

# The role of laparoscopic liver resection in the current management of small HCC ( $\leq 30$ mm): comparison with radio frequency ablation

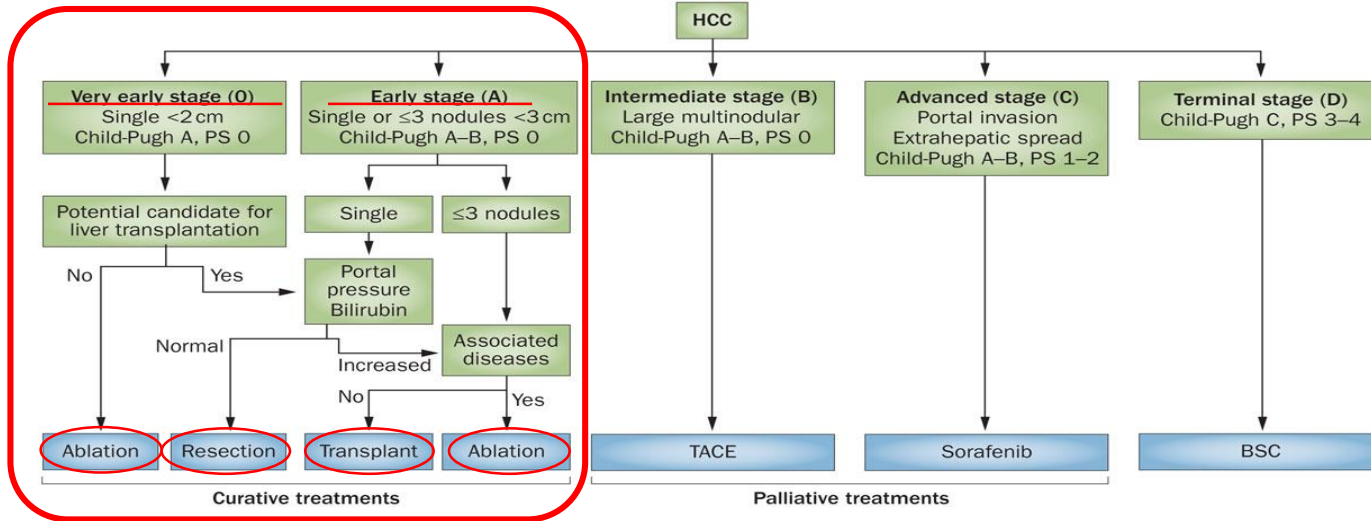
Satoshi Ogiso<sup>1</sup>, Satoru Seo<sup>1</sup>, Yuji Eso<sup>2</sup>, Tomoaki Yoh<sup>1</sup>, Ken Fukumitsu<sup>1</sup>, Takamichi Ishii<sup>1</sup>, Kojiro Taura<sup>1</sup>, Kentaro Yasuchika<sup>1</sup>, Hiroyuki Marusawa<sup>2</sup>, Toshimi Kaido<sup>1</sup>, Hideaki Okajima<sup>1</sup>, Hiroshi Seno<sup>2</sup>, Shinji Uemoto<sup>1</sup>

1. Department of Surgery
2. Department of Gastroenterology and Hepatology  
Graduate School of Medicine, Kyoto University, Kyoto



# Treatment options for early stage HCC

## BCLC staging and treatment strategy



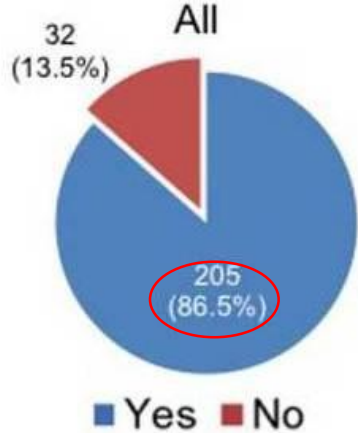
Forner A, Llovet JM, Bruix J. Hepatocellular carcinoma. *Lancet* 2012

Recommendation for the treatment of early stage HCC (BCLC 0-A):  
ablation, resection, or transplantation

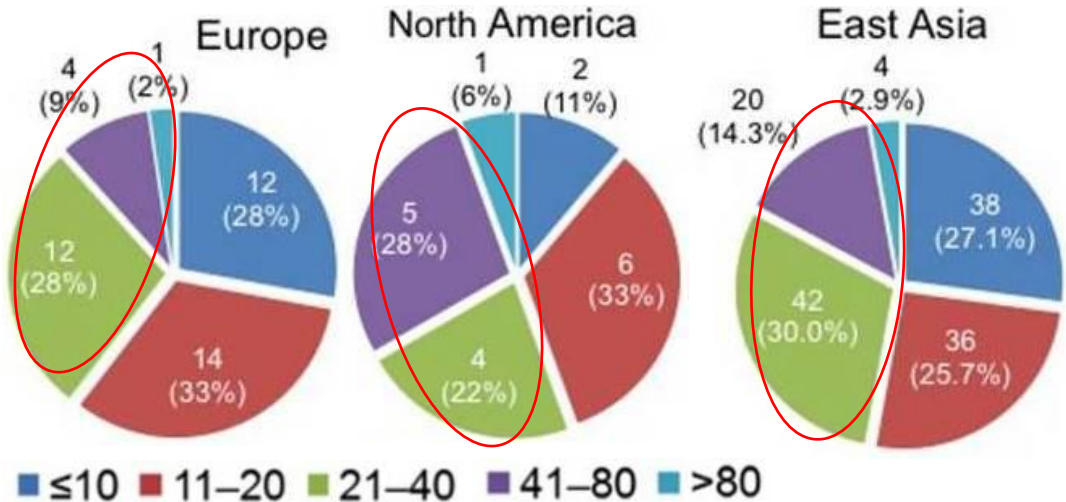
Forner, A. et al. Treatment of intermediate-stage hepatocellular carcinoma. *Nat. Rev. Clin. Oncol* 2014

# Dissemination of lap liver resection (LLR)

Did LLR increase?  
(from 2009 to 2013)



The proportion of LLRs

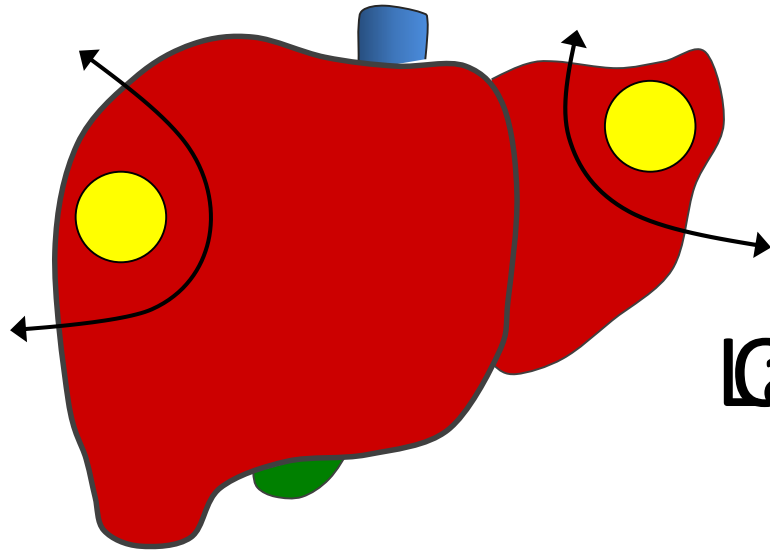


Hibi, et al. International Survey on Technical Aspects of Laparoscopic Liver Resection. *J Hepatobiliary Pancreat Sci* 2014

Minor LLR has become a standard procedure.

Wakabayashi, et al. Recommendations for laparoscopic liver resection: a report from the second international consensus conference held in Morioka. *Ann Surg* 2015

# For peripherally located small HCC



Laparoscopic ablation?

# Place of each treatment option

## Equivalent overall and disease-free survival of LLR and OLR

Cheung, et al. Pure Laparoscopic Hepatectomy Versus Open Hepatectomy for Hepatocellular Carcinoma in 110 Patients With Liver Cirrhosis: A Propensity Analysis at a Single Center. *Ann Surg* 2016

Xiang, et al. Prospective cohort study of laparoscopic and open liver resection for hepatocellular carcinoma. *Br J Surg* 2016

Sposito, et al. Propensity score analysis of outcomes following laparoscopic versus open liver resection for hepatocellular carcinoma. *Br J Surg* 2016

Takaahra, et al. Long-term and perioperative outcomes of laparoscopic versus open liver resection for hepatocellular carcinoma with propensity score matching: a multi-institutional Japanese study. *J Hepatobiliary Pancreat Sci* 2015

Komatsu, et al. Laparoscopic versus open major hepatectomy for hepatocellular carcinoma: a matched pair analysis. *Surg Endosc* 2015

Memeo, et al. Laparoscopic vs. open liver resection for hepatocellular carcinoma of cirrhotic liver: a case-control study. *World J Surg* 2014



RFA ?

# Patients and Method

- Minor LLRs versus RFAs for early stage HCC ( $\leq 30$  mm, 1-3 nodules, no macrovascular involvement)
- A total of 85 minor LLRs performed between 2005-2016 in Kyoto university hospital
    - Minor LLR: non-anatomical excision of less than 2 segments and left lateral sectionectomy
  - 136 RFAs performed by hepatologists or radiologists

# Demographic/clinicopathologic data

Variables	LLR n = 85	RFA n = 136	p value
Age, mean, yr	68.2	71.2	0.01
Sex (male/female), No. (%)	62 (72.9)/23 (27.1)	98 (72.1)/38 (27.9)	0.89
Child-Pugh grade (A/B), No. (%)	73 (85.9)/12 (14.1)	110 (80.9)/26 (19.1)	0.34
Serum albumin, mean, g/dl	3.88	3.74	0.056
Serum total bilirubin, mean, mg/dl	0.97	0.86	0.07
Prothrombin time (%)	83.4	82.5	0.69
Platelet count, median (range), x 10 <sup>4</sup> /μl	14.5	11.2	0.04
Alpha-fetoprotein, mean, ng/ml	96.2	25.1	0.045
Des-γ-carboxy prothrombin, mean, mAU/ml	686.1	35.2	0.30
Tumor number			
Single, No. (%)	73 (85.9)	115 (84.6)	0.79
Two, No. (%)	9 (10.6)	19 (14.0)	0.46
Three, No. (%)	3 (3.5)	2 (1.5)	0.32
Tumor size, mean (range), mm	21.0	16.0	< 0.01
Locoregional recurrent lesion (n [%])	13 (15.3)	36 (26.5)	0.04

# Short-term outcomes

Variables	LLR n = 85	RFA n = 136	p value
Conversion (n [%])	6 (7.1) <sup>※</sup>	12 (8.8) <sup>※※</sup>	0.64
Transfusion	7 (8.2)	0 (0)	< 0.01
All complications (n [%])	10 (11.8)	4 (2.9)	0.02
Major complication (grade≥3)	1 (1.2)	0 (0)	0.38
Mortality	0 (0)	0 (0)	1
Hospital stay (days)	11.6	6.2	< 0.01

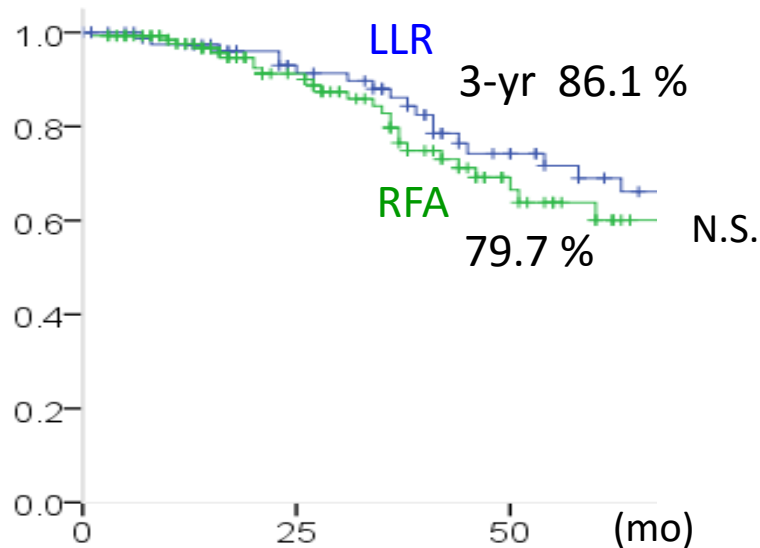
※, conversion to open surgery

※※, repeat ablation or resection due to insufficient margin/therapeutic effect

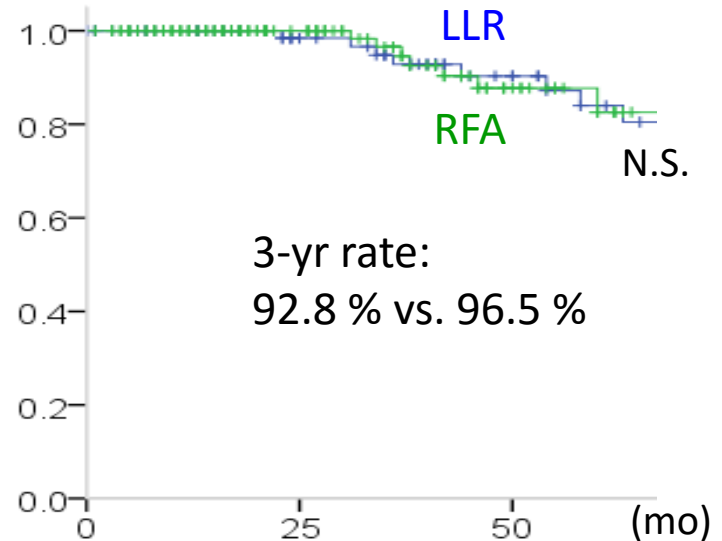


# Overall and disease-specific survivals

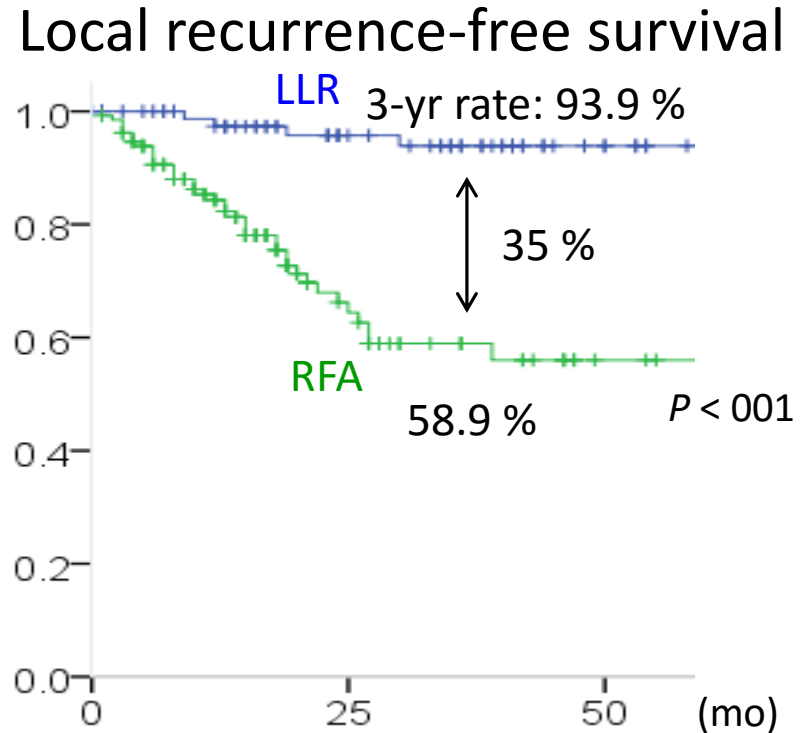
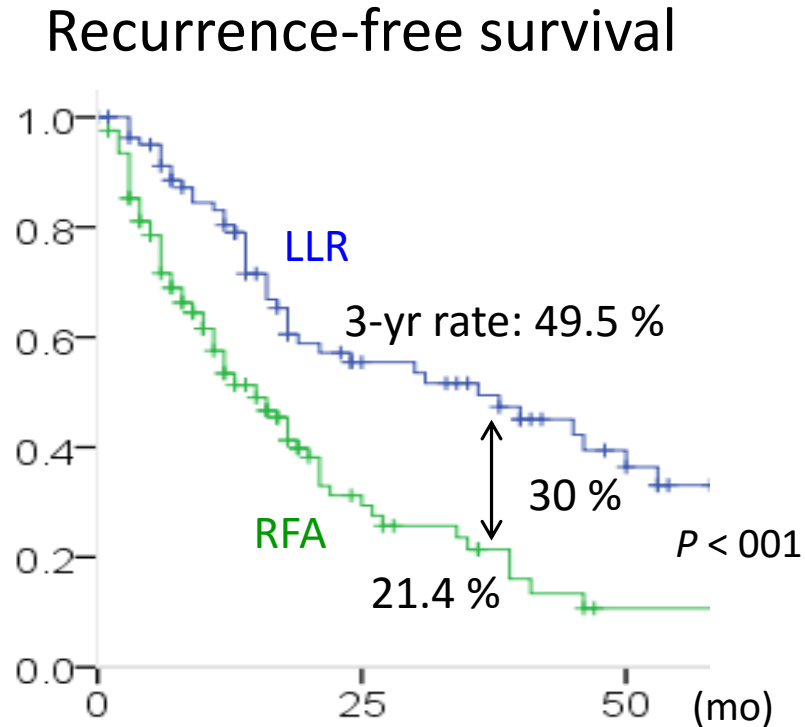
## Overall survival



## Disease-specific survival



# Overall and local recurrence



Development of locoregional recurrence after RFA did not compromise survival, possibly due to repeat local treatment for locoregional recurrent lesions

# Multivariate analyses for recurrence

## Cox Hazard ratios for recurrence

Variables		Hazard ratios	95% CI	<i>p</i> value
Procedure	RFA vs. LLR	2.49	1.52, 4.07	< 0.001
Tumor number	multiple vs. single	1.88	1.09, 3.24	0.023

## Cox Hazard ratios for local recurrence

Variables		Hazard ratios	95% CI	<i>p</i> value
Procedure	RFA vs. LLR	9.59	3.22, 28.58	< 0.001

# Conclusion

- LLR had favorable short-term outcomes, but RFA was less invasive and safer.
- LLR had better local control efficiency, but overall and disease-specific survivals were similar between LLR and RFA.
- LLR is an efficient option to treat small HCCs, and should be recommended over RFA for patients with low risk of developing multicentric recurrence.