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Original Article

Biliary tree variations as viewed by intra-operative cholangiography – Comparing Egyptian versus international data

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ABSTRACT

Aim of the work: The purpose of this study was to evaluate the frequency of anatomical variations and congenital anomalies of intra and extra-hepatic biliary system in our geographical zone in Egypt encountered during open and laparoscopic cholecystectomies through performing routine intraoperative cholangiogram (IOC) during the operation.

Patients and methods: Intraoperative cholangiogram (IOC) was performed for 248 patients undergoing cholecystectomy (open or laparoscopic) at Ain-Shams university specialized hospital (ASUSH), Cairo, Egypt, from May-2011 to April 2015. All IOC's were performed by the hepato-biliary surgeon and reviewed by the radiologist and then compared with the known internationally published anatomical variations. These results were then confirmed by total agreement between: radiologists.

Results: In our study, typical biliary anatomy (type A) was observed in 60% of the cases ($n = 150$ patients) vs 57% published in most references, type B (11.3% $n = 28$ vs 12%), type C1 (11.3% $n = 28$ vs 16%), type C2 (6.5% $n = 16$ vs 4%), type D1 (3.6% $n = 9$ vs 5%), type D2 (2.8% $n = 7$ vs 1%), type E1 (2% $n = 5$ vs 2%), type E2 (0.8% $n = 2$ vs 1%) and type F (1.2% $n = 3$ vs 1%). With regard to the cystic duct variations we found type A, ($n = 190$) the normal direct cystic duct in 76.6% which is nearly similar to the 75% published in most references. However, type B ($n = 30$) was found in 12.1% vs 20% and type C ($n = 28$) in 11.3% vs 5%.

Conclusion: In our small scale study ($n = 248$); the more common typical biliary anatomy is observed here in Egypt at percentages nearly similar to that reported in the international literature. On the other hand, the less common variation types, show prevalence here in Egypt that are different from those reported in the international literature; a finding that could cause a higher number of bile duct injuries in laparoscopic cholecystectomies if not recognized.

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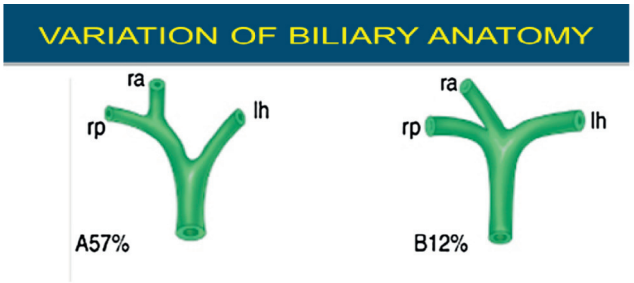
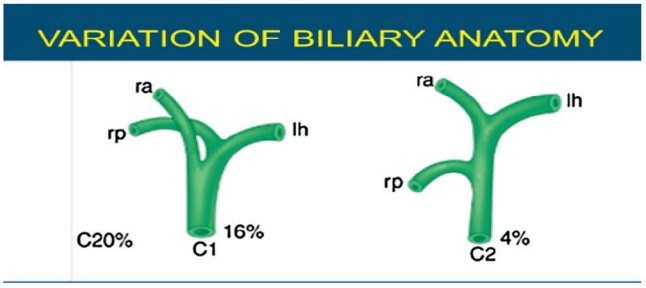
1. Introduction

Detailed awareness of biliary tree divisions with its anatomical variations (which change between different ethnicities and different geographical anthropological zones) is important for safe liver operations. Nevertheless, details in some geographical zones seem scarce as compared to the literature available elsewhere. Thorough

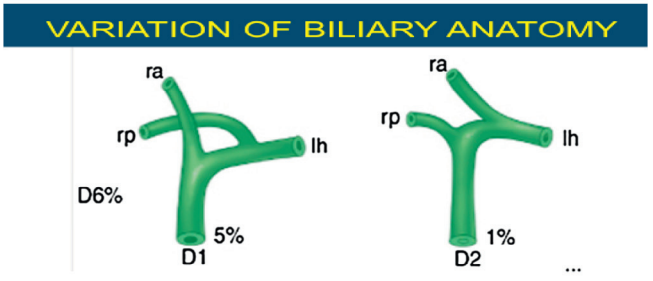
(a) Types A &B



(b) Types C1&2



(c) Types D1&2



(d) Types E1&2

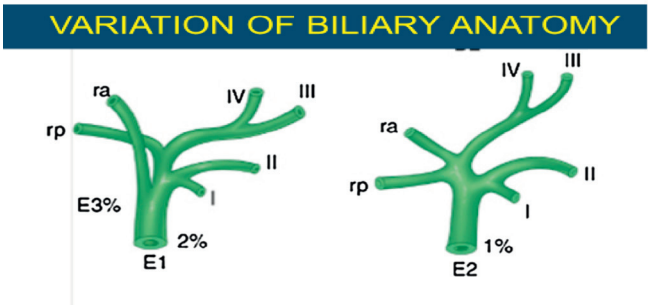


Fig. 1. Variations in biliary anatomy; (a) Types A and B. (b) Types C1 and 2. (c) Types D1 and 2. (1) Types E1 and 2.

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