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Research Article

Incidence Of Post Operative Stricture Following Hepaticojejunostomy For Benign And Malignant Disease.

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Abstract

Objective: To determine the incidence of post operative stricture following hepaticojejunostomy for benign and malignant disease.
Study Design: Prospective Cohort Study
Place and Duration of Study: Department of General Surgery, MTI-Khyber Teaching Hospital, Peshawar from jan 2024 to Dec 2024. (12 months).
Methodology: Fifty-two patients of either gender scheduled for hepaticojejunostomy for benign and malignant disease confirmed on CT scan were included. Sample size was calculated using WHO software taking 12.50%[12] proportion of post operative stricture with 80% power of test and 5% significance level. After the surgery, patients were followed up for three months for biliary-enteric stricture following biliary-enteric anastomosis i.e hepaticojejunostomy. On clinical evaluation during follow up visit, patients were identified as having a stricture if they had an International Classification of Diseases, 9th Edition (ICD-9) code for biliary obstruction.
Results: Overall, 10 (19.2%) patients had post operative stricture following hepaticojejunostomy for benign and malignant bile duct tumors.
Conclusion: This study demonstrated that the occurrence of stricture after biliary-enteric anastomosis is relatively common among elderly individuals.

Keywords : *Post Operative Stricture, Hepaticojejunostomy, Benign Bile Duct Tumors, Malignant Bile Duct Tumors.*

INTRODUCTION

In numerous circumstances, the implementation of biliary reconstruction with biliary-enteric anastomosis is important for patients afflicted with both benign and malignant conditions. One of the enduring consequences associated with biliary-enteric anastomosis, specifically choledochojejunostomy or hepaticojejunostomy, is the development of stricture.[1-3] This condition has the potential to necessitate numerous hospitalisations and medical interventions. Limited knowledge exists regarding anastomotic stricture following biliary-enteric anastomoses, particularly in cases unrelated to liver transplant. The reported incidence of benign disease ranges from 4% to 10% based on small retrospective studies.[4-6] Biliary blockage and/or stricture are less frequently observed in patients diagnosed with pancreatic adenocarcinoma or cholangiocarcinoma. However, when such obstructions or strictures do arise, they are believed to be a result of malignancy recurrence. Due to the limited amount of available information regarding post-biliary-enteric anastomotic stricture, there is a significant want for more comprehensive data in order to facilitate surgeons in evaluating and enhancing their own results, as well as to comprehend the effects of a stricture on the patient's quality of life and lifespan. There is currently a lack of reports regarding the evaluation of resource utilisation among the limited number of patients who are diagnosed with a biliary-enteric stricture. Multiple procedures have been documented in studies, include balloon dilation, stent insertion, and reoperation. Several studies have documented the success rates of reoperation for biliary-enteric anastomosis in individuals who had experienced either pancreatic surgery or bile duct injury.[7-8] Nevertheless, endoscopic and percutaneous procedures are becoming as prominent approaches.[9-11]

A study reported, cumulative incidence of stricture was 12.5% At 2 years. Mean time to stricture diagnosis was 16.8±21.6

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Months (median=8.5 Months); 23% of patients with a stricture required hospitalization for cholangitis (n=94). Only 18 (4.5%) Patients with a stricture required reoperation.[12]
This research aims to contribute valuable data to the medical community and enhance patient care in this specific surgical context.

METHODOLOGY

This prospective cohort study was conducted at the department of general surgery, mti-khyber teaching hospital, from jan 2024 to dec 2024. The sample size was calculated using who software taking 12.50%[12] Proportion of post operative stricture with 80% power of test and 5% significance level. Nonprobability consecutive sampling technique was used for data collection.

Inclusion criteria

Patients of either gender aged 18 to 90 years scheduled for hepaticojejunostomy for benign and malignant bile duct tumors, patients with asa score 2 and 3 were included.

Exclusion criteria

Patients in whom bile duct disease was not involved were excluded.
Written informed consent forms were obtained from all patients prior to the conduct of study and were briefed about the research nature of this study. Patients confirmed on ct scan for benign and bile duct tumors underwent hepaticojejunostomy and were subjected to certain preoperative procedures as per standard protocol. After the surgery, patients were followed up for three months. During the follow up visit, on clinical evaluation, patients were identified as having a post operative stricture if they had an icd-9 code for biliary obstruction.
Data was entered and analyzed using spss (statistical package for the social sciences) version 23.0. Mean + sd were calculated for quantitative variables like age. Frequencies and percentages were calculated for qualitative variables like gender, disease at surgery and post operative incidence of stricture. Chi-square test was applied keeping p value < 0.05 As significance level.

RESULTS

A total of 52 patients were included in this study. Mean age of patients was 53.79 Years with female preponderance 29 (55.8%) Vs 23 (44.2%) And maximum number of patients with malignant disease, 28 (53.8%) Vs 23 (44.2%). Overall, 10 (19.2%) Patients had post operative stricture following hepaticojejunostomy. **(Table-i).**
Statistically insignificant association of post operative stricture incidence was recorded with disease at the time of surgery. **(Table-ii).**

Table I: Demographic and Clinical Characteristics of Patients (n=52)

Quantitative Variable	Mean+SD
Age	53.79+11.65 years
Qualitative Variables	
Gender, n (%)	
Male	23 (44.2%)
Female	29 (55.8%)
Disease at Surgery, n (%)	
Benign	24 (46.2%)
Malignant	28 (53.8)
Charlson Comorbidity Index, n (%)	
0	15 (28.8%)
1	14 (26.9%)
2	16 (30.8%)
3	07 (13.5%)
Pre-operative Procedure, n (%)	
Non	17 (32.7%)
PTC	13 (25.0%)
EBS	22 (42.3%)
Jaundice at Surgery, n (%)	
Yes	21 (40.4%)
No	31 (59.6%)
Incidence of Stricture, n (%)	
Yes	10 (19.2%)
No	42 (80.8%)

Table II: Association of Incidence of Post Operative Stricture with Disease at Surgery (n=52)

		Disease at Surgery		Total	P Value
		Benign	Malignant		
Incidence of Stricture	Yes	8	2	10	0.017
		80.0%	20.0%	100.0%	
	No	16	26	42	
		38.1%	61.9%	100.0%	
Total		24	28	52	
		46.2%	53.8%	100.0%	

DISCUSSION

This study presents the initial documentation of the occurrence rate of biliary-enteric stricture subsequent to biliary-enteric anastomosis, employing a prospective cohort study approach.

The occurrence rate of stricture after to biliary-enteric anastomosis is relatively elevated, measuring at 19.2%. While lacking statistical significance, it is noteworthy that a higher proportion of patients who underwent a surgical procedure for a benign diagnosis exhibited an increased likelihood of developing a stricture. One possible explanation for this phenomenon could be that a higher percentage of individuals diagnosed with malignant illness exhibit dilated ducts, hence decreasing the probability of stricture formation. Moreover, a considerable number of individuals who have been diagnosed with a malignant condition exhibit low rates of survival, thereby leading to their demise prior to the occurrence of this particular issue.

This study recorded a statistically insignificant association of post-operative stricture incidence with disease at the time of surgery. A study published on pubmed12 reported that the overall incidence of hepaticojejunostomy stricture was 11.9%, And the cumulative incidence of stricture was 12.5% At 2 years thus in agreement to the findings of this study. Another study published on pmc13 reported post operative strictures in men, with a prevalence of 229-627 per 100,000 males, or 0.6% Of the at-risk population.

A study published in the international journal of colorectal disease14 reported that out of 11 crohn's disease-related strictures, seven cases were post-operative strictures in the ileo-colonic anastomosis. Overall, the incidence of post-operative stricture following hepaticojejunostomy for benign and malignant disease in this study was 19.2%, Which is higher than the incidence reported in the study on pubmed. However, the study on pmc13 and the study on crohn's disease-related strictures15 are not directly comparable to this study.

The appropriate course of action for managing strictures in individual cases is mostly determined by several factors, including the initial surgical procedure, the clinical symptoms observed when the stricture is identified, whether the stricture is benign or malignant, the expected outcome, and the available expertise in the local medical community. Nevertheless, the results presented in this study provide substantial evidence to support a number of specific management recommendations. Initially, the diagnostic modalities of ct, mri, or us can be employed to identify biliary blockage, and are considered appropriate primary imaging techniques. Furthermore, data of this study substantiate the findings of previous studies conducted within a single institution for benign and malignant biliary strictures. These findings support the notion that non-operative care should be considered as the initial treatment approach.

The main limitations of this study are attributed to its small sample size as only 52 patients were included, which may not be representative of the entire population. A larger sample size would have provided more accurate results. This study was conducted at a single center, which may limit the generalizability of the results to other centers or populations. Moreover, this study did not report the follow-up period, which may limit the ability to assess the long-term outcomes of the patients.

CONCLUSION

This study demonstrated that the occurrence of stricture after biliary-enteric anastomosis is relatively common among elderly individuals, therefore, it is imperative to explore novel strategies that have been developed to effectively manage patients' post-diagnosis and mitigate the related morbidity linked to stricture development.

Authors Contribution

Following authors have made substantial contributions to the manuscript as under:

- Conception, study design, drafting the manuscript, approval of the final version to be published.
- Data analysis, data interpretation, critical review, approval of the final version to be published.
- Data acquisition, critical review, approval of the final version to be published.

- Proof readings, write-up, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Conflict Of Intrest

None.

REFERENCES

1. Greif F, Bronsther OL, Van Thiel DH, et al. The incidence, timing, and management of biliary tract complications after orthotopic liver transplantation. Annals of surgery. 1994 Jan;219(1):40–45.

2. Thethy S, Thomson B, Pleass H, et al. Management of biliary tract complications after orthotopic liver transplantation. Clinical transplantation. 2004 Dec;18(6):647–653.

3. Verdonk RC, Buis CI, Porte RJ, et al. Anastomotic biliary strictures after liver transplantation: causes and consequences. Liver transplantation : official publication of the American Association for the Study of Liver Diseases and the International Liver Transplantation Society. 2006 May;12(5):726–735.

4. Pottakkat B, Vijayahari R, Prakash A, et al. Factors predicting failure following high bilio-enteric anastomosis for post-cholecystectomy benign biliary strictures. Journal of gastrointestinal surgery : official journal of the Society for Surgery of the Alimentary Tract. 2010 Sep;14(9):1389–1394.

5. Rothlin MA, Lopfe M, Schlumpf R, Largiader F. Long-term results of hepaticojejunostomy for benign lesions of the bile ducts. American journal of surgery. 1998 Jan;175(1):22–26.

6. Tocchi A, Costa G, Lepre L, Liotta G, Mazzoni G, Sita A. The long-term outcome of hepaticojejunostomy in the treatment of benign bile duct strictures. Annals of surgery. 1996 Aug;224(2):162–167.

7. AbdelRafee A, El-Shobari M, Askar W, Sultan AM, El Nakeeb A. Long-term follow-up of 120 patients after hepaticojejunostomy for treatment of post-cholecystectomy bile duct injuries: A retrospective cohort study. International journal of surgery. 2015 Jun;18:205–210.

8. Prawdzik C, Belyaev O, Chromik AM, Uhl W, Herzog T. Surgical revision of hepaticojejunostomy strictures after pancreatectomy. Langenbeck's archives of surgery/ Deutsche Gesellschaft fur Chirurgie. 2015 Jan;400(1):67–75.

9. Itokawa F, Itoi T, Ishii K, Sofuni A, Moriyasu F. Single- and double-balloon enteroscopy-assisted endoscopic retrograde cholangiopancreatography in patients with Roux-en-Y plus hepaticojejunostomy anastomosis and Whipple resection. Digestive endoscopy : official journal of the Japan Gastroenterological Endoscopy Society. 2014 Apr;26(Suppl 2):136–143.

10. Luo ZL, Cheng L, Ren JD, Tang LJ, Wang T, Tian FZ. Progressive balloon dilatation following hepaticojejunostomy improves outcome of bile duct stricture after iatrogenic biliary injury. BMC gastroenterology. 2013;13:70.

11. Monkemuller K, Jovanovic I. Endoscopic and retrograde cholangiographic appearance of hepaticojejunostomy strictures: A practical classification. World journal of gastrointestinal endoscopy. 2011 Nov 16;3(11):213–219.

12. Dimou FM, Adhikari D, Mehta HB, Olino K, Riall TS, Brown KM. Incidence of hepaticojejunostomy stricture after hepaticojejunostomy. Surgery. 2016 Sep;160(3):691-8.

13. Alwaal A, Blaschko SD, McAninch JW, Breyer BN. Epidemiology of urethral strictures. Transl Androl Urol. 2014 Jun;3(2):209-13.

14. Chen WC, Juan MW. Intestinal Stricture in Crohn's Disease. Intest Res. 2015 Jan; 13(1): 19–26.

15. Tleyjeh IM, Saddik B, AlSwaidan N, AlAnazi A, Ramakrishnan RK, Alhazmi D, et al. Prevalence and predictors of Post-Acute COVID-19 Syndrome (PACS) after hospital discharge: A cohort study with 4 months median follow-up. PLoS ONE 16(12): e0260568.