

Restricted mean survival time (RMST): a new tool for time to event analysis in young breast cancer patients (YBCP)

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BACKGROUND

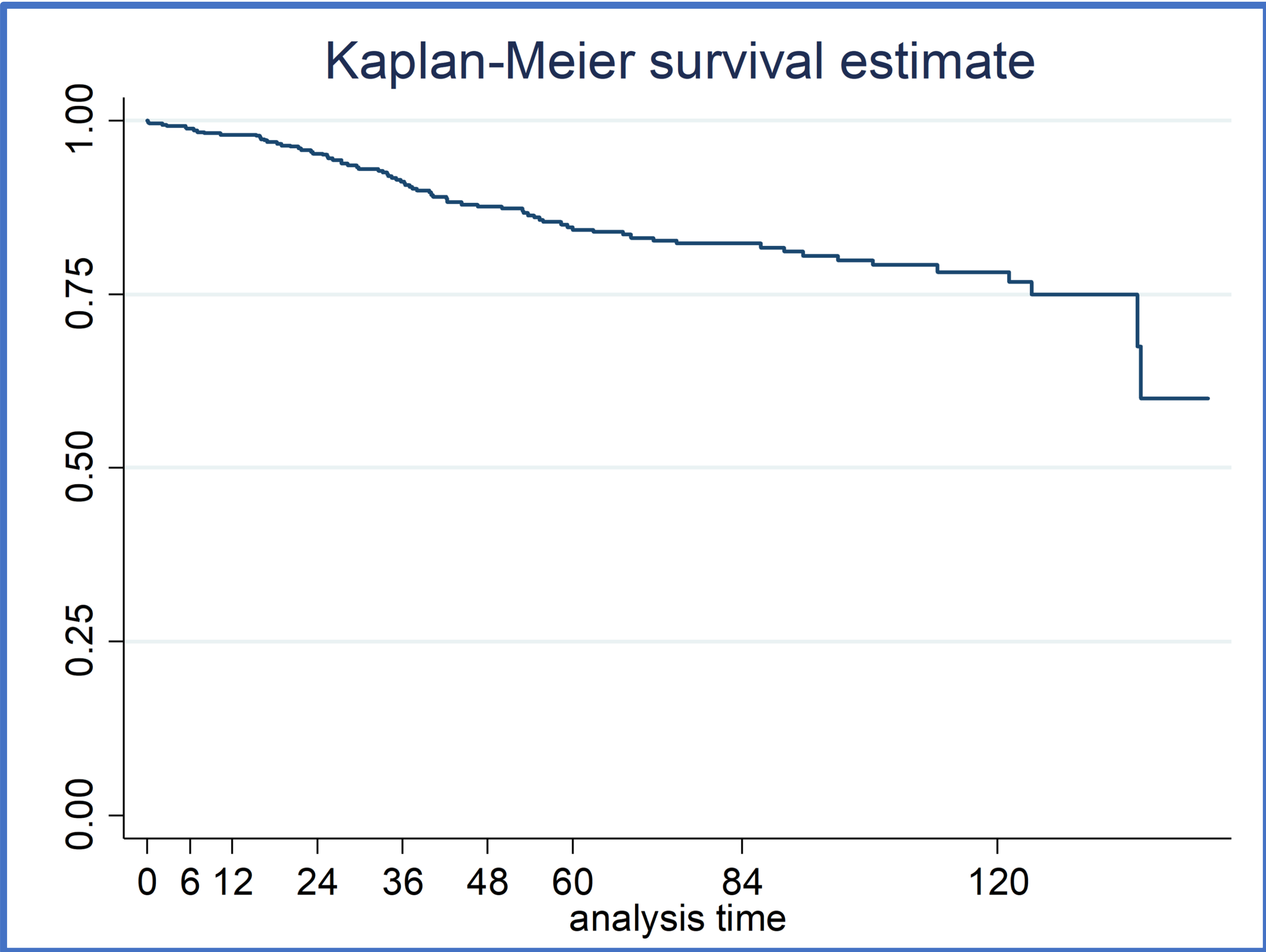
Breast cancer (BC) remains the most common malignancy among female young patients and the leading cause of cancer death in this population. BC in young women is a social problem since it often appears during the highest family and professional activity. Very often, YBCP are classified as high risk only by age.

METHODS

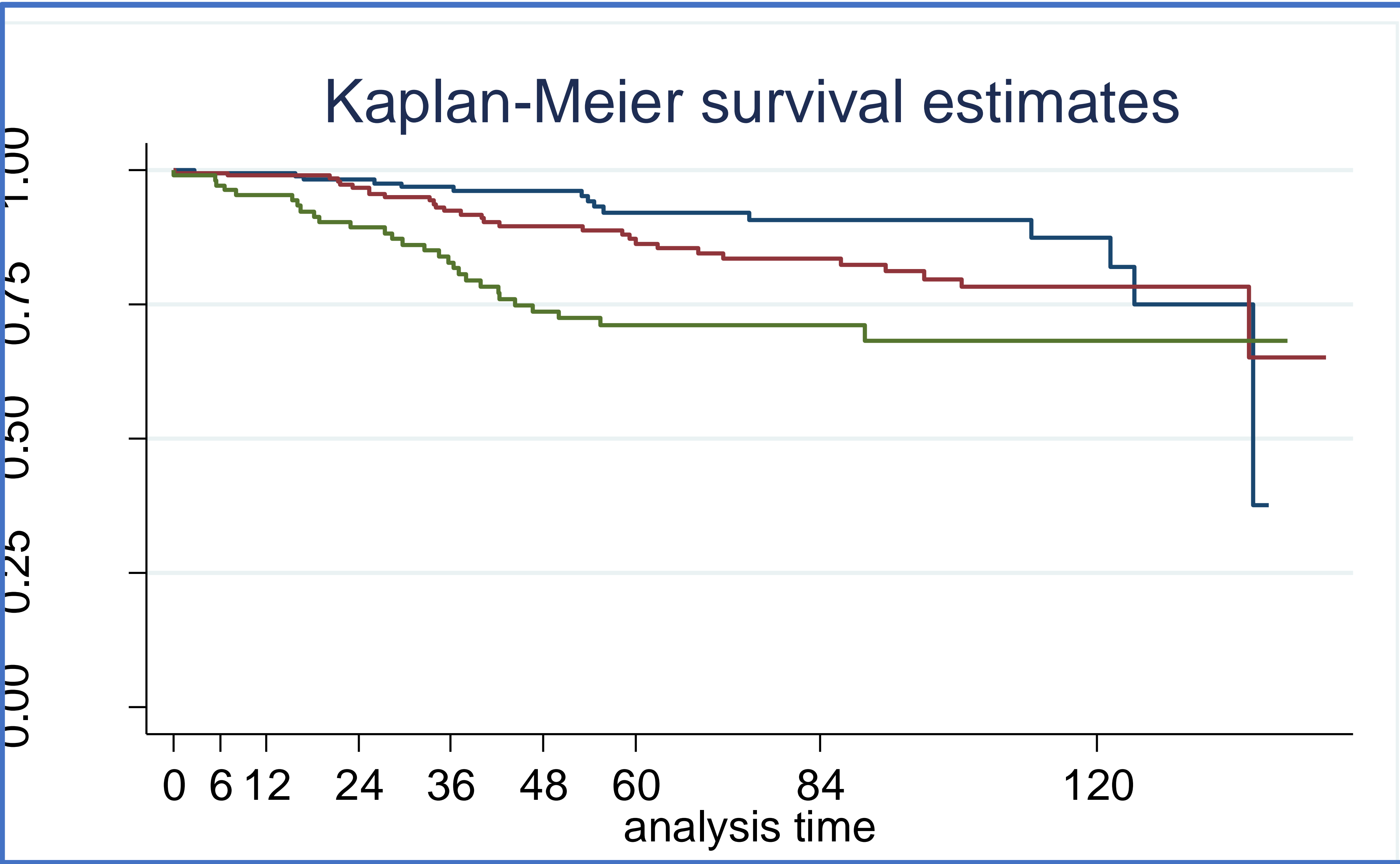
A retrospective analysis of women with BC diagnosed between 2009-2019 in HUPH in Madrid and ≤ 45 years old at the moment of the diagnosis was made. Survival was analyzed according to histopathological subtypes and stages in this population. The Cox proportional hazards model could not be used because our variables could not meet the proportional hazards (PH) assumption. Instead, the RMST at 60 months has been analyzed as an alternative, which means expected survival time subject to a specific time horizon. Kaplan Meier curves were also estimated.

RESULTS

	TN	HR+/HER2-	HR+/HER2+	HR-/HER2+
n	60	357	58	21
p=.03				
Stage (S): n(%)				
I	12 (20%)	144 (40,3%)	15 (25,9%)	7 (33,3%)
II	33 (55%)	141 (39,5%)	25 (43,1%)	10 (47,6%)
III	15 (25%)	72 (20,2%)	18 (31%)	4 (19,1%)
Relapses: n (%)	14 (23,3%)	52 (14,9%)	7 (11,9%)	6 (27,3%)
RMST				
Expected average survival time within 60 months				
S I:				
Average time (95%IC)	50,5 (40,1 – 60,9)	59 (58 – 59,9)	60 (60 - 60)	52,6 (39,5 – 65,8)
S II:				
Average time (95%IC)	51,5 (45,4 – 57,5)	57,3 (55,6 - 59)	60 (60 - 60)	55,3 (49,7 – 60,9)
S III:				
Average time (95%IC)	42,3 (29,8 – 54,8)	51,7 (48,1 – 55,4)	54,3 (48,4 – 60,2)	56,6 (51,3 - 62)
Relapse Free Survival Rate at 24 // 60 months				
S I	91,6% / 61,1 %	99,2% /93,7%	100% /100%	83,3% /83,3%
S II	92,9% /73,9%	96,8% /87,5%	100% /100%	100% /75%
S III	69,8% /55,9%	91,3% /72,1%	93,8% / 79,3%	100% /66,7%
All stages	87,4% /67,5%	96,3% /85,8%	97,9% /92,8%	90% /72,9%



ALL STAGES



STAGE I
STAGE II
STAGE III

A total of 537 YBCP were analyzed, 104 events were defined (relapse) with a median follow up of 69 months (95% IC: 63,7 – 73,6). The patients were divided by histopathological subtypes and stages, and no significant differences were found between stages according to histological subtypes. RMST was clearly diminished independently stage in triple negative and HR-/HER2+ disease (except for stage III due to a low number of subjects). These differences were greater within stage III between triple negative disease and the other histologies. These results were compared with a Kaplan Meier analysis at 24 and 60 months showing that the risk of relapse was higher in the HR negative subtypes regardless of HER2 status.

CONCLUSIONS

The RMST is a valid tool to analyze the risk of relapse according to the tumor biology and the stage at the time of diagnosis, being comparable to the PH in detecting differences between arms when hazards are proportional, but better when they are not.