LETTER – BREAST ONCOLOGY

Reply: The Effect of Primary Surgery in Patients with Stage IV Breast Cancer with Bone Metastasis Only (Protocol BOMET MF 14-01): A Multi-center, Registry Study

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Dear Editor,

We'd like to thank Drs. Ishizuka and Horimoto for their letter to the editor. We're glad to see their interest to our prospective study. Regarding their recommendation that univariate Kaplan–Meier analysis does not eliminate confounding factors, such as age, tumor size, number of bone metastasis, etc., we employed propensity score methods for the results, including Fig. 1.

Statistical Analysis: A propensity score matching method is employed accounting for confounding covariates. Systemic therapy and surgery groups are matched based on significantly different clinicopathological factors, including age, tumor size, number of bone metastasis, histologic grade, treatment to primary breast tumor, and intervention to metastatic sites. Full matching gave the best matching and adequate balance (Supplemental Table 1; Supplemental Fig. 1). Kaplan–Meier survival curves in systemic therapy and surgery groups are estimated in the matched sample. Stratified log-rank tests (stratifying on matched sets) used to compare survival curves. Cox regression models weighted by the matching weights and including subclasses as a cluster were run to estimate marginal hazard ratios (HR) and 95% confidence intervals (CI). Statistical analyses were conducted with R version 4.1.0 (R Foundation for Statistical Computing, Vienna, Austria).
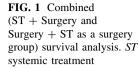
We believe that as the author stated in the letter these new analyses deliver more precise information to the readers. This propensity score matching method supports with an additional evidence that primary breast surgery should be in the treatment scheme in patients with de novo stage IV breast cancer.
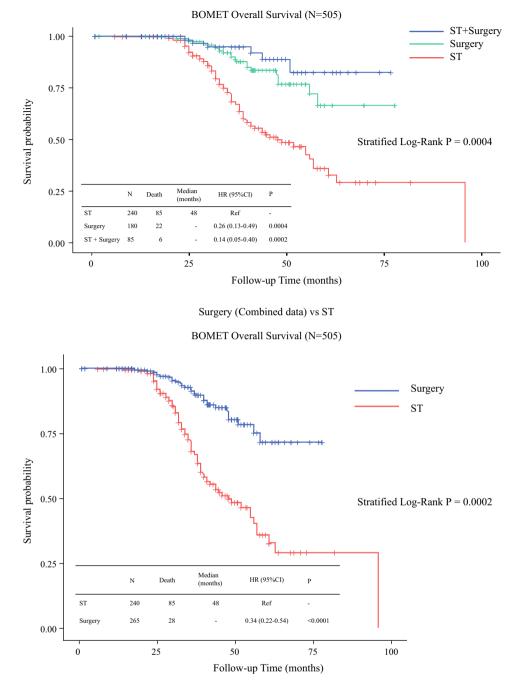
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FIG. 1 Combined (ST + Surgery and Surgery + ST as a surgery group) survival analysis. *ST* systemic treatment

BOMET Overall Survival (N=505)

Stratified Log-Rank P = 0.0004

	N	Death	Median (months)	HR (95%CI)	P
ST	240	85	48	Ref	-
Surgery	180	22	-	0.26 (0.13–0.49)	0.0004
ST + Surgery	85	6	-	0.14 (0.05–0.40)	0.0002

Surgery (Combined data) vs ST

BOMET Overall Survival (N=505)

Stratified Log-Rank P = 0.0002

	N	Death	Median (months)	HR (95%CI)	P
ST	240	85	48	Ref	-
Surgery	265	28	-	0.34 (0.22–0.54)	<0.0001