Supplementary Online Content

This supplementary material has been provided by the authors to give readers additional information about their work.

Supplementary Table 1. Methods used in Study Analysis for Two-Group Comparisons

Groups	Independent	Independent	Paired	Paired
Variable Type	Ordinal or non-normal continuous	Nominal	Ordinal or non-normal continuous	Nominal
Group point Estimate	Median (IQR), min/max	Percent with exact binomial CIs	Proportion worse, same, better + exact (Clopper-Pearson) binomial CIs	Proportion worse, same, better + exact binomial Clopper-Pearson) CIs
Difference	Hodges-Lehmann estimator of location shift with 95% CI	P1-P2 (i.e., raw difference)		
DifferenceReference	Hodges & Lehmann (1983)	Fleiss (1981, p. 29).	--	--
Test	Wilcoxon rank sum test	1) Fisher's exact test, 2) Univariable logistic regression	Wilcoxon signed-rank test	McNemar test with continuity correction
Effect size	r [Z divided by the square root of total observations]	1) Cramer's Z 2) Odds ratio	r [Z divided by the square root of total observations]	Cohen's g
Effect size CIs	Bootstrap	1) Bootstrap bias-corrected CIs	Bootstrap	95% CIs
Effect size reference	(Rosenthal, 1991, p. 19).	1) Cramér (1946)	(Rosenthal, 1991, p. 19).	Cohen (1988)
Effect size interpretation	small (.10 to < .30) medium (.30 to < .50) large (≥ .50) Rosenthal added: very large (> .70)	(Depends on degrees of freedom)	small (.10 to < .30) medium (.30 to < .50) large (≥ .50) Rosenthal added: very large (> .70)	negligible (<.05) small (.05 to < .15) medium (.15 to < .25) large (≥ .25)
Interpretation reference	Cohen (1988)p. 79-80 Rosenthal (1996)	Cohen (1988) p. 222	Cohen (1988)p. 79-80 Rosenthal (1996)	Cohen (1988)

Clopper, C. J., and Pearson, E. S. (1934), "The Use of Confidence or Fiducial Limits Illustrated in the Case of the Binomial," *Biometrika* 26, 404–413

Cohen, J. 1988. *Statistical Power Analysis for the Behavioral Sciences*, 2nd Edition. Routledge
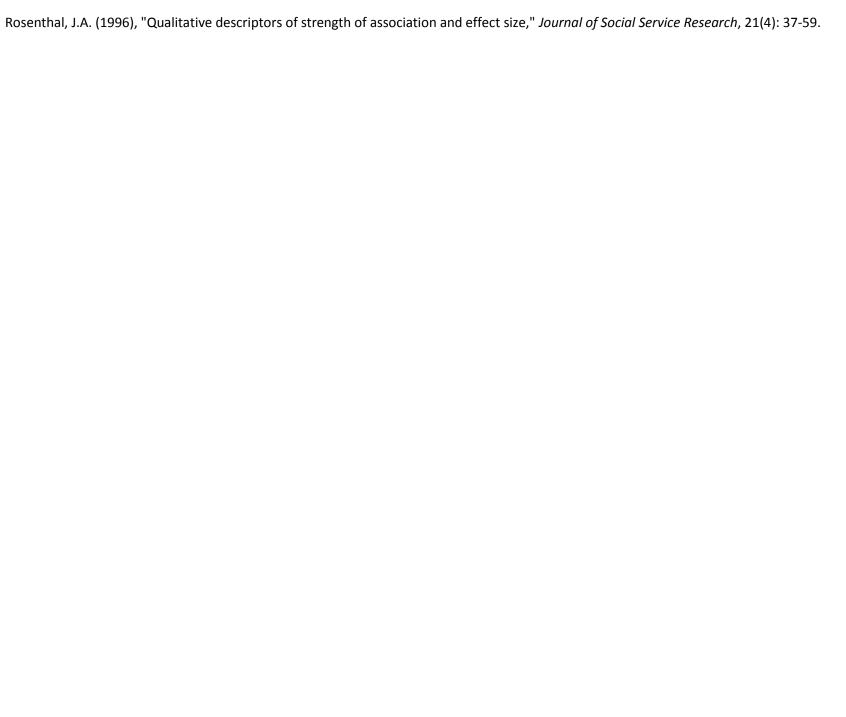
Cramér, Harald. 1946. *Mathematical Methods of Statistics*. Princeton: Princeton University Press, page 282

Fleiss, J. L. (1981). Statistical Methods for Rates and Proportions, New York: John Wiley & Sons, Inc.

Hodges, J. L., Jr. and Lehmann, E. L. (1983). "Hodges-Lehmann Estimators," in *Encyclopedia of Statistical Sciences*, vol. 3, ed. S. Kotz, N. L. Johnson, and C. B. Read, New York: John Wiley & Sons, 463–465.

Rosenthal, R. (1991). Meta-analytic procedures for social research. Newbury Park, CA: Sage.

Rosenthal, J.A. (1996), "Qualitative descriptors of strength of association and effect size," *Journal of Social Service Research*, 21(4): 37-59.

Supplementary Table 2. MDASI-HN swallow item differences in least squares means between pre-treatment groups by time point among 219 patients who received radiotherapy.

Time Point	Pre-RT status	Comparator Group	Estimate	95% CI	
RT start	Post-TORS	Post-induction	2.5839	0.3708	4.7969
	Post-TORS	Treatment naive	1.6599	1.0438	2.2759
	Post-induction	Treatment naive	-0.9240	-3.1357	1.2877
RT end	Post-TORS	Post-induction	-0.2026	-0.7316	0.3264
	Post-TORS	Treatment naive	-0.2791	-0.5638	0.0056
	Post-induction	Treatment naive	-0.0765	-0.5439	0.3909
6-Months post-treatment	Post-TORS	Post-induction	0.0857	-0.6600	0.8315
	Post-TORS	Treatment naive	-0.0421	-0.4980	0.4138
	Post-induction	Treatment naive	-0.1278	-0.7897	0.5341

Estimates adjusted for baseline MDASI-swallow score, patient age, and concurrent chemotherapy.

Supplementary Table 3. Primary treatment modality and 3-6 month dysphagia by TN-Stage, n = 257*

TN-stage of primary	Total				RT				TORS				Missing
	n	(%)	3-6M Dysphagia		n	(%)	3-6M Dysphagia		n	(%)	3-6M Dysphagia		n
			n	(%)			n	(%)			n	(%)		
T1N0	17	(6.61)	10/13	(0.00)	3	(17.65)	0/3	(0.00)	14	(82.35)	0/10	(0.00)	4
T1N1	18	(7.00)	0/15	(0.00)	9	(50.00)	0/7	(0.00)	9	(50.00)	0/8	(0.00)	3
T1N2a	12	(4.67)	0/11	(0.00)	10	(83.33)	0/10	(0.00)	2	(16.67)	0/1	(0.00)	1
T1N2b	77	(29.96)	6/55	(10.91)	62	(80.52)	5/45	(11.11)	15	(19.48)	1/10	(10.00)	22
T2N0	26	(10.12)	4/19	(21.05)	10	(38.46)	2/6	(33.33)	16	(61.54)	2/13	(15.38)	7
T2N1	17	(6.61)	2/15	(13.33)	11	(64.71)	2/10	(20.00)	6	(35.29)	0/5	(0.00)	2
T2N2a	7	(2.72)	2/7	(28.57)	5	(71.43)	2/5	(40.00)	2	(28.57)	0/2	(0.00)	0
T2N2b	76	(29.57)	17/65	(26.15)	66	(86.84)	15/56	(26.79)	10	(13.16)	2/9	(22.22)	11
T3N0	7	(2.72)	3/7	(42.86)	6	(85.71)	3/6	(50.00)	1	(14.29)	0/1	(0.00)	10

Dysphagia assessment at 3 to 6 months post-treatment was missing for 50 study patients –16 (21%) in the TORS group and 34 (19%) in the RT group.