



E-ISSN: 2616-3470
P-ISSN: 2616-3462
© Surgery Science
www.surgeryscience.com
2020; 4(1): 203-205
Received: 15-11-2019
Accepted: 19-12-2019

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A study on treatment modalities adopted for gallstone disease at a Tertiary care hospital

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DOI: <https://doi.org/10.33545/surgery.2020.v4.i1d.336>

Abstract

The first Cholecystostomy is credited to John Stough Bobbs in Indianapolis on June 15, 1867. His patient a 32 year old woman had a large abdominal mass which proved to be the gall bladder filled with clear serous fluid and gallstones. He opened the gallbladder, removed the stones and closed it by sutures. His patient survived until the age of 77, when she died of atherosclerosis. This study has been based on the analysis of 25 cases of gallstones admitted to Hospital. After admission a detailed history was taken and clinical examination carried out. Various investigations were done to assess the patient. All 25 cases were subjected to laparotomy and all of them were evaluated before surgery with Ultrasonography. All patients had cholecystectomy as the main procedure. The decision regarding exploration of CBD was made on the basis of clinical, investigation and operative criteria. Among the two cases (8%) with wound infection one patient was diabetic who was treated conservatively. Temporary biliary leak from drain site stopped after 10 days. The patient with postoperative jaundice was investigated and found to have CBD stone, which was removed by ERCP, subsequently jaundice disappeared, and the patient with post cholecystectomy syndrome had dyspepsia, right hypochondriac tenderness.

Keywords: Cholecystectomy, ERCP, treatment modalities

Introduction

The first recognized case of cholelithiasis was reported more than 1500 years ago. Calculous disease of the biliary tract continues to be a major national and international health problem. The incidence of cholelithiasis varies widely throughout the world, as does the predominant type and actual location of gallstone disease. In recent years the field of calculous biliary disease has entered into transition as the introduction and application of new technologies has enhanced our understanding of the pathogenesis of gallstones and has facilitated the development of innovative modalities for treatment. The history of gallstone disease and the evolution of its management illustrate the principle that improved patient care, can be achieved through a better appreciation of pathophysiology of specific disease entities ^[1].

Considerable efforts are being expanded to clarify the role of altered gall bladder function in the pathogenesis of gallstones and the mechanisms by which alterations in the physical properties of bile promote the process of nucleation and stone formation. As our understanding of pathogenesis of cholelithiasis has continued to evolve, new and innovative techniques for the non-operative management of gallstones have been introduced. The primary role that surgery has played in the clinical management of patients with gallstones is being challenged by such modalities as medical dissolution, contact dissolution and biliary lithotripsy. Disappointment with high recurrence rates associated with these non-operative modalities has in part been responsible for the development of laparoscopic cholecystectomy. This operative procedure achieves complete removal of gall bladder, thereby effectively eliminating stone recurrence as a possibility. The ultimate place of this procedure in the management of patients with uncomplicated gallstone disease has yet to be defined ^[2].

Most of the progress in the diagnosis and treatment of biliary tract disease has been made in the last century, but gall stones and their sequelae which cause most of the clinical problems, are not a malady of modern times. The earlier known gallstone dates back to the 21st Egyptian Dynasty (1085 - 945 B.C.) having been discovered in the mummy of a priestess of Amen. Ironically this ancient specimen was destroyed in the bombing of England during World War II. Much later during the time of Roman Empire, Pliny described the rare anomaly of double gall bladder and

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well known Physician Soranus of Ephesus described jaundice and associated signs of extrahepatic obstruction including acholic stools, dark urine and itching. Gallstones were first described in the fifth century by a Greek Physician, Alexander Tralliances, who wrote about calculi within the bile ducts. Surgical relevance of biliary tract disease was first made obvious by Islamic Physician Ibu Sina (980-1037) who stated that biliary cutaneous fistula could follow drainage of an abdominal wall abscess. Joenisius first extracted gallstones through a biliary fistula that had formed from spontaneous drainage of an abdominal wall abscess. According to power, Jean Louis Petit (1674- 1760) noted that a gall bladder could become adherent to the abdominal wall and proposed that it be punctured through the wall of the abdomen by a trocar. He believed that wound should be enlarged with a knife if stones could be palpated with a sound passed through the trocar [3, 4].

The first cholecystostomy is credited to John Stough Bobbs in Indianapolis on June 15, 1867. His patient a 32 year old woman had a large abdominal mass which proved to be the gall bladder filled with clear serous fluid and gallstones. He opened the gallbladder, removed the stones and closed it by sutures. His patient survived until the age of 77, when she died of atherosclerosis.

Carl Langenbuch of Berlin performed first cholecystectomy in June 1882, using the aseptic technique that Joseph Lister had initiated in 1868, the year in which Bobbs had reported first cholecystostomy. The patient was 43 years old man who had suffered from biliary colic for 16 years. He was released from hospital 8 weeks after the operation. 4 years later in 1886 the first cholecystectomy in USA, was performed by Justus Ohage of St. Paul, Minnesota, Ludwig Courvoisier of Basel performed the first successful choledocholithotomy in 1890 and made several contributions to the understanding of bile duct obstruction at the turn of the century [5].

Important discoveries in the area of diagnostic testing have been made in 20th century. This field was opened by the development of cholecystography by Graham and Cole culminating in the first cholecystogram in man in 1924. Cholescintigraphy was first reported in 1953. Improved imaging techniques and better dyes and nuclides led to the present high resolution cholecystography and cholescintigraphy. Operative cholangiography was described in 1932. Cholangiography by percutaneous transhepatic and endoscopic retrograde route have been developed since 1950. The applications of ultrasonography, CT, choledochoscopy and interventional radiologic techniques to the diagnosis and management of biliary tract disease have occurred in the past 2 decades [6].

Alternatives to traditional cholecystectomy were developed in 1980's and are currently under evaluation. They include oral chemolysis, extracorporeal shock wave lithotripsy, percutaneous dissolution and extraction and laparoscopic cholecystectomy.

Methodology

This study has been based on the analysis of 25 cases of gallstones admitted to Hospital. After admission a detailed history was taken and clinical examination carried out. Various investigations were done to assess the patient.

All 25 cases were subjected to laparotomy and all of them were evaluated before surgery with Ultrasonography. All patients had cholecystectomy as the main procedure. The decision regarding exploration of CBD was made on the basis of clinical, investigation and operative criteria.

The associated disorders were treated on their own merit. Patients diagnosed as having associated medical disorders like diabetes, Hypertension or bronchial asthma were evaluated carefully and treated accordingly before taking them for surgery. In the immediate postoperative period, patients were followed up every day, with continuous bedside monitoring of vital data. Due attention was paid to note the development of any complication. Suitable and appropriate treatment was instituted from time to time according to the needs of the patients.

After satisfactory improvement, patients were discharged from the hospital. Patients who were on T-tube drainage in postoperative period had T-tube Cholangiogram on 10th postoperative day and assessed carefully. Depending on the study, patients were managed.

Patients were advised regarding diet, rest and regular followup in surgical OPD. Patients who came for regular follow up were examined in detail, a general physical examination and examination of the abdomen was carried out to note the condition of operative scan and for evidence of tenderness in various regions of abdomen. Patients were advised necessary treatment accordingly.

After studying 25 cases, an extensive review of the available literature has been made. All the cases were analysed and the results were tabled.

Results and Discussion

Abnormal L.F.T. was present in 4 (16%) cases. The S.bilirubin was raised and alkaline phosphatase was elevated in those 4 patients. All the four had C.B.D. stones/stone. This is in comparison with the studies of S.K. Bhansali and Vijaypal. The ultrasound had shown gallstones in all 25 (100%) cases. Only 4 cases had associated CBD Stones (16%) the plain X-ray abdomen was normal in all 25 cases. There was no incidence of radio opaque gallstones in our series. The incidence of radio opaque gallstones was 20% in Bhansali series, 10% in Vijaypal Series.

About 22 cases out of 25, had no associated medical illness 2 patients (8%) had diabetes mellitus and one (4%) had hypertension. In S.K. Bhansali series 16% of the patients had diabetes mellitus, 6% had cirrhosis of liver, 8% had peptic ulcer 7% hiatus hernia, 7% had acute pancreatitis, 4% had chronic pancreatitis.

Table 1: Operative procedure performed

Procedure	Present Series	S.K. Bhansali [7]	Vijaypal [8]
Cholecystectomy alone	76%	70%	60%
Cholecystectomy + CBD Exploration with T- tube	16%	30%	26%
Cholecystectomy + Vagotomy with GJ	-	-	-
Cholecystectomy + Appendicectomy	8%		10%

The above table clearly shows the fact that cholecystectomy is the commonest operative procedure performed in all the series,

including the present series.

Table 2: Types of Gallstones

S. No.	Type of Stone	No of Cases	Percentage	Vijaypal [8]	Hussain <i>et al.</i> [9]
1.	Mixed stones	20	80%	91.80%	68%
2.	Cholesterol stone	3	12%	6.00%	30%
3.	Pigment stones	2	8%	2.20%	2%
	Total	25	100	100.00	100

The gallstones were assessed by their macroscopic appearance and biochemical analysis. The commonest type of stone was mixed type (80%). This is in comparison with the studies of

Vijaypal *et al.* (91.8%) and Hussain *et al.* (68%). Pigment stones are rare type, in all the series including the present series.

Table 3: Post operative complications:

S. No.	Complications	No of Cases	% Present series	S.K. Bhansali [7]	Vijaypal <i>et al.</i> [8]
1.	Wound infection	2	8%	1.5%	8.94%
2.	Temporary Biliary leak	1	4%	1.5%	1.4%
3.	Postoperative Jaundice	1	4%	2%	1.4%
4.	Post cholecystectomy syndrome	1	4%	6%	6%

Among the two cases (8%) with wound infection one patient was diabetic who was treated conservatively. Temporary biliary leak from drain site stopped after 10 days. The patient with postoperative jaundice was investigated and found to have CBD stone, which was removed by ERCP, subsequently jaundice disappeared, and the patient with post cholecystectomy syndrome had dyspepsia, right hypochondriac tenderness. She was managed conservatively and she showed a good response. The incidence of post cholecystectomy syndrome was directly related to the duration of symptoms prior to surgery. The incidence in the present series is compared with that of Rose *et al.*, Bodwell *et al.* and Stefamini *et al.*

The mortality rate was nil in the present series, whereas Vijaypal reported a mortality rate of 5.33%, Lee (1968) reported a mortality rate of 5.2%, Kessles *et al.* (1962) 5.8%, Marrow *et al.* (1978) 6.8% Essenhigh [10] also reported a high incidence of mortality i.e., 8.1%. SK Bhansali reported a mortality rate of 2.5%.

Cultures for bacteria were done on bile samples from all 25 patients undergoing surgery. In 10 cases (40%) no growth was seen on culture. Although positive cultures were obtained in 15 cases (60%), known pathogenic organisms were found in only 10 cases (40%). Nonpathogenic organisms were seen in 5 patients (20%). The commonest organism grown was *E. Coli*, which was isolated in 5 bile samples. Antibiotic sensitivity test *in vitro* demonstrated maximum sensitivity to cephalosporins followed by ampicillin and trimethoprim, sulfa methoxazole combination.

Table 4: Bile Culture results

Organism	Number
<i>E. Coli</i>	5
<i>Klebsiella</i>	1
<i>Pseudomonas</i>	1
<i>Staph. aureus</i>	1
<i>S. typhi</i>	1
<i>S. paratyphi</i>	1
Micrococci	3
<i>Staph. coagulase negative</i>	2

Conclusion

- The abnormal liver function tests with raised serum bilirubin and alkaline phosphatase, were present in 16% of patients, one patient had hepatomegaly.
- There was no evidence of radioopaque calculi in the present series.

- Ultrasonography was very sensitive investigation in the diagnosis of gallstones.
- Diabetes and hypertension, were associated illnesses in the patients with gallstones.
- The cholecystectomy was performed in all cases (100%) in the present series.
- The commonest type of stone present was mixed stone, in the present study.
- The mortality was nil in the present series and the morbidity was minimal.

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