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Appendix Table 1. Comparison of different methods for survival analysis after propensity score matching (n=540).

	90-day*		
	Hazard ratio (95% CI)	Standard error	P-value
Log-rank stratified	-	-	0.38
McNemar	1.12 (0.75-1.66)	-	0.56
Cox proportional hazard			
Unadjusted	1.09 (0.79-1.51)	0.179	0.59
Stratified quintiles	1.09 (0.79-1.51)	0.179	0.59
Weighting (IPT)	1.13 (0.81-1.56)	0.188	0.48
Robust variance estimator	1.09 (0.79-1.50)	0.178	0.59
	1-year*		
	Hazard ratio (95% CI)	Standard error	P-value
Log-rank stratified	-	-	0.03
McNemar	1.43 (1.00-2.08)	-	0.04
Cox proportional hazard			
Unadjusted	1.26 (1.01-1.57)	0.142	0.04
Stratified quintiles	1.26 (1.01-1.57)	0.142	0.04
Weighting (IPT)	1.28 (1.02-1.61)	0.148	0.03
Robust variance estimator	1.26 (1.01-1.57)	0.142	0.04

*CI=confidence interval; IPT=inverse probability of treatment. **Bold** indicates statistical significance ($P<0.05$).*

**Survival could be ascertained for respectively impending and completed pathological fracture in 90-days 262 (97%) and 262 (97%); and 1-year 256 (95%) and 253 (94%).*

Appendix Table 2. Summary of study characteristics that compare patients undergoing surgery for impending and completed pathological fracture in long bone metastases as their primary study aim.

Author, year	Location	Years	Number	Impending; Completed	Database	Controlled for
Groot, 2021	Long bone	1999-2017	1,064 (non-PSM) 540 (PSM)	I 462; C 602 (non-PSM) I 270; C 270 (PSM)	MGH and BWH	Propensity score matched on 22 variables
El Abiad, 2019	Long bone	2006-2016	1,317	I 461; C 856	NSQIP	Age, BMI, disseminated cancer
Phillipp, 2019	Femur	2010-2015	950	I 362; C 588	National Veterans Administration Database	Gagne comorbidity score, primary tumor
Mclynn, 2018	Femur	2005-2015	620	I 332; C 288	NSQIP	Age, sex, BMI, ASA class, disseminated cancer
Aneja, 2017	Femur	2002-2011	5,579	I 2,750; C 2,829	NIS	Age, sex, comorbidities, payer type
Blank, 2016	Long bone	2011-2014	40	I 19; C 21	NYU Langone	None
Arvinius, 2013	Femur	1995-2011	65	I 21; C 45	Hospital Clínico San Carlos, Madrid	None
Ristevski, 2009	Femur	1992-1997	551	I 350; C 201	OHIP	Age, sex, comorbidities, primary tumor
Ward, 2003	Femur	1991-2002	182	I 97; C 85	Wake Forest University Baptist Medical Center	None

I=impending pathological fracture; C=completed pathological fracture; PSM=propensity score matching; MGH=Massachusetts General Hospital; BWH=Brigham and Women's Hospital; NSQIP= National Surgical Quality Improvement Program; NIS=National Inpatient Sample; NYU=New York University; OHIP=Ontario Health Insurance Plan; BMI=body mass index; ASA=American Society of Anesthesiologists

Appendix Table 3. Summary of study outcomes that compare patients undergoing surgery for impending and completed pathological fracture in long bone metastases as their primary study aim.

Author, year	Survival 30-day or 90-day	Survival 1-year or longer	Operation time	Blood loss	Transfusion	LOS	Complications	Reoperations
Groot, 2021 [#]	90-day HR 1.13 (0.81-1.56); <i>P</i> =.48	1-year HR 1.28 (1.02-1.61); <i>P</i>=.03	Median (IQR) hours I: 2.8 (2.1-3.5) C: 3.1 (2.5-3.6); <i>P</i>=.04	Median (IQR) I: 0.2 (0.1-0.4) C: 0.3 (0.2-0.4); <i>P</i>=.03	Median (IQR) I: 0 (0-2) C: 1 (0-2); <i>P</i>=.01	Median (IQR) days I: 4 (3-7) C: 4 (3-7); <i>P</i> =.09	30 days OR1.12 (0.69-1.83); <i>P</i> =.64	OR 2.50 (1.92-7.86); <i>P</i>=.049
El Abiad, 2019	30-day OR 2.38 (0.88-6.25); <i>P</i> =.09					Mean days (sd) I:6.9 (8.1) vs. C:8.2 (9.0) incidence risk ratio 0.86 (0.74-0.96); <i>P</i>=.01	30-day -major: OR 0.64 (0.45-0.92); <i>P</i>=.02 -other: <i>P</i> >.05	OR 0.65 (0.42-1.01); <i>P</i> =.06
Phillipp, 2019		Overall survival HR 0.75 (0.62–0.89); <i>P</i><.01						
Mclynn, 2018	30-day OR 1.71 (0.95-3.09); <i>P</i> =.07		OR 1.31 (0.90-1.90); <i>P</i> =.16		OR 0.62 (0.38-0.89); <i>P</i>=.01	OR 1.43 (0.99-2.09); <i>P</i> =.06	30-day -any event: OR 1.48 (0.99-2.21); <i>P</i> =.06	
Aneja, 2017					OR 0.74 (0.65, 0.84); <i>P</i><.01	<i>P</i> =.82	In hospital -PE: OR 2.1 (1.3, 3.3) <i>P</i><.01* -DVT: OR 1.5 (1.1, 2.1) <i>P</i>=.03* -UTI: <i>P</i><.01 -Pneumonia, CVA, MI: <i>P</i> >.05	
Blank, 2016						Mean difference 3 days (0.9–7); <i>P</i> =.053		
Arvinus, 2013		Overall survival mean (range) months C: 11 (1-49) I: 14 (1-34); <i>P</i>=.03	Mean (range) minutes I:23 (5-55) C:48 (15-90); <i>P</i><.01			Mean days (range) I: 8 (3-27) C:16 (4-60); <i>P</i><.01	Technical failure I:1 C:1; <i>P</i> =.52	
Ristevski, 2009		Overall survival OR 1.48 (1.23–1.79); <i>P</i><.01				<i>P</i><.01 (unadjusted)	<i>P</i> >.05 (unadjusted)	
Ward, 2003		1-year I: 35% C: 25%; <i>P</i>=.02		I: 0.4 C: 0.6; <i>P</i>=.01		I: 7 C: 11; <i>P</i>=.01		

OR=odds ratio; HR=hazard ratios; C=completed; I=impending; IQR=interquartile range; PE=pulmonary embolism; DVT=deep venous thromboembolism; UTI=urinary tract infection; CVA=cerebrovascular accident; MI=myocardial infarction.

The presented results are from the propensity score matching cohort.

* PE and DVT were higher in the prophylactic surgery group. **Bold** indicates statistical significance ($P<0.05$).
