

## Brief CV

Hyunchul Rhim, MD

Professor

Department of Radiology

Samsung Medical Center, Sungkyunkwan University, School of Medicine

Prof. Hyunchul Rhim graduated in School of Medicine at Hanyang University, Seoul, Korea in 1985. He completed a residency in the Department of Radiology in Hanyang University Hospital in 1989. From 1993 after clinical fellowship in Asan Medical Center, he started academic service from an instructor to associate professor in Hanyang University Hospital until 2005. For two years from 1997, he studied abroad as a research fellow and clinical assistant professor in University of Texas at San Antonio, USA. During that period, he had a chance to involve the clinical trial on radiofrequency ablation of hepatic tumors under supervision of Prof. Gerald D. Dodd III. After coming back to Korea in 1999, he first introduced radiofrequency ablation in Korea. In 2005, he moved to Samsung Medical Center, Sungkyunkwan University and is currently a professor of the Department of Radiology. The research interest of Prof. Rhim is "Image-guided tumor ablation for hepatic tumor". He has published more than 150 International scientific papers in SCI journals. Among them, 130 papers are articles regarding radiofrequency ablation of hepatic tumors. He contributed to publish a textbook entitled "Malignant Liver Tumors: Current and Emerging Therapy" from Blackwell Science in 1999. He has given 35 invited lectures in international conferences including CIRSE, ECIO, WCIO, APASL, APPLE and ACTA. He is serving as a journal referee of major peer-review journals including Radiology, JVIR, CVIR and Int J of Hyperthermia. He served as the president of the Korean Study Group of Image-guided Tumor Ablation (KSITA) for 4 years from 2010. For 22 years from 1997, he performed more than 3,500 RFA procedures by himself. Since 2011, he is a director of SITAT (Samsung Image-guided Tumor Ablation Training) Program to share their experience with international doctors. He is also a Co-founder of Asian Conference on Tumor Ablation (ACTA), and served a hosting Chair for ACTA 2016, Seoul, Korea.



## What is the Best Modality? Current Trends

Hyunchul Rhim, MD

*Samsung Medical Center, Sungkyunkwan University, Seoul, Korea*

Image-guided tumor ablation has been accepted and widely used as one of curative treatment option for early stage of hepatocellular carcinoma. Ablation is recommended as treatment of choice especially very early HCC (single smaller than 2 cm in diameter). There are many kinds of ablative modality including ethanol, radiofrequency, microwave, cryo, and irreversible electroporation (IRE).

Radiofrequency ablation (RFA) has been mainstay of ablation during the recent two decades. However, the recent advancement of microwave ablation equipment are showing a great promise for better local tumor control by providing greater ablation zone in a shorter time. Although the survival benefit has not proven yet in the literatures, clear shifting from RF to MW is ongoing now, especially western countries. But more clinical evidences to prove clinical benefit over RFA or MWA are awaited.

RFA has still a clear room to play a role in HCC management because every tumor doesn't need just bigger ablation zone in the era of smaller recurrent tumor detected on Liver MRI. Cryoablation and IRE also has a specific benefit for the tumor located at the dangerous area due to safer ablation despites of high cost compared to RFA.

In summary, no study has demonstrated the best modality as an ablation tool. Optimal selection of each modality is more important depending on tumor characteristics (size and location). Furthermore, the proper use of any modality is the most essential to maximize the potential of each modality.

# Thermal Ablation in Hepatocellular Carcinoma: What's New in 2019

Hyunchul Rhim, MD

*Samsung Medical Center, Sungkyunkwan University, Seoul, Korea*

Image-guided tumor ablation has been accepted as one of curative treatment option for early stage of hepatocellular carcinoma in the recently updated guidelines from the 3 groups (Asia, Europe, and USA). In BCLC guidelines, Ablation is recommended as treatment of choice especially very early HCC (single smaller than 2 cm in diameter). Besides several RCT and many meta-analysis studies, the interim result of the largest RCT (Resection vs RFA; SURF trial) from Japan recently also showed there was no significant difference in 3 yrs recurrence-free survival between the both groups.

Furthermore, the outcome of ablation for HCC is continuously improving due to technical advances as well as antiviral treatments. Location and size (Peri-portal, Subphrenic, larger than 3 cm) of tumor still matter for better outcomes. To achieve sufficient ablative margin, no-touch technique with multiple application or the stronger energy (microwave) was more drawing an attention of operators. Tumor aggressiveness is recently introduced to affect the outcome after RFA, which requires careful selection and treatment planning. The clear megatrend in HCC ablation (especially for larger or perivascular tumor) is the shift from RFA to MWA due to faster heating and less affective to heat sink effect, although the evidence of survival benefit has not proven yet. Immunomodulation by tumor ablation is still promising filed to be explored through more research.

Ablation has been evolving but should be applied as one of multimodality strategies for treating HCC which continuously recurs even after any curative treatment.