London Health Sciences Centre
Multi-Organ Transplant Program

MOTP CLINICAL DIRECTIVES

Program:	Liver Transplantation
Title:	HCC Surveillance Algorithm for Patients Transplanted for Hepatocellular Carcinoma
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Preamble

Liver transplantation offers improved survival in patients with hepatocellular carcinoma (HCC). However tumour recurrence can occur in up to 15% of cases post-transplant[1,2] and therefore, surveillance of these patients is critical. Factors associated with tumour recurrence include sociodemographic variables and clinical parameters such as AFP levels and the presence of microvascular invasion. Surveillance programs post-OLT could result in early identification and management of tumour recurrence and therefore improved survival.

The Risk Estimation of Tumor Recurrence After Transplant (RETREAT) score was highly predictive of hepatocellular carcinoma (HCC) recurrence risk following liver transplantation.[1,2] The RETREAT score includes AFP at liver transplantation, microvascular invasion, sum of the largest viable tumour diameter, and the number of tumours on explant.

Scoring System:

Predictor		RETREAT Points
1. AFP at Liver Transplant (ng/mL)		
	0-20	0
	21-99	1
	100-999	2
	≥1000	3
2. Micorvascular Invasion		2
3. Largest viable tumour diameter (cm) + number of viable tumours		
	0	0
	1.1-4.9	1
	5.0-9.9	2
	≥10	3

A high RETREAT score (4-5) is associated with AFP >400, tumour size >5cm and microvascular invasion.

Three Year Risk of Recurrence[2]:

RETREAT Score	% Probability of Recurrence
0	1.6
3	8.4
≥5	29.0

LHSC Surveillance Algorithm:

RETREAT Score	Risk	Surveillance Protocol
<2	Low	Annual US
2-3	Medium	Contrast CT q 6 months x 2 years Then annual US
4-5	High	Contrast CT q 3 months x 2 years Then annual US

Resources

1. Mehta N, Heimbach J, Harnois DM, et al. Validation of a risk estimation of tumor recurrence after transplant (RETREAT) score for hepatocellular carcinoma recurrence after liver transplant. JAMA Oncol. 2017;3(4):493-500.

2. Mehta N, Dodge J, Sarkar M, Roberts J, Yao F. Validation of the RETREAT score, a novel prediction index for HCC recurrence after liver transplant using the UNOS database. Am J Transplant. 2017 Oct 25