinoma (PDAC) is the seventh leading cause of cancer-related deaths worldwide, with a 5-year survival rate below 10%. Pancreatectomy is the only curative option, yet nearly 90% of patients experience recurrence within 7–9 months. It is known that tumor aggressiveness and resistance are driven by epithelial-mesenchymal transition (EMT), regulated by transcription factors (TFs) like SNAIL, SLUG, ZEB1, ZEB2, and TWIST. Among them, ZEB1 plays a key role in promoting cancer stemness, invasion, and metastasis. Identifying new prognostic markers is essential for improving survival predictions and treatment strategies.

Objectives

The aim of this study was to investigate expression changes and the relationship between EMT-TFs and overall survival in PDAC patients.

Materials and methods

mRNA was extracted from postoperative cancerous and adjacent tissues (n=65), converted to cDNA, and analyzed via RT-PCR. Gene expression was normalized to GAPDH, and statistical analysis was performed using the Kruskal-Wallis test, Spearman's correlation, and Kaplan-Meier analysis.

Results

RT-PCR analysis showed significantly higher ZEB1 and TWIST expression in short-term survivors, with 4.27-fold and 2.89-fold increases ($p < 0.05$). SNAI1 and SNAI2 were also upregulated, rising 7.40-fold and 5.46-fold in medium-term survivors and even higher in long-term survivors (14.46-fold and 7.90-fold, $p < 0.01$). ZEB1 overexpression correlated with increased SNAI1 and SNAI2, while high levels of these factors were linked to shorter survival. No significant survival differences were found for ZEB1, SNAI1, or TWIST, but low SNAI2 expression was associated with significantly better early survival (36 vs. 15 months, $p = 0.0278$).

Conclusions

In conclusion, elevated ZEB1, TWIST, SNAI1, and SNAI2 levels were linked to shorter survival, with ZEB1 overexpression correlating with increased SNAI1 and SNAI2 expression. Notably, lower SNAI2 expression was associated with better early survival, suggesting its potential as a prognostic marker in PDAC and warranting further research

AI-Driven Radiomics in CT Imaging for Chronic Pancreatitis: Novel Biomarkers for Classification and Disease

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Introduction/Objectives

Chronic pancreatitis (CP) is a progressive inflammatory disease that leads to irreversible pancreatic damage and complications such as abdominal pain, diabetes, and exocrine pancreatic insufficiency (EPI). Traditional diagnostic approaches often detect CP at advanced stages, limiting early intervention. However, artificial intelligence (AI)-based radiomics can extract quantitative imaging biomarkers from computed tomography (CT) scans, revealing subtle parenchymal changes invisible to the naked eye. This study aimed to evaluate whether radiomic features from CT can reliably classify CP from healthy individuals and the different severities of CP complications. A secondary objective was to explore the clinical interpretability of the features.

Materials and Methods

This retrospective multicenter study was based on 208 CP patients and 150 controls affiliated to Aalborg University Hospital. Pancreas was manually segmented on portal venous-phase CT, and 110 radiomic features were extracted. Feature selection was performed with LASSO regression, and support vector machines models were trained to classify CP and identify EPI, diabetes, and chronic pain. Validation was conducted on 79 CP patients from Haukeland University Hospital. Conventional imaging findings were correlated with radiomics, and probability scores were correlated with fecal elastase and functional disease severity.

Results

The radiomics model achieved 93% accuracy in distinguishing CP from controls, with 85% in external validation. Classification for EPI, diabetes, and chronic pain reached accuracies of 67%, 64%, and 66%, respectively. Selected radiomic features largely correlated with pancreatic volume and calcifications. Fecal elastase strongly correlated with EPI probability scores (p=0.002), and higher functional disease severity was linked to higher probability score for CP classification.

Conclusion

Radiomics-based AI models effectively differentiate CP from healthy pancreas and show potential for classifying complications and disease severity. Though performance varied across outcomes, quantitative imaging biomarkers may aid noninvasive diagnosis and staging. Larger cohorts and refined algorithms could enhance accuracy and support personalized CP management.

Sex Differences in Chronic Pancreatitis – a Cross-Sectional Study of 1922 Patients from the Scandinavian Baltic Club Database

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Introduction:
There are few studies on sex differences in chronic pancreatitis (CP).
Objectives: To study sex differences in aetiology, complications, and treatment of CP in a large, North-European CP database.

Materials and methods:
Data were extracted from the Scandinavian Baltic Pancreatic Club (SBPC) database. Differences between sexes were compared with multiple logistic regression models.

Results:
We included 1922 patients in the analyses, of whom 1264 were men. Mean age of CP onset was 52.5 (SD 15.0) years in men and 51-5 (SD 16.4) years in women (p=0.2). Significantly more women were underweight (p<0.001), and more men were overweight (p<0.001). Alcohol aetiology was strongly associated with male sex (OR 2.92 (2.29-3.71), p<0.001), and numbers of men and women with non-alcoholic aetiology were almost equal (461 and 422, respectively). Duct obstruction aetiology was associated with female sex (OR 0.62 (0.44-0.89), p=0.01). Concerning complications, diabetes mellitus (DM) was strongly associated with men (OR 1.62 (1.27-2.07), p<0.001), whereas osteoporosis was strongly associated with women (OR 0.47 (0.32-0.70), p<0.001). There were no strong associations between sexes and various treatment options.

Conclusions:
More men than women had CP, but there was almost no difference in absolute numbers of men and women with non-alcoholic CP. Among the CP patients, DM was associated with men, while osteoporosis was associated with women.

Sarcopenia and Increased Intra-Muscular Adipose Tissue (IMAT) Decresase Overall Survival after Pancreatic Resection

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Sarcopenia, defined as decreased muscle mass strength and impaired function, is suggested to correlate with worse outcomes of overall survival after cancer surgery. The aim of this study was to evaluate the impact of body composition on prognosis after pancreatic surgery.

All patients who underwent pancreatic resection in Tampere University Hospital during 2018–2020 were included. Data on demographics, medical history, surgery, complications and survival were recorded from the patient register. Complications were categorized according to the Clavien-Dindo (CD) classification. Muscle index for sarcopenia (MI) and intra-muscular adipose tissue (IMAT) were determined from the preoperative TT-scans using SliceOmatic software. The MI cut-offs for sarcopenia were $42.5 \text{ cm}^2/\text{m}^2$ and $35.1 \text{ cm}^2/\text{m}^2$ and for increased IMAT $4.5 \text{ cm}^2/\text{m}^2$ and $5.3 \text{ cm}^2/\text{m}^2$ for males and females, respectively.

240 patients were included. Median age was 67 (30-86) years, 54% were males and 64% had ASA class 3-5. Median BMI was 26 kg/m^2 (17-29). 62 % had a malignant tumor. Severe complications (CD 3b-5) were reported among 20%. Preoperative sarcopenia or increased IMAT were not significantly associated with severe complications (MI: $p=0.967$, IMAT: $p=0.075$) or 30-day mortality (MI: $p=0.664$, IMAT: $p=0.138$). Increased IMAT was associated with 90-day mortality among pancreatic cancer patients ($p=0.038$), but sarcopenia was not ($p=0.553$).

Among cancer patients, 1-year survival was significantly lower in sarcopenic patients (60% vs 88%; $p<0.001$) and in patients with increased IMAT (65 % vs 88 % $p=0.001$). In multivariant analysis for 1-year survival, both remained statistically significant (SMI: $p=0.007$, IMAT: $p=0.046$).
No correlation with severe complications, mortality or survival was detected among patients with a benign disease.

Preoperative sarcopenia and increased IMAT are associated with worse 1-year survival among pancreatic cancer patients. In addition, increased IMAT was associated with higher 90-day postoperative mortality. Preoperative evaluation of body composition may provide additional important information for the planning of pancreatic cancer treatment.

Pancreaticoduodenectomy using the Finnish binding pancreaticojejunostomy: 400 consecutive patients operated in Tampere University Hospital

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Introduction

Anastomosis technique Finnish binding pancreatico-jejunostomy (FBPJ) was developed to minimize pancreatic trauma and post-operative inflammation which precede complications after pancreatico-duodenectomy (PD). Perioperative acinar cell count (ACC) method can be used to identify patients at high risk for complications after PD. Our aim was to analyze complications after FBPJ in high- and low risk patients.

Materials and methods

400 consecutive patients undergoing PD with FBPJ in Tampere University Hospital were included. High-risk pancreas was defined as ACC >40% in the pancreatic transection line. Clinically relevant pancreatic fistula (CR-POPF), postpancreatectomy hemorrhage (PPH) and delayed gastric emptying (DGE) were graded using the International study Group of Pancreatic Surgery (ISGPS) classification.

Results

Median age was 68 (22-87) years and 49 % were men. 30-day mortality was 2.3 %. 13.8 % developed CD3b-4 complications, 13.5% had CR-POPF and 10 % PPH. 67 % were classified as having high-risk pancreas. High-risk patients developed more CD3b-5 complications (19 % vs 10 %, $p=0.04$), CR-POPF (19 % vs 0.8 % $p=0.00$), PPH (13 vs 3.9, $p=0.00$) and DGE (31 vs 16 %, $p=0.00$). In multivariate analysis ACC >40 % was an independent risk factor for CD3b-5 complications, POPF and PPH.

Conclusions

Favorable results can be achieved using the FBPJ in PD for both high- and low-risk patients.
ACC >40 % in pancreatic transection line is a good predictor for higher risk of postoperative complications after PD.

The Impact of Preoperative Biliary Stenting on Early Postoperative Complications Following Pancreaticoduodenectomy

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Introduction:

Negative impact of preoperative biliary stenting on early postoperative complications following pancreaticoduodenectomy remains a subject of debate. Previous studies show contradictory results, which prompted to perform this single center study at the tertiary university hospital in Lithuania.

Objectives:

To evaluate the impact of preoperative biliary stenting on the occurrence of early postoperative complications in patients after pancreaticoduodenectomy.

Materials and Methods:

A retrospective study included 77 patients who underwent pancreaticoduodenectomy at the Lithuanian University of Health Sciences Hospital (LUHS) between 2022 and 2024. Patients were divided into two groups based on preoperative stenting. Postoperative complications were classified according to the Clavien-Dindo classification. Statistical analysis was performed using MS Excel 2010 and IBM SPSS 25.0, with a significance level set at $p < 0.05$.

Results:

forty-seven (47 (61%)) patients underwent preoperative biliary stenting. In total postoperative complications occurred in 53 (69%) patients, with no significant differences between the two groups regarding complications such as surgical wound infection, cardiological, respiratory, neurological complications, pancreatic fistula, postoperative bleeding, biliary anastomosis leak, or *Cl. difficile* infection. Delayed gastric emptying was more often observed in non-stented patients (23.3% vs. 6.4%, p=0.031), while postoperative cholangitis was more frequent in the stented group (51.1% vs. 23.3%, p=0.016). Postoperative mortality was higher in the stented group (12.8% vs. 3.4%, p=0.172). When evaluating postoperative complications according to the Clavien-Dindo classification, level III complications were more common in non-stented patients (52.6% vs. 14.7%, p=0.014).

Conclusions:

Preoperative biliary stenting does not significantly affect most early postoperative complications after pancreaticoduodenectomy. However, the risk for postoperative cholangitis and postoperative mortality is higher.

Epidemiology, Treatment, and Pattern of Recurrence of Pancreatic Neuroendocrine Tumors

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Background

Neuroendocrine neoplasia of the pancreas (pNEN) are rare tumors and divided into non-functional (nf-pNEN) and functional (f-pNEN) tumors. While a steady increase in the incidence has been observed over the past decades many surgeons rarely encounter this neoplasia.

The aim of this study was to elucidate on the epidemiology, survival rates, recurrence patterns and treatment of pNEN in Germany using real-world data from the German Cancer Registry Group (GCRG) of the Association of German Tumor Centers (ADT).

Methods

Data of patients diagnosed after 2017 were retrieved and differences in the epidemiological and histopathological data compared. Overall survival (OS) and disease-free survival (DFS) were calculated using the Kaplan-Meier method and compared using log-rank test. The cumulative hazard (cH) of a local/ distant recurrence of disease were estimated using the Nelson–Aalen estimator.

Results

1953 patients (97% nf-pNEN) with a median age of 63 years were identified. Nf-pNEN were larger (p=0.046), tended to have more frequent lymph node involvement (p=0.102) and more often were metastasized at diagnosis (22.5% vs. 11.1%, nf-pNEN vs. f-pNEN, p=0.047). Of the f-pNEN, 93.7% underwent upfront surgery versus 81.1% of nf-pNEN (p=0.088). OS and DFS was improved for f-pNENs over nf-pNENs (5-year OS 0.73 vs. 0.48, p <0.01; 5-year DFS 0.50 vs. 0.29, p<0.01). The liver and distant lymph nodes were the most frequent sites of metastasis at diagnosis for both groups. cH of a local recurrence were comparable (5-year cH 0.11 vs. 0.20, f-pNEN vs nf-pNEN, p=0.56). Nf-pNEN had a higher risk of a newly diagnosed metastasis (5-year cH 0.66 vs. 0.35, p=0.035). Most frequent chemotherapy-regimens for nf-pNEN were platin-based substances ± etoposide and 5-fluorouracil ± streptozocin.

Discussion

Our data show that both f-pNEN and nf-pNENs have a good outcome. Nevertheless, nf-pNENs need close follow-up after curative intent treatment for an early detection of distant metastasis.

Small and Large Pancreatic Neuroendocrine Tumors: a Retrospective analysis of clinicopathological features and long-term outcomes.

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Introduction.

Pancreatic neuroendocrine tumors (pNETs) are a heterogeneous group of neoplasms with different biological behaviours. Tumor size is a well-known predictive factor that affects management strategies and overall survival. While surgical resection is recommended for pNETs above 20 mm, the optimal approach for small pNETs remains a hot topic of debate. The aim of this study was to compare clinicopathological features and treatment results of small and large surgically resected pNET.

Materials and methods.

A retrospective cohort study was conducted on patients diagnosed with pNET between 2011 and 2024 at Riga East University Hospital. Patients were divided into two groups based on tumor size: small pNET (<20 mm) and large pNET (≥20 mm).

Results.

A total of 68 patients with pNET were identified, of whom 42 underwent surgical resection. Among them, 22 patients had small pNETs, while 20 had large pNETs. The median age was 62 years (IQR 51.8-67.5), and 80.9% of patients had hormonally nonfunctional tumors. Large pNETs were more frequently located in the head of the pancreas compared to small pNETs, respectively 45.0% vs 27.3%, p=0.124. The parenchyma-sparing approach was performed more frequently in small pNET (31.8% vs 5.0%, p=0.055), whereas PDR was more common in large pNET group (45.0% vs 13.6%, p=0.05). The rates of high-grade tumors and lymph node metastasis were higher in large pNET group. The median follow-up period was 96 months (IQR 57-125). The recurrence rate for small and large pNET group were 4.5% and 15.8%, respectively, p=0.321. The 3- and 5-year survival rates for large pNETs were 93.3% and 77.5%, respectively; while no deaths were observed in the small pNET group.

Conclusions.

Large pNETs are more aggressive, with higher probability of distant metastases and lymph node involvement. Small pNETs more often underwent parenchyma-sparing resection. These findings highlight the potential role of selective, risk-based treatment approaches for patients with small pNETs.