Liver Transplantation

Indications and patient selection.

Donor selection.

Contraindications.

Operation:

- Anatomy.
- Preoperative preparation.
- Anesthesia.
- Positioning.
- Anti-sepsis.
- Incision.
- Steps.
- Closure.
- Drainage.
- Post-operative care.
- Complications.

Indications

Disease	Number	%
Cirrhosis	249	46
Hepatitis, chronic	114	22
Fulminant	49	9
Primary sclerosing cholangitis	35	6
Biliary atresia	31	6
Inborn errors of metabolism	32	6
Neoplasm	17	3
Budd-Chiari syndrome	10	2
Iatrogenic	2	-
	539	100

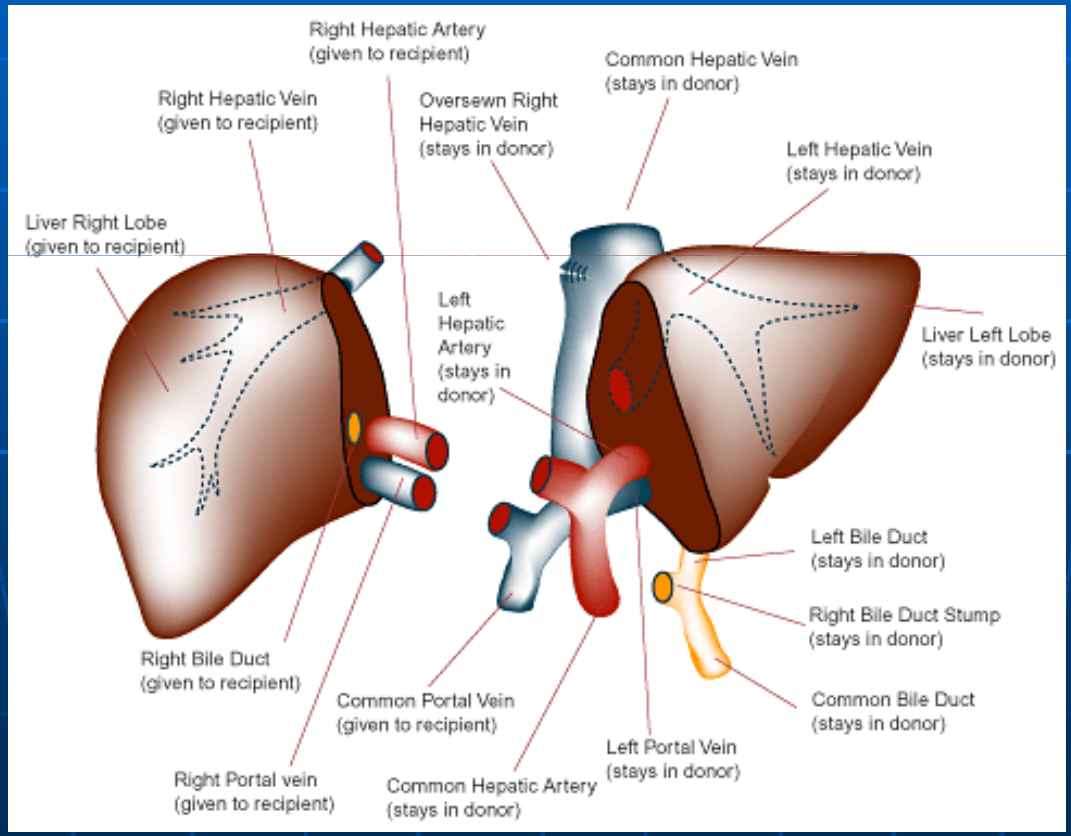
Donor Selection

- Blood typing.
- Exclusion of viral hepatitis or hepatic dysfunction.
- Physical examination and history.
- Psychiatric evaluation.
- Detailed imaging of the donor liver.

Recipient Considerations

Contraindications

Anatomy


Right Hepatic Artery
(given to recipient)
Common Hepatic Vein
(stays in donor)
Right Hepatic Vein
(given to recipient)
Oversewn Right
Hepatic Vein
(stays in donor)
Left Hepatic Vein
(stays in donor)
Liver Right Lobe
(given to recipient)
Left
Hepatic
Artery
(stays in
donor)
Liver Left Lobe
(stays in donor)
Left Bile Duct
(stays in donor)
Right Bile Duct Stump
(stays in donor)
Right Bile Duct
(given to recipient)
Common Portal Vein
(given to recipient)
Common Bile Duct
(stays in donor)
Left Portal Vein
(stays in donor)
Right Portal vein
(given to recipient)
Common Hepatic Artery
(stays in donor)

Operation

(Preoperative preparation)

- **General:**

  Informed concent.

  Routine ex. And invest.

- **Specific:**

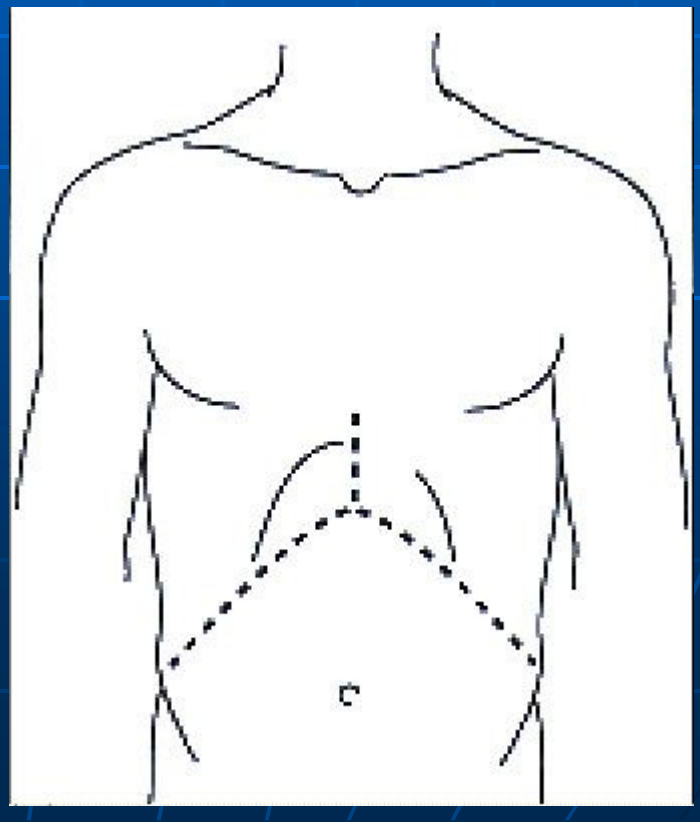
  Comorbid conditions.

  Infection profile.

  Liver function tests for the donor

Operation

- Anaesthesia
- Positioning
- Anti-sepsis
- Incision



Operation
(Technique)

Three phases

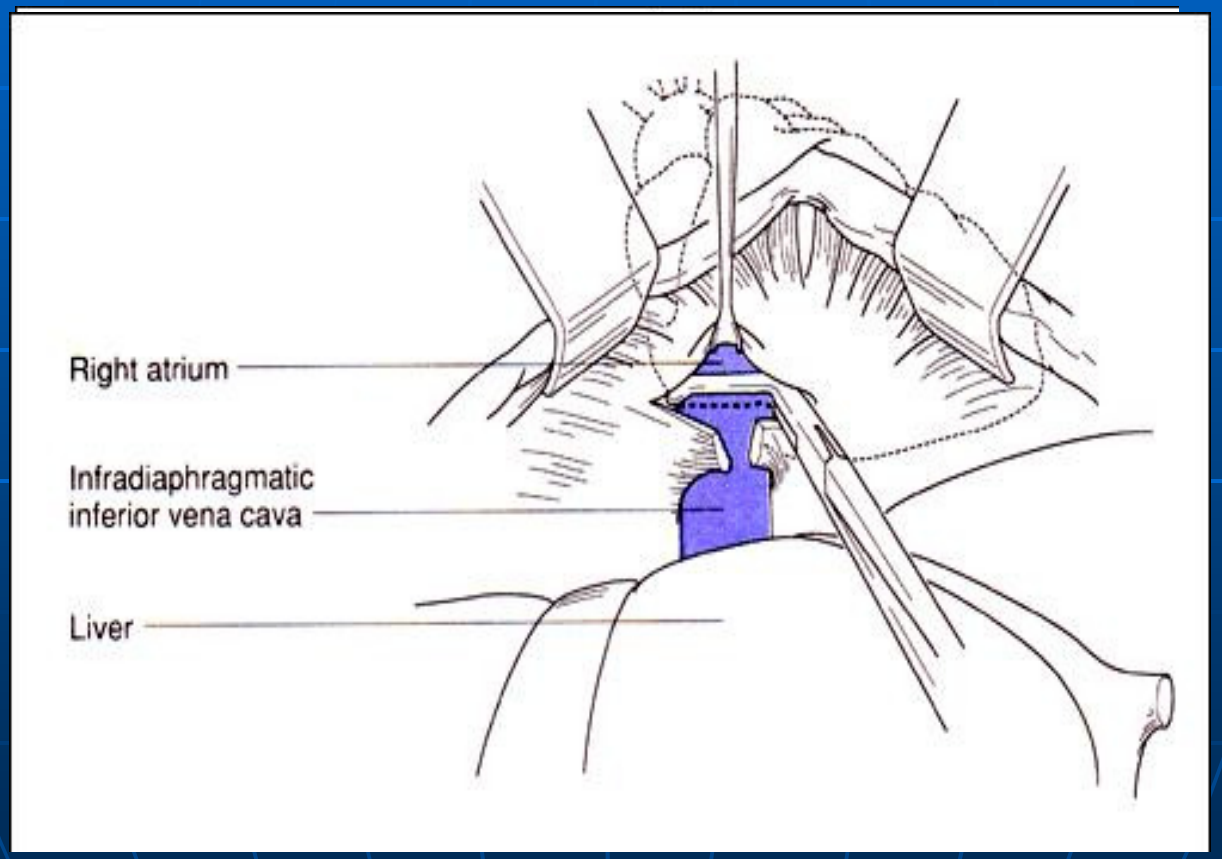
Dissection of Recipient Liver

Anhepatic Phase and Implantation of the Donor Liver

Postrevascularization and Biliary Reconstruction

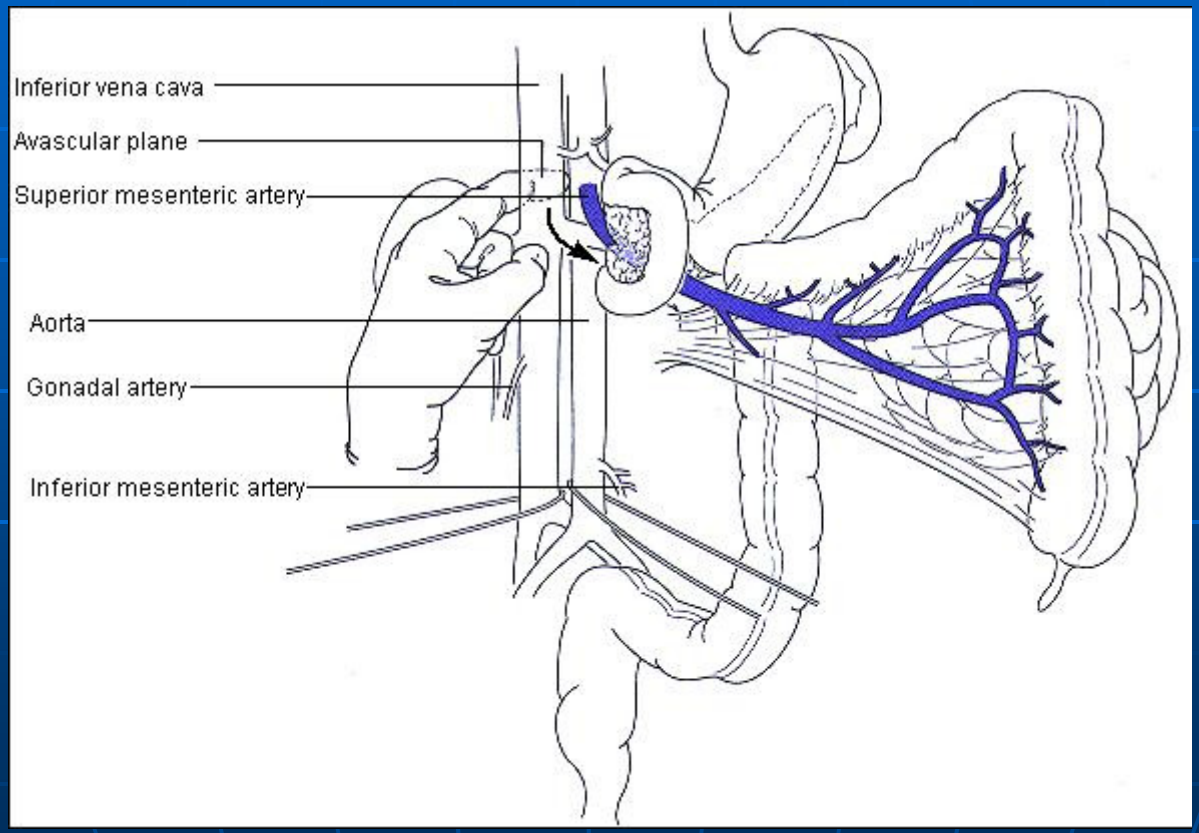
Operation

(Dissection of Recipient Liver)



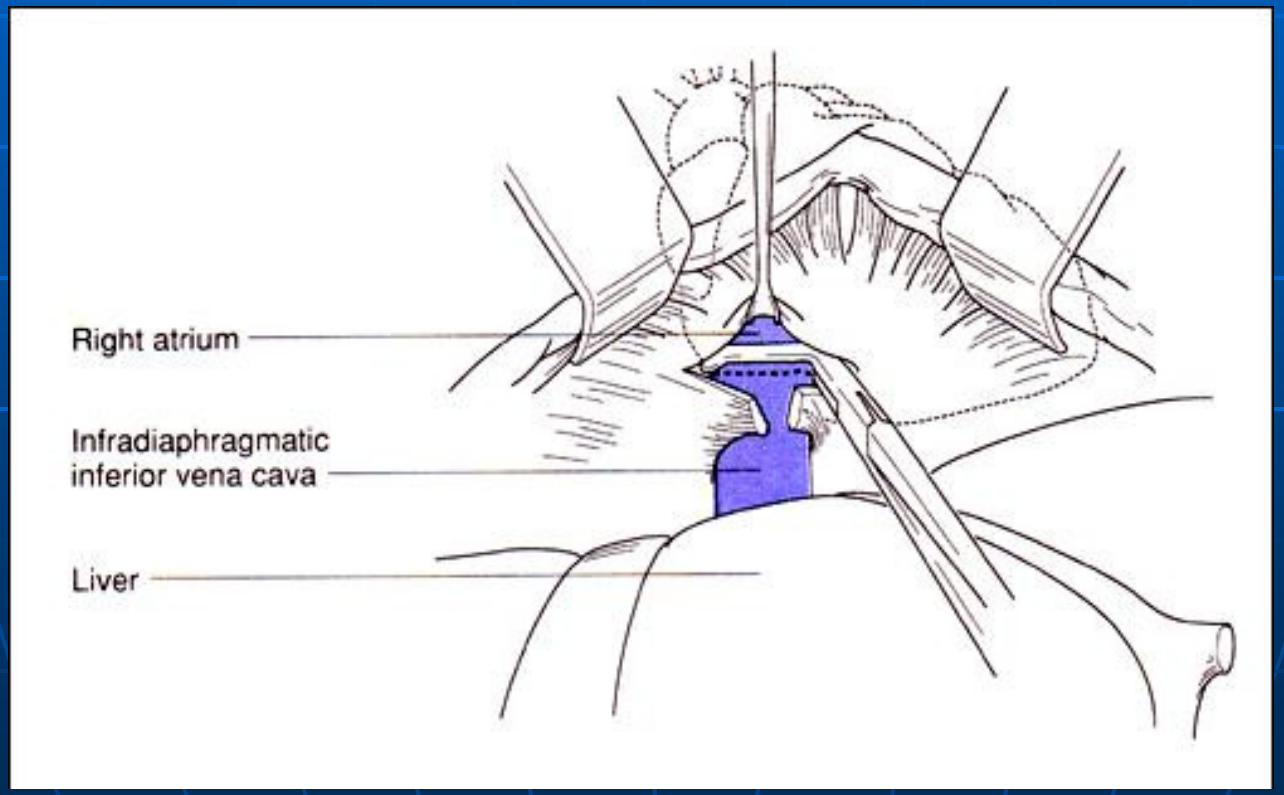
Operation

(Dissection of Recipient Liver)



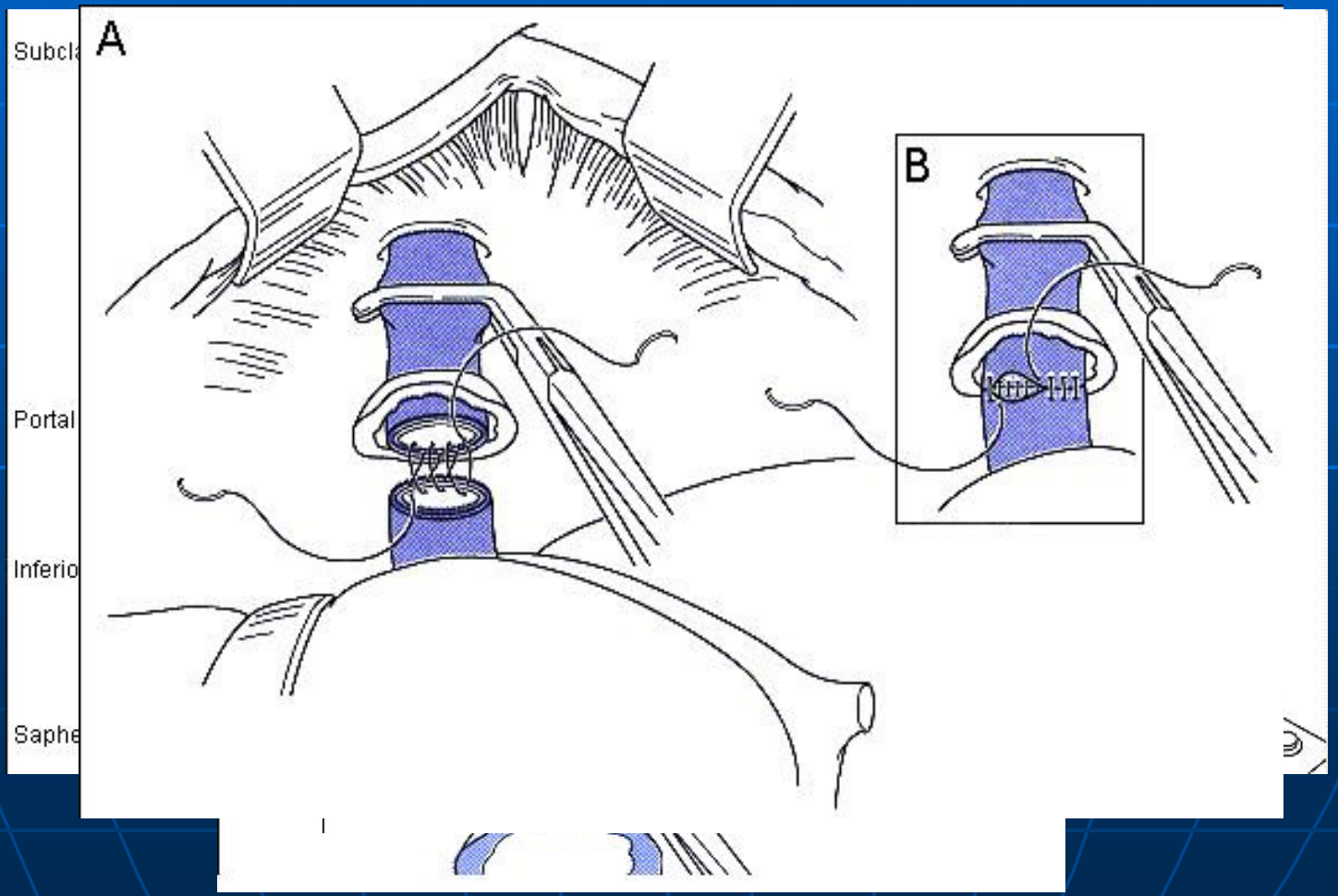
Operation

(Dissection of Recipient Liver)



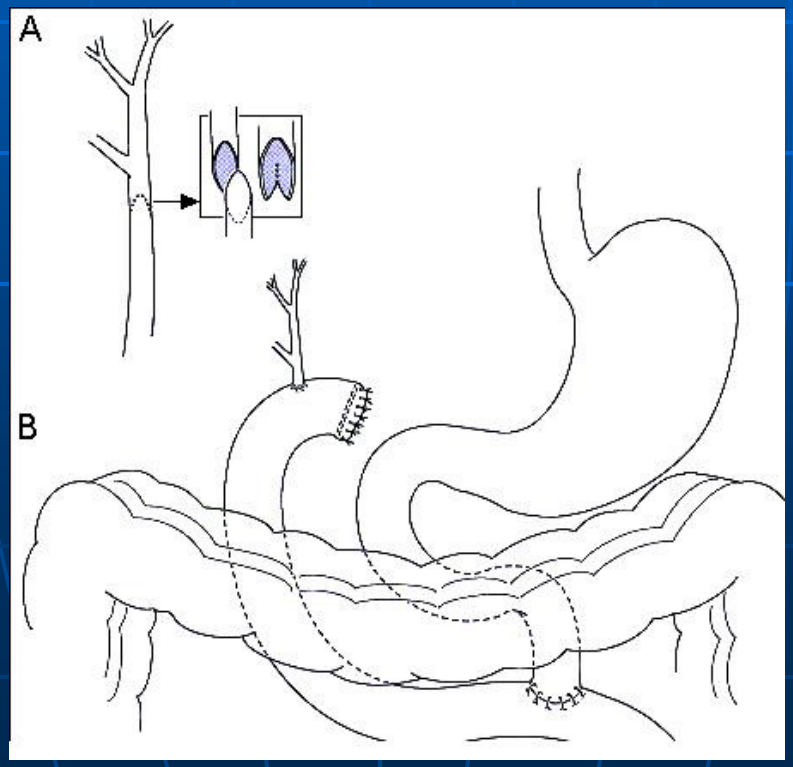
Operation

(Anhepatic Phase & Implantation of the Donor Liver)



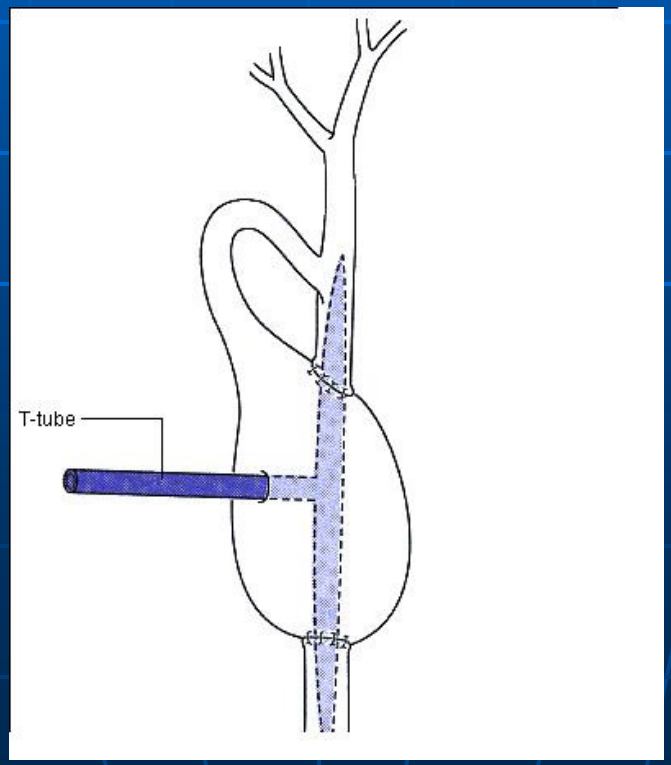
Operation

(Postrevascularization
and
Biliary Reconstruction)



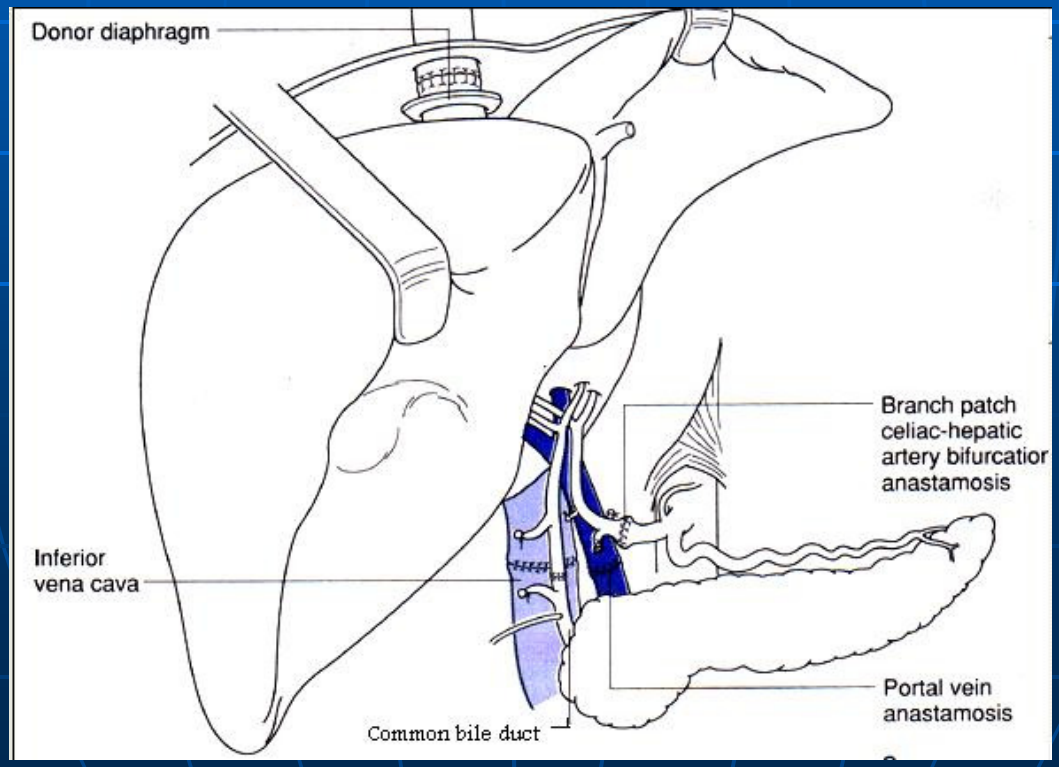
Operation

(Postrevascularization
and
Biliary Reconstruction)



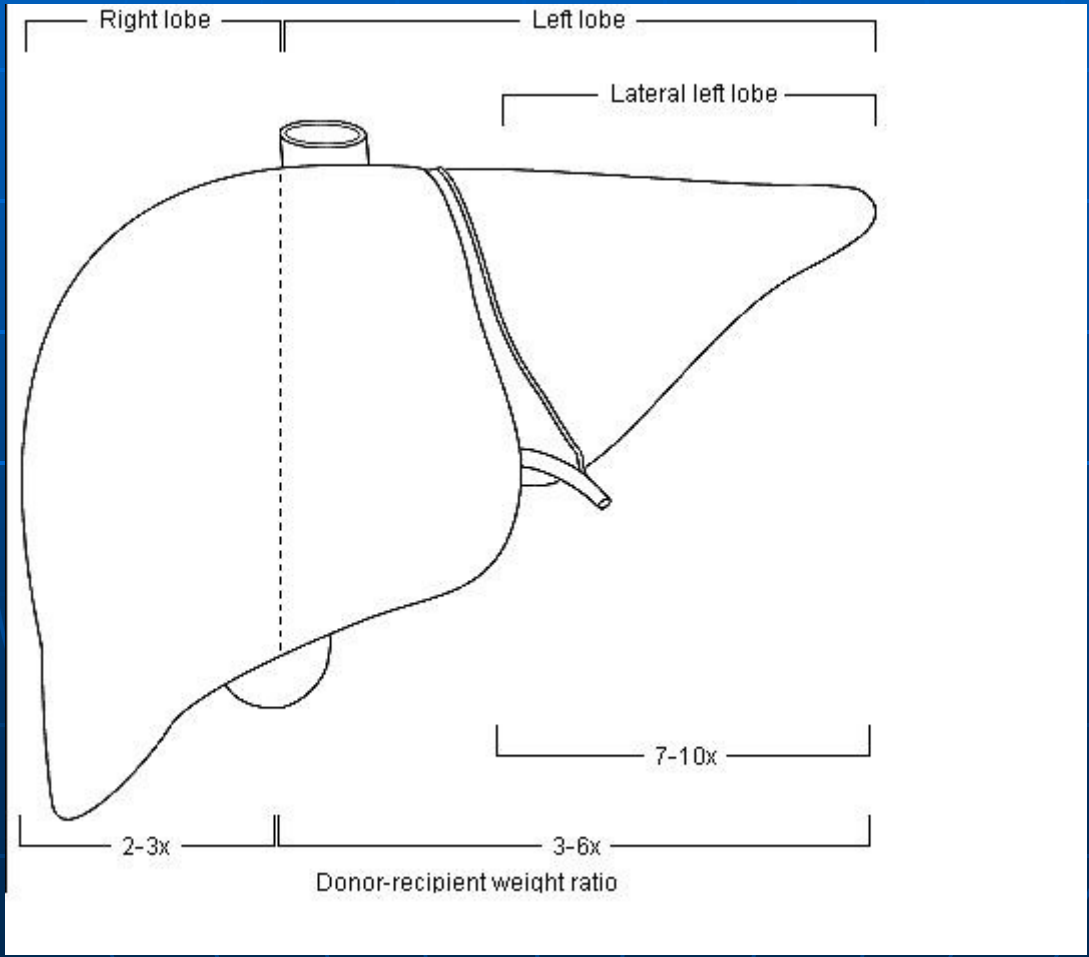
Operation

(Postrevascularization
and
Biliary Reconstruction)



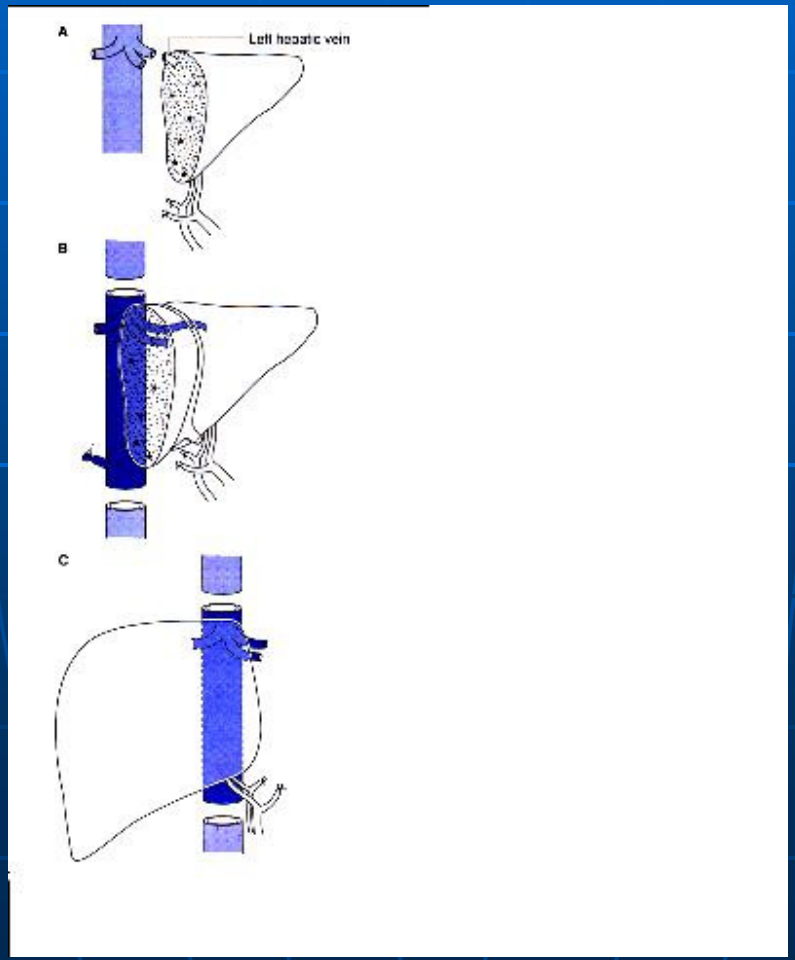
Operation

(Technique for Reduced-Size Hepatic Transplantation)

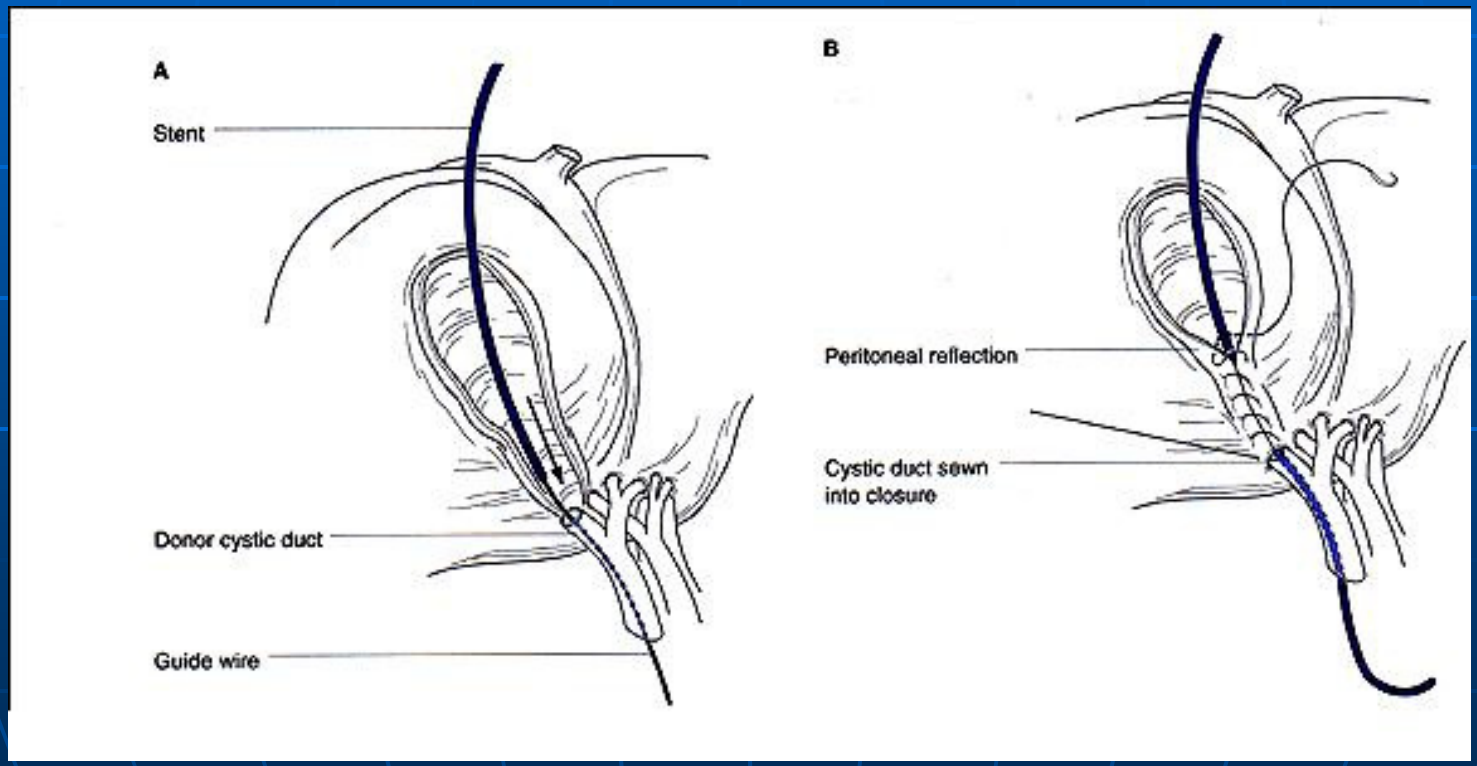


Operation

(Technique for Reduced-Size Hepatic Transplantation)

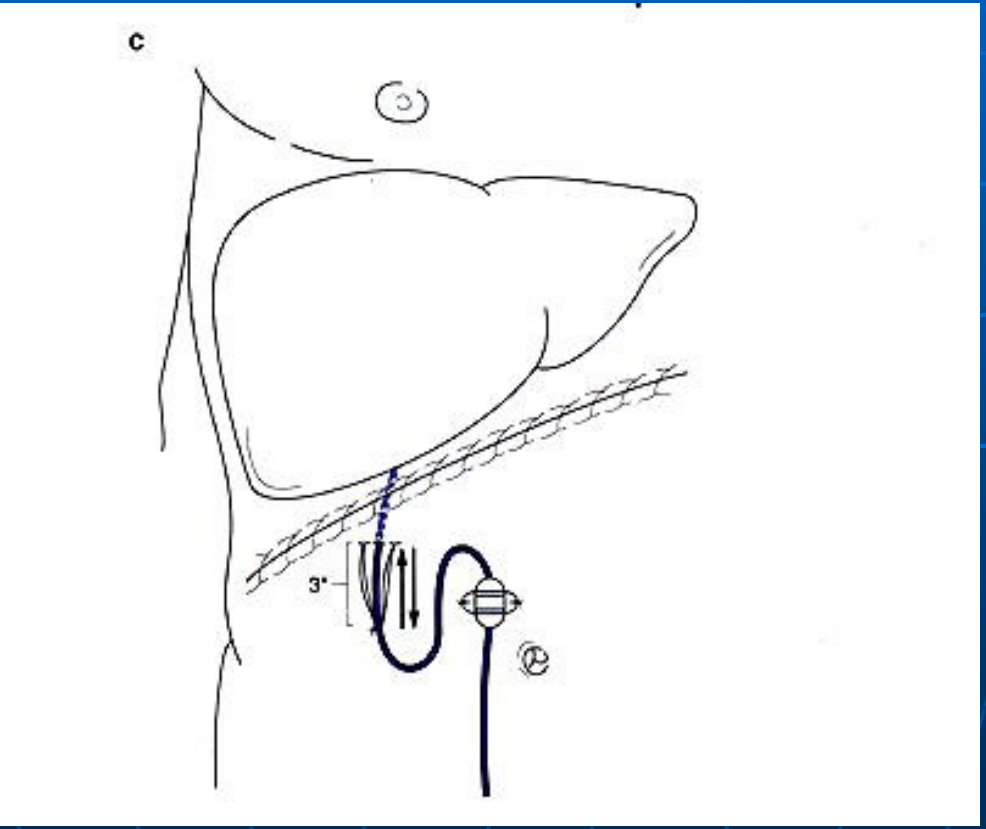


Operation
(Auxiliary Liver Transplantation)



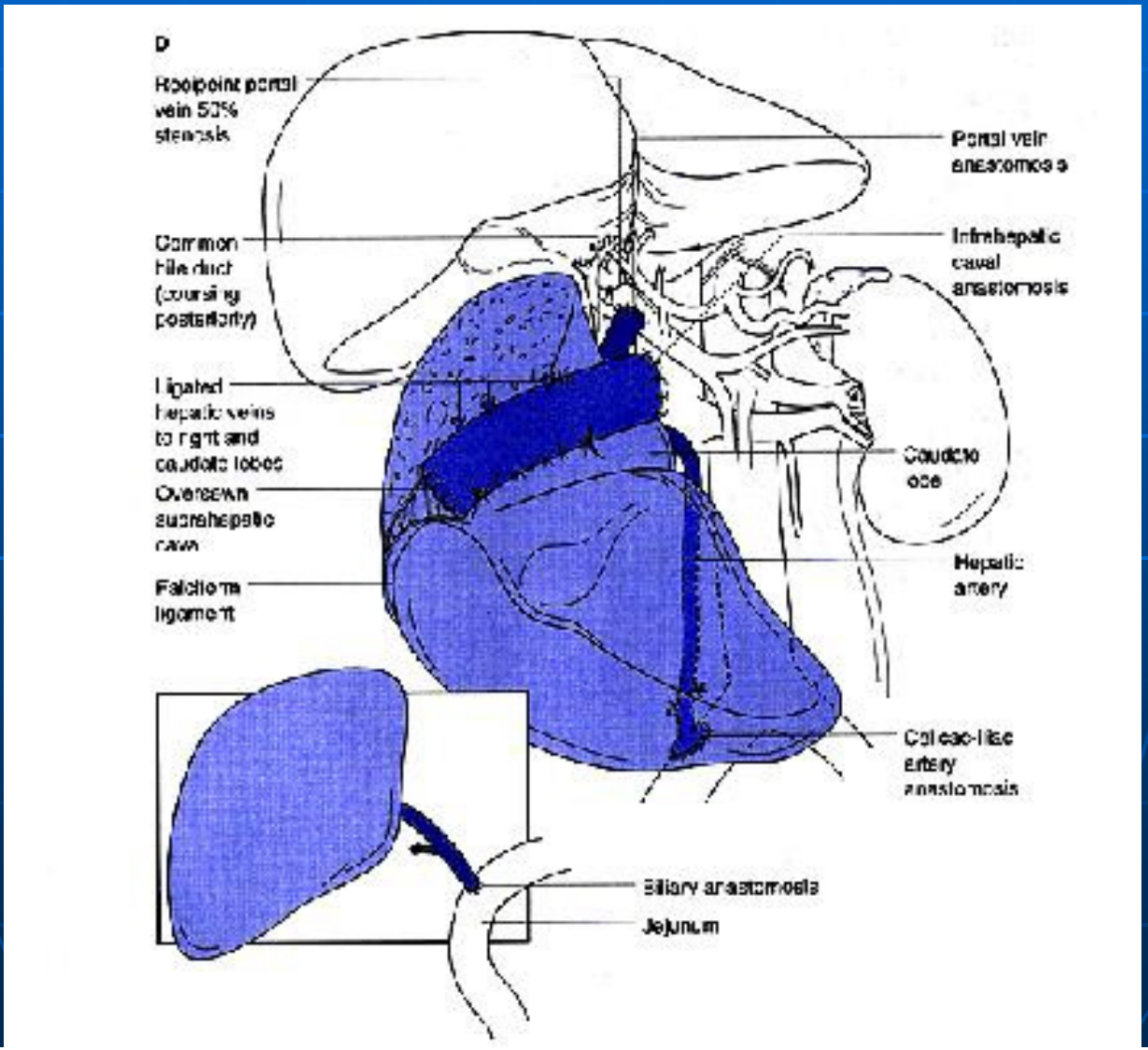
Operation

(Auxiliary Liver Transplantation)



Operation

(Auxiliary Liver Transplantation)



Operation

- Closure
- Drainage

Post-operative care

- Depends on the patient's preoperative status and on the development of postoperative complications.

ICU for the 1st 24 – 48 hr

- Monitoring and stabilization of the major organ systems (e.g., cardiovascular, pulmonary, renal).
- Evaluation of graft function.
- Achievement of adequate immunosuppression.
- Detection, monitoring, and treatment of complications directly and indirectly related to the transplant.

Complications

1- Primary Nonfunction

Essential Characteristics

- Occurrence within 96 hours after the operation
- Patent portal vein and hepatic artery

Three of Four Characteristics Required

- Bile output below 20 mL in 12 hours
- Bilirubin level greater than 10 or rising 5 mg/d or more
- PT/PTT ratio of 1.5 or greater
- Factors V and VIII less than 25% of normal

Complications

2- Nonspecific Cholestasis

- *Progressive rise in bilirubin past the third postoperative day in the absence of identifiable causes of cholestasis.*
- *Results of ischemic injury to the liver.*
- *Serum bilirubin levels often exceed 30 mg/dL for 2 to 3 weeks.*
- *It must be accurately distinguished from rejection by serial biopsy.*
- *In the absence of rejection, complete recovery usually occurs.*

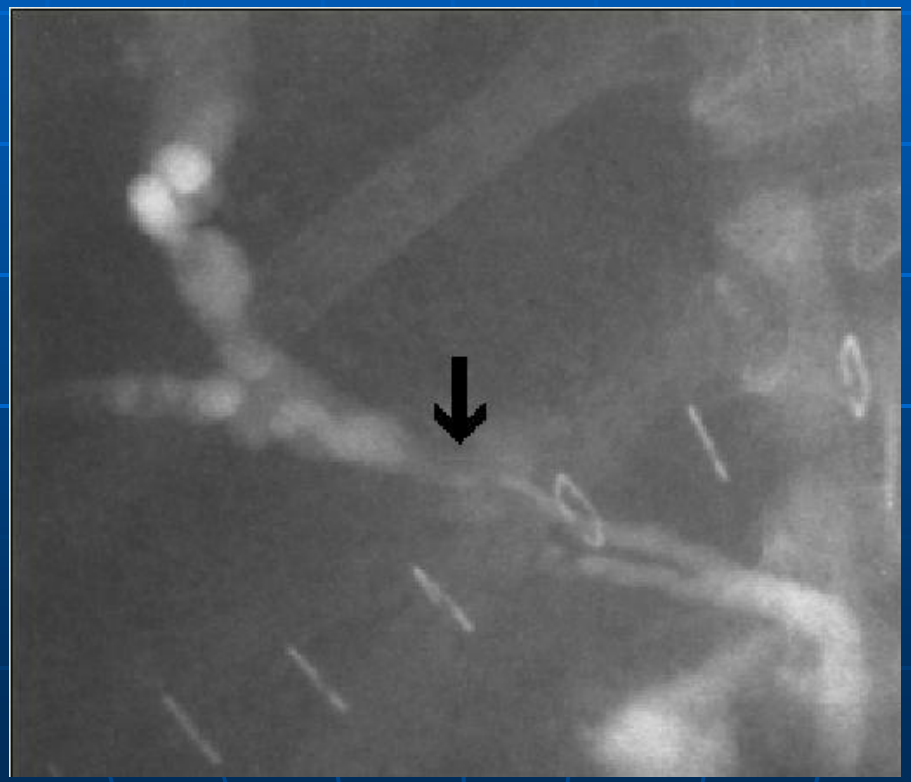
Complications

3- Biliary leak or obstruction

- *20% of postoperative surgical problems.*
- *High (50%) mortality rate.*
- *Presents as an unexplained rise in bilirubin and alkaline phosphatase*
- *Confirmed by T-tube cholangiography or by a PTC.*
- *First treated by balloon dilation.*

Complications

3- Biliary leak or obstruction



Complications

4- Hemorrhage.
5- Hepatic artery thrombosis.
6- Portal vein thrombosis.
7- Vena caval thrombosis.
8- Intraabdominal sepsis.
9- Neurologic complications .
10- Immunosupprission.

Complications

11- Rejection

DIAGNOSIS OF HEPATIC ALLOGRAFT REJECTION

CLINICAL

- Fever.
- Jaundice.
- Decrease in bile output.
- Change in consistency of bile.

LABORATORY

- Leukocytosis.
- Eosinophilia.
- Elevation of transaminases.
- Elevation of serum bilirubin.
- Elevation of prothrombin time.

BIOPSY

- Portal lymphocytosis.
- Endothelitis.
- Bile duct infiltration by cells, with duct injury.

Outcome

- Accepted rates for 1-year survival is 75%
  Accepted rates for 1-year survival is 65%

- Determined by the status of the patient at the time of transplantation
  42% for patients taken to surgery directly from an ICU
  84% for patients not taken to surgery directly from an ICU

- **Four specific preoperative risk factors:**

1- the degree of preoperative neurologic impairment.
2- the degree of malnutrition.
3- the serum bilirubin level.
4- the degree of prolongation of the serum prothrombin time.

Outcome

The cause of liver failure in most cases is not an important determinant of success

- Age is an important factor
- Survival is markedly reduced in patients who undergo transplantation after age 65 years.