III. Caterpillar hump right hepatic artery: The incidence of this variation was 6% in this study. It is within the range reported by other studies (1-12.9%) [8,17-20]. In this case the right hepatic artery replaces the cystic artery within the Calot's triangle, and it is tortuous and projects forwards to the right of the CHD. It is a dangerous anomaly because it may be mistaken for the cystic artery so ligation can lead to fatal complication in the presence of impaired liver functions [21, 22].

Ductal anomalies

The incidence of significant anomalies of the extrahepatic bile ducts ranges from 10 to 28 percent in autopsy series [23-27]. The cystic duct varies in length as well as in the level and pattern of conjunction with the common hepatic duct [23].

The commonest ductal anomalies are:

1. Long cystic duct with abnormal low fusion with the CHD. In this study it was found in (5.3%) of cases. Under this circumstance the cystic duct is invariably longer than normal. It runs alongside and parallel with the CHD, before joining it. In this case a variable length of the cystic duct is tightly bound to the CHD before they actually fuse [16]. Thus, extensive dissection of the distal portion of the cystic duct can produce devascularization of a segment of CBD, subsequently ischemia, fibrosis and stricture at the level of junction of cystic duct with the CHD [10].

2. Short cystic duct: This anomaly was found in 3 cases (2%). In this condition, the cystic duct is very short (less than 0.5 cm in length). The main danger of this anomaly when the surgeon try to visualize the cystic duct by vigorous traction on the GB, so producing marked angulation and tenting of the CHD or CBD which may then be caught in a clamp or clip [3].

3. High fusion of the cystic duct with CHD or RHD: It was found in 3 cases (2%). In this condition the cystic duct enters the confluence of the right and left hepatic ducts making trifurcation, so the right or left hepatic ducts may be damaged during cystic duct ligation or clipping, furthermore any tenting produced by traction could compromise the lumen at the confluence if a tie was applied [3].

4. Accessory hepatic (bile) ducts: It is the most interesting abnormality of the ducts, because there is a wide variation in its incidence between literatures and quoted as varying from 0.67 to 31 percent (as shown in table 4) [8,13,17,27-29], in addition that he risk of injury to an accessory duct without knowledge that it has been torn or avulsed is present in every case of cholecystectomy [28], because they are infrequently seen and difficult to recognized due to their unusual position and commonly so narrow in caliber in addition that bile flow during anesthesia is commonly decreased [25], or acute and chronic cholecystitis produces enough inflammatory changes which obscure the ductal structures. The incidence of accessory bile ducts in our study is less than that reported in literatures, (the difference is statistically significant: $P < 0.05$), as shown in table 4. The explanation is that, the high incidence occurs in studies who dissect resin- casts in cadaver [17,27,29] with more meticulous dissection technique might be responsible for the result. Other explanation is that, some surgeons might not be aware of the possibility of the presence of accessory bile ducts and certainly is not in the habit of looking for them at operation, and also the in availability of pre- and peroperative cholangiogram in this study.

Table 4. Comparison between this study and other studies regarding accessory hepatic ducts

Studies	Accessory hepatic ducts (%)
Our study (2000)	2.7
Khamiso AH(2010) [8]	0.67
Shwartz (1999) [13]	15
Lichtenstein and Nicosia (1970) [28]	10
Healey and Schroy (1953) [27]	28
Johnston and Anson (1952) [29]	31
Moosman (1951) [17]	16