

Supplementary Material

Figure S1: *The relevant question from the clinical reporting form*

Do you experience tingling or electric shock sensation down your back?

0. Never
1. Occasional and mild
2. Sometimes but bearable
3. Often present or severe
4. Constant and very severe

Figure S2: Maximum spinal cord dose in patients with unilateral and bilateral neck radiation

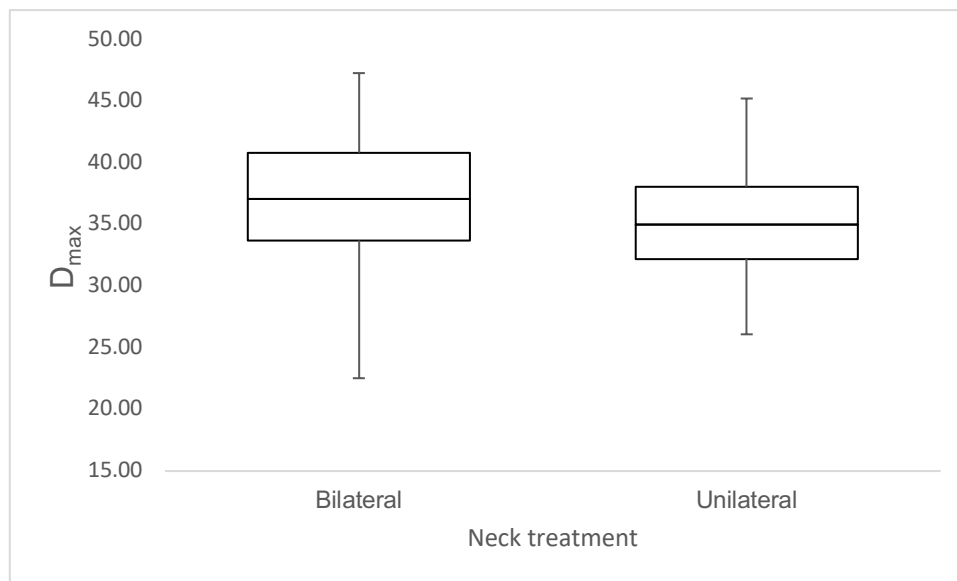


Figure S3: Dose parameters in patients with no LS symptoms (unshaded, n=75), and with LS (shaded, n=42) **A** – Dose to spinal cord. **B** – Volume of spinal cord receiving 10, 20, 30, and 40 Gy. **C** – Percentage of spinal cord receiving 10, 20, 30, and 40 Gy

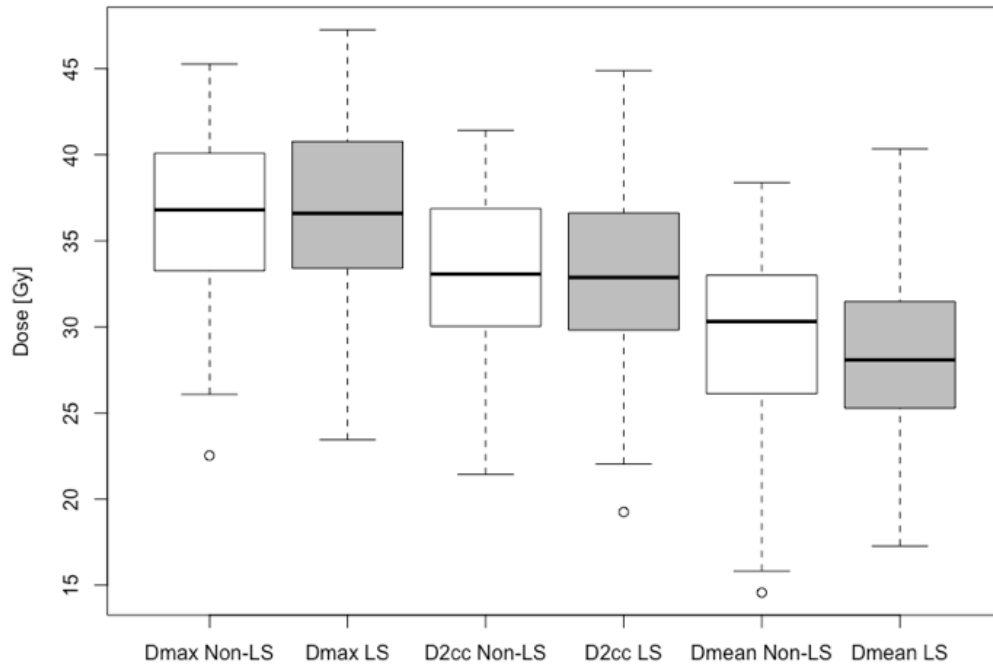
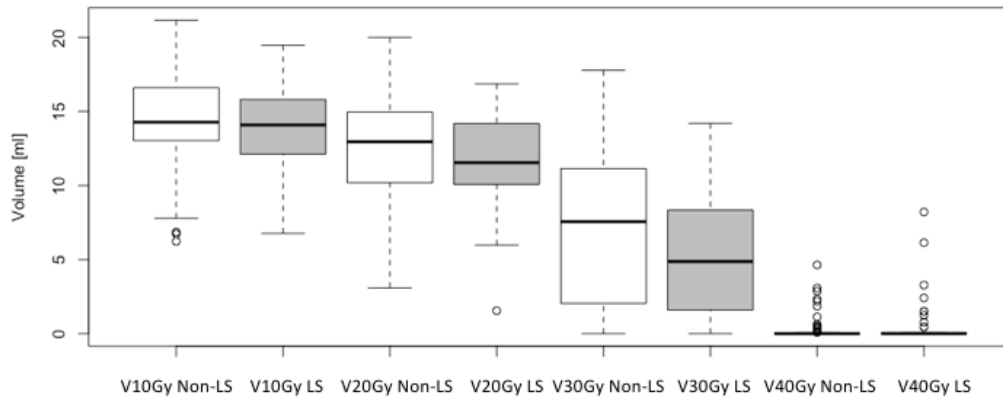
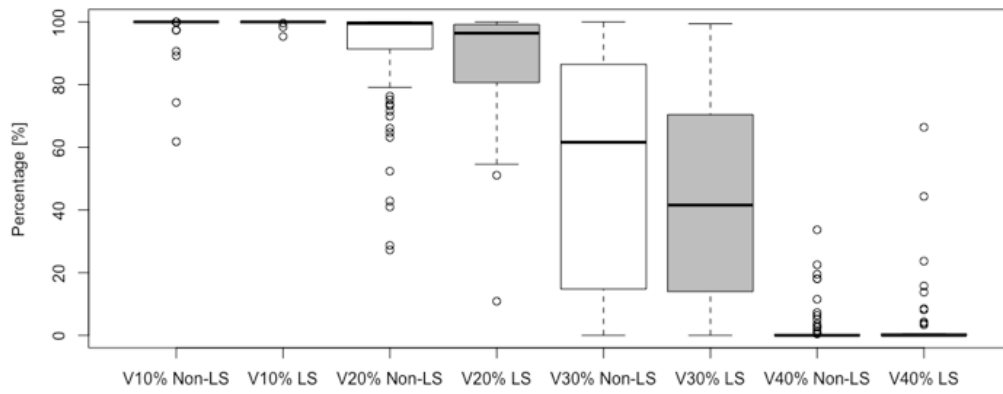
A**B****C**

Figure S4: Dose parameter multi-collinearity scatter plots. **A** – $V_{20\%}$ vs $V_{30\%}$. **B** – $V_{20\%}$ vs $V_{40\%}$

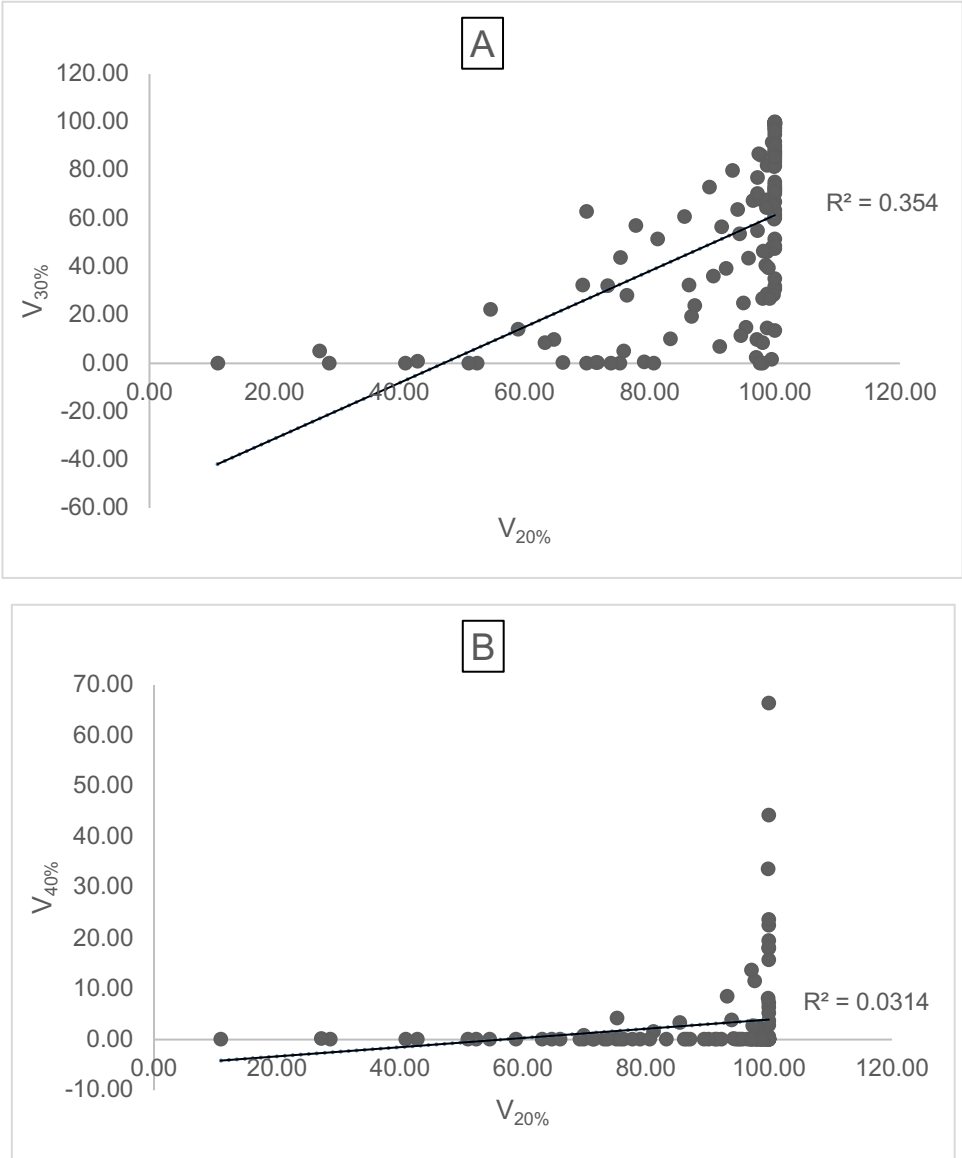


Table S1 (A&B): Collinearity Statistics for models containing V20%, V30%, and V40%

A Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	.434	.244		1.782	.077		
V _{20%}	.001	.003	.021	.188	.851	.642	1.556
V _{30%}	-.003	.002	-.235	-1.929	.056	.562	1.778
V _{40%}	.012	.005	.220	2.213	.029	.843	1.186

a. Dependent Variable: LS

B Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	.594	.232		2.565	.012		
V _{20%}	-.003	.003	-.106	-1.130	.261	.969	1.032
V _{40%}	.008	.005	.151	1.609	.110	.969	1.032

a. Dependent Variable: LS

Table S2: Ordinal logistic regression with highest reported grade of LS as the dependent variable.

Independent Variable	Logistic regression coefficient	Regression p value	Odds Ratio^a (95% CI)
<i>Original model</i>			
Age	-0.049	0.027	0.952 (0.91-0.99)
V_{20%}	-0.009	0.559	0.99 (0.96-1.23)
V_{40%}	0.032	0.157	1.032 (0.89-1.08)
HI	0.903	0.399	2.5 (0.30 – 20)
Laterality	-0.572	0.230	0.564 (0.22-1.44)
Diabetes	1.738	0.090	5.686 (0.76-42.52)
Hypertension	0.482	0.355	1.619 (0.58-4.50)
Cisplatin	0.051	0.912	1.052 (0.43-2.58)
<i>Refined model</i>			
Age	-0.044	0.031	0.957 (0.92-1.00)
Diabetes	1.875	0.065	6.521 (0.89-47.61)

Chi squared test $\chi^2 (2) = 10.22$, $p = 0.006$. Pseudo- $R^2 = 0.047$ to 0.099 .

^aOdds ratio per unit increase in variable or for bilateral radiation and being non-diabetic.

Table S3: Binary logistic regression with LS vs Non-LS as the dependent variable, and absolute dose volumes (in cc).

Independent Variable	Logistic regression coefficient	Regression p value	Odds Ratio^a (95% CI)
<i>Original model</i>			
Age	-0.042	0.080	0.959 (0.92-1.01)
Laterality	-1.096	0.039	0.334 (0.12-0.95)
Diabetes	2.194	0.063	8.972 (0.89-90.52)
Hypertension	0.439	0.429	1.551 (0.52-4.60)
Cisplatin	-0.495	0.335	0.609 (0.22-1.67)
V_{20Gy}	-0.114	0.094	0.893 (0.78-1.02)
V_{40Gy}	0.532	0.025	1.702 (1.07-2.71)
HI	0.992	0.276	2.70 (0.45-16.10)
Constant	1.093		
<i>Refined model</i>			
Age	-0.051	0.028	0.951 (0.91-1.00)
Laterality	-0.966	0.042	0.381 (0.15-0.96)
Diabetes	2.388	0.033	10.9 (1.21-98.5)
V_{20Gy}	-0.119	0.056	0.89 (0.79-1.0)
V_{40Gy}	0.513	0.025	1.67 (1.07-2.62)
Constant	2.053		
<p><i>Hosmer and Lemeshow test $\chi^2 (8) = 6.770, p = 0.562. Pseudo-R^2 = 0.16$ to 0.22.</i></p> <p>^aOdds ratio per unit increase in variable or for bilateral radiation and being non-diabetic.</p>			

Table S4: Ordinal logistic regression with highest reported grade of LS as the dependent variable, and absolute dose volumes (in cc).

Independent Variable	Logistic regression coefficient	Regression p value	Odds Ratio^a (95% CI)
<i>Original model</i>			
Age	-0.057	0.011	0.945 (0.90-0.99)
V_{20Gy}	-0.123	0.051	0.884 (0.78-1.00)
V_{40Gy}	0.299	0.084	1.349 (0.96-1.89)
HI	0.762	0.363	2.143 (0.41-11.07)
Laterality	-0.610	0.200	0.543 (0.21-1.38)
Diabetes	1.622	0.119	5.063 (0.66-38.78)
Hypertension	0.568	0.283	1.765 (0.63-4.98)
Cisplatin	-0.054	0.907	0.947 (0.38-2.36)
<i>Refined model</i>			
Age	-0.062	0.005	0.940 (0.90-0.98)
Diabetes	1.790	0.074	5.989 (0.84-42.69)
V_{20Gy}	-0.132	0.021	0.876 (0.78-0.98)
V_{40Gy}	0.288	0.079	1.334 (0.97-1.84)

Chi squared test $\chi^2 (4) = 17.31$, $p = 0.002$. Pseudo- $R^2 = 0.08$ to 0.16 .

^aOdds ratio per unit increase in variable or for bilateral radiation and being non-diabetic.