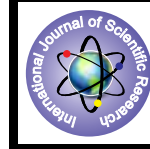


## Choledochoduodenostomy: Our Experience in 50 Consecutive Patients



### Medical Science

**KEYWORDS :** Choledochoduodenostomy, choledocholithiasis, T-tube, common bile duct.

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### ABSTRACT

*Choledochoduodenostomy is a surgical drainage procedure for choledocholithiasis in the presence of dilated common bile duct. It has been reported as a more effective treatment for choledocholithiasis than T-tube drainage but is regarded as an obsolete therapeutic method due to fears of higher morbidity, cholangitis and sump syndrome. Between January 2007 and May 2013, 50 patients underwent choledochoduodenostomy for choledocholithiasis with dilated bile duct(diameter more than 1.5 cm). Medical records of these were retrospectively analyzed and data collected with particular attention to clinical profile, postoperative morbidity and mortality, complications and follow-up. Fifty patients (27 female and 23 male, mean age 55 years) underwent choledochoduodenostomy for choledocholithiasis. There were no anastomotic leaks and peri-operative mortality. 2 patients(4%) developed wound infection. The mean duration of hospital stay was 7 days(5-11 days). On follow-up, 9 patients(18%) were symptomatic.No patients developed sump syndrome or cholangitis. Choledochoduodenostomy is a safe and effective biliary drainage option for choledocholithiasis with dilated bile duct (diameter greater than 1.5 cm).Adequate stoma size is necessary to reduce complications. Outcomes are acceptable with low morbidity.*

### Introduction:

Choledochoduodenostomy is a surgical drainage procedure for choledocholithiasis in the presence of dilated common bile duct. It has been reported as a more effective treatment of choledocholithiasis than T-tube drainage but is regarded as an obsolete therapeutic method due to fears of higher morbidity, cholangitis and sump syndrome. The aim of this study is to evaluate patients treated with choledochoduodenostomy for choledocholithiasis.

### Methods:

Between January 2007 and May 2013, 50 patients underwent choledochoduodenostomy for choledocholithiasis with dilated bile duct(diameter more than 1.5 cm). Medical records of these were retrospectively analyzed and data collected with particular attention to clinical profile, postoperative morbidity and mortality, complications and follow-up. The technique of choledochoduodenostomy is as described: with patient in supine position, abdomen is opened with right subcostal or midline incision. First cholecystectomy is done followed by kocherisation. Stay sutures are taken at the lower end of bile duct. Incision is made at the lower end of bile duct. All the stones are cleared. Choledochoscopy is performed to check complete stone clearance. Bile duct is incised longitudinally. Duodenotomy is made perpendicular to the above incision. Anastomosis is done with 3.0 vicryl round body, interrupted sutures.

### Results:

Fifty patients (27 female and 23 male, mean age 55 years) underwent choledochoduodenostomy for choledocholithiasis. Fifteen patients underwent Endoscopic retrograde cholangio pancreatography(ERCP) prior to surgery. In 12 patients stenting was done with incomplete stone removal and in 3 patients ERCP could not be done. Three patients had history of open cholecystectomy and one patient underwent gastrojejunostomy . All patients had dilated bile duct more than 1.5 cm with choledocholithiasis. Fifteen patients(30%) had single stone. There were multiple stones in 35 patients(70%). The mean operating time was 84 min (55 – 135 min).There were no anastomotic leaks and peri-operative mortality. 2 patients(4%) developed wound infection. The mean duration of hospital stay was 7 days(5-11 days). On follow-up, 9 patients(18%) were symptomatic. 5

patients(10%) developed alkaline reflux gastritis and were treated medically. 2 patients (4%) had multiple liver abscess which was managed by antibiotics and image guided drainage. One patient(2%) developed a stone proximal to the anastomosis, which was cleared endoscopically. One patient(2%) had stenosis of the anastomosis, which was converted to Roux-en-Y anastomosis. No patients developed sump syndrome or cholangitis .

### DISCUSSION

Choledochoduodenostomy (CDD) has been reported as an effective treatment of common bile duct stones <sup>1</sup>. Draining the common bile duct after stone clearance is required to reduce the chance of recurrent stones<sup>2</sup>. CDD is an easy, highly effective and definitive method of decompression, especially when there are multiple stones in a dilated CBD<sup>2,3</sup>.It can be performed in all age groups with low morbidity and mortality when a wide side to side anastomosis is done<sup>3</sup>. It has been reported as a more effective treatment of choledocholithiasis than T-tube drainage<sup>3</sup>. High recurrence rates been reported when only choledochotomy and T-tube drainage are performed, because the unchanged biliary structure keeps the environment of the common bile duct prone to stone formation. Few studies reported an incidence of upto 41.7 % after T-tube drainage <sup>4</sup>. There are 2 types of choledochointerostomy for choledocholithiasis: choledochojejunostomy with Roux-en- y reconstruction and choledochoduodenostomy. Choledochojejunostomy is not commonly selected as a treatment option for choledocholithiasis due to the following reasons: 1) inability for endoscopic extension when postoperative anastomotic stenosis has occurred; 2) the recurrent stone is a very intractable type of hepatolithiasis; and 3) complicated surgical techniques involved . Choledochojejunostomy

is considered to be a good choice for patients with primary bile duct stones, cholangiectasis 15mm or greater<sup>6,7</sup>, or papillary diverticula<sup>8</sup> to prevent recurrence<sup>9</sup> . Choledochojejunostomy may be the treatment of choice for younger patients with primary stones to reduce the risk of upper gastrointestinal malignancies<sup>9</sup>.

In a study of 71 patients with 5 or more years follow-up , the authors concluded that construction of a CDD in the presence

of a dilated CBD (more than 16 mm) allows more than 14 mm is essential to obtain good results<sup>10</sup>. Studies with long-term follow-up suggest that cholangitis or sump syndrome are rare and it has good long term results with infrequent complications<sup>11</sup>. The recurrence of choledocholithiasis was less than choledocholithotomy and T-tube drainage, including open and laparoscopic surgery<sup>9</sup>.

Laparoscopic choledochoduodenostomy has been performed for definitive surgical treatment of “difficult choledocholithiasis” in elderly patients with multiple comorbidities<sup>12</sup>. Laparoscopic choledochoduodenostomy is suggested as an alternative to the open choledochoduodenostomy to obtain a tension-free anastomosis and an adequate-sized stoma<sup>13</sup>. Though laparoscopic approach provides the advantages of minimal access surgery, the success of the procedure needs intracorporeal suturing and knot-tying skills<sup>10</sup>. In experienced hands, laparoscopic choledochoduodenostomy is an option for safe and effective treatment of choledocholithiasis after gastric bypass<sup>14</sup>. If expertise for minimally invasive biliary procedures is not available, open biliary drainage procedures may still be performed in select patients<sup>15</sup>.

A recent study reported that, endoscopic ultrasound – guided choledochoduodenostomy can be an effective life-saving endoscopic biliary decompression procedure. When endoscopic retrograde cholangiopancreatography (ERCP) with stent placement fails, this shortens the procedure time and prevents post-ERCP pancreatitis, particularly in patients with cholangitis -induced sepsis in choledocholithiasis<sup>16</sup>.

In conclusion, choledochoduodenostomy is a safe and effective biliary drainage option for choledocholithiasis with dilated bile duct (diameter greater than 1.5 cm). Adequate stoma size is necessary to reduce complications. Outcomes are acceptable with low morbidity.

## REFERENCES

1. El Nakeeb, A., Askr, W., El Hanafy, E., Atef, E., Hamdy, E., El Hemaly, M., Abdallah, T. (2015). Long term outcomes of choledochoduodenostomy for common bile duct stones in the era of laparoscopy and endoscopy. *Hepato-Gastroenterology*, 62(137), 6–10. Gupta, B. S. (2004). Choledochoduodenostomy: a study of 28 consecutive cases. *Kathmandu University Medical Journal (KUMJ)*, 2(3), 193–197.
2. Shrestha, S., Pradhan, G. B. N., Paudel, P., Shrestha, R., & Bhattachan, C. L. (2012). Choledochoduodenostomy in the management of dilated common bile duct due to choledocholithiasis. *Nepal Medical College Journal: NMCJ*, 14(1), 31–34.
3. Lygidakis, N. J. (1983). Surgical approaches to recurrent choledocholithiasis. Choledochoduodenostomy versus T-tube drainage after choledochotomy. *American Journal of Surgery*, 145(5), 636–639.
4. Uchiyama, K., Onishi, H., Tani, M., Kinoshita, H., Ueno, M., & Yamaue, H. (2002). Indication and procedure for treatment of hepatolithiasis. *Archives of Surgery (Chicago, Ill.: 1960)*, 137(2), 149–153.
5. Parrilla, P., Ramirez, P., Sanchez Bueno, F., Perez, J. M., Candel, M. F., Muelas, M. S., & Robles, R. (1991). Long-term results of choledochoduodenostomy in the treatment of choledocholithiasis: assessment of 225 cases. *The British Journal of Surgery*, 78(4), 470–472.
6. Deutsch, A. A., Nudelman, I., Gutman, H., & Reiss, R. (1991). Choledochoduodenostomy an important surgical tool in the management of common bile duct stones. A review of 126 cases. *The European Journal of Surgery*, 157(9), 531–533.
7. Miyazawa, Y., Okinaga, K., Nishida, K., & Okano, T. (1995). Recurrent common bile duct stones associated with periampullary duodenal diverticula and calcium bilirubinate stones. *International Surgery*, 80(2), 120–124.
8. Uchiyama, K., Onishi, H., Tani, M., Kinoshita, H., Kawai, M., Ueno, M., & Yamaue, H. (2003). Long-term prognosis after treatment of patients with choledocholithiasis. *Annals of Surgery*, 238(1), 97–102.
9. Escudero-Fabre, A., Escallon, A., Sack, J., Halpern, N. B., & Aldrete, J. S. (1991). Choledochoduodenostomy. Analysis of 71 cases followed for 5 to

15 years. *Annals of Surgery*, 213(6), 635–642–644.

10. Srivengadesh, G., Kate, V., & Ananthakrishnan, N. (2003). Evaluation of long-term results of choledochoduodenostomy for benign biliary obstruction. *Tropical Gastroenterology: Official Journal of the Digestive Diseases Foundation*, 24(4), 205–207.
11. Aguirre-Olmedo, I., Cuendis-Velázquez, A., Morales-Chávez, C. E., Torres-Ruiz, M. F., Rojano-Rodríguez, M. E., & Cárdenas-Lailson, L. E. (2013). Laparoscopic choledochoduodenostomy as an optional treatment choledocholithiasis. *Cirugía Y Cirujanos*, 81(2), 118–124.
12. Gurbuz, A. T., Watson, D., & Fenoglio, M. E. (1999). Laparoscopic choledochoduodenostomy. *The American Surgeon*, 65(3), 212–214.
13. DuCoin, C., Moon, R. C., Teixeira, A. F., & Jawad, M. A. (2014). Laparoscopic choledochoduodenostomy as an alternate treatment for common bile duct stones after Roux-en-Y gastric bypass. *Surgery for Obesity and Related Diseases: Official Journal of the American Society for Bariatric Surgery*, 10(4), 647–652.
14. Khalid, K., Shafi, M., Dar, H. M., & Durrani, K. M. (2008). Choledochoduodenostomy: reappraisal in the laparoscopic era. *ANZ Journal of Surgery*, 78(6), 495–500.
15. Minaga, K., Kitano, M., Imai, H., Yamao, K., Kamata, K., Miyata, T., ... Kudo, M. (2016). Urgent endoscopic ultrasound-guided choledochoduodenostomy for acute obstructive suppurative cholangitis-induced sepsis. *World Journal of Gastroenterology*, 22(16), 4264–4269.