

SUMP SYNDROME — A RARITY AFTER CHOLEDOCHODUODENOSTOMY

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SUMMARY

Side to side Choledochoduodenostomy (CDD) is an established method of achieving permanent drainage of Common Bile Duct (CBD) in non-malignant lesion, mainly for Choledocholithiasis (CDL). The study was conducted at one of the surgical units of Khyber Teaching Hospital Peshawar and P.G.M.I/L.R.H Peshawar at various timing extending from September 1980 to September 2000 (20 years). These patients were followed up for 6 months to one year time. Only 3 patient presented with fever, pain epigastrium and mild jaundice which recovered completely with conservative treatment. No patient presented with fully established Sump Syndrome. From this study and many more in world literature it was concluded that "Sump" syndrome though well recognised but is ill defined and a rare complication of CDD. Choledochoduodenostomy (CDD) can be considered as gold standard for treatment of CBD calculi.

INTRODUCTION

Sump Syndrome after CDD is characterised by upper abdominal discomfort or pain, rigors, pyrexia, jaundice and pancreatitis associated with elevated hepatic enzymes. Acute cholangitis is not a common feature and steatorrhoea is most un-usual^{1,2}. The sump syndrome may result because of stone, sludge or vegetable residue lodged in cesspool of the CBD distal to anastomosis

(Fig: 1). The exact incidence is hard to determine and has been inconsistent². After opening the CBD several controversial procedures may be used^{3,4}. In CDL like many others our preference is to perform CDD^{5,6}.

The CBD exploration was laid down by Ludwig Curvisor in 1890 with first successful removal of CBD stone¹. Madden et al brought CDD into common use as biliary drainage procedure. He experienced not a

single case of this entity in a series of 100 patients with this procedure and considered the blind segment practically of no surgical significance⁷. In our series of 300 CDDs no case of established Sump-Syndrome was recorded.

MATERIAL AND METHODS

The study was conducted on patients who had undergone Choledochoduodenostomy (CDD) for benign biliary ducts lesions mostly Choledocholithiasis (CDL) at a Surgical Unit of Khyber Teaching Hospital (KTH) and PGMI/Lady Reading Hospital Peshawar at different timings. The break up of this study period is as follow.

Sep: 1980 to Sep: 1989
 PGMI/LRH Sep: 1989 to March 1997
 K.T.H March 1997 to Sep: 2000

About 3000 Cholecystectomies were performed during this period of 20 years. Out of these 500 had Common bile duct exploration (CBDE), 16.6%. 350(11.6%) patient had non malignant lesions while the rest of those undergoing CBDE had other lesions and were excluded from study. CDD

AGE AND SEX INCIDENCE IN 300 PATIENTS OF CDD

Female = 225 Male = 75 Sex ratio = 3:1

Age group in years	No. of patient	Percentage
21 – 30	43	14.3%
31 – 40	55	18.3%
41 – 50	80	26.7%
51 – 60	102	34%
61 – 70	15	5%
71 – 80	4	1.3%

TABLE – 1

was performed in 300 cases (10%) while the remaining 50 patient had T-Tube drainage. There were 225 female and 75 male making the sex ratio of 3F:1M. The age ranged between 22-80 years (mean = 50 years)

The maximum CDD were performed in 5th and 6th decade. Morbidity was 3%. Mortality was nil. No case of Sump-Syndrome was recorded however non-specific symptoms occurred in 3 patients who responded well to antibiotics and analgesics.

All patient presenting with jaundice had preliminary investigations like L.F.T., Ultra-sound study for hepatobiliary tree., P.T.C as

THE INCIDENCE OF SUMP SYNDROME IN VARIOUS SERIES IN WORLD LITERATURE

Author	No. of CDD	Follow up	Sumps YND	Cause
Baker-AR ^{20,31}	190	—	5(3.3%)	Rec:ston
Berkenfeld-S ²¹	55	12 years	—	—
Eleftheroid-E ²⁹	30	—	—	Inflammatory changes
Jan AU. KTH/LRH (present series of the author)	300	6 month-1 year	—	—
Jan AU. ⁵	220	6 month-1 year	—	—
Henry A Pitt ³⁶	523	—	—	—
Madden JL ⁷	100	—	—	—

TABLE – 2

required to establish pre-operative diagnosis. PT/APTT were brought to normal by Inj:Vit:K 10mgm I/V once daily. Side to side CDD in these cases were performed as low as possible near the duodenum to reduce the length of distal stump³³. The size of the stoma was kept wide enough i.e more than the diameter of existing CBD in individual case. In the follow up period lasting from 6-months to one year no patient presented with classical "Sump" syndrome except for the 3-patients mentioned above who recovered with out any surgical intervention.

RESULTS

The total number of cholecystectomies performed in the period between September 1980 to September 2000 were 3000. The age of the patients range from 22 years to 80 years. Out of these 3000 cases 500 patients had CBD exploration and cholecystectomy. 300 patients had under gone CDD amongst them 225 were female and 75 male that is ratio of 3:1. Amongst the 500 CBD exploration 350 (11.6%) had benign lesion. The rest of them had malignancies and CDD

BILIARY SUMP SYNDROME

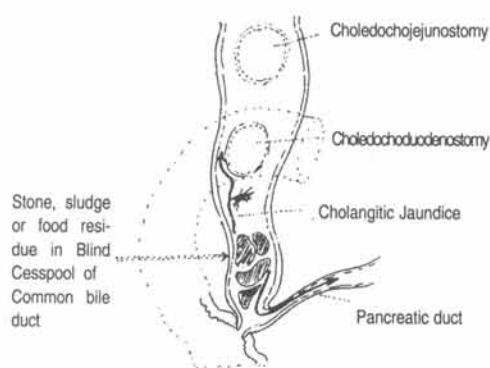


Fig. 1: Blind Cesspool distal to Choleldochoduodenostomy (CDD) and Choleldochojejunostomy (CDJ) showing stones, sludge, vegetable residue that causes Sump syndrome.²

was not considered feasible. Out of 350 CBDE 50 patients had a procedure other than CDD like T-tube drainage. 300 (10%) cases had CDD. Majority of these patients who had a CDD were in 5th and 6th decade that is 182 patients (60.7%). Only 9 (3%) patients with CDD had minor complications like post operative leakage in 6 patients which stopped spontaneously in 3 to 7 days time and vague symptom in 3 cases not indicating Sump syndrome meaning there by that non of the patient had classical Sump syndrome in this series. No mortality was encountered in this series indicating that CDD is safe procedure both in young and aged people.

DISCUSSION

The term "Sump Syndrome" signifies variety of symptoms caused by stone, sludge or food residue stagnating in a blind pouch of CBD distal to CDD or CDJ. Clinically it present as cholangitis, jaundice or pancreatitis.² Baker-AR et al described two syndromes following side to side CDD, both attributed to the sump or "blind" sac of CBD between stoma and sphincter of oddi. Firstly recurrent episodes of cholangitis associated with accumulation of debris in the sump and secondly blind loop type syndrome due to bacterial proliferation of bile salts resulting in steatorrhea and malabsorption^{1,8,9} but Capper -WM and Wright-NL in evaluating the results of CDD found it a very uncommon.^{10,11} In our study and studies of so many other the duodenal contents reflux into biliary tree and bacterobilia is common but even then cholangitis is a very uncommon long term complication occurring only in 0.14-1.3% cases.^{12,13} Lygidakis-NJ and Vogt-DP in several review of large number of patient with CDD have shown no case of this syndrome.¹⁴⁻¹⁵ Siegel-JH has occasional report of sump syndrome¹⁶ De-Almeida-AM et al has reported initially complications like

ascending cholangitis, sump syndrome and alkaline reflux gastritis but due to excellent long term results in present series they have allowed liberalisation of CDD especially in young people.^{8,17} Anderberg-B et al consider it as safe and effective method for primary, retained or recurrent stones and Sump Syndrome is a rarity.^{14,15,16,18,19,20,21,22,23} The chances of infections are also much more higher in T-Tube drainage than in primary bile duct closure or an internal drainage. Lygidakis-NJ observed that 70% of those patients who had sterile bile to start with became infected during the post operative period of T-Tube drainage.²⁴ De-la-Cuadra-R consider CDD as promising method even in the presence of infection in biliary ducts in benign biliary tract disease.²⁵

The basic criterion indicating need for CDD is²⁶

1. Dilated bile duct of more than 12mm.
2. Reoperation of patient with recurrent stone or retained stone.
3. Since the publication of several series of CDD with little morbidity and mortality, the technique has become safe and easy leading to widening of indications and increase in its use.
4. When there are doubts about total clearance of ducts.
5. Intrahepatics lithiasis.
6. When there is suppurative cholangitis.

As far as the other complications of CDD are concerned, they are much rarer than the Sump syndrome itself and include, anastomotic bleeding,²⁷ biliportal fistula,²⁸ Duodenobiliary reflux common but rarely producing symptoms^{8,17}, anastomotic stenosis & biliary leak.⁵

Eleftheriodis-E et al in a series of 30 patients who had undergone CDD for benign biliary tract disease conducted

endoscopy and classified endoscopic anatomy into two types. 1) Inflammatory changes of chole-dochal mucosa adjacent to stoma in 9-cases. 2) Endoscopic proximal & distal (blind) segment of the CBD in 19-cases. These inflammatory changes lead to complications.²⁹

The uneventful long term post operative period of choledochoduodenostomized patients can be explained on histological and histochemical changes of the CBD mucosa in specimen obtained by per oral cholangio-scopy 1-12 years after CDD, which showed hyperplasia of superficial epithelium, metaplastic goblet cells containing predominantly acid sialomucin and pyloric like gland formation containing neutral mucin, expressing a morphological and functional differentiation of the CBD mucosa.³⁰ In evaluating the result of CDD in a series of Baker-AR out of 190 patient, 5 patient (3.3%) developed Sump Syndrome due to recurrent CBD stone and further recommended CDD as operation of choice where permanent biliary drainage procedure is required.^{20,31} De-Almeida-AM et al and Cubillos-L et al have touched the controversies on procedure of CDD,^{3,4} but majority of the studies in the world literature favour the procedure and consider sump syndrome as rarity. Berkenfeld-S et al in two different series evaluated the safety of CDD and considered it as treatment of choice in residual CBD stone as immediate intra-operative definitive treatment. They recorded no complication related to the procedure in itself in 55 patients over the age of 70 years. In 12 years follow up neither cholangitis nor sump syndrome was documented.^{21,22,32} Rizzuti-RP advocate CDD a safe procedure with good results especially in high risk patients. He could not attribute non specific complaints of abdominal pain in post operative period to the sump syndrome after necessary diagnostic studies.³³ Madden-JL et al brought CDD into common use as biliary drainage procedure,

experienced not a single case of this entity in a series of 100 patients with this procedure and considered the blind segment practically of no surgical significance.⁷ Regarding the techniques of CDD, the anastomotic stoma must be wide enough to ensure good biliary drainage and prevent stenosis, a main factor favouring cholangitis and recurrent lithiasis.²⁶ A longitudinal incision is made in the bile duct as near as possible to the duodenum rather we will suggest it just behind the first part of duodenum so that infra anastomotic bile duct is as short as possible thus preventing sump syndrome.³⁴ It is recommended that the incision in the duodenum is made along its longitudinal axis, perpendicular to choledochotomy incision. The anastomosis is performed with absorbable suture which may cause less inflammatory reaction. Another important detail of preventing anastomotic stenosis is to achieve good apposition between the choledochal and duodenal mucosa.⁶ So if proper anastomosis is performed keeping the above principles in mind the chances of sump syndrome can be totally obviated as in our series and so many other no sump syndrome was reported. The series of Parrilla-P et al agree with other that more than 75-80% of patients with CDD are completely asymptomatic 5 years after operation. Furthermore dyspeptic complaints are not related to CDD and so we must consider associated pathology.²⁶ We from our study and the international literature concluded that inspite of advancement in the hepatobiliary surgery in term of laparoscopic/endoscopic surgery, open common bile duct exploration (CBDE) continues to be an option for management of choledocholithiasis (CDL). This is more true for the conditions prevailing in our province where the endoscopic/laparoscopic surgery is still in stages of infancy and if available is quite out of reach of common man. It can not be considered as obsolete technique.⁴ We would go for it even today

partly because of our experience and partly because of the so many supportive studies in world literature. Major problem in the management of CDL is that of missed stone or retained stone after choledocholithotomy because of the lack of facilities of intra operative cholangiography, fluoroscopy, choledoch-scopy and per-operative ultrasonography even in the major teaching institutes of N.W.F.P. These facts were also noted by Andenberg et al in their set up and recommended CDD to avoid these problems.²⁰ Second exploration for retained or missed CBD stone poses lot of technical, economical and social problems as majority of our patient come from far flung areas and report quite late to the hospital. To deal with these problems we have decided to do side to side CDD in all cases of CBD calculi to avoid re-exploration and thus jaundice. Thus the procedure of CDD is unjustly maligned for a rare complication "The Sump-Syndrome"

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