Breast conserving surgery or mastectomy? - Impact on survival

Supplemental Digital Content

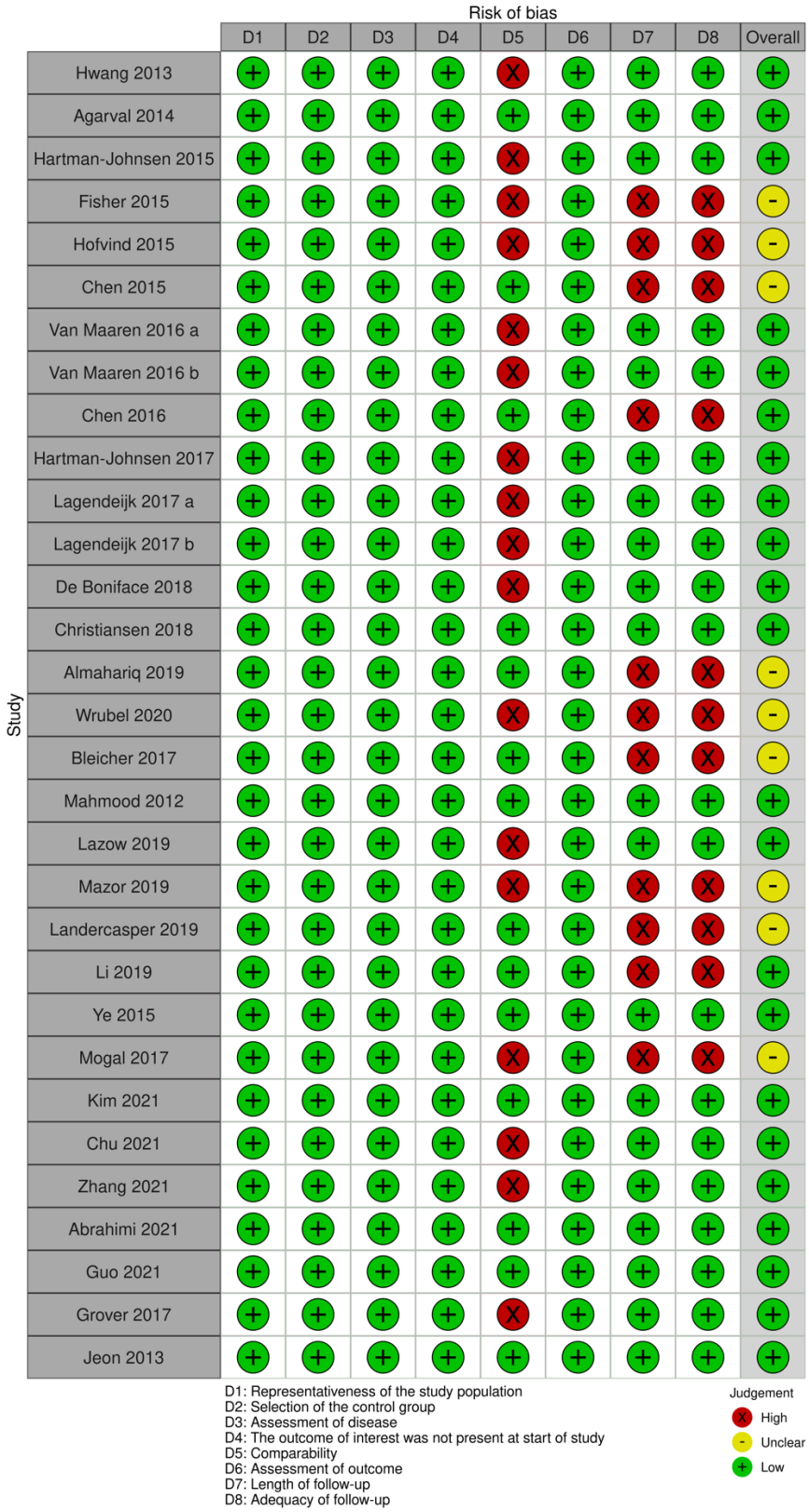
Supplementary Table S1. Risk of bias assessment of the studies included in the review

Risk of bias assessment									
	Selection				Comparability	Outcome			Total (x/9)
Study	Representativeness of the study population	Selection of the control group	Assessment of disease	The outcome of interest was not present at start of study		Assessment of outcome	Length of follow-up	Adequacy of follow-up	
Hwang 2013	x	x	x	x	0	x	x	x	7
Agarval 2014	x	x	x	x	x	x	x	x	8
Hartman-Johnsen 2015	x	x	x	x	0	x	x	x	7
Fisher 2015	x	x	x	x	0	x	0	0	5
Hofvind 2015	x	x	x	x	0	x	0	0	5
Chen 2015	x	x	x	x	x	x	0	0	6
Van Maaren 2016	x	x	x	x	0	x	x	x	7
Van Maaren 2016	x	x	x	x	0	x	x	x	7
Chen 2016	x	x	x	x	xx	x	0	0	7
Hartman-Johnsen 2017	x	x	x	x	0	x	x	x	7
Lagendeijk 2017	x	x	x	x	0	x	x	x	7
Lagendeijk 2017	x	x	x	x	0	x	x	x	7
De Boniface 2018	x	x	x	x	0	x	x	x	7
Christiansen 2018	x	x	x	x	xx	x	x	x	9
Almahariq 2019	x	x	x	x	x	x	0	0	6
Wrubel 2020	x	x	x	x	0	x	0	0	5
Bleicher 2017	x	x	x	x	x	x	0	0	6
Mahmood 2012	x	x	x	x	x	x	x	x	8
Lazow 2019	x	x	x	x	0	x	x	x	7
Mazor 2019	x	x	x	x	0	x	0	0	5
Landercasper 2019	x	x	x	x	x	x	0	0	6
Li 2019	x	x	x	x	xx	x	0	0	7
Ye 2015	x	x	x	x	x	x	x	x	8
Mogal 2017	x	x	x	x	0	x	0	0	5
Kim 2021	x	x	x	x	x	x	x	x	8
Chu 2021	x	x	x	x	0	x	x	x	7
Zhang 2021	x	x	x	x	0	x	x	x	7
Abrahimi 2021	x	x	x	x	x	x	x	x	8
Guo 2021	x	x	x	x	x	x	x	x	8
Grover 2017	x	x	x	x	0	x	x	x	7
Jeon 2013	x	x	x	x	x	x	x	x	8

Supplementary Table S2. Prognostic covariates in the included studies and adjusted for in the overall analyses

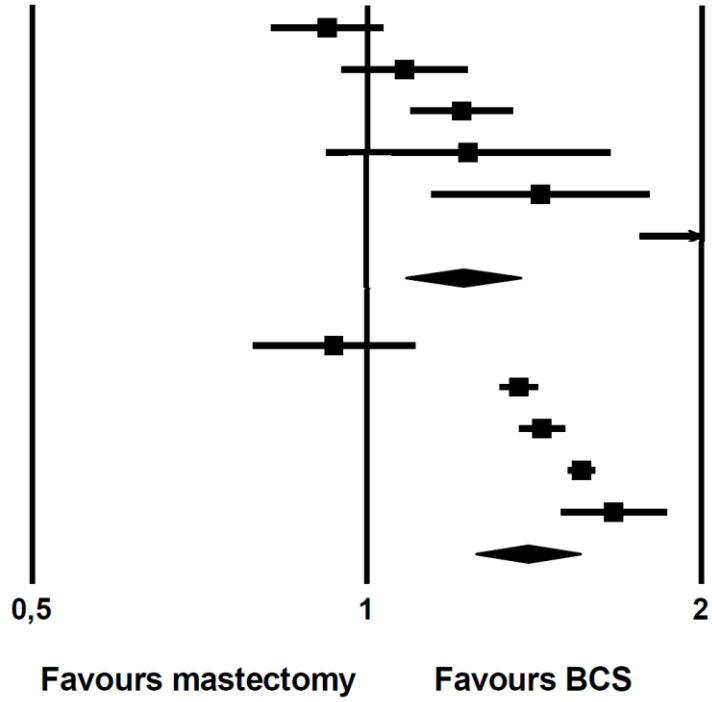
	Tumor characteristics									Patient char.		Treatment				
Study	**T-stage**	**N-stage**	**Locali-zation**	**Foca-lity**	**Type**	**Grade**	**HR**	**HER2**	**LVI**	**Age**	**Comor-bidity**	**RT (mast)**	**CT**	**ET**	**Anti-HER2**	**Total number of covariates**
Mogal et al. 2017 (13)	+	+	-	-	-	-	-	-	-	+	+	-	-	-	-	4
Hwang et al. 2013 (34)	+	+	-	-	-	+	-	-	-	+	-	+	-	-	-	5
Agarwal et al. 2014 (7)	+	+	-	-	-	+	+	-	-	+	-	-	-	-	-	5
Hartmann-Johnsen et al. 2015 (18)	+	+	-	-	+	+	-	-	-	+	-	-	-	-	-	5
Kim et al. 2021 (43)	+	+	-	-	-	+	+	+	-	+	-	-	-	-	-	6
Fisher et al. 2015 (36)	+	+	-	-	-	-	+	-	-	+	-	+	+	+	-	7
Chen, Liu et al. 2015 (12)	+	+	+	-	-	+	+	-	+	+	-	-	-	-	-	7
Guo et al. 2021 (39)	+	+	+	-	-	+	+	+	-	+	-	+	-	-	-	8
Bleicher et al. 2016 (10)	+	+	-	-	-	+	+	-	-	+	+	+	+	-	-	8
Landercasper et al. 2019 (16)	+	+	-	-	+	+	+	-	-	+	+	+	+	-	-	9
Li et al. 2019 (11)	+	+	-	-	+	+	+	+	-	+	-	+	+	-	-	9
Lagendeijk et al. 2017a[1] (23)	+	+	+	-	+	+	-	-	-	+	+	+	+	+	-	10
Abrahimi et al. 2021 (42)	+	+	-	-	+	+	+	-	+	+	-	+	+	+	-	10
de Boniface et al. 2021 (38)	+	+	-	-	+	+	+	+	-	+	+	+	+	+	-	11
Chu et al. 2021 (41)	+	+	-	+	+	+	+	-	-	+	+	+	+	+	-	11
Lagendeijk et al. 2017b[2] (23)	+	+	+	-	+	+	+	+	-	+	+	+	+	+	-	12

Christiansen et al. 2018 (25)	+	+	-	+	+	+	-	+	+	+	+	+	+	+	-	12



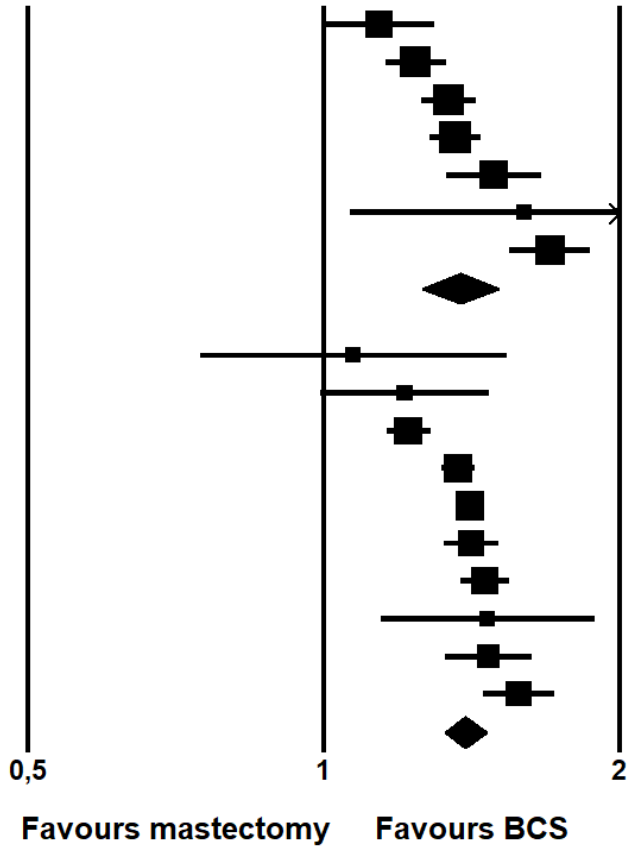
Supplementary Figure S1. Risk of Bias assessment.

Study name	Hazard ratio	Lower limit	Upper limit	p-Value
Almahariq et al. 2020	0,920	0,821	1,031	0,152
Mahmood et al. 2012	1,080	0,950	1,228	0,240
Chen et al. 2015	1,215	1,095	1,348	0,000
Jeon et al. 2013	1,232	0,920	1,650	0,161
Hartmann-Johnsen et al. 2015	1,430	1,143	1,789	0,002
Lazow 2019	2,400	1,761	3,271	0,000
BCS vs mastectomy age < 50	1,220	1,083	1,375	0,001
Bleicher et al. 2016	0,934	0,791	1,103	0,421
Grover 2017	1,370	1,320	1,422	0,000
Chen et al. 2015	1,438	1,374	1,505	0,000
Almahariq et al. 2020	1,560	1,520	1,601	0,000
Hartmann-Johnsen et al. 2015	1,668	1,498	1,857	0,000
BCS vs mastectomy age ≥ 50	1,397	1,254	1,557	0,000



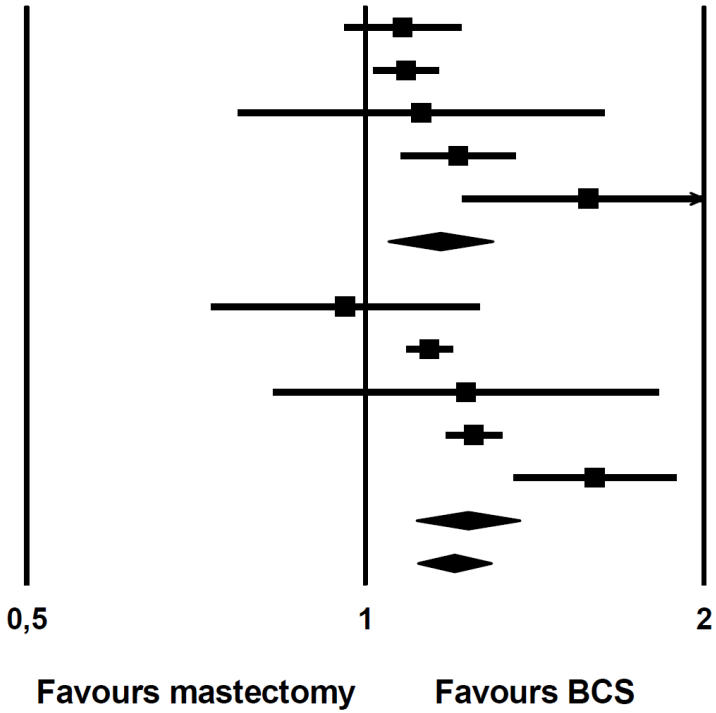
Supplementary Figure S2. Forest plots showing comparisons in overall survival between BCS and mastectomy for patients with age < 50 and ≥ 50, respectively.

Study name	Hazard ratio	Lower limit	Upper limit	p-Value
van Maaren et al. 2016a	1,140	1,005	1,293	0,042
van Maaren et al. 2016b	1,241	1,158	1,330	0,000
Christiansen et al. 2018	1,341	1,260	1,427	0,000
Chen et al. 2015	1,361	1,285	1,441	0,000
Guo et al. 2021	1,489	1,334	1,663	0,000
Hartmann-Johnsen et al. 2017	1,598	1,064	2,400	0,024
de Boniface et al. 2021	1,699	1,548	1,865	0,000
BCS vs. mastectomy N+	1,377	1,260	1,504	0,000
Jeon et al. 2013	1,072	0,750	1,532	0,703
Fisher et al. 2015	1,210	0,995	1,472	0,057
van Maaren et al. 2016	1,220	1,160	1,283	0,000
Grover 2017	1,370	1,320	1,422	0,000
Almahariq et al. 2020	1,410	1,371	1,451	0,000
Chen et al. 2015	1,413	1,326	1,506	0,000
Christiansen et al. 2018	1,460	1,382	1,542	0,000
Hartmann-Johnsen et al. 2017	1,468	1,144	1,883	0,003
Li et al. 2019	1,472	1,331	1,628	0,000
de Boniface et al. 2021	1,579	1,457	1,712	0,000
BCS vs. mastectomy N0	1,392	1,326	1,462	0,000

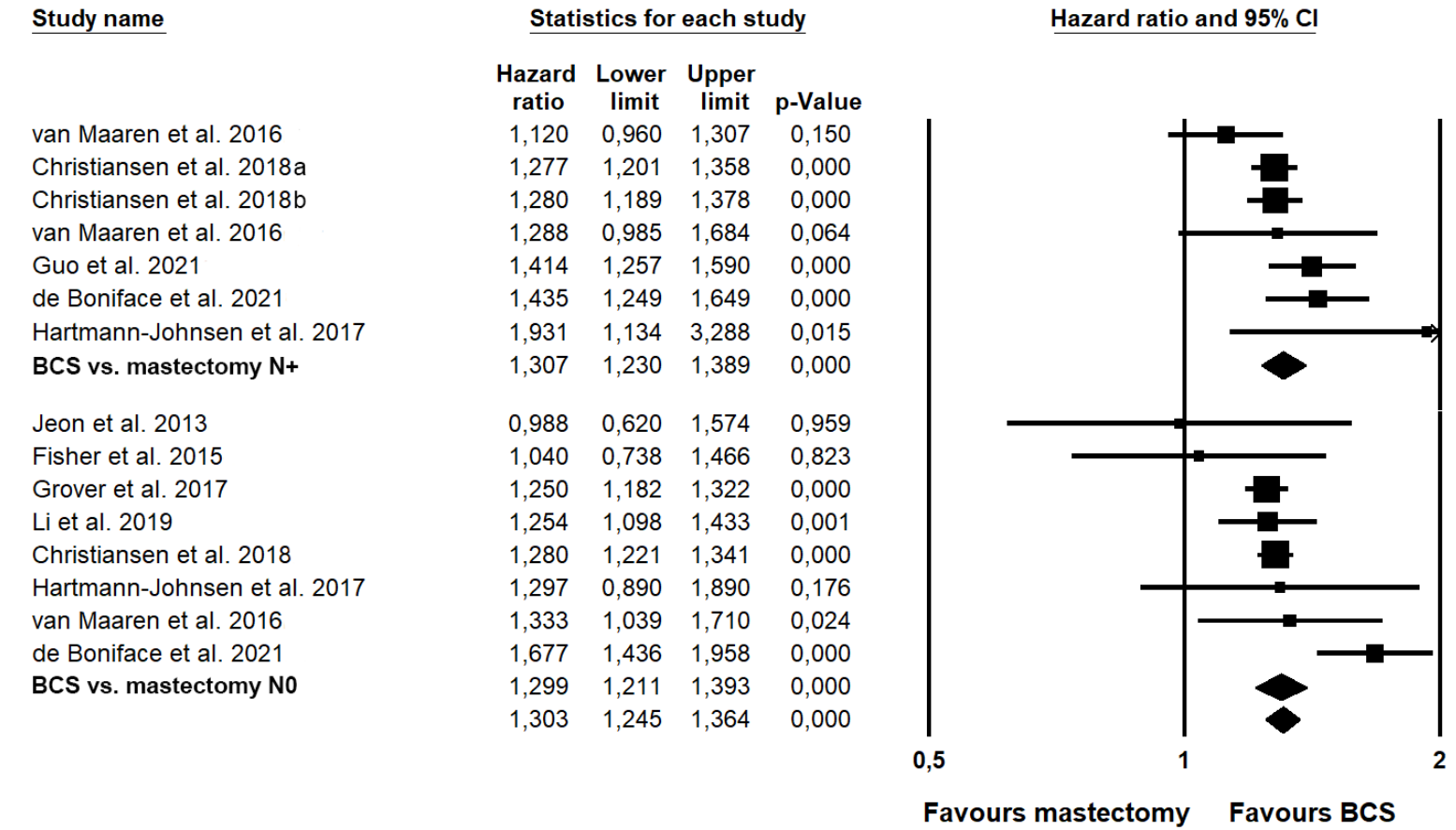


Supplementary Figure S3. Forest plots showing comparisons in overall survival between BCS and mastectomy for node positive (N+) and node negative (N0) patients, respectively.

Study name	Hazard ratio	Lower limit	Upper limit	p-Value
Mahmood et al. 2012	1,080	0,960	1,215	0,200
Hwang et al. 2013	1,087	1,019	1,160	0,012
Jeon et al. 2013	1,122	0,772	1,630	0,546
Christiansen et al. 2018	1,210	1,078	1,358	0,001
Hartmann-Johnsen et al. 2015	1,580	1,222	2,043	0,000
BCS vs mastectomy age < 50	1,167	1,049	1,299	0,005
Bleicher et al. 2016	0,960	0,731	1,261	0,769
Hwang et al. 2013	1,141	1,091	1,194	0,000
Mogal et al. 2017	1,230	0,831	1,821	0,301
Grover et al. 2017	1,250	1,182	1,322	0,000
Hartmann-Johnsen et al. 2015	1,600	1,357	1,886	0,000
BCS vs mastectomy age ≥ 50	1,235	1,111	1,373	0,000



Supplementary Figure S4. Forest plots showing comparisons in breast cancer specific survival between BCS and mastectomy for patients with age < 50 and ≥ 50, respectively.



Supplementary Figure S5. Forest plots showing comparisons in breast cancer specific survival between BCS and mastectomy for node positive (N+) and node negative (N0) patients, respectively.