



## T-TUBE DRAINAGE VERSUS PRIMARY CLOSURE AFTER OPEN CHOLEDOCHOTOMY: OUR EXPERIENCE IN KING GEORGE HOSPITAL, VISAKHAPATNAM.

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**ABSTRACT** **BACKGROUND:** The gold standard surgical management for choledocholithiasis has been T-tube drainage. However, T-tube drainage has its drawback of leakage around the T-tube and prolonged hospital stay.

**OBJECTIVE:** 1. To compare outcomes of T-tube drainage and primary closure after choledochotomy.  
2. to assess the safety of primary closure after choledochotomy.

**METHODS:** patients with choledocholithiasis admitted to King George Hospital, Visakhapatnam, from January 2019 to June 2020 are included in the study. A total of 40 patients are randomly divided into group A (PRIMARY CLOSURE) and group B (T-tube DRAINAGE), with 20 patients in each group.

**RESULTS:** The mean hospital stay was 6.2 days in the primary closure group compared to 14 days in the T-tube drainage group. There was no bile leak in the primary closure group than the T-tube drainage group in which one patient had a bile leak. Wound infection is seen in 3 patients in the T-tube drainage group compared to 2 patients in the primary closure group. There is no mortality and retained stones in both groups.

**CONCLUSION:** primary closure after choledochotomy is safe and has reduced hospital stay.

**KEYWORDS :** choledocholithiasis, T-tube drainage, choledochotomy, primary closure.

### INTRODUCTION

CBD stones develop in about 10–15% of patients with gallbladder stones<sup>1</sup> and are encountered in approximately 7–15% of patients undergoing cholecystectomy.<sup>2</sup> The management options available for choledocholithiasis include Endoscopic retrograde cholangiopancreatography (ERCP) and surgical exploration of CBD done by either open or laparoscopic approach.

Traditionally the surgical management of choice is open CBD exploration and T-tube drainage. The reasons for using T-tube drainage after open CBD exploration are distal decompression of common bile duct, to reduce edema and intra luminal pressure of CBD, postoperative contrast study, to visualize and extract retained bile duct stones.<sup>3</sup> The complications associated with T-tube drainage include bacteremia, obstruction of T-tube, dislodgement of the tube, and bile leak after T-tube removal.<sup>4,5</sup> All these may lead to a prolonged hospital stay.<sup>6</sup>

Halstead first described the advantages of primary closure after CBD exploration. Different authors in various papers supported primary closure after choledochotomy.<sup>7,8</sup> The aim of this study is to compare the outcome of primary closure versus T-tube drainage after choledochotomy in terms of postoperative complications and hospital stay.

### MATERIALS AND METHODS:

This is a prospective study performed from January 2019 to June 2020. A total of 40 patients with choledocholithiasis admitted to the Department of General Surgery, Visakhapatnam, are included in the study.

The patients are divided into two groups as group A (primary closure) and group B (T-tube drainage), with 20 patients in each group.

### INCLUSION CRITERIA:

1. Patients diagnosed to have CBD stones.
2. Patients who give valid consent.
3. Patients between the age group 30 years to 60 years.

### EXCLUSION CRITERIA:

1. Patients not willing to give valid consent.
2. Patients with malignancy, renal failure, pancreatic pathology causing jaundice, and other severe co-morbidities.

Routine baseline investigations such as CBP, RFT, LFT, Sr. electrolytes are done. Preoperative antibiotics are given in both groups. In all

patients, cholecystectomy followed by choledochotomy is done. CBD stones are removed, and CBD flushed with normal saline to ensure no distal obstruction. Primary closure is done in 20 (50%) cases, and T tube drainage is done in 20 (50%) cases. Primary closure of CBD is done with interrupted suture of No. 3-0 or No. 4-0 vicryl on an atraumatic needle. A subhepatic drain is kept. For T-tube drainage No. 12 F gauge T-tube is used. T-tube is removed on the 14th postoperative day after satisfactory postoperative cholangiography. All patients were given postoperative care along with antibiotics, and follow-up was done for the next three months.

### RESULTS:

Out of 40 patients 15 (37.5%) are male and 25(62.5%) are female. Most of the patients are in the age group of 40-50 years, followed by 30-40 years and 50-60 years.

The average hospital stays in group A is 6.5 days(5-8 days) as compared to 14 days(8-20 days) in group B. In group A, two patients developed wound infection as compared to 3 patients in group B. The wound infection in both groups is managed by antibiotics and regular dressing. One patient in group B developed bile leak, which is managed conservatively, and no bile leak is seen in group A. In both groups, there is no mortality and residual stones.

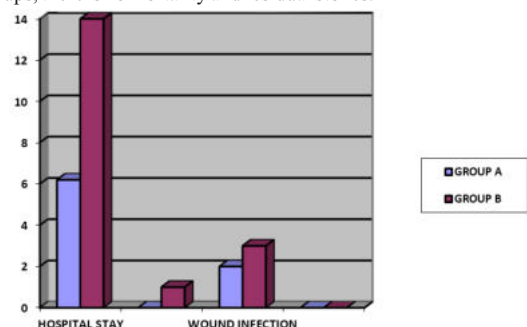


Figure 1: Comparison of outcomes between group A and group B.

Table – 1

Comparison Of Outcomes Between Group A And Group B

	GROUP A ( 20 patients)	GROUP B ( 20 patients)
HOSPITAL STAY	6.5 (5-8 days)	14 (8-20 days)

BILE LEAK	0	1
WOUND INFECTION	2	3
RESIDUAL STONES	0	0

### DISCUSSION:

The practice of using T-tube drainage versus primary closure of the bile duct after choledochotomy is a subject of discussion. Nowadays, the trend is towards primary closure.

Many authors such as Khaled Ahmed El- Dabee et al. have advocated the primary closure of the CBD.

The prerequisites for a safe and successful primary closure of the common bile duct are patent ampulla of Vater, complete removal of all intra-ductal calculi, absence of pancreatic pathology, and meticulous suture of the duct.<sup>9,10</sup>

In this study, the mean hospital stay in the primary group is shorter than the T-tube drainage group, which is similar to studies conducted by Zhang et al., Ambreen et al. and Kyoum Tah Noh et al.<sup>4,7,11</sup> primary closure of CBD has no effect on patient's quality of life after discharge from hospital. Whereas, T-tube affects the patient's quality of life as it is uncomfortable, requires continuous management, and restricts the patient's activity because of the risk of dislodgement. In this study, there is no increased risk of bile leak.

### CONCLUSION:

Therefore, we can conclude that primary closure after choledochotomy is safe and effective. Primary closure after choledochotomy has reduced hospital stay as compared to T-tube drainage. However, randomized trials on a larger scale and with a longer follow-up are necessary to address complications after primary closure.

### REFERENCES:

- [1] Perez G, Escalona A, Jarufe N, et al. Prospective randomized study of T-tube versus biliary stent for common bile duct decompression after open choledochotomy. *World J Surg* 2005;29:869-72.
- [2] Ahrendt SA, Pitt HA. Biliary tract. In: Townsend M, ed. Sabiston Textbook of Surgery. Philadelphia: WB Saunders, 2004:486-92.
- [3] Lygidakis NJ. Hazards following T-tube removal after choledochotomy. *Surg Gynecol Obstet.* 1986;163:153-5.
- [4] Ambreen M, Shaikh AR, Jamal A, Qureishi JN, Dalwani AG, Memon MM. Primary closure versus T-tube drainage after open choledochotomy. *Asian J Surg.* 2009;32:21-5.
- [5] Boerma D, Schwartz MP. Gallstone disease. Management of common bile duct stones and associated gallbladder stones: surgical aspects. *Best Pract Res Clin Gastroenterol.* 2009;20:1103-16.
- [6] Gurusamy KS, Samraj K. Primary closure versus T-tube drainage after laparoscopic common bile duct exploration. *Cochrane Database Syst Rev.* 2013;(6):CD005641.
- [7] Zhang LD, Bie P, Chen P et al. Primary duct closure versus T-tube drainage following laparoscopic choledochotomy. *Zhonghua Wai Ke Za Zhi* 2004;42:520-523.
- [8] Qian D, Zhu & Chong L, Tao & Meng T, Zhou & Zheng P, Yu & Hong Q, Shi & Qi Y, Zhang. Primary closure versus T-tube drainage after common bile duct exploration for choledocholithiasis. *Langenbecks Arch Surg* 2011; 396:53-62.
- [9] Rafailidis S, Ballas K, Symeonidis N, Pavlidis T, Psarras K, Marakis H. Primary closure of common bile duct long-term results. *Arch ISPUB.* 2010;23:80-6.
- [10] Haider J, Aziz A, Khan L, Alam SN. Primary closure of common bile duct after open choledochotomy. *J Surg Pak.* 2009;14:173-5.
- [11] Noh KT, Min SK, Lee HK. Comparison of primary closure and T-tube drainage following laparoscopic CBD exploration. *J Korean Surg Soc.* 2009;77:399-403.