

liver transplant

management of rejection

	Comment	Characteristics	Liver biopsy	Differential diagnosis	Treatment options
Hyperacute rejection	Rare in OLT 1-10 days post transplant	Rapid deterioration in graft function. AST > 1000, Coagulopathy, acidosis	Haemorrhagic necrosis	Primary non-function/delayed function Hepatic artery thrombosis	Retransplantation Rarely: OKT3, Cyclophosphamide, plasmapheresis (unproven)
Acute rejection	30-70% Occurs at mean of 7-9 days	Often clinically silent apart from fever and RUQ pain. High AST and Bili Coagulation and acid base undisturbed	Portal inflammation Endohepatitis Bile duct damage	Sepsis Viral	Methylprednisolone 1 g daily for 3 days

In those who do not respond: Consider diagnosis; if correct, Consider Tacrolimus if induction agent is Cyclosporin A, OKT3 or MMF/ Sirolimus or other new agents

technical problems

Complication	Comment
Abdominal bleeding	
Anastomosis	Immediate
Graft surface (if cut down)	Immediate
General ooze secondary to coagulopathy	Immediate
Pseudo-aneurysm formation	Can present early or late and is usually associated with intra-abdominal sepsis and biliary leaks
Vascular complications	
Hepatic artery thrombosis	Early and late
Portal vein thrombosis	Early and late, there may also be stenosis of the portal vein rather than thrombosis
Inferior vena caval obstruction	May be infra, supra or retrohepatic in site
Biliary complications	
Biliary leak	Usually early
Biliary stricture	Usually late
Papillary dysfunction	Late
Roux-en-Y dysfunction	Usually late

monitoring graft function

Parameter	Comment
General	Liver perfusion Bile production Haemodynamics
	Characteristics at surgery Quality ± volume if T-tube <i>in situ</i> Stabilization, with cessation of vasopressor requirements
Coagulation	INR/Prothrombin time (h)
	8-hourly for the first 24 h, thereafter daily unless indicated. The fall in PT is more important than the actual value. FFP should be withheld to assess graft function although platelet support should be provided as usual
Biochemistry	Glucose
	Hypoglycaemia is an ominous sign. 4-hourly measurement in the first 24 h. Euglycaemia or hyperglycaemia requiring insulin infusion is the norm
	Arterial blood gases and lactate
	4-6-hourly depending on ventilatory requirement. Hyperlactataemia and acid base disturbance should rapidly resolve. Other causes of base deficit such as renal tubular acidosis and hyperchloraemia should be excluded
	AST
	Should fall steadily (50% fall each day). The first measurement may reflect washout and thus the next may be higher. Daily measurements. The initial measurement reflects the degree of preservation injury.
	Bilirubin
	Early increases reflect absorption of haematoma, does not reflect graft function. Haemolysis should be considered if the graft is not blood group matched.
	ALP/GGT
	Usually normal, increases may reflect biliary complications or cholestasis of sepsis.

differential diagnosis of graft dysfunction

- Primary non-function
- Preservation injury
- Rejection – hyperacute/acute
- Vascular complications
- Biliary complications
- Drug induced liver dysfunction
- Infection
- Recurrent disease (normally late)

infections post liver transplant

Aetiology:	Bacterial	Viral	Fungal	Protozoal
	Wound Nosocomial pneumonia Line sepsis UTI Liver Biliary	HSV CMV EBV Varicella	Candida Aspergilla PCP Cryptococcus	Toxoplasmosis Strongyloides
Timing	Any time	HSV in first few weeks CMV 3-10 weeks EBV from 4 weeks Varicella later All may be earlier in ALF or retransplantation	Usually after 4 weeks	After 3 weeks

routine investigations

	FBC	LFTs	Coagulation	Drug levels	Cultures	Ultrasound
Day 1	✓	✓	✓	✓	As indicated	Routine ultrasound including hepatic artery and portal vein
Day 2	✓	✓	✓	✓		flow between D1 and D3 unless clinically indicated at other time
Day 3	✓	✓	✓	✓		