RESEARCH PAPER | Medical Science | Volume : 3 | Issue : 10 | Oct 2013 | ISSN - 2249-555X

The Probable Prevalence of Pancreatico Biliary Maljunction in South Indian Adult Population.

KEYWORDS: main pancreatic duct, bile duct, pancreatico biliary maljunction

Dr. ANANDARANI .V.S.

Professor, Dept of Anatomy,Sri Ramachandra medical college, Chennai, India--600116

ABSTRACT *The present study in the south Indian adult population was planned to learn the terminal anatomical arrangement of the bile duct and the main pancreatic duct, giving importance to the mode of drainage these ducts into the duodenal lumen .*

Materials and methods

The study was designed as a descriptive dissection based observational study .By routine dissection method 200 adult duodenopancreas specimens (140 males and 60 females)were studied. The bile duct was incised just above the first part the duodenum. The mode of termination was observed and the position of pancreatico biliary ductal junction was noted. The presence of a true common channel was confirmed after ruling out the presence of a septum inside

Results

In this study the common duct formation was observed in 80% and among these 11% showed a septum inside the common passage 69% showed a true common duct . 20% of specimens showed separate openings of the bile duct and pancreatic duct into the duodenal lumen . In 8% of the specimens the ductal union was well out side the duodenal wall.

The cases with extramural placement of ductal junction were identified as the probable cases of pancreatico biliary maljunction and the embryological basis of this condition was analysed. The etiology of various diseases associated with this condition can be explained by the functional variation of sphincter of oddi. The study results were compared with previous reports .The extra duodenal junction was observed more in females.

Conclussion.

In our descriptive anatomical study we tried to reveal the clinical significance of the mode of termination of the pancreatco biliary ductal system and the probable prevalence of pancreatico biliary maljunction in south Indian population was noted as 8%

Introduction

The most outstanding feature of the anatomy of pancreatico biliary ductal system is its high degree of variability. The reflux of bile, pancreatic juice or duodenal contents into one another can be influenced by the anatomic relationship among the choledochus, duct of Wirsung and their openings into the duodenum. The efficacy of the sphincter of oddi which is described near the termination of these ducts depends on the length of the common channel formed. If the ductal junction is described well outside the duodenal wall it will not have an efficient sphincteric control.

Apart from discussing the prevalence and clinical significance of different ways of termination of common bile duct(CBD) and main pancreatic duct(MPD), a descriptive anatomical study throwing light into the prevalence of pancratico biliary maljunction (PBM) in south Indian adult population was conducted..

Materials and methods

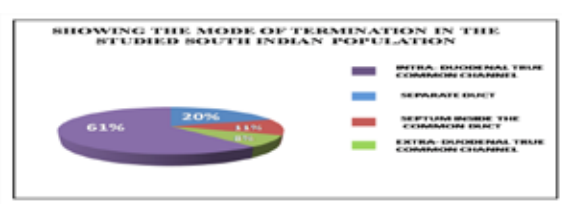
From the anatomy dissection hall 200 cadveric duodenopancreas specimens [140 males and 60 females]were collected . Dissection was carried out on the posterior aspect of the specimens. . The bile duct was traced down up to the major pancreatic duct. The mode of termination and the positioning of pancreatico biliary ductal union was observed to note whether the junction was extramural (out side the duodenal wall) or intramural (within the duodenal wall). The common duct was opened up to see whether there was any septum inside. If there was no septum it was grouped under a true common channel.

Results

In the present study 40 specimens [20%] showed separate openings while 160 showed [80%] a common passage. But a true common channel was observed only in 69%. A septal formation was there inside the common duct in 22 specimens [11%] which infact separated the ductal systems internally.

In specimens with a true common channel formation, the positioning of the ductal junction was observed. The placement of the pancreatico biliary ductal junction was within the duodenal wall in majority [6I%] and it was located outside the wall in only 16[8%].

While 15% female showed this type of ductal union only 5% males came under this category. Pie chart shows the patterns of ductal terminations observed in this study.



Discussion.

The terminal part of the common duct shows a dilatation called ampulla. Around the ampullary region a sphincter is described. The sphincter choledochus and the sphincter pancreaticus surrounds the periampullary parts of the bile duct and main pancreatic duct respectively. The sphincter of oddi (proper) is described around the ampulla. These three sets of sphincters together described as sphincter of oddi [1] . A long common channel with an extra mural ductal union indicates a dysfunctional sphincter of oddi [2].

The presence of separate openings for the bile and pancreatic ducts is an anatomic variation. In the study group 20%

Volume : 3 | Issue : 10 | Oct 2013 | ISSN - 2249-555X

showed separate openings. In autopsy studies this mode of drainage was noticed in 12.9 % to 19% of the western population [3] and 17.4% in Japan [4].

The spontaneous movements of the sphincter at the duodenal papillae will be lost because of the separate openings. The sphincter choledochus is the best developed part of sphincter of oddi and it regulates the out flow of bile and prevents free communication between the bile and pancreatic juice[4]. Since the pressure is higher in the pancreatic duct usually reflux of pancreatic juice into the bile duct occurs [2].

The ERCP examinations tried to analyze whether anatomical variations in the ductal pattern had a role in the pathogenesis of choledocholithiasis and the results revealed an association of separate openings and choledocholithiasis [5].The protective role of common channel in the pathogenesis of gall stone diseases may be due to the reflux entry of proteolytic pancreatic juice into the biliary tree. This reflux entry may prevent the mucous nidus formation.[6] Lack of a common channel is associated with ductal epithelial abnormalities. And this is perhaps related to the reflux of duodenal contents into pancreatic duct which can lead on to pre malignant changes in the ductal system[7].

The difference in the site of ductal union was noted. While majority showed the junction within the duodenal wall(fig-1) some others showed the union well outside the duodenal wall(fig-2).

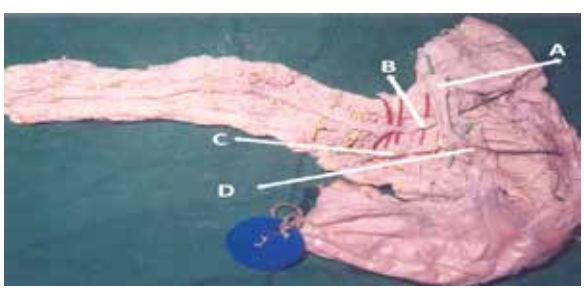


Fig-1. A specimen showing intra duodenal pancreatico biliary ductal union.
A.bile duct B. accessory pancreatic duct
C. main pancreatic duct D. ductal junction

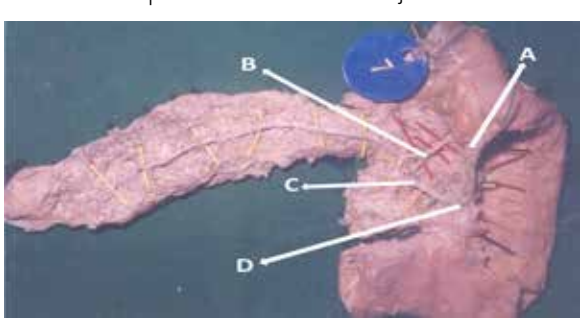


Fig-2. A specimen showing extra duodenal pancreatico biliary ductal union
A.bile duct B. accessory pancreatic duct
C. main pancreatic duct D. ductal junction

The Japanese study group on PBM defined this condition as a congenital anomaly and they set the diagnostic criteria of the condition as the detection of the junction of pancreatic and biliary ducts outside the duodenal wall either radiologically or anatomically or by both[4,8]. In cases of PBM the ductal junction is not under the control of the sphincter of oddi[8]. In this cadaveric dissection study by observing the positioning of the ductal junction by the dissection method the probable prevalence of PBM in the south Indian population was assessed .

The studies related to PBM stated even if the extra mural location of the junction is visualized only in one cholangiogram taken from any one of the angles, that evidence is enough to prove PBM in a patient [9].PBM is an anomaly which is probably caused by a disturbance in the embryologic connections of the terminal bile duct and the ductal system of ventral pancreas including the main pancreatic duct [9].

The clinical features of PBM includes intermittent abdominal pain , acute relapsing pancreatitis, obstructive jaundice ,abdominal pain , acute cholangitis etc. In PBM patients, pancreatobiliary reflux frequently leads to biliary cancer, and bilio pancreatic reflux often leads to acute or chronic pancreatitis [10].The optimal approach is the prevention of reciprocal reflux of bile and pancreatic juice.

Among the subjects undergoing endoscopic retrograde cholangio pancreatography an abnormal pancreaticobiliary junction was noted in 59(3.4%) of 1752 [11]. The incidence went up to 8.7% in 680 patients when the pancreaticobiliary junction was clearly visualized. In 2009 an endoscopic study conducted in Japan stated a prevalence of 2.1% PBM [12]. In our study we observed the prevalence of PBM as 8% in the south Indian population.

Radiological studies associated with manometric parameters will be able to show the prevalence of the 'functional sphincter of oddi 'among these cases. Since the present study was dissection based , I could not go for any functional assessment and I feel that manometric studies are must because the functional changes are clinically significant.

Gallbladder cancer occurs very frequently in patients with PBM without biliary dilatation, and women appear to be at a significantly higher risk than men [13]. Gender difference in PBM was noted to be different in cases with chledochal dilatation (1:3.2) and without choledochal dilatation(1:2.7) [14] .In this study the prevalence of PBM was more in females and the male to female ratio was 1:3. But sample size was less for giving an authorized data.

It is really unfortunate that studies on PBM are very less in our country even when the condition is described as an Asian disease and cases and studies are reported more from Japan and Taiwan [15]. Studies related to such clinically significant topics will be very useful as close follow-up may allow earlier detection of carcinoma and curative instead of palliative treatment is possible. A prospective effort to clearly report this anomaly during every endoscopic retrograde cholangio pancreatography should be encouraged to identify patients at high risk.

Volume : 3 | Issue : 10 | Oct 2013 | ISSN - 2249-555X

REFERENCE

1. Boyden EA. The anatomy of the choledocboduodenal junction in man. Surg Gynecol | Obstef 1957; 104:641-52 | 2. Kamisawa T, Okamoto A. Biliopancreatic and pancreatobiliary refluxes in cases with and | without pancreaticobiliary maljunction: diagnosis and clinical implications. Digestion | 2006;73:228–236 | 3. Dimango EP, Shorter RG, Tailor WF, Go VL. Relationships between pancreatico biliary | ductal anatomy and pancreatic ductal and parenchymal history. Cancer 1982; 49:361–8 | 4. Suda K, Miyano T, Hashimoto K . The choledochopancreatico ductal junction in infantile | obstructive jaundice diseases. Acta Pathol Jpn 1980; 30:187–194 | 5. Wynder EL, Mabuchi K, Maruchi N, Fortner JG. Epidemiology of cancer of the pancreas. J. Not1 Cancer Inst 1973; 50:645-647. | 6. Leuschner J, Baumgartel H. Gall stone dissolution in the biliary tract biliary tract: in vitro | investigations of inhibiting factors and special dissolution agents. Am J Gastroenterol | 1982; 77:222-226 | 7. Eugene P ,DiMagno, Roy G Shorter, William F, Taylor,Vayliang W.GO. Relationships | between Pancreaticobiliary Ductal Anatomy and Pancreatic Ductal and Parenchymal | Histology Cancer1982 ;49:361-368. | 8. The Japanese Study Group on Pancreaticobiliary Maljunction . Diagnostic criteria | | of pancreaticobiliary maljunction. J Hepatobiliary Pancreat Surg1994; 1:219–22 | 10. Kamisawa T, Honda G, Kurata M, Tokura M, Tsuruta K. Pancreatobiliary disorders | associated with pancreaticobiliary maljunction. Dig Surg. 2010; 27(2):100-4. | 11.Wang HP, Wu MS, Lin CC, Chang LY, Kao AW, Wang HH et al. Pancreaticobiliary diseases associated with anomalous pancreaticobiliary ductal union. Gastrointest Endosc. 1998;48:184–189. | 12. Kamisawa T, Amemiya K, Tu Y, Egawa N, Sakaki N, Tsuruta K et al. Clinical significance of a long common channel Pancreatology. 2002; 2(2):122-8. | 13.KamisawaT, Munakata W, Tu Y. Sex-based differences in gallbladder cancer associated with pancreaticobiliary maljunction. Hepatogasrtoenterology 2008;55(81):21-3 | 14. Seiki Tashiro, T. Imaizumi, H. Ohkawa, A. Okada, T. Katoh, Y. Kawaharada et al. | Pancreaticobiliary maljunction: retrospective and nationwide survey in Japan Journal of | Hepato-Biliary- Pancreatic Surgery 2007 ; 10(5): 345-351 | 15. Hasumi A, Matsui H, Sugioka A, Uyama I, Komori Y, Fujita J et al. Precancerous | conditions of biliary tract cancer in patients with pancreaticobiliary maljunction: | reappraisal of nationwide survey in Japan. J Hepatobiliary Pancreat Surg2000; 7: 551-555 |