

# Surgical Outcomes of Hepatocellular Carcinoma Within Milan Criteria in our department: especially assess by the timing of sustained virological response

Yuko Takami<sup>1</sup>, Yoshiyuki Wada\*<sup>1</sup>, Tomoki Ryu<sup>1</sup>, Hiroki Ureshino<sup>1</sup>, Hajime Imamura<sup>1</sup>, Shin Sasaki<sup>1</sup>, Hideki Saitsu<sup>1</sup>  
<sup>1</sup>Department of Hepato-Biliary Pancreatic Surgery, Clinical Research Institute, National Hospital Organization Kyushu Medical Center, Fukuoka, Japan



## INTRODUCTION

Patients undergoing liver transplantation (LT) for hepatocellular carcinoma (HCC) within the Milan criteria (MC) (single tumour ≤5 cm in size or ≤3 tumours each ≤3 cm in size, and no macrovascular invasion) have an excellent outcome. Until 2017 more than 1600 HCC patients in Japan have received LT. But there are various problems such as shortage of deceased donor liver.

## AIM

In our department, we have aggressively treated HCC patients within MC using hepatic resection (HR) and/or microwave coagulo-necrotic therapy (MCN) as locoregional therapy. Now we assess the outcome of our strategy and especially evaluate the relationship between the timing of sustained virological response (SVR) and the postoperative results in the hepatitis C virus patients.

## RESULTS

1,3,5, and 10-year OS of all patients were 98.0, 86.1, 72.0, and 41.0%. And 1,3,5, and 10-year RFS were 91.2, 59.0, 42.2, and 23.0%. Multivariate analysis showed that hepatitis C virus positivity and Child-Pugh B were independent risk factor for OS and in addition to these two, the number of tumor and DCP>100mAU/ml were independent risk factor for RFS. Among hepatitis C virus patients, 61 patients with SVR before the onset of HCC had significantly better OS and RFS (97.4 and 74.6%) than 35 patients with SVR after the treatment of HCC and 480 patients without SVR (P<0.0001). And more, OS of patients with SVR before the onset of HCC was significantly better than that of non-B and non-C HCC (NBNC-HCC), which is negative for HCV and hepatitis B virus infection (P=0.0118) and RFS of this group was comparable to NBNC-HCC (P=0.1053).

Characteristic	(n=893)
years, median (range)	69 (38-93)
Sex, men, n (%)	574(64%)
HBV +, n (%)	138 (15%)
HCV +, n (%)	591 (66%)
NBNC, n (%)	176 (20%)
Alb g/dL, median (range)	3.9 (1.8-5.5)
T.Bil., mg/dL, median (range)	0.9 (0.1-2.9)
PT, %, median (range)	83(23-170)
ICGR15, %, median (range)	25.1 (1.2-111.2)
PLT, /μL, median (range)	14.4 (4.4-30.7)
Child-Pugh class, A, n (%)	703 (79%)

Characteristic	(n=893)
Tumor number, n (%)	
1	642 (72%)
≤3cm	447
>3cm	195
2	148 (16%)
3	103 (12%)
AFP, ng/mL, median (range)	422(0-103156)
AFP-L3, %, median (range)	11(0-93)
DCP, mAU/mL, median (range)	523 (0-36500)
Histological grade, well:mode:poor	61:580:76

## Univariate and Multivariate Analyses for OS

Characteristic	Univariate analysis			Multivariate analysis		
	OR	95% CI	P-value	OR	95% CI	P-value
Age, years, (>75)	0.80	0.63-1.01	0.057			
Sex (male)	0.90	0.73-1.01	0.288			
Hepatitis C virus (positive)	1.73	1.38-2.18	<0.001	1.55	1.20-2.00	<0.001
Child-Pugh (class B)	2.26	1.83-2.80	<0.001	2.17	1.72-2.74	<0.001
Number of tumors (resected)	1.32	1.07-1.63	0.009	1.27	1.00-1.60	0.044
AFP (ng/mL) (>200)	1.23	0.96-1.58	0.109			
AFP (ng/mL) (>500)	1.16	0.85-1.60	0.351			
DCP (mAU/mL) (>100)	1.37	1.08-1.75	0.010			
Maximum tumor size (mm) (>30)	1.02	0.80-1.29	0.890			

## Univariate and Multivariate Analyses for RFS

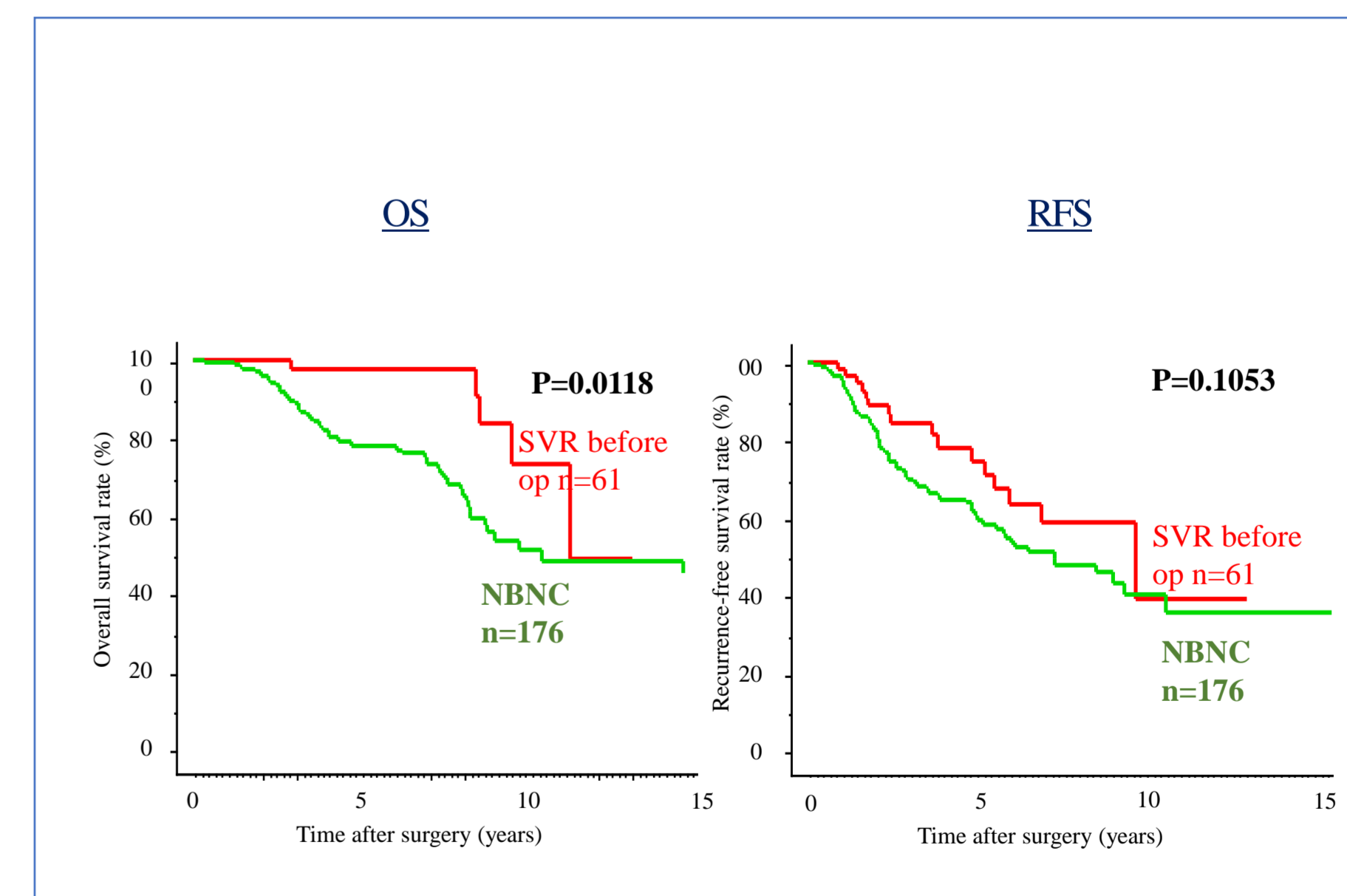
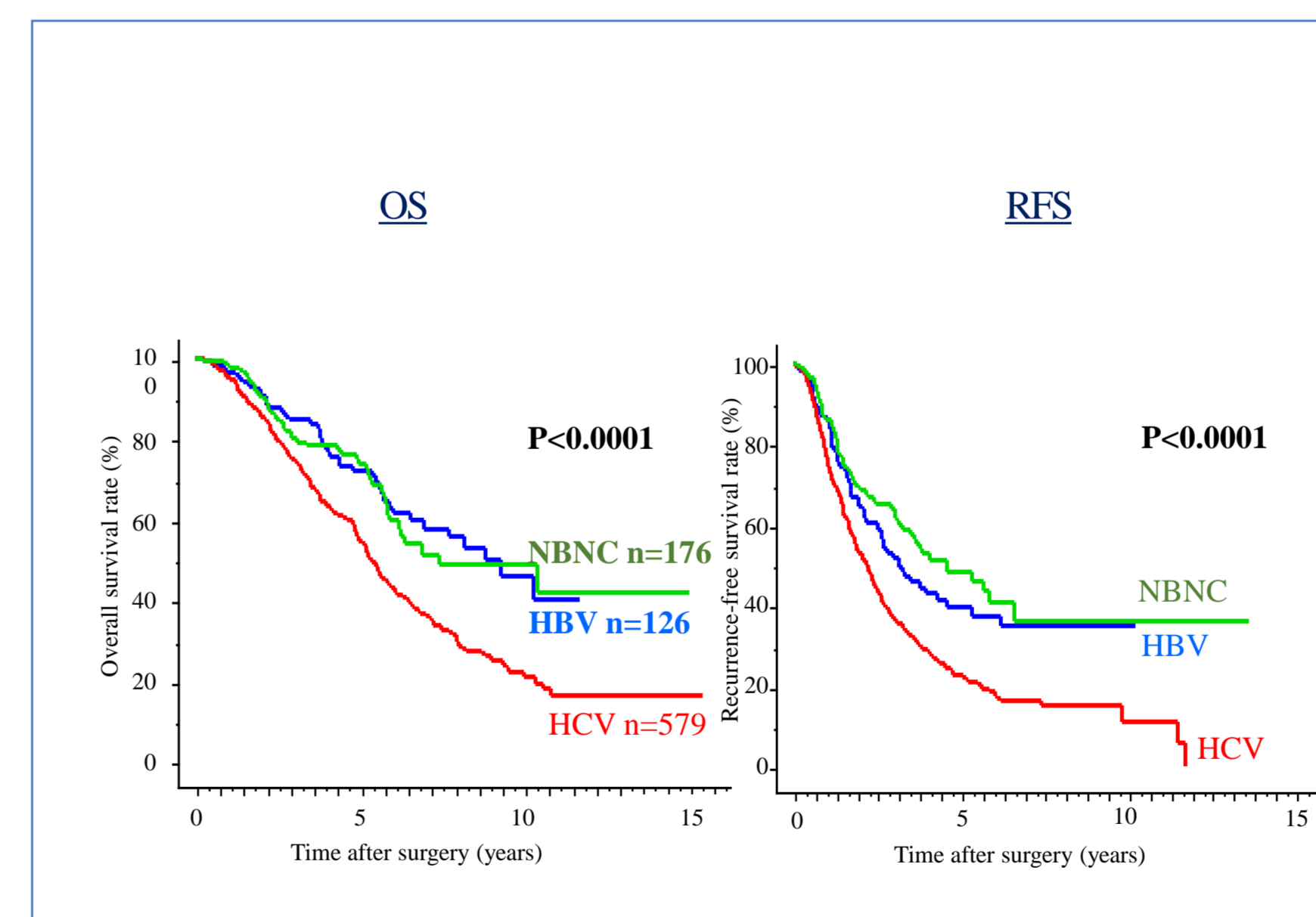
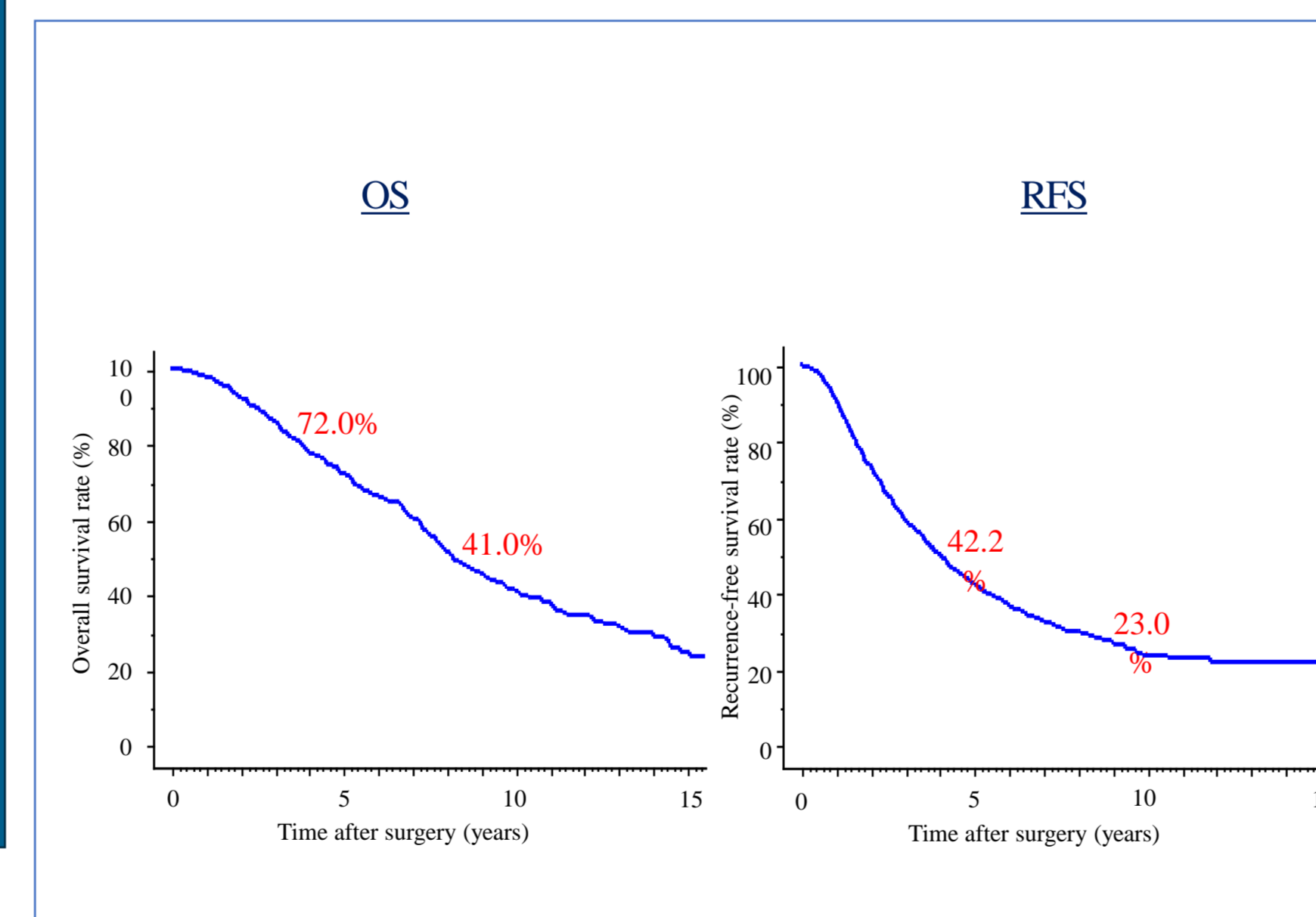
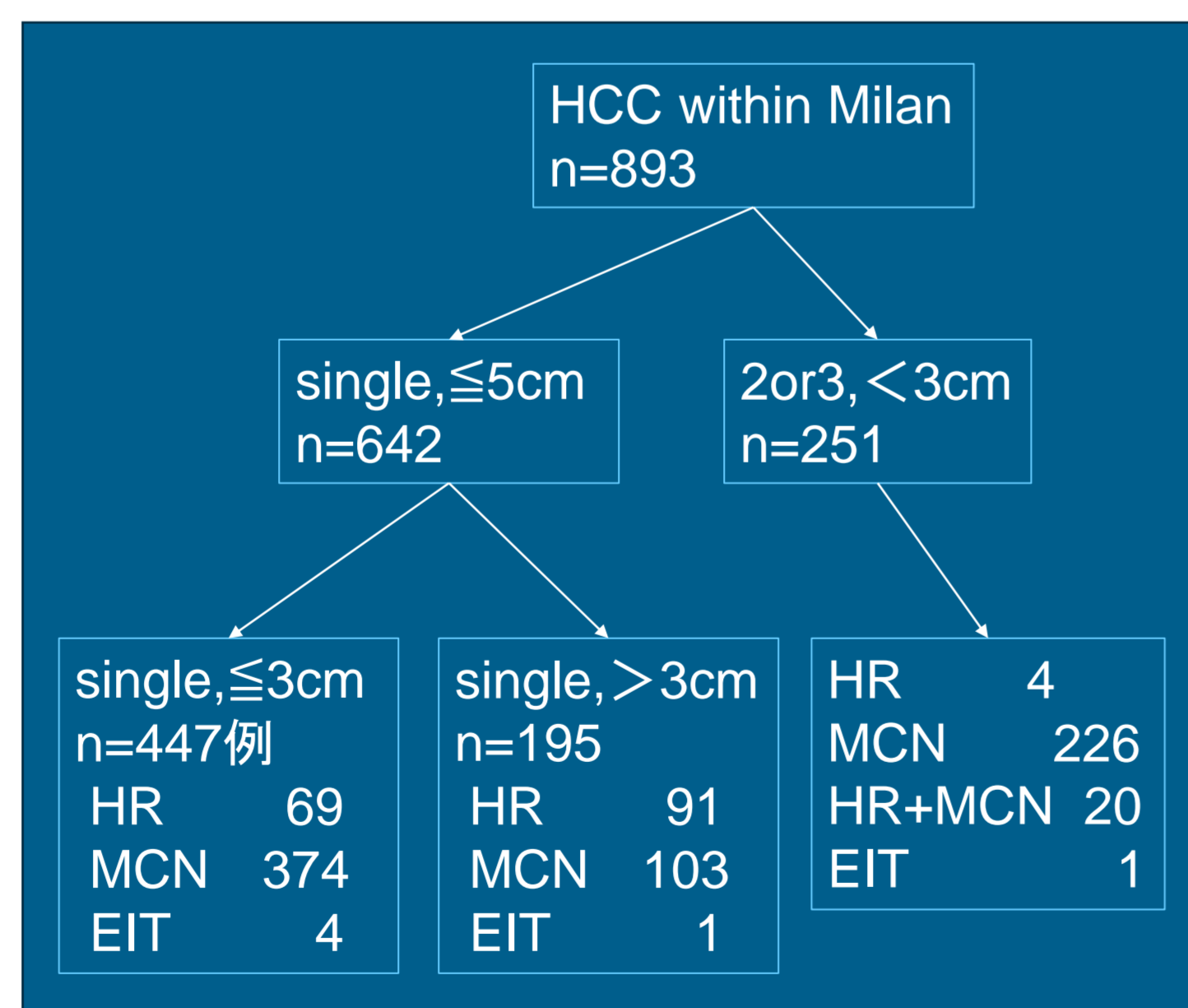
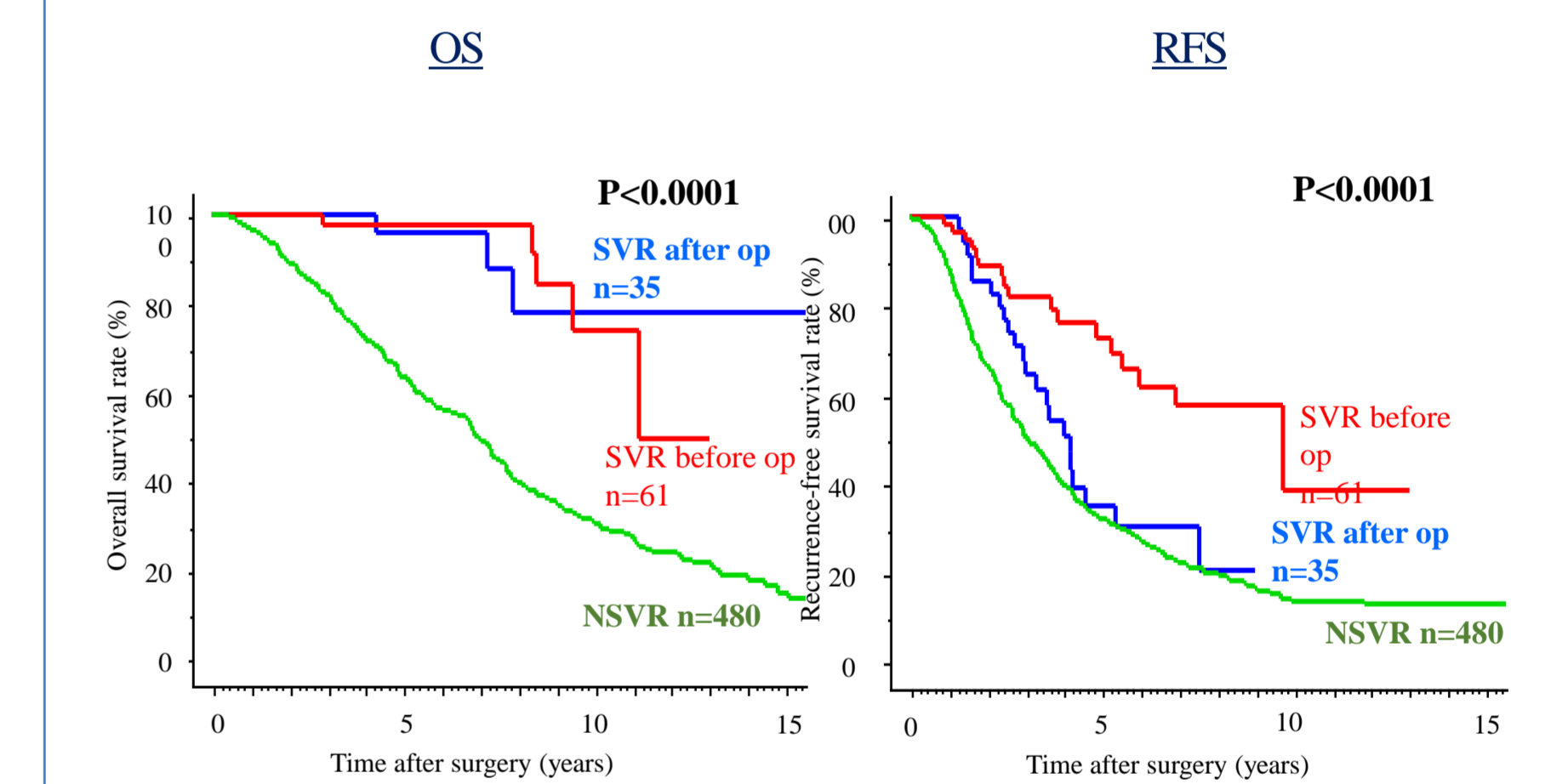
Characteristic	Univariate analysis			Multivariate analysis		
	OR	95% CI	P-value	OR	95% CI	P-value
Age, years, (>75)	1.07	0.88-1.31	0.511			
Sex (male)	1.19	0.99-1.42	0.067			
Hepatitis C virus (positive)	1.94	1.50-2.50	<0.001	1.60	1.30-1.98	<0.001
Child-Pugh (class B)	1.71	1.41-2.08	<0.001	1.44	1.15-1.79	0.002
Number of tumors (resected)	1.45	1.21-1.75	<0.001	1.42	1.16-1.74	<0.001
AFP (ng/mL) (>200)	1.35	1.08-1.68	0.009	1.34	1.05-1.71	0.021
AFP (ng/mL) (>500)	1.27	0.96-1.67	0.094			
DCP (mAU/mL) (>100)	1.34	1.09-1.65	0.006	1.40	1.13-1.73	0.002
Maximum tumor size (mm) (>30)	1.34	0.89-1.34	0.409			

HCV + (HCV-Ab positive)  
n=591

SVR before op  
n=61

SVR after op  
n=35

NSVR  
n=480



## METHOD

893 patients with HCC within MC treated in our department between 1994 and December 2018 were reviewed. Overall survival (OS), and recurrence free survival (RFS) were analyzed.

## CONCLUSIONS

The outcome of our surgical strategy without LT had good results in HCC within MC. Even in the positive for HCV infection, preoperative SVR group had favorable OS and RFS. Using DAA (Direct Acting Antiviral) and early SVR before HCC could be important for improving postoperative survival.

## REFERENCES

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## CONTACT INFORMATION

takami.yuko.px@mail.hosp.go.jp