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Donor Biliary Complications after Living Donor Liver Transplantation

Essay

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Mohamed Alaaeldin Maklad

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List of Abbreviations

AFP	**:**	Alpha Feto Protein
APCR	**:**	Activated Protein C resistance
BMI	**:**	Body Mass Index
CA19.9	**:**	Cancer Antigen 19.9
CBD	**:**	Common Bile Duct
CEA	**:**	Carcinoembryonic Antigen
CMV	**:**	Cytomegalo Virus
CT	**:**	Computed Tomography
DDLT	**:**	Deceased Donor Liver Transplant
EBD	**:**	Endoscopic Balloon Dilatation
EBV	**:**	Epstein-Barr Virus
ECG	**:**	Electrocardiography
ENBD	**:**	Endoscopic Nasobiliary Drainage
ERCP	**:**	Endoscopic Retrograde Cholangiopancreatography
FNA	**:**	Fine Needle Aspiration
GRBWR	**:**	Graft Recipient Body Weight Ratio
HIV	**:**	Human Immunodeficiency Virus
HJ	**:**	Hepatecojejunostomy
HSV	**:**	Herpes Simplex Virus
Ig	**:**	Immunoglobulin
IOC	**:**	Intraoperative Cholangiogram

ISGLS	**:**	International Study Group For Liver Surgery
LB	**:**	Liver Biopsy
LDLT	**:**	Living Donor Liver Transplant
LHA	**:**	Left Hepatic Artery
LHD	**:**	Left Hepatic Duct
LPV	**:**	Left Portal Vein
MDCT	**:**	Multi-Detector Computed Tomography
MRCP	**:**	Magnetic Resonance Cholangiopancreatograph
OLT	**:**	Orthotopic Liver Transplant
PDS	**:**	Polydioxanone Sulfate
PTBD	**:**	Percutaneous Transhepatic Biliary Drainage
PTC	**:**	Percutaneous Transhepatic Cholangiography
PV	**:**	Portal vein
RAD	**:**	Right Anterior Duct
RHA	**:**	Right Hepatic Artery
RHD	**:**	Right Hepatic Duct
RPD	**:**	Right Posterior Duct
RPV	**:**	Right Portal Vein
SD	**:**	Standard Deviation
TSH	**:**	Thyroid Stimulating Hormone

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Abstract

Biliary complications after donor hepatectomy can result in significant morbidity. In this essay we try to research etiologies, risk factors, associations of donor biliary complications, also management and prevention of these complications according to multiple studies in multiple transplant centers worldwide. In conclusion, with careful donor selection and a standardized surgical technique, biliary complications can be minimized.

Keywords

Living donor liver transplantation. Donor biliary complications. Biliary leak. Biliary stricture. Endoscopic management.

Introduction

Transplant is the only known curative treatment option for end-stage liver insufficiency patients ***(Jeon and Lee, 2011).***

Organs from live donors have provided a new form of hope for those who need liver transplants. Living-donor liver transplants offer the advantages of direct organ availability compared to deceased-donor transplants, the ability to conduct the procedure under the best conditions, and a reduced rate of primary organ dysfunction because of short-term cold ischemia ***(Sugawara et al., 2002).***

However, living-donor liver transplants also give rise to some ethical concerns. Donor hepatectomy is the only surgical procedure that exposes the patient to a major and possibly fatal operation with no benefit to the donor, while providing the possibility of saving the recipient's life ***(Cotler et al., 2007).***

Liver transplants were first conducted in pediatric patients with liver disease, using the parents of the patients as donors. The low rate of donor complications, high success rates in liver transplant recipients, and emotional satisfaction of the parents served to attenuate the ethical issues in pediatric liver transplants ***(Roberts et al., 2004).***

This success achieved in pediatric liver transplants has paved the way for adult living-donor liver transplants which are characterized by the removal of 30% to 60% of the total volume of the donor's liver. Adult living-donor liver transplants had become widespread until the first donor death in 2002 ***(Dirican et al., 2015).***

Despite geographic variations, today liver transplants are generally performed using live donors; thus, donor survival should be given the highest priority with consideration to ethical issues. Although the actual donor mortality rate is unknown, 19 donor deaths were reported in the largest series of patients to date and the average incidence of mortality was 0.2% ***(Trotter et al., 2006).***

Hence, standardization of donor complications requires use of the modified Clavien-Dindo classification, and use of liver transplant databases, such as the European Liver Transplant Registry and the United Network for Organ Sharing, are required for storing the results ***(Clavien et al., 1994).***

Although multiple donor hepatectomy procedures have been described, right and left lobe hepatectomy and left lateral segmentectomy are the most commonly applied. Liver insufficiency and sepsis are commonly deemed