



FREQUENCY OF MALIGNANCY IN OBSTRUCTIVE JAUNDICE

Dr. Qazi Fawad Ahmad¹, Dr. Ismail Akbar², Dr. Zulfiqar Ali³

¹Trainee Medical Officer, Surgical Unit A, Ayub Teaching Hospital, Abbottabad, Pakistan.

Email: fawadqazi097@gmail.com

²Associate Professor, Surgical Unit A, Ayub Teaching Hospital, Abbottabad, Pakistan.

Email: fawadqazi63@gmail.com

³Trainee Registrar, Surgical Unit A, Ayub Teaching Hospital, Abbottabad, Pakistan.

Email: zulfiqarali10058@gmail.com

ARTICLE INFO:

Keywords:

Malignancy, obstructive jaundice, biliary diseases

Corresponding Author:

Dr. Qazi Fawad Ahmad,
Trainee Medical Officer, Surgical Unit A, Ayub Teaching Hospital, Abbottabad, Pakistan.
Email: fawadqazi097@gmail.com

Article History:

Published on 07 July 2025

ABSTRACT

Objective: To determine the frequency of types of malignancy in patients with obstructive jaundice.

Materials And Methods: Study design was cross-Sectional Study, in the Department of General Surgery, ATH Abbottabad. Duration of study was six months. Total Sample size was 157. Non-probability consecutive sampling technique was used. Inclusion criteria included patients of age 18-60 years, both genders, obstructive jaundice as per operational definition, presented with yellow skin/sclera, dark urine, pale stools, pruritis (any two or more). Data analysis was done with a statistical analysis program (SPSS version 26). Frequencies and percentages were analyzed for categorical variables like gender, socioeconomic status, education level, residential status, profession, smoking CA gallbladder, CA pancreas, cholangiocarcinoma and hepatoma. Mean \pm SD or median (IQR) were presented for quantitative variables like age, BMI and monthly income (Shapiro-Wilk test was used to check normality). Post stratification chi-square test or Fisher exact test were applied, p- value \leq 0.05 was considered statistically significant.

Results: The study included 157 patients presenting with obstructive jaundice. Malignancy was the underlying cause in all studied cases, with cholangiocarcinoma being the most frequent diagnosis (36.9%), followed by carcinoma of the gallbladder (29.3%) and pancreatic head carcinoma (24.2%). Hepatocellular carcinoma was less common, accounting for 9.6% of cases. Age and gender showed significant associations with specific malignancies. Older patients (\geq 50 years) were more likely to have cholangiocarcinoma or pancreatic cancer, while hepatoma was more prevalent in younger individuals. Overall, the findings emphasize that malignant biliary diseases are the leading cause of obstructive jaundice in this population, with distinct demographic and

lifestyle patterns.

Conclusion: Obstructive jaundice in the population is predominantly caused by malignant biliary diseases, with distinct epidemiological and clinical patterns. These results highlight the need for increased clinical suspicion, early referral, and timely imaging in patients with jaundice. Furthermore, region-specific data such as this can inform local screening protocols, public health strategies, and physician education, ultimately contributing to earlier detection and improved outcomes in patients with obstructive jaundice.

INTRODUCTION

Jaundice manifests as a yellowish pigmentation of the skin and sclera, which is caused by interrupted or impaired excretion of bilirubin and biliverdin [1]. Obstructing malignant lesions of the hepatobiliary tracts pose specific management challenge to the general surgeons in resource limited countries [1]. This may be attributed to the delayed manifestation of clinical symptoms and signs of hepatobiliary malignancies causing obstructive jaundice [2]. Late stage lesions of malignant obstructive jaundice (MOJ) preclude curative resection due to organ spread, lympho-vascular and perineural invasion, peritoneal deposits, and ascites [2]. Generalized pruritus referable to malignant biliary obstruction is troublesome and may impact on the overall quality of life of patients [2].

MOJ results from partial or total blockage of ante-grade flow of bile from the liver and gallbladder to the duodenum [3]. This leads to accumulation of bile salts and products in the blood with a wide range of clinical manifestations. Pancreatic head cancer and extrahepatic biliary malignancies are common causes of obstructive jaundice in general surgical practice [3].

Obstructive jaundice is also termed “surgical jaundice” as surgery was traditionally required for its treatment or reversal of symptoms [4]. Consequences of biliary obstruction include pruritus, malabsorption, cholangitis nutritional disturbances, bleeding

disorders, and renal and progressive liver failure [4]. Surgical resection for cure or long-term survival is not usually feasible in many patients with late stage MOJ [5]. However, palliative surgery remains a valuable option when endoscopic services are not available and life expectancy is more than 6 months [5]. Surgical palliation of malignancies is carried out with primary intention to relieve symptoms and to improve quality of life, despite having a negligible impact on patient’s survival [5]. Recently, there has been an increasing trend for the use of endoscopic and interventional radiologic procedures in MOJ. These procedures are associated with lesser morbidity and avoid the risk of major surgery [6]. Endoscopic retrograde cholangiopancreatography (ERCP), endoscopic ultrasonography, and interventional radiologic procedures are currently the mainstay in the diagnosis and therapeutic management of malignant biliary obstruction [6]. However, a major advantage of surgical bypass over the well-popularized endoscopic procedures is the long-term anastomotic patency rate [7]. The overall cost of surgery is also less when compared with the endoscopic approach that requires repeated hospitalizations to manage stent-related problems [7].

Clinical studies indicate that surgical jaundice resulting from benign etiologies accounts for approximately 56.7% of cases, while malignant causes contribute to about 43.3%.⁵ The most frequently observed clinical features

in patients with surgical jaundice include jaundice accompanied by clay-colored stools (89.6%), intense pruritus (77.6%), unintentional weight loss (61.2%), right upper quadrant abdominal pain (58.6%), cutaneous scratch marks due to scratching (53.6%), and a palpable abdominal mass (51.8%) [8].

Malignant conditions associated with obstructive jaundice requiring surgical evaluation include carcinoma of the pancreatic head, periampullary carcinoma, cholangiocarcinoma, Klatskin tumor (hilar cholangiocarcinoma), gallbladder carcinoma, hepatocellular carcinoma, and metastatic tumors involving the hepatobiliary system [8]. The diagnosis of malignancy in jaundiced patients is established through a multimodal approach involving a detailed medical history, comprehensive clinical assessment, biochemical laboratory analyses, radiological imaging, gastrointestinal endoscopic procedures, and confirmation via histopathological examination [9].

Biochemical evaluation typically reveals abnormalities consistent with cholestasis, particularly elevated serum bilirubin and increased alkaline phosphatase levels. Transabdominal ultrasonography (US) is widely utilized as the initial imaging modality due to its cost-effectiveness, widespread availability, and high sensitivity approximately 97% in determining the location and extent of biliary obstruction. Consequently, it is considered the first-line radiological investigation in the diagnostic workup of surgical jaundice [9].

In a study by Aziz M, et al. has shown that frequency of CA gallbladder was 52%, Ca pancreas 31%, cholangiocarcinoma 10% and hepatoma was 7% in patients with obstructive jaundice [8].

Despite global studies highlighting malignancies like pancreatic and duct cancers as major causes of obstructive jaundice, there is a lack of localized research to determine the prevalence and patterns of these cancers in

our region. Conducting this study was not only fill the existing knowledge gap but also provide valuable insights into the burden of malignancy in obstructive jaundice locally. This could lead to earlier detection, more accurate diagnostic protocols, and targeted management strategies, ultimately improving patient outcomes, thereby contributing to more effective management of obstructive jaundice cases and reducing the mortality associated with late-stage diagnosis.

MATERIAL AND METHODS

Study design was cross-Sectional Study, in the Department of General Surgery, ATH Abbottabad. Duration of study was six months after approval of synopsis. Total Sample size was 157 and was calculated with WHO sample size software, using 95% confidence level, 4% margin of error and expected frequency of hepatoma by 7% in patients with obstructive jaundice. Non-probability consecutive sampling technique was used. Inclusion criteria included patients of age 18-60 years, both genders, obstructive jaundice as per operational definition, presented with yellow skin/sclera, dark urine, pale stools, pruritis (any two or more) While, exclusion criteria excluded patients with H/O hepatocellular jaundice (e.g., viral, hepatitis, alcoholic liver disease), h/o hemolytic jaundice, h/o biliary tract surgery within the past 6 months, h/o chronic liver disease or cirrhosis, h/o pregnancy on HCG, h/o obstetric cholestasis. Data collection procedure included, patients fulfilling the selection criteria from the Department of central Surgery ATH Abbottabad were included in the study after permission from ethical committee and CPSP informed consent was taken from patients, ensuring confidentiality and the fact that there is no risk involved to the patient while taking part in study. Baseline demographic information of patients (age, gender, BMI, profession, monthly income, socioeconomic status, education level, smoking and residential

status) was taken. Patients were positioned supine, with a conductive gel applied to the abdomen to enhance acoustic transmission. A transducer systematically scanned the region of interest to capture real time images, facilitating the assessment of mass characteristics, echogenicity, and associated computed tomography (CT) was utilized as a diagnostic imaging procedure. Patients were positioned on the CT table and intravenous administration of a contrast agent was indicated to improve vascular delineation. Scanning occurred multiple phases, including arterial and delayed phases, allowing for comprehensive evaluation of mass presence, morphological characteristics, and any associated desmoplastic reactions. In all patients, malignancy (CA gallbladder, CA pancreas, cholangiocarcinoma and hepatoma) were noted as per operational definitions by reviewing the obtained images and data was noted in an especially designed proforma. Data analysis was done with a statistical analysis program (SPSS version 26). Frequencies and percentages were analyzed for categorical variables like gender, socioeconomic status, education level, residential status, profession, smoking CA gallbladder, CA pancreas, cholangiocarcinoma and hepatoma. Mean \pm SD or median (IQR) were presented for quantitative variables like age, BMI and monthly income (Shapiro-Wilk test was used to check normality). Malignancy (CA galbladder, CA pancreas, cholangiocarcinoma and hepatoma) were stratified for age, gender, BMI, profession, monthly income, socioeconomic status, education level, smoking and residential status. Post stratification chi-square test or Fisher exact test were applied, p- value ≤ 0.05 was considered statistically significant.

RESULTS

A total of 157 patients fulfilling the inclusion criteria were enrolled in this cross-sectional study conducted at the Department of General

Surgery, Ayub Teaching Hospital, Abbottabad. All participants were evaluated for the presence of malignancy using predefined operational definitions based on imaging (ultrasound and CT scan), clinical features, and laboratory findings. The results are presented below across tables.

In Table:1 the mean age of patients was 48.7 years, with a male predominance (56.7%). Most were from urban areas (58.6%) and had low education and income levels. Nearly half (47.1%) belonged to the poor socioeconomic class, and about one-third were smokers.

Table 1: Demographic Characteristics of Patients with Obstructive Jaundice (n = 157)

VARIABLE	CATEGORY	FREQUENCY (N)	PERCENTAGE (%)
Age (years), Mean \pm SD	–	48.7 \pm 9.6	–
Gender	Male	89	56.7%
	Female	68	43.3%
Residence	Urban	92	58.6%
	Rural	65	41.4%
Education Level	Uneducated	41	26.1%
	Primary	33	21.0%
	Secondary	54	34.4%
Smoking Status	Yes	51	32.5%
	No	106	67.5%
Socioeconomic Status	Poor	74	47.1%

VARIABLE	CATEGORY	FREQUENCY (N)	PERCENTAGE (%)
	Middle	63	40.1%
	Rich	20	12.8%

Table: 2, among all cases of obstructive jaundice, malignancy was confirmed in 100% of the studied cohort (as per study design focusing on suspected malignant etiology). Cholangiocarcinoma emerged as the leading cause, accounting for 36.9% of cases, followed by carcinoma of the gallbladder (29.3%) and pancreatic head carcinoma (24.2%). Hepatocellular carcinoma was the least common, identified in 9.6% of patients. These findings highlight biliary tract malignancies as the predominant etiology in this population.

Table 2: Frequency and Distribution of Malignant Etiologies in Obstructive Jaundice (n = 157)

TYPE OF MALIGNANCY	FREQUENCY (N)	PERCENTAGE (%)
Cholangiocarcinoma	58	36.9%
Carcinoma Gallbladder	46	29.3%
Carcinoma Pancreas	38	24.2%
Hepatocellular Carcinoma (Hepatoma)	15	9.6%
Total Malignant Cases	157	100%

Table: 3, gender-based analysis revealed a significantly higher proportion of gallbladder

carcinoma and pancreatic cancer in males ($p = 0.024$ and $p = 0.013$, respectively), while gallbladder cancer was more prevalent among females in absolute numbers, though not statistically dominant. Cholangiocarcinoma showed no gender predilection. With regard to age, cholangiocarcinoma and pancreatic cancer were significantly more common in patients aged 50 years and above ($p = 0.038$). Notably, hepatoma was predominantly seen in younger patients (<50 years), with a statistically significant difference ($p = 0.007$), suggesting earlier onset or different risk profile in this subgroup.

Table 3: Stratification of Malignancy by Gender and Age Group

VARIABLE	MALIGNANCY TYPE	MALE (N=89)	FEMALE (N=68)	P-VALUE*	AG E < 50 (N=76)	AG E ≥ 50 (N=81)	P-VALUE
	Cholangiocarcinoma	31 (34.8%)	27 (39.7%)	0.521	22 (28.9%)	36 (44.4%)	0.038
	CA Gallbladder	20 (22.5%)	26 (38.2%)	0.024	18 (23.7%)	28 (34.6%)	0.109
	CA Pancreas	28 (31.5%)	10 (14.7%)	0.013	14 (18.4%)	24 (29.6%)	0.087
	Hepatoma	10 (11.2%)	5 (7.4%)	0.401	12 (15.8%)	3 (3.7%)	0.007
Total	Any Malignancy	89 (100%)	68 (100%)	-	76 (100%)	81 (100%)	-

Chi-square or Fisher's exact test applied; $p < 0.05$ considered statistically significant.

Table: 4, smoking was significantly associated with biliary malignancies, particularly cholangiocarcinoma (44.8%), and showed a strong statistical association ($p = 0.002$). Residence (urban vs. rural) did not show a significant association with any cancer type ($p = 0.312$), though hepatoma was more common in rural areas.

Table 4: Association of Malignancy with Smoking and Residence

RI SK FA CT OR	CA TE GO RY	CHOLA NGIOCA RCINO MA (N=58)	CA GAL LBL ADD ER (N=46)	CA PA NC RE AS (N=38)	HE PA TO MA (N=15)	P-V A L U E
S mo ki ng	Yes	26 (44.8%)	14 (30.4%)	10 (26.3%)	1 (6.7%)	0.002
	No	32 (55.2%)	32 (69.6%)	28 (73.7%)	14 (93.3%)	
Re sid en ce	Urban	38 (65.5%)	26 (56.5%)	22 (57.9%)	6 (40.0%)	0.312
	Rural	20 (34.5%)	20 (43.5%)	16 (42.1%)	9 (60.0%)	

This study highlights that malignant causes are a leading etiology in patients presenting with obstructive jaundice, with cholangiocarcinoma being the most common malignancy, followed by carcinoma of the gallbladder and pancreatic head. The majority of patients were middle-aged, with a slight male predominance and a higher frequency among urban dwellers and lower socioeconomic groups. Smoking was significantly associated with biliary tract cancers, particularly cholangiocarcinoma, suggesting a potential modifiable risk factor. Clinical presentation was typical, including jaundice, pruritus, weight loss, and pale stools. Diagnostic imaging, primarily ultrasound and CT scan, played a crucial role in identifying the level and cause of obstruction. No significant association was found with residence, education, or occupation, but age and gender showed notable correlations with

specific tumor types. These findings emphasize the need for early diagnosis, increased clinical suspicion in high-risk individuals, and targeted interventions to improve outcomes in patients with obstructive jaundice.

DISCUSSION

Biliary tract disorders represent a significant global health burden, with gallstone disease being the most prevalent underlying cause. In the United States, cholelithiasis affects approximately 20% of individuals by the age of 65, and about one million new cases are diagnosed annually [9]. The biliary system consists of a network of ducts responsible for transporting bile from the liver to the gallbladder and from the gallbladder to the duodenum. Obstruction can occur at any level within this biliary tree, leading to impaired bile flow. The clinical manifestations of biliary obstruction arise primarily due to the failure of bile to reach its intended destination, resulting in a cascade of physiological and symptomatic consequences [10].

Cholestasis, defined as the reduction or cessation of bile flow, may result from either structural abnormalities causing physical blockage within the biliary ducts or functional disturbances at the hepatocellular level. This study focuses specifically on the anatomical or structural causes of biliary obstruction, which are categorized as intrahepatic or extrahepatic. Among these, gallstone disease remains the most common etiology of obstructive jaundice. Gallstones originating in the gallbladder may migrate into the common bile duct (CBD), leading to biliary colic, dyspepsia, and, in more severe cases, complete ductal obstruction [11]. Larger stones can become lodged in the CBD, increasing intraductal pressure throughout the biliary system and precipitating complications such as cholangitis or pancreatitis.

A particularly notable condition is Mirizzi syndrome, which occurs when a stone

becomes impacted in the cystic duct or at the neck of the gallbladder, causing chronic inflammation and extrinsic compression of the adjacent common hepatic duct. This compression leads to secondary biliary obstruction, often mimicking the presentation of malignant disease and posing diagnostic challenges [12].

These findings underscore the clinical significance of benign biliary pathologies in the spectrum of obstructive jaundice, even as malignancies remain a critical concern. Understanding the mechanisms and presentations of both benign and malignant causes is essential for timely diagnosis and appropriate management. Biliary strictures are predominantly associated with prior surgical interventions, with

approximately 95% of cases attributed to iatrogenic injury particularly during cholecystectomy. The remaining 5% arise from non-surgical etiologies such as abdominal trauma, chronic pancreatitis, or erosion of the bile duct by migrating or impacted gallstones [13]. In patients without a history of surgery, choledocholithiasis (stone disease) remains the most frequent underlying cause of biliary obstruction, often leading to inflammation, ductal damage, and secondary stricture formation.

Disruption of the biliary ductal integrity can result in bile leakage, which may trigger localized peritonitis and inflammatory responses. This cascade promotes fibrovascular proliferation and ultimately leads to the development of fibrotic strictures, further compromising bile flow. Such benign pathological processes contrast with malignant causes, which involve direct mechanical obstruction due to tumor growth.

In the United States, primary malignancies of the pancreatobiliary system including cancers of the pancreas, bile ducts, gallbladder, and adjacent organs account for approximately

80,000 new cancer diagnoses annually, with an estimated 58,000 deaths, highlighting their aggressive nature and late presentation [14]. Despite advances in imaging, endoscopic intervention, and oncologic therapy, the prognosis for the most common of these malignancies pancreatic cancer and cholangiocarcinoma remains poor, with a 5-year survival rate of only about 5% [15].

Malignant biliary obstruction can result from a variety of tumors, including primary carcinomas of the gallbladder, ampulla of Vater, duodenum, and intrahepatic or extrahepatic cholangiocarcinomas, as well as secondary involvement due to metastatic disease or malignant lymphadenopathy compressing the biliary tree [16]. Epidemiological patterns vary across studies. One report indicated a female preponderance with a 2:1 ratio compared to males, with gallstone disease identified as the leading cause (85%), followed by malignancy (10%). The highest incidence was observed in the 30–50 years age group.²³ In contrast, the current study found a nearly equal gender distribution, with 51 (53.7%) male and 44 (46.3%) female patients, and a mean age of 49.96 ± 16.54 years (range: 18–80 years), aligning more closely with typical presentations of malignant obstructive jaundice.

Regarding tumor distribution, a previous study reported that gallbladder carcinoma was the most common malignant cause (52%), followed by pancreatic cancer (31%), cholangiocarcinoma (10%), and hepatocellular carcinoma (7%) [17]. In the present study, gallbladder carcinoma also emerged as a predominant malignancy, consistent with regional trends and underscoring its significant role in causing obstructive jaundice in this population. These findings reinforce the dual burden of benign and malignant etiologies in biliary diseases and emphasize the importance of early

differentiation through clinical evaluation, laboratory testing, and advanced imaging to guide timely and appropriate management. A previous study reported a high diagnostic rate of malignancy, with cancer identified in 84% of patients presenting with obstructive jaundice, indicating a rising trend in the proportion of malignant etiologies. Among these cases, carcinoma of the gallbladder was the most prevalent, accounting for 52% (44 out of 84 cases), followed by pancreatic head carcinoma in 31% (26 patients), cholangiocarcinoma in 10% (8 patients), and hepatocellular carcinoma in 7% (6 patients). This distribution highlights gallbladder carcinoma as the leading cause of malignant obstructive jaundice, particularly affecting females, while pancreatic head cancer was the predominant tumor in male patients. The findings reflect a significant burden of biliary and pancreatic malignancies in the studied population and suggest a gender-specific variation in the underlying etiology of obstructive jaundice [18].

In our study, the majority of patients were in the 40–60 years age group, with a slight male predominance. Notably, smoking was significantly associated with biliary tract malignancies, particularly cholangiocarcinoma and gallbladder cancer, suggesting a potential modifiable risk factor. Diagnosis was based on well-defined operational criteria using ultrasound as the primary imaging modality, supplemented by CT scan for confirmation, especially in pancreatic lesions. Imaging played a crucial role in differentiating benign from malignant causes and in determining resectability. The study reaffirms the importance of early and accurate diagnosis to guide appropriate management whether curative resection or palliative intervention. Obstructive jaundice in this population is predominantly caused by malignant biliary diseases, with distinct epidemiological and clinical patterns. These results highlight the need for increased

clinical suspicion, early referral, and timely imaging in patients with jaundice. Furthermore, region-specific data such as this can inform local screening protocols, public health strategies, and physician education, ultimately contributing to earlier detection and improved outcomes in patients with obstructive jaundice.

CONCLUSION

Obstructive jaundice in the population is predominantly caused by malignant biliary diseases, with distinct epidemiological and clinical patterns. These results highlight the need for increased clinical suspicion, early referral, and timely imaging in patients with jaundice. Furthermore, region-specific data such as this can inform local screening protocols, public health strategies, and physician education, ultimately contributing to earlier detection and improved outcomes in patients with obstructive jaundice.

REFERENCES

1. Teterin YS, Tigiev LR, Yartsev PA, Stepan EV, Rogal ML, Kulikov YD. Management of obstructive jaundice in patients with neoplasms of the major duodenal papilla. *Khirurgiia (Mosk)*.2021;49-56. doi: 10.17116/hirurgia202107149.
2. Li S, Li B, Li L, Yang X, Xu F, Wang W. The efficacy of the combination of percutaneous transhepatic biliary drainage and (125) stranded seeds for malignant bile duct obstruction treatment. *J Contemp Brachytherapy*. 2020; 12:225-32. doi: 10.5114/jcb.2020.96862.
3. Oldhafer KJ, Habel V, Horling K, Makridis G, Wagner KC. Benign Liver Tumors. *Visc Med*. 2020; 36:292-303. doi: 10.1159/000509145.
4. E-Poster Exhibition. APDW 2019. *J GastroenterolHepatol*. 2019; 34:72-582. doi: 10.1111/jgh.14664.
5. Fernandez Y Viesca M, Arvanitakis M. Early Diagnosis And Management Of

- Malignant Distal Biliary Obstruction: A Review On Current Recommendations And Guidelines. *ClinExpGastroenterol.* 2019; 12:415-32. doi: 10.2147/CEG.S195714.
6. Hasan MS. Factors Affecting Morbidity and Mortality after ERCP for Obstructive Jaundice. *Mymensingh Med J.* 2021; 30:523-30
 7. Fung BM, Lindor KD, Tabibian JH. Cancer risk in primary sclerosing cholangitis: Epidemiology, prevention, and surveillance strategies. *World J Gastroenterol.* 2019; 25:659-71
 8. Lwanga SK, Lemeshow S. Sample size determination in health studies: a practical manual. Geneva, Switzerland: World Health Organization; [Cited 2022 July 20].
 9. 61st Annual Conference of Indian Society of Gastroenterology, Virtual Diamond Jubilee ISGCON 2020, 19-20th December 2020. *Indian J Gastroenterol.* 2020; 39:1-127.
 24. Aziz M, Ahmad N. Incidence of malignant Obstructive Jaundice-a study of hundred patients at Nishtar Hospital Multan. *Ann King Edward Med Uni.* 2004; 10:71-3.
 10. Afzal MN, Changazi SH, Bhatti S, Rahman UA, ZainulAbdin M. Diagnostic outcomes and management of patients presenting with obstructive jaundice in surgical department of services hospital Lahore: A prospective cross sectional study. *Pak J Med Health Sci* 2019; 13(1): 181-4.
 11. Kang M, Kim NR, Chung DH, Cho HY, Park YH. Squamous cell carcinoma of the extrahepatic common hepatic duct. *J PatholTransl Med* 2019; 53(2): 112
 12. Knudsen KN, Mortensen MB, Detlefsen S. Squamous cell carcinoma of the common bile duct: A case report with genomic profiling. *PatholInt* 2019; 69(7): 427-31. 21.
 13. Reith TP, Nair V, McKenna EJ, Singavi A. Metastatic Squamous Cell Carcinoma in the Gallbladder Fossa Complicated by a Duodenal Fistula. *Cureus* 2019; 11(12): e6522
 14. Sana Ullah Khan, Abdullah Khan, NidaMumtaz, Ali Hasnain Malik, Sara Asmat, &MaleehaNisar. (2023). FREQUENCY OF CHOLANGIOCARCINOMA IN PATIENTS OF OBSTRUCTIVE JAUNDICE IN SURGICAL DEPARTMENT OF LADY READING HOSPITAL, PESHAWAR. *Journal of Population Therapeutics and Clinical Pharmacology*, 30(18), 2757-2763.
 15. Liu JJ, Sur YM, Xu Y, Mei IIW, Guo W, Li ZL. Pathophysiological consequences and treatment strategy of obstructive jaundice. *world J Gastro-intest Surg.* 2023;15(7):1262-76.
 16. Ansari SM, Patel D, Aswani Y, Bairy A, Narvel H. Obstructive jaundice as the initial manifestation of gastro adenocarcinoma Cureous. 2022;14(12):e32478-81.
 17. Okamoto T. Malignant biliary obstruction due to metastatic non-hepato-pancreato-biliary cancer. *Word J Gastroenterol* 2022;28(10):985-1008
 18. Li Z, Zhang X, Sun C, Li Z, Fei H, Zhao. Does surgical resection significantly prolong the long term survival of patients with oligiometastatic pancreatic ductal adenocarcinoma?A cross-sectional study based on 18 registries. *J Clinic Med* 2023;12(2)513-5.