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Palliative biliodigestive bypass for unresectable pancreatic malignancy at Kilimanjaro Christian medical centre: a retrospective cross-sectional study

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Abstract

Background Pancreatic cancer is a common and deadly cancer, ranking as the 14th most common cancer worldwide and the 7th leading cause of cancer-related deaths. Advanced pancreatic malignancy frequently presents with biliary and gastric outlet obstruction and palliative open interventions are often required, especially in low-income countries where endoscopic surgical bypass methods are often unavailable. This study aimed to describe the demographic and clinical characteristics of patients undergoing biliodigestive bypass for pancreatic malignancy.

Methods This was a hospital-based retrospective observational study at the tertiary hospital in northern Tanzania. We included 53 patients who underwent double or triple bypass surgery for pancreatic malignancy between January 2019 to December 2022 at Kilimanjaro Christian Medical Centre (KCMC), Tanzania. Data was collected from medical records, analyzing demographics, comorbidities, pre-surgery and surgery details, and post-surgery outcomes. Descriptive statistics were used to summarize continuous variables as mean with standard deviation and categorical variables as percentages.

Results 53 patients were analyzed, with a mean age of 63.2 years and a male to female ratio of 1.03:1. Jaundice was the most common presentation (77.4%). Of the patients, 74.5% had comorbidities, and the majority (81.1%) were uninsured. 50.9% of patients had a length of hospital stay shorter than 5 days, and 88.3% resumed normal oral intake. Palliation failure was observed in 22.6% of patients. The median survival time for the entire cohort of patients was 65 days. Patients with palliation failure had a significantly shorter mean survival time than those without complications (14.17 vs. 90 days, $p=0.001$).

Conclusion Bypass surgery remains a treatment of choice for palliating symptoms in patients with advanced pancreatic cancer. This study highlights the importance of prompt diagnosis of pancreatic tumors, especially in low-income countries, to achieve better outcomes.

Keywords Biliodigestive bypass, Gastric outlet obstruction, Pancreatic malignancy, Surgical palliation

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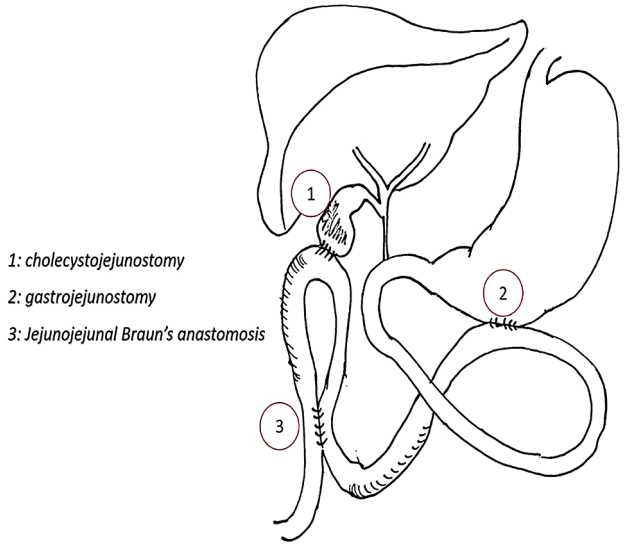

Fig. 1 Double bypass surgery combines with a Braun's Jejunojejunal anastomosis. Illustration by LELE

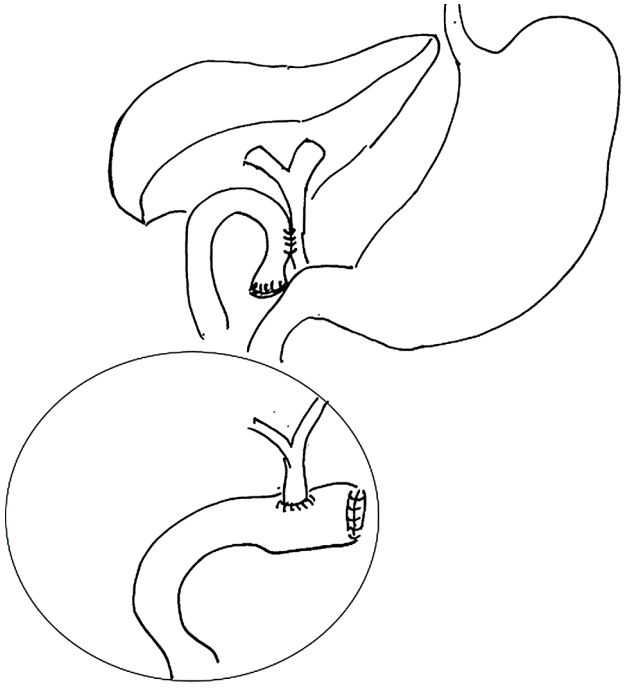

Fig. 2 Choledochojejunostomy (up: side to side, encircle: end to side); Illustration by LELE

Background

Pancreatic cancer ranks as the 14th most common cancer and the 7th leading cause of cancer-related deaths worldwide. According to Globocan estimates for 2018, there were projected to be 458,918 new cases and 432,242 deaths from pancreatic cancer globally. In eastern Africa, the incidence rate of this condition is estimated to be 2.8 individuals for every 100,000 people [1]. Pancreatic ductal adenocarcinoma (PDAC) accounts for the majority (90%) of pancreatic neoplasms, and the other subtypes include acinar carcinoma, pancreaticoblastoma, and neuroendocrine tumors [2].

Pancreatic carcinoma patients often present with advanced disease, making them ineligible for surgical resection and necessitating palliative interventions. Likewise, individuals with other malignancies such as periampullary carcinoma, distal cholangiocarcinoma, and duodenal adenocarcinoma may also require comparable treatment measures [3].

Patients with advanced pancreatic malignancy frequently experience biliary and gastric outlet obstruction (GOO) [4]. To address these issues, treatment options include surgical bypass methods such as gastroenterostomy and hepaticojejunostomy, as well as endoscopic retrograde cholangiopancreatography and percutaneous transhepatic cholangiography placement of stents [5]; which usually are not readily available in low-income countries and often expensive.

Achieving symptom palliation quickly and improving the quality of life for patients diagnosed with unresectable pancreatic cancer is critical since the median survival for this type of cancer is of 3–5 months for metastatic pancreatic cancer and 6–10 months for locally advanced disease [6, 7].

Generally, the technique depends on the type of obstruction. When the patient presents biliary obstruction with or without GOO a double bypass is preferred. The double bypass targets two specific obstructions: bile duct blockage (cholecystojejunostomy, choledochojejunostomy, hepaticojejunostomy) and gastric outlet obstruction (gastrojejunostomy) that can be therapeutic or prophylactic. Often, a side-to-side jejunojejunal Braun's anastomosis is also added to overcome biliary gastritis [3, 8]. (Figures 1 and 2)

When in addition to biliary obstruction and GOO, the patient also presents obstruction of the main pancreatic duct, we will opt for a triple bypass. That procedure thus includes the three previous cited anastomoses plus a pancreaticojejunostomy [9]. (Fig. 3)

In the past, patients who had a simple biliodigestive obstruction with an unresectable cancer only benefited from a simple biliojejunal diversion. However, over time, several studies have shown that prophylactic gastrostomy combined with biliojejunal diversion (double bypass) is beneficial and has fewer complications [10].

The aim of this study was to describe the demographic, clinical characteristics of patients undergoing biliodigestive bypass for pancreatic malignancy.

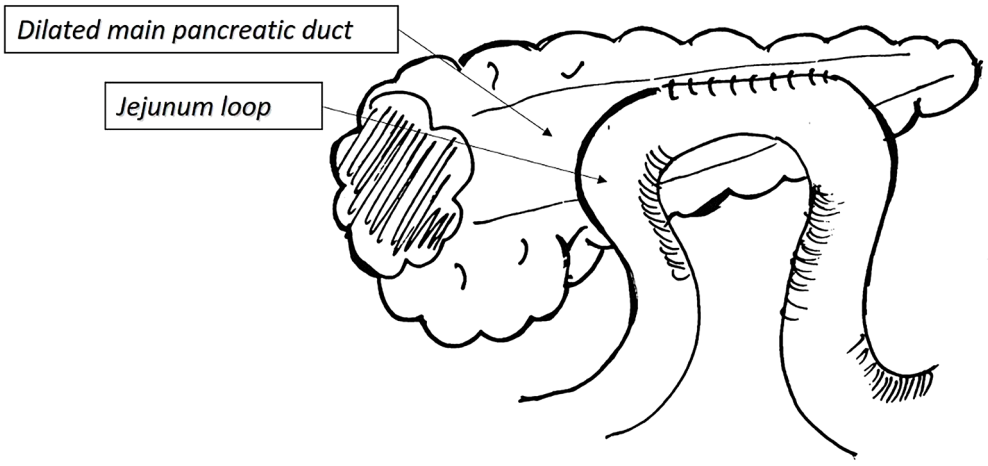

Fig. 3 Pancreatojejunostomy; Illustration by LELE

Patients and methods

Patients

Patients with unresectable or metastatic tumor presenting with symptoms of obstructive jaundice and/or gastric outlet obstruction at KCMC, and admit for a double or a triple bypass, were considered for inclusion in this study.

We used the NCCN criteria from 2016 to define resectability status [11]. Tumors were classified as unresectable if they had not distant metastatic disease and exhibited the following characteristics:

- Tumor involvement of greater than 180° of the superior mesenteric artery circumference.
- Unreconstructable encasement of the common hepatic artery (involvement of the celiac axis).
- Unreconstructable occlusion of the portal vein or superior mesenteric vein (long segment encasement).

Double bypass was defined as a Hepatico-, Choledocho- or Cholecystojejunostomy + gastrojejunostomy ± Braun's anastomosis. And a Triple bypass as an Hepatico-, Choledocho- or Cholecystojejunostomy + a gastrojejunostomy + pancreaticojejunostomy ± Braun's anastomosis. The term "palliation failure" was defined as Inability to resume normal oral intake and persistence of cholestatic symptoms. The criteria include:

- Persistence of GOO (Persistent vomiting, Inability of feeding).
- Persistence of Cholestasis (Persistence or worsening of itching, Persistence or worsening of jaundice, Persistence or worsening of the dark coloration of urine, Persistence or worsening of the pale stool discoloration).
- Lab investigation: failure of serum bilirubin levels to decrease by at least 50% within 48 to 72 h post-surgery.

Patients experiencing palliative failure were managed based on their performance status. Those with good performance status underwent a straightforward reintervention, while those with poorer performance had resuscitation followed, if possible, by reintervention.

The study obtained patient information from medical records, retrospectively analyzing demographics, comorbidities, pre-surgery and surgery details, and post-surgery outcomes such as complications, return to normal oral food intake, length of hospital stay, and short-term outcome. Postoperative mortality was determined as death within 30 days of surgery or during hospitalization. Postoperative morbidity was classified using the Clavien-Dindo (CD) classification [12].

Patients with relevant missing data, particularly those without histological confirmation of pancreatic cancer, were excluded from the study.

Study design and study site

We conducted a hospital-based retrospective cross-sectional study involving patients undergoing palliative bypass surgery for pancreatic malignancy at Kilimanjaro Christian Medical Centre (KCMC) from January 2019 to December 2022. Data collection was carried out in May 2023.

KCMC is a specialized referral hospital serving the northern, eastern and central zone of Tanzania. The facility also serves as a teaching hospital for the Kilimanjaro Christian Medical University College (KCMUCo).

Sample size and sampling technique

We did an exhaustive sampling of all patients with pancreatic tumor and obstructive symptoms. All information from patients of any age and sex with any documented pancreatic tumor were selected. 87 patients were enrolled into the study, 34 didn't meet the inclusion criteria hence 53 were analyzed.

Measurements

Histology information was obtained from the electronic management system report of each patient, which was validated by a pathologist. The EHMS system and the theater electronic general surgery registry contained documented records of demographic, clinical symptoms, treatment provided and reports on imaging modalities. The DYSALAB system contained lab investigation results.

The AJCC TNM classification was done based on the imaging protocol (CT scan) and intraoperative lesion descriptions [13], and the modified 8th staging system by Shi et al. was used [14].

Data collection and analysis

Data was collected using a well-structured electronic questionnaire designed and developed specifically for this research project (Supplementary material Appendix 1). The collected information included demographic profiles, management strategies, and outcomes.

Table 1 Characteristics of study participants

Characteristics	*n*	%
Age Category in years		
< 40	3	5.7
40–59	16	30.2
60–69	15	28.3
70–79	18	34
> 79	5	9.4
Mean age (± SD)	*63.2 (± 12.7) [34–70]*	
Sex		
Male	27	53.7
Female	26	46.3
Presenting symptoms		
Abdominal pain	26	46.3
GOO	12	22.6
Jaundice	41	77.4
Weight loss	12	22.6
Duration of symptoms in months (± SD)	*3 (± 2.1) [0.5–10]*	
Comorbidities		
Yes	38	74.5
No	13	25.5
Imaging modality		
USS	35	66.0
Ct-scan	34	64.2
MRCP	17	32.1
OGD	2	3.8
Payment		
Insurance	10	18.9
Cash	43	81.1

GOO: gastric outlet obstruction, USS: ultrasound scan, CT-scan: Computed Tomography scan, MRCP: Magnetic Resonance Cholangiopancreatography, OGD: Oesophago-gastro-duodenoscopy

Before analysis the data was thoroughly reviewed for completeness and any identifying information was removed to maintain anonymity. The de-identification process ensured that no specific patient identifiers were used during data analysis. Subsequently, the data was coded and fed into Office Excel 21, then analyzed with EPI-INFO 7 (Version 7.2.5.0 of March 2022) and SPSS 26.

For Descriptive Statistics, we summarized the demographic and clinical characteristics of the study population using means, medians, and frequencies.

We assessed the association between potential risk factors and 30-day mortality using chi-square tests for categorical variables and t-tests for continuous variables.

We conducted a multivariate logistic regression analysis to identify independent risk factors associated with 30-day mortality, controlling for confounders. Odds ratios (OR) and 95% confidence intervals (CIs) were reported.

We performed Kaplan-Meier analysis to evaluate the 30-day survival rate and employed the log-rank test to compare survival curves among different groups.

All analyses were conducted using appropriate statistical software, with a significance level set at $p < 0.05$.

Ethical consideration

The research was conducted in accordance with the principles set out in the Declaration of Helsinki (as revised in 2013). The requirement for individual consent was waived due to the retrospective nature of the analysis and an Ethical clearance N∘ HA/CEM/MM/003-2023, was granted by Heal Africa Research Ethics Committee (HAREC).

Results

Patient profiles

The mean (± SD) age of the participants was 63.2 years (± 12.7) with a male: female ratio of 1.03:1. Majority (81.1%) of the patients were not insured and the average duration of symptoms before radiologic diagnosis was 3 months. Jaundice was the most common presentation accounting for 77.4% followed by abdominal pain, gastric outlet obstruction and weight loss. 74.5% of the participants had comorbidities. Table 1 summarizes the sociodemographic characteristics.

Perioperative characteristics

Out of the 53 patients, only seven (13.2%) underwent urgent surgery, while the remaining 46 (86.8%) were elective cases. Almost all patients – 98.1% (52 patients) underwent a "double-bypass", and only one patient (1.9%) underwent a "Triple-bypass" procedure. Most of the patients (52.8%) had an ASA classification of IV, while 26.4% were classified as III. On TNM staging, all patients had a T4 tumor. Of them, 60.4% were classified as stage

IIIB and 39.6% had metastatic disease (stage IV). The average (± SD) duration of the surgery was 178.5 (± 53.2) minutes, and the median (IQR) estimated blood loss was 77.2 ml (IQR 20–250). 18.9% of patients required blood transfusion during the surgery. (Table 2)

Postoperative course

Out of 53 patients, 7 patients (13.2%) experienced noteworthy complications after their surgery, which were reported with a Clavien-Dindo score of ≥ 3 (as seen in Table 3). Unfortunately, one of these patients passed away during their stay in the hospital, whereas 6 others (11.3%) were readmitted and died within a month of the surgery. Palliation failure was observed in 22.6% of patients with 50% of them presenting with persistant GOO and biliary obstruction. The average (± SD) duration of hospital stay was 5.2 (± 2.8) days. Moreover, 34 patients (88.3%) managed to resume normal oral intake during their hospitalization. The 30-day mortality rate was 13.2%.

The majority of the histopathology results showed ductal adenocarcinoma (92.5%), followed by neuroendocrine carcinoma and acinar cell carcinoma, each accounting for 3.8% of cases (Table 3).

The median survival time for the entire cohort of patients was 65 days. Furthermore, patients who experienced palliative treatment failure exhibited a significantly shorter mean survival time compared to those without complications, with mean survival times of 14.17 days vs. 90 days, ($p < 0.001$). (Fig. 4).

Table 2 Perioperative characteristic

Characteristics	*n*	%
Urgency		
Elective	46	86.8
Urgent	7	13.2
ASA Classification		
II	11	20.8
III	14	26.4
IV	28	52.8
Surgeon qualification		
Resident	21	39.6
Surgeon	32	60.4
TNM Stagging		
IIIB	32	60.4
IV	21	39.6
Type of surgery		
Double bypass + Braun anastomosis	52	98.1
Triple bypass + Braun anastomosis	1	1.9
Duration of surgery in min		
[60–120]	6	11.3
[120–180]	16	30.2
[180–240]	23	43.4
[240–300]	8	15.1
Mean duration of surgery (± SD)	*178.5 (± 53.2) [60–300]*	
Estimated blood loss (ml)		
< 50	10	21.7
[50–100]	19	42.3
[100–150]	8	17.4
[150–200]	6	13.0
≥ 200	3	6.5
Mean blood loss (IQR)	*77.2 (20–250)*	
Intraoperative BT		
No	43	81.1
Yes	10	18.9

ASA Classification: American Society of Anesthesiologists classification. BT: Blood transfusion

Factors associated with failure of palliation and mortality

The results of the multivariate analysis showed that the Male sex had a negative association with both failure of palliation ($p = 0.049$) and early mortality ($p = 0.036$). Similarly, when the surgeon was a resident, a negative association was observed with both failure of palliation ($p = 0.049$) and early mortality ($p = 0.024$). (Table 4)

Discussion

Healthcare infrastructure in Tanzania and similar low-income regions presents significant challenges that significantly impact the management of unresectable pancreatic cancer. One of the primary issues is limited access to surgical interventions, which often stems from inadequate healthcare facilities and insufficient trained personnel. In many hospitals, particularly those located in rural areas, the availability of advanced surgical options such as biliodigestive bypass is limited. This is compounded by a lack of training in minimally invasive surgery, which restricts the potential for procedures like stent placement that could alleviate biliary obstruction without resorting to more invasive surgeries [15, 16].

Additionally, the penetration of advanced diagnostic imaging technology is poor in many lower-tier hospitals. Most healthcare facilities rely on basic imaging modalities, such as ultrasound, which may not provide the necessary detail for accurate staging and treatment planning. Advanced imaging techniques like CT scans or MRIs are often unavailable or prohibitively expensive for many patients, resulting in delays in diagnosis and treatment. These barriers contribute to late presentations, where patients often arrive at clinics with advanced-stage tumors, complicating treatment options and adversely affecting outcomes [15–18].

Moreover, the socioeconomic factors influencing healthcare access cannot be overlooked. A substantial portion of the population in Tanzania remains uninsured or underinsured, leading to financial barriers that hinder timely access to diagnosis and treatment. Patients may delay seeking care due to the costs associated with diagnostic tests and surgeries, further exacerbating the

Table 3 Postoperative characteristic

Characteristics	*n*	%
Postoperative complication	28	52.8
Clavien-Dindo classification of complications		
Class I	17	32.1
Class II	6	11.3
Class III	5	9.4
Class IV	1	1.9
Class V	1	1.9
Palliation failure	12	22.6
Persitant GOO	2	3.8
Persistant biliary obstruction	4	7.5
Persistant GOO + biliary obst.	6	11.3
Length of hospital stay.		
< 5	27	50.9
5 to 10	21	39.6
> 10	4	7.5
Mean length of hospital stays (± SD)	*5.2 (± 2.8) [3–17]*	
Discharged home	52	98.1
Readmission	6	11.3
30 Days mortality	7	13.2
During prior admission	1	1.9
During readmission	6	11.3
Histopathologic diagnosis		
Adenocarcinoma	49	92.5
Neuroendocrine carcinoma	2	3.8
Acinar cell carcinoma	2	3.8

Table 4 Factors associated with poor outcome

Variable		95% C.I.for			
Independent	**Dependent**	***O.R***	**Lower**	**upper**	***p*-value**
30 days mortality	Sexe (Female/ Male)	0.030	0.001	0.987	0.049
	Operator (consultant / resident)	0.044	0.002	0.821	0.036
Palliation failure	Sexe (Female/ Male)	0.040	0.002	0.992	0.049
	Operator (consultant / resident)	0.038	0.002	0.653	0.024

impact of limited healthcare resources. This multifaceted interplay of infrastructure challenges and socioeconomic constraints underscores the vital need for systemic improvements in the healthcare system to better manage pancreatic cancer in resource-poor settings [15–19].

Despite the recent introduction of endoscopic interventions, the challenges presented by healthcare infrastructure in resource-poor settings like Tanzania explain why open bypass surgery remains a treatment of choice for palliating symptoms in patients with advanced pancreatic cancer. Bypass surgery for cancer of the head of pancreas is usually done to relieve the obstructive symptoms in the biliary and/or digestive system.

To our knowledge, this is the first study carried out in Tanzania describing the management of patients with pancreatic tumors at an advanced stage. A total of 53 patients have been treated at KCMC over the past 4 years.

The study aimed to observe the demographic and clinical characteristics of patients undergoing biliodigestive bypass for pancreatic malignancy. The mean age was 63.2 (SD ± 12.7) years and a male to female ratio of 1.03:1. The majority of patients with this condition are diagnosed in their seventies and eighties, with less than 10% being

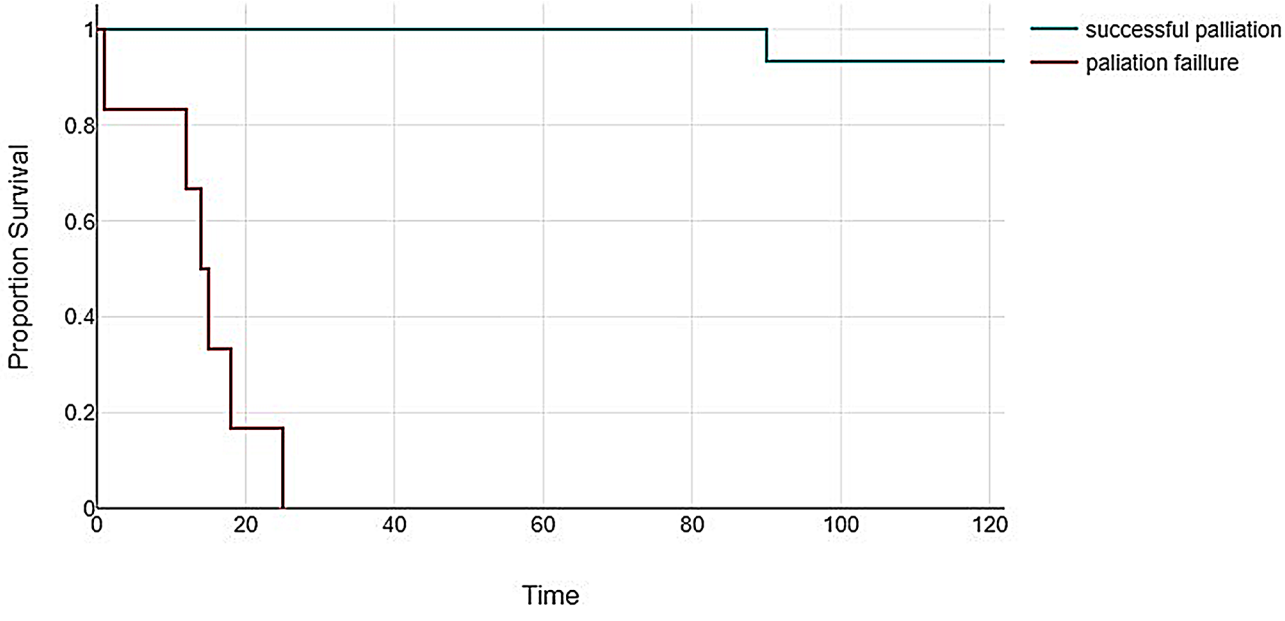

Fig. 4 Survival curves for patient with palliation failure

diagnosed under the age of 55, according to multiple authors [20]. For AUSANIA the median patient age was 64 years (range: 39–79 years) with a male to female ratio of 1.94:1 [8]. Several studies also shows that males are more touched by the disease [8, 10]. This could be due to males having greater exposure to risk factors, such as smoking and alcohol, which are more prevalent in their population.

Most patients (81.1%) did not have insurance, and the average duration of symptoms before diagnosis was 3 months. which is significantly longer than the duration reported in western countries, where patients usually obtain a diagnosis within the first month of symptom manifestation [13]. Another study conducted in Nigeria indicated that a majority of patients actually presented within the first two months [14]. In addition to the multifactorial reasons behind the delay of diagnosis, most of the patients were not insured, indicating that low socioeconomic status may contribute to the delay.

In the Tanzanian context, uninsurance and low socioeconomic status significantly impact patient management in Tanzania, particularly for individuals with pancreatic cancer. Patients lacking insurance often face substantial financial barriers that hinder their ability to seek timely medical care, leading to significant delays. Consequently, those unable to afford conventional treatment may turn to traditional healers or witch doctors as a means of addressing their health concerns, further delaying access to evidence-based medical interventions. This reliance on alternative therapies can result in advanced disease progression, reducing the effectiveness of available medical treatments. Additionally, financial constraints limit access to essential diagnostic tools, such as advanced imaging, which are crucial for accurate staging and treatment planning. Patients may miss the opportunity for early, less invasive surgical interventions, forcing them into more aggressive and less effective treatment options later in their disease course. Collectively, these factors exacerbate health disparities and contribute to poorer outcomes for pancreatic cancer patients, highlighting the urgent need for interventions that address both financial and structural barriers in the healthcare system.

According to the observations of our study, Jaundice (77.4%) was the most frequently reported symptom among the patients, followed by abdominal pain, gastric outlet obstruction, and weight loss. Interestingly, in another study conducted by Kivuyo, which centered on pancreatic mass at Muhimbili National Hospital, the most reported symptom was abdominal pain, reported by 72.1% of the patients, followed by jaundice [21].

A significant number of patients (74.5%) had comorbidities; Research has demonstrated that diabetes mellitus (DM) is a prevalent manifestation in patients with pancreatic masses [22].

The most used imaging modality was ultrasound (66.0%), followed by CT scan, which was performed in 64.2% of cases and MRCP in 32.1%. n clinical practice, Computed tomography, magnetic resonance imaging, and endoscopic ultrasonography are the most commonly used imaging methods in diagnosing and staging pancreatic cancer, playing a critical role in the process. According to Costache, CT showed a diagnostic accuracy of 83.3%, with sensitivity and specificity of 81.4% and 43% respectively. MRI showed superior diagnostic accuracy compared to CT-scan (89,1%) [23]. MRCP was least done among our participants due to the low economic status and the absence of medical insurance in the majority.

The findings from the TNM staging indicate that a majority of the cases (60.4%) were classified as stage IIIB, representing locally advanced disease, with 39.6% of the cases classified as stage IV, indicating metastatic disease. This proportion aligns with Ausiana's research, which reported a similar 38% of cases with metastatic disease [8]. However, Pencovich's research differed significantly, with 50% of cases having locally advanced disease (stage IIIB) and the remaining 50% having metastatic disease [24]. This distribution contrasts with both our study and Ausiana's findings. The equal distribution between locally advanced and metastatic disease in Pencovich's research underscores the potential for substantial variation in disease progression among different populations or in different healthcare settings. It may be valuable to analyze the characteristics of patients, such as tumor characteristics, demographic factors, and access to healthcare, to better understand the observed discrepancies.

Forty-six patients (86.8%) were elective cases, and only seven patients (13.2%) underwent urgent surgery. Double bypass was performed in most cases (98.1%), while only one patient underwent triple bypass (1.9%). The average duration of surgery was 178.5 (SD ± 53.2) minutes, and the median estimated blood loss was 77.2 (*20–250*), with 18.9% of patients requiring blood transfusion during surgery. In Pencovich series double bypass surgery took 270 ± 76 min [24]. Most of the patients (52.8%) had an ASA classification of IV, while 26.4% were classified as III.

Postoperatively, 13.2% of patients experienced noteworthy complications as per Clavien-Dindo Classification (Clavien-Dindo ≥ 3), and one patient died during their hospital stay. Palliation failure was observed in 22.6% of patients, and the average duration of hospital stay was 5.2(SD ± 2.8) days. Most patients (88.3%) resumed normal oral intake during hospitalization.

Ausania found that the complication rate was 50% and the in-hospital mortality rate was 4% [8]; and Pencovich found that of the patients, the palliation failure rate was 40.5%, 36% suffered from major postoperative complications (Clavien-Dindo ≥ 3), 1 patient died during the same

hospital stays and 16.6% of patients died within 30 days. The length of hospital stay ranged from 2 to 108 days with an average of 18.3 days [24].

In the Pencovitch series, the mean operative time for double-bypass procedures was 270 ± 76 min, with no conversions to an open approach required and no blood units administered during the surgeries [24]. Similarly, the study by Taylor reported that for patients undergoing a combined biliary and gastric bypass, the mean operative time was 4.6 ± 0.1 h, with a mean estimated intraoperative blood loss of 300 mL (median 200 mL) for palliated patients, and a transfusion requirement of 0 units [25].

In our series, both the average duration of surgery (178.5 ± 53.2 min) and the estimated blood loss (median 77.2 mL, IQR 20–250 mL) were significantly lower than what was observed in the cited literature. Notably, 18.9% of patients required blood transfusions during the procedure.

Our research reveals that the mean overall survival for all patients was 27.6 days. However, we have uncovered a significant difference in survival rates when examining patients with palliation failure. These individuals had a considerably shorter mean survival compared to those without complications, and the difference is statistically significant. Ausania also found that the median overall survival for all patients was 14.6 months. Patients with postoperative complications had a significantly shorter median survival than those without complications (9 vs. 18 months, $p = 0.003$) [8]. This finding underscores the importance of postoperative care and highlights the need for strategies to minimize complications in order to improve patient outcomes and prolong survival rates.

In our study, the multivariate analysis revealed that male sex was negatively associated with both palliation failure and early mortality. Similarly, surgeries performed by resident surgeons exhibited a negative association with these outcomes. Notably, the high complication rates observed in procedures conducted by fully qualified surgeons may be attributed to their involvement in more complex and advanced cases. Other factors such as surgery duration, blood loss, metastatic disease, and ASA classification did not demonstrate a significant association with poor outcomes.

Additionally, findings from the Pencovitch study corroborate our results, indicating that neither blood loss nor operative time were predictors of poor outcomes. However, their analysis identified that palliation failure was significantly associated with preoperative low albumin levels ($p = 0.034$) and increased age ($p = 0.027$) [24]. This highlights the importance of preoperative assessment in predicting surgical outcomes and emphasizes potential areas for intervention to improve patient care.

Conclusion

Biliodigestive bypass surgery remains a primary treatment option for advanced pancreatic cancer patients in Tanzania. Our study provided important information about the demographic and clinical characteristics and treatment outcome of patients who underwent this surgery at KCMC. We found that the patients were typically in their sixties, with a higher incidence in males and a longer duration of symptoms prior to diagnosis, which may be due to a lack of insurance and low socio-economic status. Jaundice was the most frequently reported symptom among the patients, and most utilized ultrasound as the imaging modality for diagnosis. Postoperative complications and palliation failure were common, with one patient dying during their hospital stay. Better patient selection and preoperative preparation may help decrease complication rates and improve postoperative outcomes.

This study has several limitations that should be noted. Conducted in a resource-poor setting, the research may reflect constraints in diagnostic and therapeutic options, potentially impacting patient outcomes and the generalizability of our findings. Additionally, the retrospective nature of the study, relying on physical files, poses challenges related to data completeness and accuracy. The relatively small sample size also limits the statistical power and representativeness of our results. Recognizing these limitations, we plan to conduct a prospective study to improve data collection and analysis, ultimately aiming to enhance patient outcomes for those with advanced pancreatic cancer in Tanzania.

Overall, our study demonstrated the need for further research to improve patient outcomes and reduce morbidity and mortality rates associated with biliodigestive bypass surgery in Tanzania. These findings could help inform policy and clinical practice, particularly in resource-limited settings, where there is a critical need for better access to diagnostic testing, healthcare insurance, and surgical interventions. Further research should also explore the use of emerging technologies and interventions for the early diagnosis and treatment of pancreatic cancer in Tanzania, as well as strategies to improve patient outcomes and reduce postoperative complications.

Abbreviations

ASA Classification	American Society of Anesthesiologists classification
BT	Blood transfusion
CD	Clavien-Dindo classification
CT-scan	Computed Tomography scan
EHMS	Electronic Health Management System
GOO	Gastric outlet obstruction
HAREC	Heal Africa Research Ethics Committee
KCMC	Kilimanjaro Christian Medical Centre
KCMUco	Kilimanjaro Christian Medical University College
MRCP	Magnetic Resonance Cholangiopancreatography
OGD	Oesophago-gastro-duodenoscopy

DRC	Democratic Republic of Congo
SPSS	Statistical Package for Social Sciences
USS	Ultrasound scan

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12876-025-03683-8.

Supplementary Material 1

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Author contributions

LMF: Study designing, data analysis, manuscript writing. TM: Data collection. EW: literature search and manuscript review JL, JT and MK: manuscript review SKC: Critical review and final approval of the manuscript.

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Data availability

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethical approval and consent to participate

The requirement for individual consent was waived due to the retrospective nature of the analysis and an Ethical clearance N**o** HA/CEM/MM/003-2023, was granted by Heal Africa Research Ethics Committee (HAREC) in Goma/DRC.

Consent for publication

Not applicable, because we are dealing with recorded data.

Competing interests

The authors declare no competing interests.

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