Original Article

Outcome of Different Surgical Modalities in the Management of Benign Surgical Jaundice

Bushra Ghulam[1], Shabbir Ahmed[2], Muhammad Mumtaz Ather[3], Sumera Nighat[4], Ammara Tariq[4] and Sumta Khan[2]

ABSTRACT

Objective: Assessed the short-term results of surgical intervention for patients with benign obstructive jaundice.
Study Design: Cross-sectional observational study
Place and Duration of Study: This study was conducted at the surgery department of Bakhtawar Amin Medical & Dental College, Multan, from August 2023 to July 2024.
Methods: A study was conducted on patients with obstructive jaundice who were admitted to surgery department. Thirty four patients who were positively diagnosed with extrahepatic obstructive jaundice were included in this study. Patients were assessed at preoperative stage and after that at intraoperative and postoperatively. Complete data include demographics of patients, duration of disease (jaundice), laboratory findings, and cause of obstructive jaundice, findings of ultrasonography and treatment modalities used. In addition to surgical procedures, we assessed postoperative complications, hospital stay duration, time to jaundice resolution, and overall mortality.
Results: In patients undergoing Whipple's pancreaticoduodenectomy, wound infection was the most common complication, occurring in 6 patients (54.5%). In those who underwent cyst excision with Roux-en-Y hepaticojejunostomy, mild pulmonary complications were most prevalent, affecting 5 patients (45.5%). For Whipple's pancreaticoduodenectomy, pulmonary complications without intubation in the ICU were observed in 3 patients (50.0%). Bile leakage was most frequently seen in patients who underwent cholecystojejunostomy with jejunojejunostomy, occurring in 4 patients (66.7%).
Conclusion: The results of our study indicate that surgical treatment for benign obstructive jaundice is generally effective and associated with acceptable short-term outcomes. Most patients experienced significant clinical improvement, with complications being relatively short-lived and manageable. Further research is needed to optimize patient care and enhance surgical outcomes for future patients with benign obstructive jaundice.

Key Words: Benign obstructive jaundice, surgical modalities, postoperative outcomes, ultrasonography.

Citation of article: Ghulam B, Ahmed S, Ather MM, Nighat S, Tariq A, Khan S. Outcome of Different Surgical Modalities in the Management of Benign Surgical Jaundice. Med Forum 2024;35(11):160-164. doi:10.60110/medforum.351134.

INTRODUCTION

Bile, produced by the liver's hepatocytes, is secreted into ductules, flowing through intrahepatic biliary channels to the duodenum[1]. Some bile is stored in the gallbladder, which connects to the biliary tree via the cystic duct[2].

[1.] Department of Surgery / General Surgery[2] / Gastroenterology[3] / Radiology[4], Bakhtawar Amin Medical and Dental College, Multan

Correspondence: Dr. Shabbir Ahmed, Associate Professor of General Surgery, Bakhtawar Amin Medical & Dental College, Multan.
Contact No: 0333-6058036
Email: shabbirahmad2011@hotmail.com

Received: August, 2024
Reviewed: August-September, 2024
Accepted: October, 2024

After eating, the gallbladder contracts, releasing bile into the common bile duct (CBD) through the cystic duct, aiding digestion in the duodenum, the common bile duct passes into the hepatoduodenal ligament[3]. It follows pancreatic head to drain into duodenum. Raised level of serum bilirubin can result from liver and biliary tract abnormalities[4]. This leads to bilirubin deposition in the skin and mucous membranes, causing jaundice. Obstructive or surgical jaundice occurs when bile outflow is blocked. Obstruction can be intraluminal (e.g., stones), intramural (e.g., cholangiocarcinoma or strictures), or extramural (e.g., pancreatic carcinoma) [5]. Although there have been technical advances, the operative management of obstructive jaundice (OJ) has historically been associated with high morbidity and mortality. However, over the past decade, significant progress has been made worldwide to understand the staging, diagnosis, pathogenesis, and management efficacy of obstructive jaundice[6].

In resource-limited countries, managing obstructive jaundice poses significant diagnostic and therapeutic challenges for general surgeons. The disease often presents late, and the absence of modern diagnostic and therapeutic facilities exacerbates these difficulties[7]. Mortality and morbidity associated with biliary obstruction are influenced by the underlying cause of the obstruction[8,9].

Assessing the factors that influence the complications rate (morbidity and mortality) in patients of obstructive jaundice within each specific society is important. Understanding these factors is vital for guiding appropriate management and improving survival outcomes in patients with obstructive jaundice[10].

There is currently a lack of information on managing obstructive jaundice specific to our environment, as no local studies have been conducted in our setting. This study aims to describe our experiences in managing obstructive jaundice, including the range of underlying causes, investigation results, and the treatment options available at our hospital.

METHODS

This cross-sectional study was conducted on obstructive jaundice patients who were admitted to surgery department of Bakhtawar Amin Medical & Dental College, Multan, from August 2023 to July 2024. Thirty four patients who were positively diagnosed with extrahepatic obstructive jaundice were included in this study. Patients who were admitted with obstructive jaundice, confirmed through clinical history, examination, liver function tests, and abdominal ultrasound, were included. The study excluded patients who were below 15 years of age and those with jaundice caused by factors other than obstructive pathology, such as hemolytic jaundice. The results of the study were analyzed based on the data from 30 patients with obstructive jaundice.

Detailed examination of all patients was conducted which include laboratory investigations, clinical examination, previous medical and surgical history and any systemic illness. Furthermore, laboratory investigations include serum albumin, total serum protein, liver function tests (SGPT or SGOT), alkaline phosphatase, and conjugated bilirubin. Basic blood investigations include total leukocytes, hemoglobin level, and coagulation profile (prothrombin time, platelet count and activated prothrombin time), INR, renal function test and serum electrolytes.

Sole diagnostic modality was abdominal ultrasonography that was applied on all patients to detect extrahepatic and intrahepatic biliary channels. Furthermore, common bile duct and causative factors like abdominal mass, worms, lymph nodes, tumors and gall stones were also diagnosed through imaging.

Patients were assessed at preoperative stage and after that at intraoperative and postoperatively. Complete data include demographics of patients, duration of disease (jaundice), laboratory findings, and cause of obstructive jaundice, findings of ultrasonography and treatment modalities used. Patients were prepared with good quality hydration, and prophylactic antibiotics, blood transfusion was also made in necessary cases (low hemoglobin level). Time and mode of surgical procedure depends upon case and findings of ultrasound. Postoperatively, patients were given intravenous fluids and antibiotics, and measures for venous thromboembolism prevention were implemented following established guidelines. In the T-tube group, oral feeding was initiated on the second postoperative day, while those with an enterostomy began oral feeding on the fifth postoperative day. Abdominal drains were removed once minimal serous fluid output was noted. T-tube patients underwent a cholangiogram on postoperative day 10 to confirm common bile duct (CBD) patency prior to T-tube removal. In addition to surgical procedures, we assessed postoperative complications, hospital stay duration, time to jaundice resolution, and overall mortality. Secondary outcome measures included identifying common causes, clinical presentations, and surgical procedures used.

SPSS version 27.1 was used for data analysis, mean (standard deviation) and frequency (percentages) were initially calculated and then test of significance (t test and chi square) were applied. P values blow 0.05 was considered as significant.

RESULTS

In our study, we included 34 patients with a mean age of 50.76±7.96 years. The majority were male, with 22 males (64.7%) and 12 females (35.3%). Among the patients, benign biliary strictures were identified in 4 (11.8%) individuals, choledochal cysts in 6 (17.6%), and choledocholithiasis in 9 (26.5%). The clinical profile of the patients with obstructive jaundice causes is shown in Figure 1. Additionally, 24 patients (70.6%) experienced fever with chills, 25 (73.5%) reported itching, 22 (64.7%) had a loss of appetite, 18 (52.9%) faced weight loss, 25 (73.5%) experienced abdominal pain, and 22 (64.7%) had steatorrhea.

Liver function tests revealed a mean direct bilirubin level of 20.07±3.13 mg/dl and an indirect bilirubin level of 3.16±1.26 mg/dl. The mean total bilirubin was 23.22±3.14 mg/dl. The association between treatment modalities and complications among patients is detailed in Table 3. In patients undergoing Whipple's pancreaticoduodenectomy, wound infection was the most common complication, occurring in 6 patients (54.5%). In those who underwent cyst excision with Roux-en-Y hepaticojejunostomy, mild pulmonary complications were most prevalent, affecting 5 patients (45.5%). For Whipple's pancreaticoduodenectomy, pulmonary complications without intubation in the ICU

were observed in 3 patients (50.0%). Bile leakage was most frequently seen in patients who underwent cholecystojejunostomy with jejunojejunostomy, occurring in 4 patients (66.7%). The statistical significance of these findings was p=0.232.

Table No. 1: Demographics and causes of obstructive jaundice patients

Variable	N (%)	Mean ± S.D
Age (years)		50.76 ± 7.96
Gender		
Male	22 (64.7)	
Female	12 (35.3)	
Causes of obstructive jaundice		
Benign biliary strictures	4 (11.8)	
Choledochal cyst	6 (17.6)	
Choledocholithiasis	9 (26.5)	

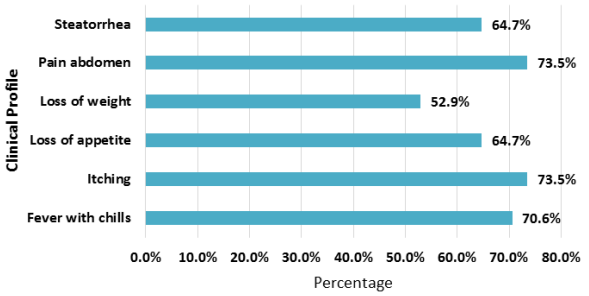

Figure No. 1: Clinical profile of obstructive jaundice causes

Table No. 2: Findings of liver function test in obstructive jaundice patients

Bilirubin (mg/dl)	Mean ± S.D
Direct	20.07 ± 3.13
Indirect	3.16 ± 1.26
Total	23.22 ± 3.14

Table No. 3: Association of treatment modalities and complications

Complication	Treatment modalities			Total
	Whipple's pancreaticoduodenectomy	Cholecysto jejunostomy with jejunojejunostomy	Cyst excision with roux-en-yhepaticojejunostomy	
Wound Infection	6 (54.5)	2 (18.2)	3 (27.3)	11 (100.0)
Mild pulmonary complications	4 (36.4)	2 (18.2)	5 (45.5)	11 (100.0)
Pulmonary complications with ICU admission	3 (50.0)	2 (33.3)	1 (16.7)	6 (100.0)
Bile leak	1 (16.7)	4 (66.7)	1 (16.7)	6 (100.0)
Total	14 (41.2)	10 (29.4)	10 (29.4)	34 (100.0)
N (%), p=0.232				

DISCUSSION

Obstructive jaundice is a common condition associated with biliary tract disorders. It often poses challenges for general surgeons in evaluation and management. Diagnosing surgical jaundice requires a thorough history, physical examination, and biochemical tests. After diagnosis, surgeons must understand the anatomy of the biliary tree, bile metabolism, and liver changes due to obstruction. They should know the causes of obstruction, imaging techniques, and treatment options[11].

In this study, the average age of patients was 50.76±7.96 years. Chalya et al[12] found similar results in their study, with an average age of 42.56 years for benign cases and 58.64 years for malignant cases, which aligns with our findings. Comparable results were also reported by Khurram et al[13] in their studies.

In this study, benign causes of obstructive jaundice were more prevalent than malignant causes. Similarly, a study by Bekele et al[14] conducted in Ethiopia found that benign conditions were the primary contributors to obstructive jaundice. However, a contrasting study by Syed et al[15] reported that malignant causes were more common than benign ones in their patient population.

In a study conducted by a researcher which involved a total of 429 patients who were reported with confirm diagnosis of obstructive jaundice through radiological investigations and most common cause was reported as malignancy. Another review was conducted by another researcher and reported pancreatic carcinoma as most common cause of malignancy, these findings reveals on operative findings. Among these all causes choledocholithiasis was common most for obstructive jaundice.

A study was conducted by Ambreen et al[16] on 35 patients who were managed with open choledochotomy

and reported that routine T-tube drainage can be replaced with common bile duct closure which is more safe and effective. In a study by Afzal et al[17] it was reported that the most common operative procedure was choledochoduodenostomy, accounting for 45% of cases, followed by choledochotomy with T-tube drainage at 35%. Choledochojejunostomy and transduodenal sphincter procedures were each performed in two cases. In this study, bile leakage was most frequently observed in patients who underwent cholecystojejunostomy with jejunojejunostomy, occurring in 4 patients (66.7%).[18] Another study by Al-Shehari et al[19] reported that mean length of hospital stay was 6.33 days and bilirubin decrease was noted on 7th post-operative day in 88.9% of patients. Among postoperative complications surgical wound infection was observed in 27.8% of patients, pulmonary complication with ICU admission were 13.9% and mild pulmonary complications were 19.4% of patients.

CONCLUSION

The results of our study indicate that surgical treatment for benign obstructive jaundice is generally effective and associated with acceptable short-term outcomes. Most patients experienced significant clinical improvement, with complications being relatively short-lived and manageable. Further research is needed to optimize patient care and enhance surgical outcomes for future patients with benign obstructive jaundice.

Author's Contribution:

Concept & Design or acquisition of analysis or interpretation of data:	Bushra Ghulam, Shabbir Ahmed, Muhammad Mumtaz Ather
Drafting or Revising Critically:	Sumera Nighat, Ammara Tariq, Sumta Khan
Final Approval of version:	All the above authors
Agreement to accountable for all aspects of work:	All the above authors

Conflict of Interest: The study has no conflict of interest to declare by any author.

Source of Funding: None
Ethical Approval: No. BATH 160 dated 10.08.2023

REFERENCES

1. Alatise OI, Owojuyigbe AM, Omisore AD, Ndububa DA, Aburime E, Dua KS, et al. Endoscopic management and clinical outcomes of obstructive jaundice. Nigerian Postgraduate Med J 2020;27(4):302-10.
2. Al-Shehari M, Obadiel YA, Al-Hubaishi JM, Jowah H. Short-term Outcomes of Surgical Treatment of Benign Obstructive Jaundice, Sana'a, Yemen. Sana'a Univ J Med Health Sci 2024; 18(1):1-0.
3. Odongo CN, Dreque CC, Mutiibwa D, Bongomin F, Oyania F, Sikhondze MM, et al. Etiology, clinical presentations, and short-term treatment outcomes of extrahepatic obstructive jaundice in South-Western Uganda. Clin Exp Gastroenterol 2022;Jun 11:79-90.
4. Anwar J, Shabbir U, Asghar MS, Shah HS, Afzal A, Gondal KM. The study of frequency of malignancy and its types in surgical jaundice; a tertiary care experience. JPMA. The J Pak Med Assoc 2023;73(1):9-12.
5. Balogun OS, Atoyebi OA. Management of malignant obstructive jaundice: defining the relevance of various palliative surgical options in resource-challenged settings: a review article. J West Afri Coll Surgeons 2022;12(3):111-9.
6. Laghari AA, Laghari QA, Shaikh AA, Muneer A, Pandhi M. Clinical presentation and different treatment modalities of obstructed jaundice. J Pharmaceutical Res Int 2020;32(17):199-203.
7. Silina EV, Stupin VA, Abramov IS, Bolevich SB, Deshpande G, Achar RR, et al. Oxidative stress and free radical processes in tumor and non-tumor obstructive jaundice: influence of disease duration, severity and surgical treatment on outcomes. Pathophysiol 2022;29(1):32-51.
8. Bao G, Liu H, Ma Y, Li N, Lv F, Dong X, et al. The clinical efficacy and safety of different biliary drainages in malignant obstructive jaundice treatment. Am J Translational Res 2021;13(6): 7400.
9. Liu JJ, Sun YM, Xu Y, Mei HW, Guo W, Li ZL. Pathophysiological consequences and treatment strategy of obstructive jaundice. World J Gastrointestinal Surg 2023;15(7):1262.
10. Stupin V, Abramov I, Gahramanov T, Kovalenko A, Manturova N, Litvitskiy P, et al. Comparative study of the results of operations in patients with tumor and non-tumor obstructive jaundice who received and did not receive antioxidant therapy for the correction of endotoxemia, glycolysis, and oxidative stress. Antioxidants 2022;11(6):1203.
11. Rahman GA, Yusuf IF, Faniyi AO, Etonyeaku AC. Management of patients with obstructive jaundice: experience in a developing country. Nigierian Quarterly J Hospital Med 2011; 21(1):75-79.
12. Chalya PL, Kanumba ES, Mchembe M. Etiological spectrum and treatment outcome of obstructive jaundice at a university teaching hospital in northwestern Tanzania: a diagnostic and therapeutic challenges. BMC Res Notes 2011; 4(1):147.
13. Khurram S, Qasim A, Shirin M, Aiza J, Aisha E, Sarmad L, et al. Evaluation of the aetiological

spectrum of obstructive jaundice. J Ayub Med Coll Abbottabad 2008;20:62-66.
14. Bekele Z, Yifru A. Obstructive jaundice in adult Ethiopians in a referral hospital. Ethiop Med J 2000;38:267-75.
15. Syed N, Mohammad SA, Umair UI, Shafiq UR. Etiological spectrum of obstructive jaundice. Med Channel 2010;16:299-301.
16. Ambreen M, Shaikh AR, Jamal A, Qureishi JN, Dalwani AG, Memon MM. Primary closure versus T-tube drainage after open choledochotomy. Asian J Surg 2009;32(1):21-25
17. Afzal MN, Ahmad QA, Rehman UA, Hussain S, Changezi SH, Bhatti S. et al. 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):181-84.
18. Al-Shehari M, Obadiel YA, Al-Hubaishi JM, Jowah H. Short-term outcomes of surgical treatment of benign obstructive jaundice, Sana'a, Yemen. Sana'a University J Med Health Sci 2024;18(1):1-10.