

# THE OUTCOME OF RADIATION SEGMENTECTOMY VS. RADIOFREQUENCY ABLATION IN EARLY STAGE HEPATOCELLULAR CARCINOMA

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## INTRODUCTION

The technique used for attempted curative management of hepatocellular carcinoma (HCC) carries enormous consequences for the patients involved and for the healthcare system at large. Recurrence of HCC after curative treatment is associated with extremely poor prognosis and is often a terminal diagnosis.

The purpose of this study was to create the Abbott Northwestern HCC database and use it to compare the efficacy of radiation segmentectomy (RS) to radiofrequency ablation (RFA) in the management of early stage HCC.

## METHODOLOGY

We conducted a retrospective cohort study of patients with HCC undergoing treatment at the Virginia Piper Cancer Institute between 2006 and 2018.

**Exposure** = Adults with Barcelona Clinic Liver Cancer Stage 0 or A who underwent treatment with either RS or RFA.

**Outcome** = Transplant-free and progression-free survival.

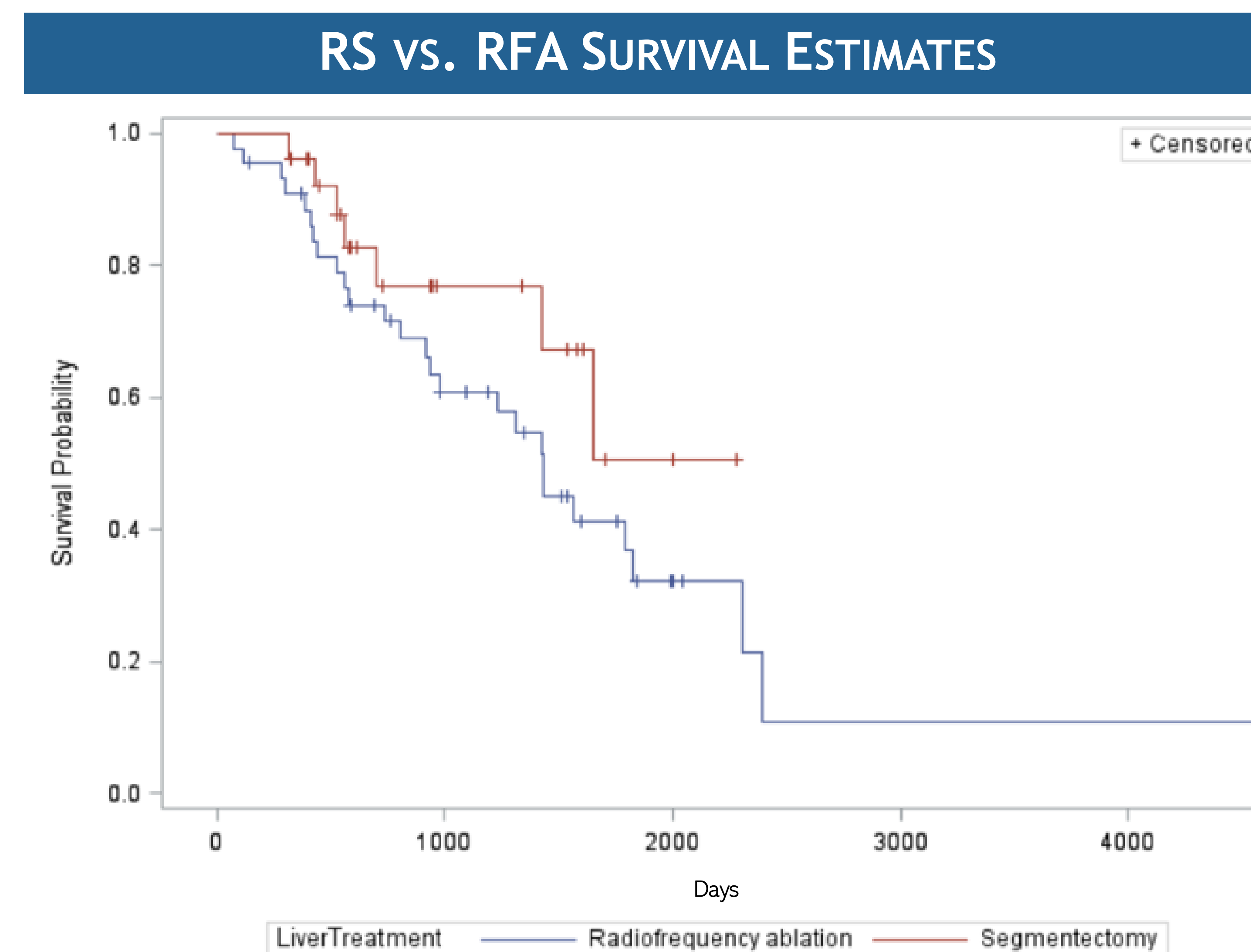
**Time at Risk** = the date of initial HCC treatment to the date of outcome, liver transplantation or last follow-up examination.

Statistical analysis used Kaplan-Meier method and Cox regression with significance set at  $p < 0.05$ .

## RESULTS

STUDY POPULATION CHARACTERISTICS			
	RS	RFA	p-value
Patients (n)	27	44	
Mean Age*	59.9	67.4	<0.01
Male (%)	66.7	70.5	0.74
Follow-up (days)	1162 (912-1413)	949 (722-1176)	0.24

\* = statistically different between treatment groups



STUDY POPULATION OUTCOMES N(%)			
	RS	RFA	p-value
Death	2 (7.4)	12 (27.3)	0.04
Recurrence*	5 (18.5)	13 (29.6)	0.30
Transplant	0 (0.0)	1 (2.3)	0.43
Survived 5 Yrs	2 (7.4)	5 (11.4)	0.59
LTFU	18 (66.7)	13 (29.6)	<0.01

\* = Defined as date of second treatment, if greater than 180 days  
LTFU = Loss to follow up

COMORBIDITIES N(%)			
	RS	RFA	p-value
Cirrhosis*	14(51.9)	34 (77.3)	0.03
Diabetes	8 (29.6)	11 (25.0)	0.67
Hypertension	15 (55.6)	18 (40.9)	0.23
Hyperlipidemia	4 (14.8)	5 (11.4)	0.67

\* = statistically different between treatment groups

HAZARD RATIO MODELS			
	HR	95% CI	p-value
Model 1 <sup>a</sup>	1.76	(0.76 – 4.10)	0.19
Model 2 <sup>b</sup>	1.81	(0.76 – 4.32)	0.18
Model 3 <sup>c</sup>	1.54	(0.62 – 3.86)	0.35
Model 4 <sup>d</sup>	1.58	(0.62 – 4.02)	0.34

a = crude RS and RFA association  
b = adjusted for cirrhosis

c = adjusted for age  
d = adjusted for age and cirrhosis

## CONCLUSION

RS was significantly younger than RFA and when adjusting for age the HR decreased by 12.5%. However, all models showed no significant difference in transplant-free survival between patients who had RS vs. those who underwent RFA.

Radiation segmentectomy is as effective as radiofrequency ablation in the management of early stage hepatocellular carcinoma, but age was a confounder and large prospective studies are needed to validate these findings.

## FUNDING

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