www.jmscr.igmpublication.org
Impact Factor (SJIF): 6.379
Index Copernicus Value: 71.58
ISSN (e)-2347-176x ISSN (p) 2455-0450
crossref DOI: https://dx.doi.org/10.18535/jmscr/v6i5.30

IGM Publication
Journal Of Medical Science And Clinical Research
An Official Publication Of IGM Publication

Hepaticojejunostomy & Hepaticoduodenostomy in Biliary Reconstruction Following Excision of Choledochal Cyst – Which Is Better?

Authors
Dr Samir Gupta[1], Dr Tanmay Anand[2], Dr Achal Gupta[3]
[1]MS Mchpaed Surgery, [2]Surgical Resident, [3]Prof and Head
Corresponding Author
Dr Tanmay Anand
Surgical Resident

Introduction

Choledochal cysts are rare congenital dilations of the biliary tree that can present with non-specific symptoms such as abdominal pain, jaundice, cholelithiasis and pancreatitis. Although most commonly identified in children, they can be found in the adult population.

The incidence of choledochal cysts in the western population is 1:100,000–1: 150,000 live births. The rate is remarkably higher in Asian populations, with approximately two-thirds of cases occurring in Japan.

Cystic disease of the biliary tree was first described in 1723, and the first classification system for choledochal cysts was proposed by Alonso-Lej et al. in 1959 Contemporary classification was created by Todani et al. in 1977 (Figure 1).

The aetiology of the choledochal cyst remains unclear. The most accepted theory of cyst origin supposes the influence of an abnormal pancreatobiliary junction when the common channel of the pancreatic and bile duct exists. This theory postulates that the exceptionally long common channel allows mixing of the pancreatic and biliary juices, resulting in the activation of pancreatic enzymes, inflammation, and deterioration of the biliary duct wall, leading toits dilatation. The origin of type-V choledochal cysts probably differs from that of the other types of choledochal cysts, and is possibly due to dysfunctional remodelling of the ductal plate during embryogenesis.

The relationship between choledochal cysts and carcinogenesis is important. The choledochal cyst is apremalignant state in which cancer occurs not only more often but also 10–15 years earlier than in the normal population. The overall risk of cancer has been reported to be 10–15%, and it increases with age.

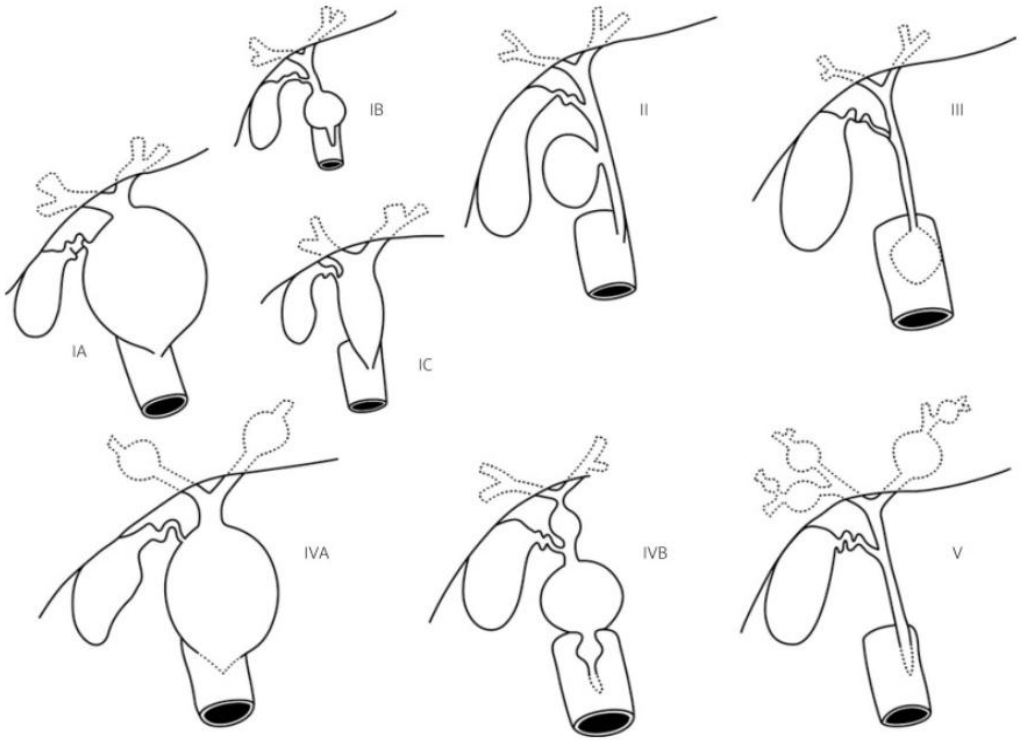


Figure 1

Todani's classification scheme for choledochal cysts [5]. Type IA – cystic dilation of the extrahepatic biliary tree. Type IB – focal, segmental dilation of the extrahepatic bile duct. Type IC – smooth fusiform dilation of the entire extrahepatic bile duct. Type II – discrete diverticuli of the extrahepatic duct. Type III – choledochocoele. Type IVA – combine intrahepatic and extrahepatic duct dilation. Type IVB – multiple extrahepatic bile duct dilations. Type V – Caroli disease. Adopted from [5]

With advances in medical technology, the number of CC diagnoses in children has been increasing, with more than 65.7% of the total adult patients. Type I CC is associated with complications such as cholangitis, pancreatitis, cholelithiasis, spontaneous rupture and malignant transformation. Most CCs are associated with anomalous pancreaticobiliary duct union, which also causes carcinogenesis of the biliary tree by reflux of pancreatic juice into the bile duct. Further, it was found that cancers could develop in any remnant cyst including the remaining hilar bifurcation, intra-hepatic or intra-pancreatic cysts. Therefore, some scholars believe that CC should be completely resected, including the involved hilar bifurcation and intra-pancreatic segment. Total resection of the CC along with Roux-en-Y hepatico-jejunostomy (HJ) is the most widely accepted method while hepaticoduodenostomy (HD) is being reviewed here as an alternative.

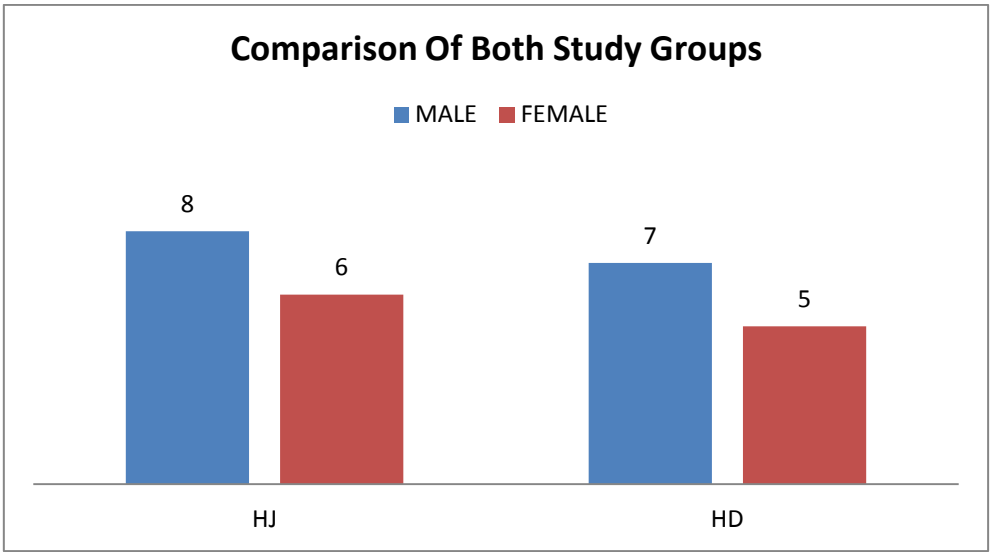
Methodology

The study was designed as prospective randomised control study. Total of 26 patients were admitted with choledochal cyst between 2011-2015.

After randomization by a computer program, 14 underwent HJ while 12 underwent HD by a single surgeon through open method. Data was collected in a prospective fashion regarding mean operating time, post op hospital stay, biliary leak, re-exploration, jaundice, and follow up till 1 yr post op.

Results

Fig 2



Total of 26 patients were observed. They were randomly divided into two separate groups, hepaticojejunostomy was performed on 14 of them and the rest 12 underwent hepaticodude-nostomy. The gender distribution of the group has been given above in fig 2. The median age in HJ group was 3.6yrs and that of HD group was 4.2 yrs. the comparison of the two groups in terms of different parameters is given in fig 3.

Fig 3

	HepaticoJejunostomy	HepaticoDuedenostomy
TOTAL NO. OF PATIENTS	14	12
MEAN OPERATIVE TIME	94 ± 15 min.	80 ± 15 min.
BILE LEAK	2	1
SEPSIS	NIL	NIL
MEAN DURATION OF HOSPITAL STAY	8.2 ± 1 Day	7.8 ± 1 Day
ASCENDING CHOLANGITIS IN 1 YEAR FOLLOW UP	2	3

Mean operating time was 94 minute in HJ while 80 minute for HD. 2 Out of 14 in HJ group required reexploration while no patients in HD required reoperation. There was no significant difference in both groups in term of bile leak, sepsis, jaundice, hospital stay, as well as follow up incidence of ascending cholangitis.

Perioperative findings such as operative time are similar in both the groups. Also in post operative phase, bile leak is the most common complication. It was observed in 3 cases in HJ group. Of these 3 cases of bile leak, 2 were conservatively managed but 1 did require re exploration and re anastomosis.

There was bile leak in only one case in HD group which resolved gradually by conservative management

The patients are followed up for 1 year for long term complication. Total of 5 patients developed ascending cholangitis and all of them were managed with proper antibiotics.

Discussion

After matching, the median age and type of choledochal cyst are not significantly different between two groups. Hepaticojejunostomy has been the choice of reconstruction in cases of choledochal cyst traditionally for years, but with development of laparoscopic technique hepaticoduodenostomy was thought to be easier due to a single anastomosis between two relatively fixed neighbouring structures. However apart from laparoscopic method, even in open method HD is a feasible option.

Santore MT et al concluded that HD requires less operative time, allowed faster recovery of bowel function and produced fewer complications requiring reoperations. Patil V et al showed a large data of 56 patients over a period of 25 yrs with HD and concluded that HD is a relatively safe procedure with very low complication rate.

In our series, this comparison was done in a prospective randomised settings where all the major factors were matched and hence the two groups were comparable .Mean operative time was slightly lower in HD group while there was no significant difference in terms of post-operative sepsis, bile leak ,mean hospital stay in two groups. Incidence of long term cholangitis was also similar in two groups.

As per the literature, suture technique, bile duct diameter, hypoalbuminemia (albumin <35 g/L)and blood supply to the bile duct seem to be important factors related to the occurrence of bile leak. The two patients with bile leak in HJ group required re exploration while bile leak in single patient in HD group resolved conservatively.

Stringer et al warned against the less radical excision of the choledochal cyst especially in laparoscopic procedure and pressed the need for a better long term data before making any conclusion regarding the two procedures. The prime objective in the surgical management of choledochal cysts is the long term health of the patient and it should not be compromised.

Conclusion

Hepaticoduodenostomy (HD) is a better alternative to HJ after choledochal cyst excision just because of the ease of procedure. Though both the procedures have similar post-operative complication profile but more long-term data is needed to find out the incidence of malignant change.

References

1. Yeung F, Chung PH, Wong KK, Tam PK. Biliary-enteric reconstruction with hepaticoduodenostomy following laparoscopic excision of choledochal cyst is associated with better postoperative outcomes: a single-centre experience. Pediatr Surg Int. 2015 Feb; 31(2):149-53.
2. Narayanan SK, Chen Y, Narasimhan KL, Cohen RC. Hepaticoduodenostomy versus hepaticojejunostomy after resection of choledochal cyst: a systematic review and meta-analysis. Journal of Pediatric Surgery 2013; 48(11): 2336-2342
3. Santore MT, Behar BJ, Blinman TA, Doolin EJ, Hedrick HL, Mattei P, Nance ML, Adzick NS, Flake AW. Hepaticoduo-denostomy vs hepaticojejunostomy for reconstruction after resection of choledochal cyst. J Pediatr Surg. 2011 Jan; 46(1):209-13.
4. Abbas HM, Yassin NA, Ammori BJ. Laparoscopic resection of type I choledochal cyst in an adult and Roux-en-Y hepaticojejunostomy: a case report and literature review. Surg Laparosc Endosc Percutan Tech. 2006 Dec; 16(6):439-44
5. Zhen C, Xia Z, Long L, LishuangM. Laparoscopic excision versus open excision for the treatment of choledochal cysts: a systematic review and meta-analysis.Int Surg. 2015 Jan;100(1):115-22.
6. Dalton BG, Gonzalez KW, Dehmer JJ, Andrews WS, Hendrickson RJ. Transition of Techniques to Treat Choledochal Cysts in Children. J Laparoendosc Adv Surg Tech A. 2016 Jan;26 (1):62-5. doi: 10.1089/lap.2015.0123.
7. Urushihara N, Fukumoto K, Fukuzawa H, Mitsunaga M, Watanabe K, Aoba T, Yamoto M, Miyake H. Long-term outcomes after excision of choledochal cysts in a single institution: operative procedures and late complications. J Pediatr Surg. 2012 Dec;47(12):2169-74. doi: 10.1016/j.jpedsurg.2012.09.001.
8. Shimotakahara A, Yamataka A, Yanai T, Kobayashi H, Okazaki T, Lane GJ, Miyano T. Roux-en-Y hepaticoeju-

nostomy or hepaticoduodenostomy for biliary reconstruction during the surgical treatment of choledochal cyst: which is better? Pediatr Surg Int. 2005 Jan;21(1):5-7.

9. Diaz Ramos NM, Lugo-Vicente H. Choledochal Cyst: Hepaticoduodenostomy or hepaticojejunostomy? BolAsoc Med P R. 2016;108(1):41-46.
10. Diao M, Li L, Cheng W To drain or not to drain in Roux-en-Y hepatojejunostomy for children with choledochal cysts in the laparoscopic era: a prospective randomized study. J Pediatr Surg. 2012 Aug;47(8): 1485-9. doi: 10.1016/j.jpedsurg.2011.10.066.