Supplementary table 1 Summary of clinical dosimetric and physical parameters of IMRT planning in esophageal cancers

Parameters	MSW (Mean ± SD)			
	0.5 cm	1 cm	1.5 cm	2 cm
Heart.V30 (%)	6.174 ± 8.407	5.931 ± 7.960	6.236 ± 8.365	6.808 ± 9.003
Heart.V40 (%)	2.852 ± 3.824	2.745 ± 3.600	2.920 ± 3.865	3.523 ± 4.667
H.Dmean (Gy)	6.130 ± 6.524	6.097 ± 6.439	6.177 ± 6.51	6.084 ± 6.61
Llung.V20 (%)	19.388 ± 3.351	19.105 ± 3.440	19.500 ± 3.327	20.599 ± 3.365
Llung.V30 (%)	8.838 ± 3.270	8.630 ± 3.256	8.652 ± 3.269	9.267 ± 3.608
Llung.Dmean (Gy)	10.833 ± 1.403	10.759 ± 1.503	10.842 ± 1.51	10.934 ± 1.678
Rlung.V20 (%)	20.195 ± 3.064	20.534 ± 2.873	20.584 ± 3.048	20.253 ± 3.055
Rlung.V30 (%)	9.347 ± 2.719	9.467 ± 2.914	9.884 ± 2.776	9.919 ± 2.936
Rlung.Dmean (Gy)	10.502 ± 1.556	10.59 ± 1.606	10.642 ± 1.654	10.479 ± 1.660
Spine.Dmax (Gy)	41.905 ± 1.795	42.123 ± 1.671	42.444 ± 1.503	43.615 ± 1.509
PTV51.D95 (Gy)	51.776 ± 0.470	51.84 ± 0.607	51.714 ± 0.713	51.44 ± 1.158
PTV51.CI	0.854 ± 0.049	0.848 ± 0.047	0.839 ± 0.047	0.790 ± 0.048
PTV51.HI	1.212 ± 0.022	1.213 ± 0.023	1.224 ± 0.025	1.256 ± 0.045
PTV60.CI	0.748 ± 0.079	0.728 ± 0.097	0.705 ± 0.106	0.604 ± 0.126
PTV60.HI	1.060 ± 0.012	1.064 ± 0.016	1.071 ± 0.016	1.094 ± 0.026
Monitor units	668.896 ± 57.900	573.022 ± 59.361	540.501 ± 57.386	574.883 ± 92.867
Control points	144.250 ± 1.164	137.350 ± 5.696	130.100 ± 9.442	116.700 ± 9.669
Delivery times (sec)	208.754 ± 21.616	182.504 ± 13.074	180.019 ± 14.807	189.638 ± 24.712
GPR.2.2AD (%)	95.040 ± 2.397	95.625 ± 2.454	95.465 ± 2.052	94.680 ± 2.336
GPR.2.2RD (%)	95.520 ± 1.696	96.140 ± 2.110	96.185 ± 1.477	96.490 ± 1.363
GPR.3.3AD (%)	98.510 ± 1.039	98.875 ± 0.962	98.740 ± 0.859	98.825 ± 0.685
GPR.3.3RD (%)	98.780 ± 0.916	99.140 ± 0.849	99.180 ± 0.608	99.395 ± 0.341

Note:

Heart.V30 (%) : The percent volume receiving a dose of 30Gy of Heart

Heart.V40 (%) : The percent volume receiving a dose of 40Gy of Heart

H.Dmean (Gy) : The mean radiation dose of Heart

Llung.V20 (%) : The percent volume receiving a dose of 20Gy of left lung

Llung.V30 (%) : The percent volume receiving a dose of 30Gy of left lung

Llung.Dmean (Gy) : The mean radiation dose of left lung

Rlung.V20 (%) : The percent volume receiving a dose of 20Gy of right lung

Rlung.V30 (%) : The percent volume receiving a dose of 20Gy of right lung

Rlung.Dmean (Gy) : The mean radiation dose of right lung

Spine.Dmax (Gy) : The maximal radiation dose of Spine

PTV51.D95 (Gy) : The radiation dose covering 95% volume of PTV51

PTV51.CI : The Conformity index of PTV51

PTV51.HI : The Homogeneity index of PTV51

PTV60.CI : The Conformity index of PTV60

PTV60.HI : The Homogeneity index of PTV60

GPR.2.2AD (%) : Absolute Dose of GPR with a standard of 2% dose difference and a 2 mm distance to agreement

GPR.2.2RD (%) : Relative Dose of GPR with a standard of 2% dose difference and a 2 mm distance to agreement

GPR.3.3AD (%) : Absolute Dose of GPR with a standard of 3% dose difference and a 3 mm distance to agreement
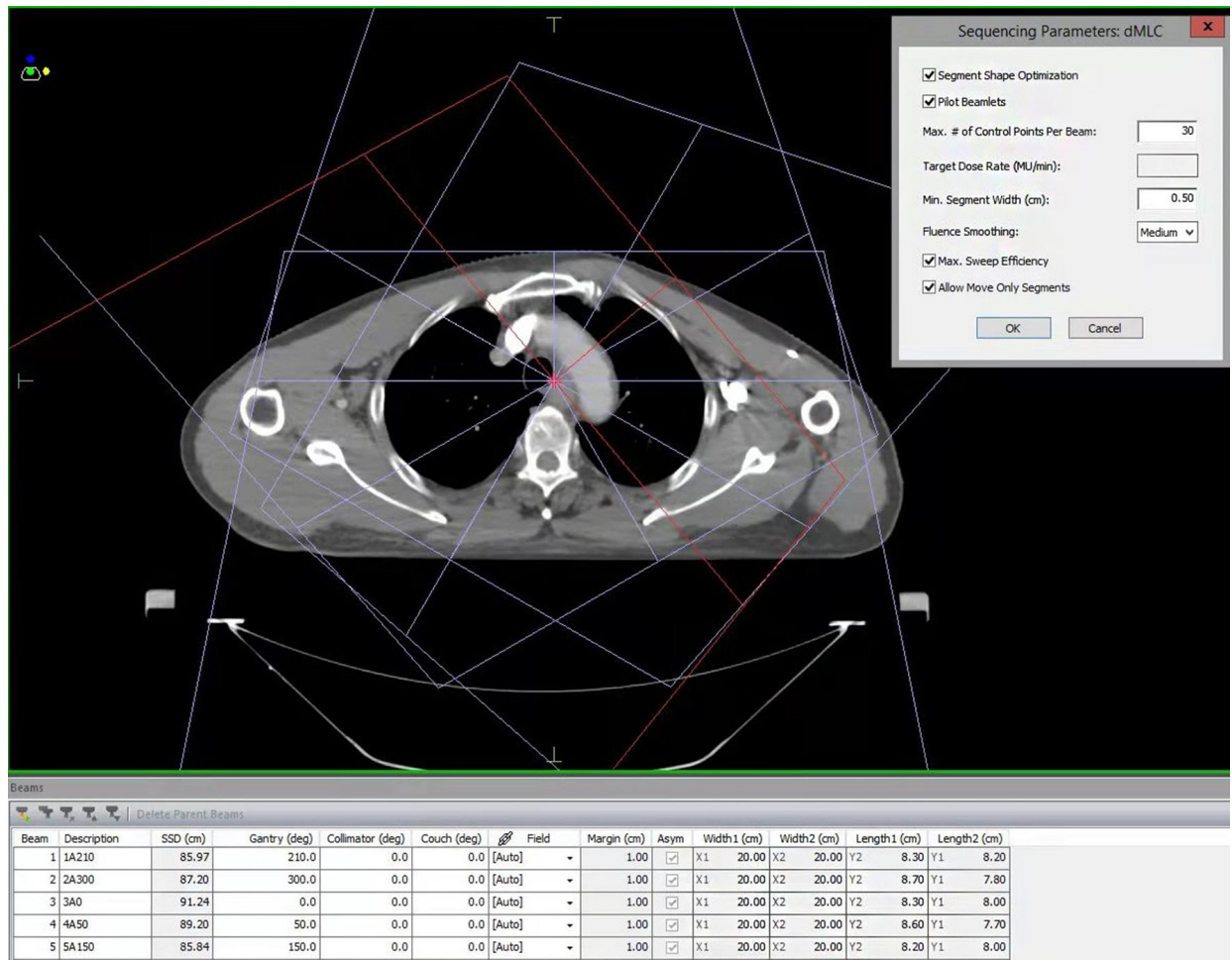
GPR.3.3RD (%) : Relative Dose of GPR with a standard of 3% dose difference and a 3 mm distance to agreement

Supplementary table 2 Summary of clinical dosimetric and physical parameters in esophageal cancers

Parameter	MSW Groups	Mean ± SD	Relative value (95%Ci)
Heart.V30 (%)	0.5(ref)	1	1
	1.0	1.011 ± 0.089	1.011 (0.913 - 1.110)
	1.5	1.028 ± 0.071	1.028 (0.929 - 1.126)
	2.0	1.005 ± 0.299	1.005 (0.906 - 1.103)
Heart.V40 (%)	0.5(ref)	1	1
	1.0	1.012 ± 0.091	1.012 (0.859 - 1.165)
	1.5	1.061 ± 0.196	1.061 (0.909 - 1.214)
	2.0	1.022 ± 0.445	1.022 (0.870 - 1.175)
H.Dmean (Gy)	0.5(ref)	1	1
	1.0	0.988 ± 0.048	0.988 (0.945 - 1.030)
	1.5	1.006 ± 0.079	1.006 (0.963 - 1.049)
	2.0	0.961 ± 0.108	0.961 (0.919 - 1.004)
Llung.V20 (%)	0.5(ref)	1	1
	1.0	0.986 ± 0.065	0.986 (0.944 - 1.028)
	1.5	1.011 ± 0.089	1.011 (0.969 - 1.052)
	2.0	1.072 ± 0.121	1.072 (1.030 - 1.114) [ab]
Llung.V30 (%)	0.5(ref)	1	1
	1.0	0.975 ± 0.085	0.975 (0.934 - 1.016)
	1.5	0.973 ± 0.072	0.973 (0.932 - 1.014)
	2.0	1.050 ± 0.107	1.050 (1.009 - 1.091) [a]
Llung.Dmean (Gy)	0.5(ref)	1	1
	1.0	0.992 ± 0.030	0.992 (0.976 - 1.009)
	1.5	1.000 ± 0.032	1.000 (0.984 - 1.016)
	2.0	1.007 ± 0.048	1.007 (0.991 - 1.023)
Rlung.V20 (%)	0.5(ref)	1	1
	1.0	1.020 ± 0.051	1.020 (0.992 - 1.047)
	1.5	1.021 ± 0.068	1.021 (0.994 - 1.048)
	2.0	1.005 ± 0.086	1.005 (0.978 - 1.032)
Rlung.V30 (%)	0.5(ref)	1	1
	1.0	1.008 ± 0.038	1.008 (0.964 - 1.051)
	1.5	1.063 ± 0.087	1.063 (1.020 - 1.106) [a]
	2.0	1.065 ± 0.121	1.065 (1.022 - 1.109) [a]
Rlung.Dmean (Gy)	0.5(ref)	1	1
	1.0	1.008 ± 0.017	1.008 (0.994 - 1.022)
	1.5	1.012 ± 0.024	1.012 (0.998 - 1.026)
	2.0	0.997 ± 0.044	0.997 (0.983 - 1.011)
Spine.Dmax (Gy)	0.5(ref)	1	1
	1.0	1.005 ± 0.014	1.005 (0.998 - 1.012)
	1.5	1.013 ± 0.014	1.013 (1.006 - 1.020) [a]
	2.0	1.041 ± 0.022	1.041 (1.034 - 1.048) [abc]
PTV51.D95 (Gy)	0.5(ref)	1	1
	1.0	1.001 ± 0.005	1.001 (0.996 - 1.006)

	1.5	0.999 ± 0.007	0.999 (0.994 - 1.004)
	2.0	0.993 ± 0.015	0.993 (0.989 - 0.998)[a]
	0.5(ref)	1	1
PTV51.CI	1.0	0.993 ± 0.016	0.993 (0.980 - 1.006)
	1.5	0.983 ± 0.014	0.983 (0.970 - 0.996)[a]
	2.0	0.927 ± 0.042	0.927 (0.914 - 0.940)[abc]
	0.5(ref)	1	1
PTV51.HI	1.0	1.001 ± 0.013	1.001 (0.992 - 1.009)
	1.5	1.010 ± 0.014	1.010 (1.001 - 1.019)[a]
	2.0	1.036 ± 0.029	1.036 (1.027 - 1.044)[abc]
	0.5(ref)	1	1
PTV60.CI	1.0	0.970 ± 0.055	0.970 (0.931 - 1.010)
	1.5	0.939 ± 0.066	0.939 (0.900 - 0.979)[a]
	2.0	0.805 ± 0.128	0.805 (0.766 - 0.845)[abc]
	0.5(ref)	1	1
PTV60.HI	1.0	1.004 ± 0.007	1.004 (0.997 - 1.010)
	1.5	1.011 ± 0.010	1.011 (1.004 - 1.017)[a]
	2.0	1.033 ± 0.020	1.033 (1.026 - 1.040)[abc]
	0.5(ref)	1	1
Monitor units	1.0	0.858 ± 0.069	0.858 (0.815 - 0.900)[a]
	1.5	0.812 ± 0.095	0.812 (0.769 - 0.854)[a]
	2.0	0.861 ± 0.137	0.861 (0.819 - 0.904)[a]
	0.5(ref)	1	1
Control points	1.0	0.952 ± 0.038	0.952 (0.927 - 0.977)[a]
	1.5	0.902 ± 0.063	0.902 (0.877 - 0.927)[a]
	2.0	0.809 ± 0.066	0.809 (0.784 - 0.834)[abc]
	0.5(ref)	1	1
Delivery times (sec)	1.0	0.879 ± 0.064	0.879 (0.840 - 0.918)[a]
	1.5	0.870 ± 0.105	0.870 (0.831 - 0.909)[a]
	2.0	0.913 ± 0.119	0.913 (0.874 - 0.952)[a]
	0.5(ref)	1	1
GPR.2.2AD (%)	1.0	1.006 ± 0.018	1.006 (0.999 - 1.014)
	1.5	1.005 ± 0.013	1.005 (0.997 - 1.012)
	2.0	0.996 ± 0.014	0.996 (0.989 - 1.004)
	0.5(ref)	1	1
GPR.2.2RD (%)	1.0	1.007 ± 0.016	1.007 (1.000 - 1.013)
	1.5	1.007 ± 0.011	1.007 (1.000 - 1.014)[a]
	2.0	1.01 ± 0.012	1.010 (1.004 - 1.017)[a]
	0.5(ref)	1	1
GPR.3.3AD (%)	1.0	1.004 ± 0.009	1.004 (1.001 - 1.007)[a]
	1.5	1.002 ± 0.006	1.002 (0.999 - 1.006)
	2.0	1.003 ± 0.009	1.003 (1.000 - 1.007)
	0.5(ref)	1	1
GPR.3.3RD (%)	1.0	1.004 ± 0.008	1.004 (1.001 - 1.007)[a]
	1.5	1.004 ± 0.005	1.004 (1.001 – 1.007)[a]
	2.0	1.006 ± 0.008	1.006 (1.003 – 1.009)[a]

a P < 0.05, vs. 0.5 cm MSW Generalized Linear Mixed Regression Analysis
b P < 0.05, vs. 1.0 cm MSW Generalized Linear Mixed Regression Analysis
c P < 0.05, vs. 1.5 cm MSW Generalized Linear Mixed Regression Analysis

Supplementary Figure 1. The beam's eye view of an example treatment plan.