A STUDY ON INCIDENCE, CLINICAL PROFILE, AND MANAGEMENT OF OBSTRUCTIVE JAUNDICE

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ABSTRACT

BACKGROUND

Jaundice is a frequent manifestation of biliary tract disorders and the evaluation and management of obstructive jaundice is a common problem faced by the general surgeon. During the last decade significant advances have been made in our understanding with regards to the pathogenesis, diagnosis, staging, and efficacy of surgical and nonsurgical management of obstructive jaundice. To diagnose the cause, site of obstruction, and management of a case of surgical jaundice is indeed a challenging task for the surgeon. Hence, a comprehensive study of the aetiology, clinical presentation, and management of obstructive jaundice is of paramount importance in the appropriate management of these patients.

AIM

This study evaluates the age and sex distribution, clinical presentation, aetiology, and the different modalities of treatment of obstructive jaundice.

MATERIALS AND METHODS

This prospective study was conducted in MKCG Medical College and Hospital, Berhampur, Odisha from September 2013-August 2015. Out of all surgical admissions from September 2013 to August 2015 in our hospital, 80 cases of surgical jaundice of different age group were selected randomly. A detailed history and clinical examination was done and appropriate investigations recorded. Patients were assessed preoperatively and later subjected to surgery or palliative procedure depending on the need. Postoperatively, patients' condition was assessed and complications were documented. Patients were followed up for mean period of 6 months where patients underwent surgical intervention/ERCP, any tissue removed was subjected for histopathological examination.

RESULTS

The occurrence of surgical jaundice was maximum in the 31-70 year age group. All patients presented with icterus and ultrasonogram was the most common investigation of choice. Most common cause of obstruction was choledocholithiasis followed by malignancy.

CONCLUSION

Commonest symptom of surgical jaundice in this study was pain abdomen and jaundice as per history. Commonest cause for surgical jaundice was found to be choledocholithiasis. Open exploration of common bile duct under experienced hands was found to be a good treatment modality in the management of obstructive jaundice.

KEYWORDS

Obstructive Jaundice, Choledocholithiasis, CBD exploration, T-tube drainage, Choledochoduodenostomy.

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INTRODUCTION: Jaundice is a generic term for the yellow pigmentation of the skin, mucous membranes, or sclera. Jaundice is due to increase in the serum bilirubin level above the normal range.

The biliary canaliculi empty into larger ducts, the hepatic duct and common bile duct and then to duodenum or to gall bladder through cystic duct.[1] Obstructive jaundice is strictly defined as due to a block in the pathway between the site of conjugation of bile in liver cells and the entry of bile into the duodenum through the ampulla. An accurate diagnosis can usually be made with standard diagnostic techniques such as history, physical examination, and

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biochemical tests, and when appropriate cholangiography and liver biopsy and observation of the patient's course.[2]

Transabdominal ultrasound is a sensitive, inexpensive, reliable, and reproducible test to evaluate most of the biliary tree being able to separate patients with medical jaundice from those with surgical jaundice. Therefore, this modality is seen as the study of choice for the initial evaluation of jaundice or symptoms of biliary disease.[3] Treatment of malignant obstructive jaundice is especially challenging. Surgical treatment ranges from definitive surgical procedures to palliative procedures. Nonoperative management includes endoscopic stenting and interventional radiological procedure like PTBD. All these are especially challenging to the surgeon because of relative inaccessibility of the extrahepatic biliary tree and pancreas. To diagnose the cause, site of obstruction, and management of a case of surgical jaundice is indeed a challenging task for the surgeon. Hence, a comprehensive study of the aetiology, clinical presentation, and management of obstructive jaundice is of paramount importance in the appropriate management of these patients and is the aim of my study.

MATERIALS AND METHODS: The prospective descriptive study was done at Department of General Surgery, Maharaja Krushna Chandra Gajapati Medical College, Berhampur. The period of study is from September 2013-August 2015. This is a prospective study. Study population has been selected after applying the necessary exclusion criteria. The study was approved by institutional ethics committee. Informed consent was taken from all the patients. A random selection of 80 patients from the patients admitted in surgical wards has been done.

Inclusion Criteria:

1. Age more than 15 years.
2. Patients proved to have obstructive jaundice by any investigative modality.

Exclusion Criteria:

1. Less than 15 years.
2. Patients with medical jaundice.

Method of Collection of Data: After admission to the hospital, data was collected from the patient's records regarding the clinical features and investigations and based on the results they were diagnosed to have either surgical jaundice or medical jaundice. Those patients diagnosed to have surgical jaundice were assessed preoperatively and later subjected to surgery or palliative procedure depending on the need. Postoperatively, patients' condition was assessed and complication were documented. Patients' were followed up for mean period of 6 months where patients underwent surgical intervention/ERCP. Any tissue removed was subjected for histopathological examination. The statistical operations were done through GraphPad InStat (© 2013 GraphPad Software Inc.) and SPSS (Statistical Presentation System Software) for Windows, version 20.00 (SPSS, 2011. SPSS Inc: New York) to find out the descriptive parameters.

OBSERVATION AND RESULTS:

Age in Years	Male (n=39)		Female (n=41)		Total (n=80)	
	No.	%	No.	%	No.	%
<30	4	10.25	3	7.32	7	8.75
31-50	22	56.41	21	51.21	43	53.75
51-70	11	28.20	16	39.02	27	33.75
>70	2	5.12	1	2.44	3	3.75

Table 1: Sex and Age Distribution

The above table shows analysis of age and sex distribution. The peak age was between 31 to 70 years (87.50%). The age varied from 21 years to 75 years. Number of male patients were 39(48.75%) and number of female patients were 41(51.25%).

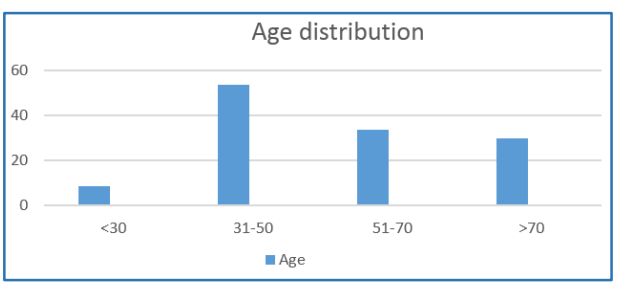
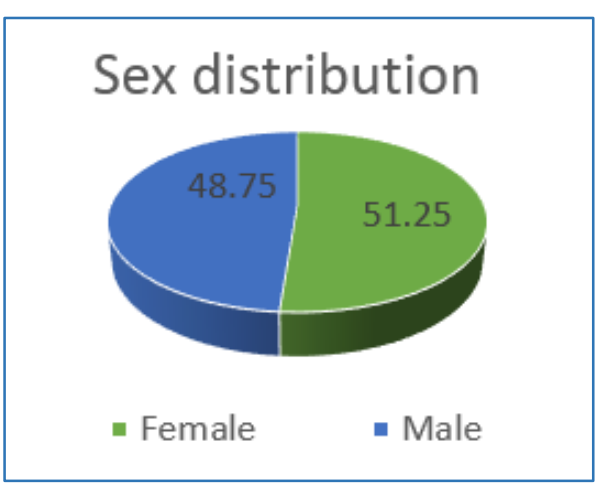


Fig. 1: Age Distribution



Symptoms	Benign n=56 (%)	Malignant n= 24 (%)	Total n = 80 (%)	Significance (p value)
Pain abdomen	40(71.42)	20(83.33)	60(85)	0.398
Jaundice as per history	30(53.57)	22(91.66)	52(65)	0.0017
Itching	22(39.28)	12(50)	34(42.5)	0.461
High-coloured urine	22(39.28)	18(75)	40(50)	0.0066
Clay-coloured stools	18(32.14)	16(66.66)	34(42.5)	0.0063
Nausea/vomiting	20(35.71)	10(41.66)	30(37.5)	0.801
Fever	6(10.71)	-	6(7.5)	0.17
Loss of appetite	18(32.14)	20(83.33)	38(47.5)	0.00027
Loss of weight	18(32.14)	22(91.67)	40(50)	0.0001
Melaena	-	2(8.33)	2(2.5)	0.08
Pallor	18(32.14)	18(75)	36(45)	0.0005
Icterus	56(100)	24(100)	80(100)	-
Palpable Gallbladder	9(16.07)	10(41.67)	19(23.75)	0.021
Abdominal tenderness	22(39.28)	10(41.67)	32(40)	-

Table 2: Association of Symptoms and Signs with Diagnosis

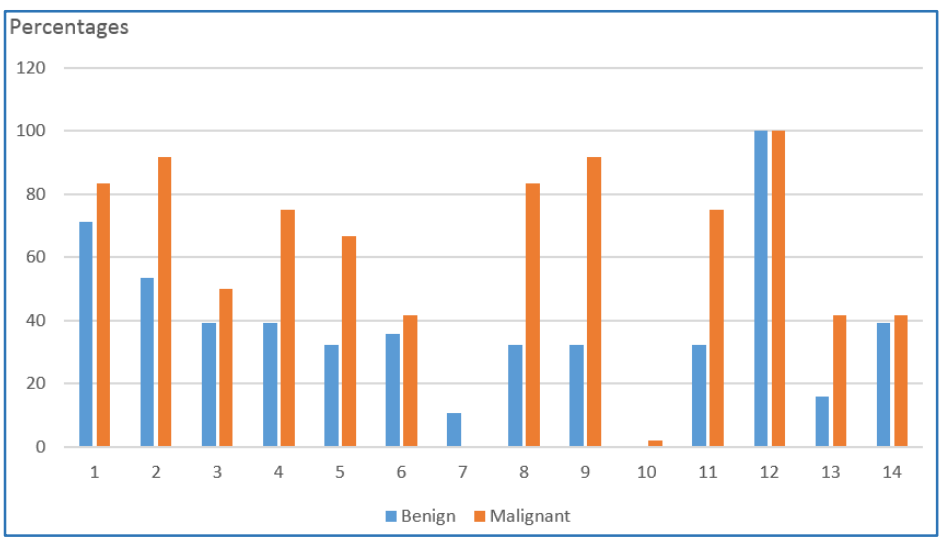


Fig. 3: Bar Chart Showing Percentage Distribution of Presenting Symptoms and Signs of Benign and Malignant Condition

1. Pain abdomen.
2. Jaundice.
3. Itching.
4. High-coloured urine.
5. Clay-coloured stools.
6. Nausea/vomiting.
7. Fever.
8. Loss of appetite.
9. Loss of weight.
10. Melaena.
11. Pallor.
12. Icterus.
13. Palpable gallbladder.
14. Abdominal tenderness.

The above analysis shows the incidence of presenting symptoms and signs. Jaundice as per history in benign condition was in 30 patients (53.6%) and in malignant condition 22 patients (91.67%) with significant difference of p value of 0.0017. High-coloured urine and clay-coloured stools also were present significantly in malignant conditions. Loss of appetite was present in 38 patients. In benign condition, it was 32.14%, and in malignant condition, it was 83.33% showing significant p value of 0.003. Loss of weight was present in 40 patients. In benign condition, it was 32.14%, and in malignant condition, it was 91.67% showing significant p value of 0.001. Melena was present in 2 patients in malignant condition. Pallor was present in 36 (45%), patients with benign condition (32.14%), and in malignant condition, it was 75% with significant p value of 0.005. Icterus was present in all patients who were diagnosed as surgical jaundice. Gallbladder was palpable in 19 patients (23.75%), in patients with benign condition 16.07%, and malignant condition 41.67% prevalence with a 3.7 times increased risk for malignancy with a p value <0.05, which was statistically significant for a malignant aetiology.

Lab Parameters	Benign (n=56) Mean ±SD	Malignant (n= 24) Mean ±SD	Total (n=80) Mean ±SD	P value
Haemoglobin (gm %)	10.8±2.06	10.45±2.59	10.70±2.22	0.511
Total bilirubin (mg/dL)	10.15±2.93	12.48±2.69	10.9±3.04	0.001
Direct bilirubin (mg/dL)	6.42±2.35	7.71±1.87	6.81±2.29	0.019
Alkaline phosphatase IU	606.57±120.33	990.37±114.63	721.71±212.68	<0.001
Albumin (mg/dL)	3.47±0.83	2.72±0.93	3.25±0.93	0.0005
Prothrombin time (seconds)	16.2±2.56	18.23±2.89	16.81±2.81	0.002
Blood urea (mg/dL)	30.56±5.73	31.04±6.3	31±5.91	0.742
Serum creatinine (mg/dL)	1.09±0.42	1.13±0.55	1.1±0.46	0.749

Table 3: Laboratory Investigations in Comparison of Benign and Malignant Conditions

There were significantly higher values of total bilirubin, direct bilirubin, and alkaline phosphatase in malignant conditions. Also, significant decrease in value of albumin and alteration in coagulation profile was found in malignancy.

Cause of Obstruction	Ultrasound		Final diagnosis		Sensitivity
	Number	% of total USG	Number	% of total diagnosis	
CBD stones	51	66.23	54	67.5	94.4
CBD benign strictures	1	1.29	1	1.25	100
Malignancy	24	31.16	24	30	100
Mirizzi's syndrome	1	1.3	1	1.25	100
Total	77		80		96.25

Table 4: Comparison of Ultrasonography and Final Diagnosis

In the radiological studies, the role of ultrasound to know the cause of obstruction, which was used as the main diagnostic procedure. In this study, 66.23% of patients had common bile duct calculi, 31.16% of patients were diagnosed as malignant, 1.29% of patients with common bile duct benign stricture, and 1.23% of patients with Mirizzi's syndrome. In the final diagnosis, CBD calculi was present in 67.50% patients, benign stricture in 1.25%, malignancy in 30%, and Mirizzi's syndrome in 1.25% of patients with USG showing no significant difference to the final diagnosis. The other investigations done was ERCP, which was done in 2 patients to confirm diagnosis of USG.

Operative Procedures/Non-operative Procedures	Number (n=56)	%
Open cholecystectomy with CBD exploration and T-tube drainage	23	41.07
Open cholecystectomy with CBD exploration and Choledochoduodenostomy	26+1*+1ǂ	50
Open cholecystectomy with choledochojejunostomy	3	5.36
Open cholecystectomy with CBD stenting	2	3.57

Table 5: Operative Procedures for CBD Calculi/Mirizzi's Syndrome/Benign Stricture

*** Mirizzi's syndrome ǂ Benign stricture**

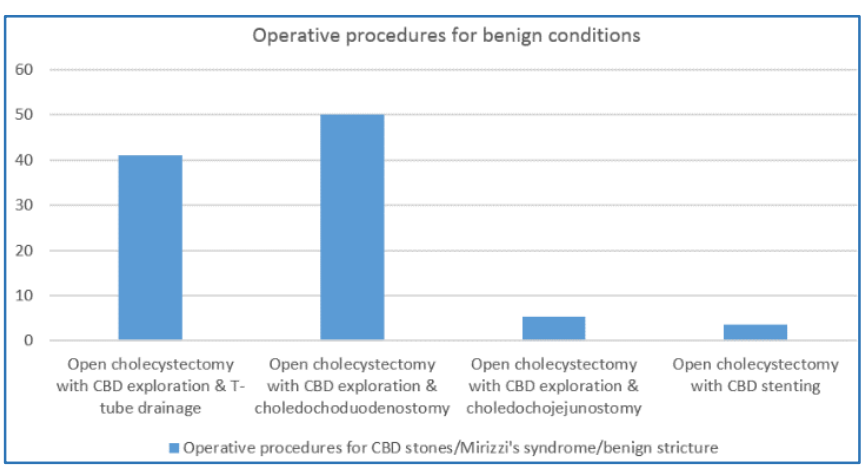


Fig. 4: Operative Procedures for Benign Conditions

23 patients underwent cholecystectomy and CBD exploration with T-tube drainage for CBD calculi. One patient with Mirizzi's Syndrome underwent cholecystectomy with CBD exploration and choledochoduodenostomy. One patient with CBD benign stricture underwent cholecystectomy with CBD exploration and choledochoduodenostomy. 26 patients underwent cholecystectomy with CBD exploration and choledochoduodenostomy for CBD calculi.

Cholecystectomy with CBD stenting was carried out in 2 patients for CBD calculi cholecystectomy with CBD exploration and choledochojejunostomy was carried out in 3 patients for CBD calculi.

Operative procedures/Nonoperative procedures	Number (n=24)	%
Whipple's procedure	2	8.33
Palliative cholecystojejunostomy + jejunojejunostomy + gastrojejunostomy	4	25
Palliative choledochojejunostomy + jejunojejunostomy + gastrojejunostomy	16	58.33
Roux-en-Y hepaticojejunostomy	2	8.33

Table 6: Operative (Curative/Palliative) Procedures for Malignancy

Malignant cause for obstruction was seen in 24 patients (30%). Whipple's procedure was done for 2 patients. Palliative cholecystojejunostomy with jejunojejunostomy with gastrojejunostomy was done for 25% of patients. Palliative choledochojejunostomy and jejunojejunostomy and gastrojejunostomy was done for most (58.33%) of malignant cases. Roux-en-Y hepaticojejunostomy was done in 2 (8.33%) of patients.

Types of Malignancy	No. of Cases	Percent of Malignant Cases
Carcinoma Head of Pancreas	17	70.83
Carcinoma ampulla of Vater	1	4.17
Carcinoma Lower CBD	6	25
Carcinoma Duodenum 2nd Part	-	-

Table 7: Causes of Malignant Obstruction on HP Study

Malignant cause for obstruction was seen in 24 patients (30%). Carcinoma head of pancreas was seen in 17 patients, distal cholangiocarcinoma in 6 patients, and carcinoma of ampulla of Vater in 1 patient on histopathological examination of the resected specimen.

Operative procedures (No. Performed)	Complications	No. of complications	Percentage of no. performed
Cholecystectomy with CBD exploration and T-tube drainage (23)	Peritubal leak with cholangitis (2) Retained stones (2) Wound dehiscence (1)	5	21.7
Cholecystectomy with CBD exploration and choledochoduodenostomy (28)	Cholangitis (1) Wound dehiscence (1)	2	7.1
Palliative cholecystojejunostomy (4)	Death	1	25
Whipple's procedure (2)	Death	1	50
Palliative choledochojejunostomy (16)	Pleural effusion (1) Wound dehiscence(1)	2	12.5
Roux-en-Y hepaticojejunostomy (2)	Cholangitis	1	50

Table 8: Postoperative Complications with Various Procedures

Patients were followed up during the post-operative period for 6 months. One patient who underwent Whipple's procedure for Carcinoma head of Pancreas, died on the 14thpost operative day due to pancreatic leak and sepsis. One patient with palliative cholecystojejunostomy with jejunojejunostomy again for carcinoma head of pancreas died on the 5th postoperative day due to sepsis. One case that underwent Whipple's procedure for Carcinoma ampulla of Vater was asymptomatic during his follow up. One patient with hepaticojejunostomy had episodes of cholangitis, which was treated with antibiotics. In two patients with CBD exploration, postoperative cholangiogram showed retained stone in CBD and they had to undergo CBD exploration again.

Three patients had wound dehiscence, which was closed with secondary suturing. Other patients did well without any complications during the follow up period.

DISCUSSION: Several studies have been done on obstructive jaundice worldwide, till date. This study was done in south Odisha. Many significant findings were observed in our study. Present study was compared with those of other authors. It has been summarised below: In this study, the peak incidence of surgical jaundice was seen in age group of 31 to 70 years with male: female ratio of M: F: 48.75: 51.25%.

Name of Study	Sharma MP et al[4]	Siddique K et al[5]	Talpur et al[6]	Lawal D et al[7]	Present Study
Mean age of patients	62.5	49.5	47.15	42	47

Table 9: Mean Age of Patients in Various Studies

In Sharma MP et al[4] mean age was 62.5. In this study, the mean age of patients was 47±12.3, which corresponds to studies like Siddique et al[5] and Talpur et al[6] with mean age of 49.5 and 47.15. In Lawal D et al[7], mean age was 42.

	Total	Male	Female	M:F
Lawal D et al[7]	50	28	22	1:0.78
Sharma et al[4]	429	229	200	1:0.87
Talpur et al[6]	83	25	58	1:2.32
Siddique K et al[5]	60	40	20	1:0.5
Present Study	80	39	41	1:1.05

Table 10: Sex Ratio in Various Studies of Obstructive Jaundice

In this study of 80 cases of obstructive jaundice, there was a slight female preponderance at 1:1.05, which intermediate between studies like Talpur et al[6] at 1:2.32 and studies with slight male preponderance like Lawal D et al[7] at 1:0.78 and Sharma et al[4] at 1:1.05.

Aetiological Distribution:

	Nadkarni et al[8] (%)	Kar et al[9] (%)	Talpur et al[6] (%)	Sharma et al[4] (%)	Siddique K et al [5](%)	PhillipoChalya et al[10] (%)	Present study (%)
CBD stones	37.5	24.8	25.3	12.4	35	25.8	67.5
CBD benign stricture	41.67	31	14.46	10.8	5	10.3	1.25
Mirizzi's syndrome	-	-	-				1.25
CBD injuries			25.3				
Carcinoma head of pancreas	58.3	72.09	12.05	26.5	30	37.9	21.25
Periampullary carcinoma				9.8	1.66	5.1	1.25
Cholangiocarcinoma				10.8	11.6		7.5
Others			22.89	28.7		6.8	

Table 11: Comparison of Aetiological Distribution

In this study, common bile duct stone was the main aetiology for jaundice when compared to Nadkarni et al[8] Kar et al[9] and Phillipo Chalya et al[10] in which malignancies were more common. This study is comparable with Talpur et al[6] and Siddique et al[5] where benign causes of obstruction were more common. In this study, malignancy was 30% with other categories being benign stricture and Mirizzi's syndrome.

	Agarwal et al[11]	Nadkarni et al[8]	Phillipo Chalya et al[10]	Present study
Jaundice	100	100	58.6	100
Pain abdomen	79.1	53.8	17.2	85
Itching	50	73.1	43.1	42.5
Fever	12.5	53.8		7.5
Nausea/Vomiting	70.9	88.5		37.5
Loss of weight	66.7	19.2	56.9	50
Clay-coloured stools	41.7	92.3		42.5

Table 12: Comparison of Symptoms and Signs

As can be seen, jaundice was the main presenting symptom/sign in the study of Agarwal et al[11] and Nadkarni et al[8]. Nausea/vomiting and pain abdomen were the other major presenting symptoms. In the present study, it is pain abdomen followed by loss of weight, itching, and clay-coloured stools. There were significantly higher values of total bilirubin, direct bilirubin, and alkaline phosphatase in malignant conditions. Also, significant decrease in value of albumin and alteration in coagulation profile was found in malignancy. This is comparable to Pellegrini et al[12] who reported that average bilirubin values are higher in patient with biliary obstruction caused by malignant disease. Pellegrini et al[12] also reported that alkaline phosphatase more than 5 times or clinical jaundice present for longer than 1 month are uncommon manifestation of CBD stones.

Ultrasonography was successfully used as the cheapest noninvasive tool to know the cause and level of obstruction in nearly 96.25% of the patients. Admassie D et al[13] in a study of 49 patients of obstructive jaundice found that ultrasonography should be the first and best initial imaging procedure in patients who have obstructive jaundice and shows reasonable sensitivity and specificity to identify causes of obstruction in obstructive jaundice. Out of patients with obstructive jaundice due to CBD calculi, most underwent cholecystectomy with CBD exploration with T-tube drainage or choledochoduodenostomy. Two patients had residual calculi postoperatively and underwent re-exploration of CBD calculi. For obstructive jaundice due to malignancy, 22 underwent palliative procedure and two patients underwent definitive procedure (Whipple's procedure). The outcome of palliative procedures was good. Patients were free from jaundice.

CONCLUSION: The occurrence of surgical jaundice was maximum in the 31-70 year age group. Males and females showed almost same percentage in presentation. Icterus was present in all 80 patients. Pain abdomen and jaundice were common in benign conditions whereas jaundice, clay-coloured stools, high-coloured urine, and itching was more common in malignancy. Anaemia and loss of weight was common in malignancy. Palpable GB indicates the aetiology to be malignant. High values of serum bilirubin and alkaline phosphatase and decreased levels of albumin and derangement of coagulation profile was common in malignancy. Ultrasonography was the cheapest and also non-invasive investigation used for the diagnosis of surgical jaundice. Most common cause of obstruction was CBD calculi followed by malignancy most common of which was carcinoma head of pancreas, then by CBD benign stricture and Mirizzi's syndrome. Open exploration of CBD under experienced hands was a good treatment modality in the management of obstructive jaundice.

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