

Supplementary Materials

Table S1 Comparison of final hyperspectral indexes between patients with different perioperative features

Table S2 Comparison of differential values of hyperspectral indexes between patients with different perioperative features

Table S3 Correlation between final hyperspectral indexes and perioperative continuous variables

Table S4 Correlation between differential hyperspectral indexes and perioperative continuous variables

Table S1 Comparison of final hyperspectral indexes between patients with different perioperative features

		TWI final	p	OHI final	p	StO₂ final	p	NIR final	p
BMI	< 30	0.239 ± 0.086	.384	0.680 ± 0.070	.520	0.538 ± 0.135	.154	0.237 ± 0.209	.555
	≥ 30	0.291 ± 0.104		0.710 ± 0.065		0.413 ± 0.041		0.137 ± 0.206	
Pre-existing hepatopathy	No	0.235 ± 0.085	.118	0.682 ± 0.066	.614	0.508 ± 0.139	.840	0.200 ± 0.217	.440
	Yes	0.342 ± 0.053		0.710 ± 0.105		0.529 ± 0.096		0.308 ± 0.095	
Neoadjuvant chemotherapy	No	0.263 ± 0.089	.501	0.668 ± 0.057	.192	0.498 ± 0.157	.650	0.188 ± 0.178	.699
	Yes	0.227 ± 0.094		0.719 ± 0.079		0.534 ± 0.075		0.265 ± 0.262	
Preoperative portal embolization	No	0.234 ± 0.090	.459	0.673 ± 0.048	.429	0.454 ± 0.120	.057	0.233 ± 0.249	1.000
	Yes	0.271 ± 0.090		0.704 ± 0.090		0.587 ± 0.111		0.192 ± 0.147	
Diabetes	No	0.230 ± 0.105	.272	0.696 ± 0.080	.496	0.517 ± 0.158	.829	0.263 ± 0.218	.240
	Yes	0.286 ± 0.028		0.669 ± 0.041		0.500 ± 0.076		0.130 ± 0.166	
Overall comorbidities	No	0.195 ± 0.085	.147	0.679 ± 0.057	.816	0.496 ± 0.182	.796	0.311 ± 0.276	.304
	Yes	0.272 ± 0.084		0.689 ± 0.074		0.517 ± 0.117		0.177 ± 0.172	
Intraoperative transfusion	No	0.260 ± 0.081	.333	0.685 ± 0.072	.843	0.503 ± 0.139	.609	0.213 ± 0.203	1.000
	Yes	0.191 ± 0.144		0.696 ± 0.047		0.557 ± 0.071		0.229 ± 0.304	
Overall morbidity	No	0.270 ± 0.050	.495	0.693 ± 0.080	.767	0.517 ± 0.057	.880	0.224 ± 0.243	.852
	Yes	0.235 ± 0.110		0.681 ± 0.063		0.506 ± 0.172		0.209 ± 0.189	
Postoperative Bilirubine > 50 µmol/L in POD5	No	0.254 ± 0.075	.956	0.696 ± 0.075	.653	0.497 ± 0.126	.747	0.167 ± 0.170	.622
	Yes	0.257 ± 0.120		0.677 ± 0.068		0.524 ± 0.164		0.211 ± 0.197	
Postoperative PT < 50 sec in POD5	No	0.243 ± 0.083	.726	0.696 ± 0.077	.577	0.519 ± 0.087	.758	0.188 ± 0.172	.639
	Yes	0.264 ± 0.115		0.671 ± 0.070		0.492 ± 0.208		0.212 ± 0.196	
50-50 criteria	No	0.239 ± 0.078	.533	0.689 ± 0.074	.837	0.482 ± 0.132	.409	0.166 ± 0.170	.283
	Yes	0.277 ± 0.128		0.679 ± 0.079		0.558 ± 0.168		0.261 ± 0.188	
Healthy vs steatotic	Healthy	0.247 ± 0.106	.926	0.675 ± 0.056	.599	0.473 ± 0.147	.370	0.288 ± 0.242	.268
	Steatotic	0.252 ± 0.081		0.695 ± 0.078		0.539 ± 0.120		0.161 ± 0.169	
Healthy vs fibrosis	Healthy	0.266 ± 0.081	.212	0.696 ± 0.074	.073	0.490 ± 0.141	.277	0.155 ± 0.169	.028
	Fibrosis	0.192 ± 0.107		0.650 ± 0.013		0.587 ± 0.028		0.438 ± 0.193	
Healthy vs cirrhosis	Healthy	0.24 ± 0.0840	.135	0.679 ± 0.064	.139	0.515 ± 0.136	.712	0.203 ± 0.208	.442
	Cirrhosis*	0.380		0.785		0.461		0.375	
Vascular clamping	No	0.290 ± 0.072	.230	0.677 ± 0.078	.717	0.566 ± 0.120	.258	0.317 ± 0.228	.177
	Yes	0.228 ± 0.093		0.692 ± 0.066		0.480 ± 0.133		0.159 ± 0.180	

* only 1 case in the present population

BMI Body Mass Index, POD postoperative day, AST ASpartate transaminase, ALT ALanine Transaminase, ALP Alkaline Phosphatase, GGT Gamma-Glutamyl Transferase, PT Prothrombin Time, POD postoperative day

Table S2 Comparison of differential values of hyperspectral indexes between patients with different perioperative features

		Δ TWI	<i>p</i>	Δ OHI	<i>p</i>	Δ StO ₂	<i>p</i>	Δ NIR	<i>p</i>
BMI	< 30	-0.020 ± 0.081	.405	-0.063 ± 0.071	.785	0.053 ± 0.128	.727	-0.006 ± 0.212	.257
	≥ 30	0.033 ± 0.141		-0.048 ± 0.123		0.017 ± 0.227		-0.131 ± 0.131	
Pre-existing hepatopathy	No	-0.002 ± 0.101	.642	-0.068 ± 0.081	.377	0.064 ± 0.132	.273	-0.023 ± 0.205	.769
	Yes	-0.038 ± 0.043		-0.011 ± 0.070		-0.062 ± 0.226		-0.097 ± 0.215	
Neoadjuvant chemotherapy	No	0.015 ± 0.092	.271	-0.055 ± 0.078	.827	0.052 ± 0.171	.839	-0.052 ± 0.216	1.000
	Yes	-0.045 ± 0.093		-0.066 ± 0.091		0.034 ± 0.111		-0.007 ± 0.189	
Preoperative portal embolization	No	-0.019 ± 0.102	.657	-0.053 ± 0.093	.769	-0.015 ± 0.144	.104	-0.055 ± 0.247	.628
	Yes	0.005 ± 0.091		-0.067 ± 0.067		0.116 ± 0.121		-0.010 ± 0.143	
Diabetes	No	-0.016 ± 0.085	.703	-0.085 ± 0.074	.145	0.051 ± 0.184	.854	-0.064 ± 0.241	.724
	Yes	0.005 ± 0.116		-0.018 ± 0.077		0.035 ± 0.063		0.011 ± 0.114	
Overall comorbidities	No	-0.034 ± 0.106	.526	-0.108 ± 0.051	.152	0.037 ± 0.142	.899	-0.068 ± 0.305	1.000
	Yes	0.003 ± 0.092		-0.038 ± 0.082		0.048 ± 0.155		-0.020 ± 0.154	
Intraoperative transfusion	No	-0.010 ± 0.098	.791	-0.066 ± 0.079	.294	0.043 ± 0.152	.863	-0.037 ± 0.208	1.00
	Yes*	0.017		0.024		0.071		-0.001	
Overall morbidity	No	-0.039 ± 0.050	.284	-0.038 ± 0.072	.405	0.015 ± 0.063	.503	0.049 ± 0.165	.295
	Yes	0.018 ± 0.117		-0.077 ± 0.086		0.0709 ± 0.19		-0.107 ± 0.208	
Postoperative Bilirubine > 50 μmol/L in POD5	No	-0.027 ± 0.078	.207	-0.060 ± 0.079	.841	0.028 ± 0.108	.549	-0.068 ± 0.188	1.000
	Yes	0.048 ± 0.119		-0.050 ± 0.101		0.088 ± 0.232		-0.048 ± 0.197	
Postoperative PT < 50 sec in POD5	No	-0.040 ± 0.079	.120	-0.088 ± 0.089	.216	0.074 ± 0.115	.475	-0.013 ± 0.121	.315
	Yes	0.058 ± 0.112		-0.022 ± 0.054		-0.002 ± 0.230		-0.161 ± 0.268	
50-50 criteria	No	-0.033 ± 0.076	.122	-0.087 ± 0.083	.139	0.048 ± 0.129	.951	-0.067 ± 0.188	.921
	Yes	0.073 ± 0.133		-0.003 ± 0.048		0.041 ± 0.261		-0.068 ± 0.236	
Healthy vs steatotic	Healthy	0.011 ± 0.109	.571	-0.036 ± 0.056	.438	-0.040 ± 0.133	.094	-0.100 ± 0.280	.370
	Steatotic	-0.020 ± 0.088		-0.074 ± 0.092		0.098 ± 0.133		0.006 ± 0.134	
Healthy vs fibrosis	Healthy	-0.001 ± 0.100	.608	-0.056 ± 0.086	.777	0.043 ± 0.158	.946	-0.072 ± 0.187	.115
	Fibrosis	-0.041 ± 0.047		-0.0754 ± 0.01		0.052 ± 0.064		0.170 ± 0.163	
Healthy vs cirrhosis	Healthy	-0.002 ± 0.096	.525	-0.067 ± 0.077	.214	0.067 ± 0.127	.050	-0.017 ± 0.197	.282
	Cirrhosis*	-0.068		0.038		-0.223		-0.249	
Vascular clamping	No	-0.025 ± 0.079	.615	-0.042 ± 0.072	.556	0.036 ± 0.186	.871	0.079 ± 0.211	.102
	Yes	0.003 ± 0.106		-0.070 ± 0.087		0.050 ± 0.129		-0.106 ± 0.165	

* only 1 case in the present population

BMI Body Mass Index, POD postoperative day, AST ASpartate transaminase, ALT ALanine Transaminase, ALP Alkaline Phosphatase, GGT Gamma-Glutamyl Transferase, PT Prothrombin Time, POD postoperative day

Table S3 Correlation between final hyperspectral indexes and perioperative continuous variables

	TWI final		OHI final		StO ₂ final		NIR final	
	<i>ρ</i>	<i>p</i>	<i>ρ</i>	<i>p</i>	<i>ρ</i>	<i>p</i>	<i>ρ</i>	<i>p</i>
BMI	0.045	0.878	-0.138	0.638	-0.085	0.773	-0.041	0.890
Preoperative bilirubine	-0.048	0.869	0.048	0.869	-0.009	0.976	-0.026	0.929
Preoperative AST	-0.106	0.719	-0.247	0.395	0.249	0.391	0.456	0.101
Preoperative ALT	-0.480	0.082	-0.436	0.119	0.145	0.620	0.430	0.125
Preoperative ALP	-0.108	0.714	-0.011	0.970	0.359	0.208	0.130	0.658
Preoperative GGT	-0.029	0.923	-0.288	0.318	0.372	0.190	0.513	0.061
Preoperative Hemoglobin	0.220	0.450	-0.321	0.263	-0.053	0.858	0.097	0.742
Preoperative PT	-0.147	0.616	0.368	0.196	-0.334	0.243	-0.341	0.233
Preoperative INR	0.088	0.760	-0.333	0.244	0.229	0.432	0.284	0.325
Preoperative Albumin	-0.406	0.150	-0.326	0.255	-0.151	0.607	-0.035	0.904
Total resected segments	-0.135	0.646	0.042	0.887	0.246	0.396	-0.014	0.962
Total duration of vascular clamping	-0.295	0.306	0.104	0.724	-0.228	0.434	-0.237	0.416
Operative time	0.322	0.262	0.366	0.199	-0.070	0.811	0.196	0.502
AST POD1	-0.123	0.675	-0.075	0.799	-0.299	0.299	-0.374	0.188
AST POD2	-0.341	0.254	-0.132	0.667	-0.325	0.279	-0.380	0.201
AST POD5	0.105	0.734	-0.050	0.872	0.083	0.788	0.085	0.781
ALT POD1	-0.156	0.594	-0.130	0.658	-0.367	0.196	-0.165	0.573
Bilirubin POD1	-0.055	0.852	0.231	0.427	0.108	0.714	0.002	0.994
Bilirubin POD2	0.140	0.648	0.124	0.687	0.003	0.993	0.058	0.851
Bilirubin POD5	0.121	0.693	0.135	0.660	-0.019	0.950	0.121	0.693
ALP POD2	-0.237	0.436	-0.099	0.747	0.350	0.241	0.171	0.577
ALP POD5	-0.193	0.528	-0.019	0.950	0.284	0.347	-0.113	0.713
GGT POD1	-0.104	0.724	-0.335	0.241	0.304	0.290	0.359	0.207
GGT POD2	0.033	0.915	-0.331	0.270	0.190	0.534	0.259	0.393
GGT POD5	-0.083	0.789	-0.138	0.654	0.242	0.426	0.110	0.720
PT POD2	-0.025	0.936	0.220	0.469	-0.110	0.720	-0.174	0.571
PT POD5	-0.039	0.905	0.326	0.301	-0.298	0.347	-0.424	0.170

BMI Body Mass Index, AST ASpartate transaminase, ALT ALanine Transaminase, ALP Alkaline Phosphatase, GGT Gamma-Glutamyl Transferase, PT Prothrombin Time, POD postoperative day

Table S4 Correlation between differential hyperspectral indexes and perioperative continuous variables

	Δ TWI		Δ OHI		Δ StO ₂		Δ NIR	
	ρ	p	ρ	p	ρ	p	ρ	p
BMI	0.245	0.420	0.008	0.979	0.305	0.310	0.077	0.802
Preoperative bilirubine	0.467	0.108	0.159	0.603	0.033	0.915	-0.231	0.448
Preoperative AST	0.028	0.929	-0.113	0.714	-0.250	0.409	-0.030	0.922
Preoperative ALT	-0.069	0.823	-0.569	0.042	0.014	0.964	0.171	0.577
Preoperative ALP	0.313	0.297	-0.258	0.394	0.533	0.061	0.022	0.943
Preoperative GGT	0.280	0.354	0.022	0.943	-0.022	0.943	0.088	0.775
Preoperative Hb	0.187	0.541	-0.104	0.734	-0.132	0.668	0.044	0.887
Preoperative PT	-0.304	0.312	-0.008	0.978	-0.014	0.964	0.148	0.630
Preoperative INR	0.271	0.371	-0.162	0.597	0.089	0.771	-0.162	0.597
Preoperative Albumine	-0.442	0.130	-0.287	0.341	-0.180	0.557	0.135	0.659
Total resected segments	0.356	0.233	-0.347	0.246	0.603	0.029	-0.073	0.811
Total duration of vascular clamping	0.085	0.783	0.178	0.560	-0.229	0.451	-0.490	0.089
Operative time	0.360	0.226	0.272	0.368	-0.366	0.219	-0.616	0.025
AST POD1	0.445	0.128	0.363	0.223	0.016	0.957	-0.291	0.334
AST POD2	0.294	0.354	0.238	0.457	0.014	0.966	-0.189	0.557
AST POD5	0.263	0.409	0.231	0.470	-0.546	0.066	-0.249	0.436
ALT POD1	0.407	0.168	-0.016	0.957	0.071	0.817	-0.269	0.374
Bilirubine POD1	0.516	0.071	-0.148	0.629	0.500	0.082	-0.121	0.694
Bilirubine POD2	0.545	0.067	-0.056	0.863	0.308	0.331	-0.210	0.513
Bilirubine POD5	0.494	0.103	-0.007	0.983	0.249	0.436	-0.221	0.491
ALP POD2	0.091	0.778	-0.119	0.712	0.543	0.068	0.294	0.353
ALP POD5	-0.133	0.680	0.263	0.409	0.228	0.477	0.242	0.449
GGT POD1	0.331	0.270	-0.248	0.414	0.328	0.274	0.292	0.333
GGT POD2	0.396	0.203	-0.095	0.770	0.315	0.318	0.074	0.820
GGT POD5	-0.189	0.557	0.462	0.131	-0.210	0.513	0.028	0.931
PT POD2	-0.508	0.092	0.175	0.586	-0.207	0.519	0.088	0.787
PT POD5	-0.509	0.110	-0.091	0.790	-0.091	0.790	0.018	0.958

BMI Body Mass Index, AST ASpartate transaminase, ALT ALanine Transaminase, ALP Alkaline Phosphatase, GGT Gamma-Glutamyl Transferase, PT Prothrombin Time, POD postoperative day