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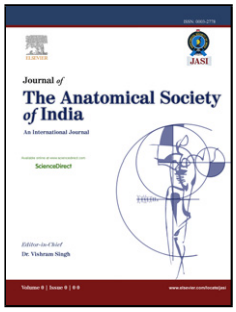

Title: Surgical Anatomy of the vasculobiliary apparatus at the hepatic hilum as applied to liver transplantations and major liver resections

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Surgical Anatomy of the vasculobiliary apparatus at the hepatic hilum as applied to liver transplantations and major liver resections

Running title: Vasculobiliary anatomy of liver

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Abstract

Introduction – To evaluate the hepatic arterial, bile duct and portal venous anatomy as applicable to major liver resections.

Methods – The study was conducted on 100 formalin fixed adult cadaveric livers. The hepatic arterial, bile ductal and portal venous anatomy of the liver was dissected from their origin up to their segmental branching. Left and right hemilivers were compared with regard to the single and multiple vascular or biliary pedicles entering their respective hemilivers.

Results – The anatomy of all the three structures, ie., hepatic artery, bile duct and portal vein was conventional in 39% and variant, i.e., "triple" anomaly in 4% of liver specimens. In 57% liver specimens, the anatomy of one or two structures was variant and individual variation of hepatic artery, bile duct and portal vein anatomy was observed in 34%, 42% and 14% of livers respectively. The anatomy of hepatic artery was classified according to the Michels classification. In 9% of livers, rare variations not included in Michels classification was found. The drainage pattern of bile ducts was grouped according to Blumgart's classification. In 11% of livers, rare variations not included in Blumgart's classification were found. The branching pattern of main portal vein was classified according to the Akgul's classification. In 1% of livers, rare variations in the right portal vein were found.

Discussion – In the present study, the vasculobiliary anatomies of liver were highly complex with the existence of many anatomic variations. The increasing complexity of hepatic surgical procedures necessitates appropriate knowledge of these anatomic variations.

Key words: Hepatic artery, Portal vein, Bile duct, Liver anatomy

Introduction

The detailed anatomy of the liver described by Couinaud[1,2] has been the basis for major advances both in surgical techniques and in diagnostic and interventional radiology. Advances in surgical and radiologic techniques in recent years, including reduced-size liver for pediatric as well as adult transplants makes the reexamination of hepatic anatomy a current priority[3].