TERAPIE ABLATIVE PERCUTANEE

OSPEDALE EVANGELICO INTERNAZIONALE

Il Nodulo Epatico

dalla Diagnosi ... alla Terapia

Con il patrocinio della

REGIONE LIGURIA

Sede del Corso: Sala Conferenze, Biblioteca Civica Rosanna Benzi di Genova Voltri - Piazza Odicini, 10

Data: 21 settembre 2013

Giornate previste: 1 **Partecipanti:** Medici di Medicina Generale, Medici, Infermieri, Tecnici Sanitari di radiologia medica

Programma

08.30 - 8.45 Registrazione dei partecipanti

08.45 - 9.00 Saluto delle Autorità

I Sessione **Eziopatogenesi - Epidemiologia Clinica**

Moderatori: Dott. Giulio Antonio Cecchini, Dott. Enzo Silvestri

09.00 - 9.15 Dall'epatopatia cronica all'HCC
Dott. Luca Anselmi

09.15 - 9.30 La gestione del paziente ambulatoriale
Dott. Giuseppe Fabio Stellini

09.30 - 9.45 Inquadramento clinico e percorso diagnostico
Dott. Gianfranco Percario

II Sessione **Diagnostica per Immagini**

Moderatori: Dott. Giulio Antonio Cecchini, Dott. Enzo Silvestri

09.45 - 10.30 Ecografia - TC - RM
Dott. Giulio Bergamaschi, Dott. Massimo De Lorenzi

10.30 - 10.45 Evoluzione della tecnologia ecografica
Dott. Giovanni Turtulici

10.45 - 11.15 *Coffee Break*

III Sessione **Terapia dell'HCC**

Moderatori: Dott. Giulio Antonio Cecchini, Dott. Enzo Silvestri

11.15 - 11.30 Terapie ablative percutanee
Dott. Giovanni Turtulici

11.30 - 11.45 L'approccio chirurgico
Dott. Enzo Andorno, Dott. Giuliano Bottino

11.45 - 12.00 La chemio-embolizzazione
Dott. Giovanni De Caro

12.00 - 12.15 Quando la terapia medica
Dott. Gianfranco Percario

12.15 - 12.45 Condivisione fra i relatori del percorso diagnostico e terapeutico
Introduce il Dott. Giuseppe Pilotti

IV Sessione **Tavola rotonda dal medico di medicina generale allo specialista ospedaliero**

12.45 - 13.00 Approfondimento da parte dei relatori del percorso diagnostico e terapeutico

13.00 - 13.15 Chiusura dei lavori

13.15 - 13.30 Strumento di valutazione del livello di apprendimento

Responsabile Scientifico

Dott. Giulio Antonio CECCHINI
Direttore S.C. Diagnostica per Immagini Ospedaliera OEI

Dott. Enzo SILVESTRI
Direttore S.C. Diagnostica per Immagini ed Ecografia Interventistica OEI

Segreteria Scientifica

Dott. Giuseppe PILOTTI
Dirigente Medico Resp. S.S. Radiologia d'Urgenza ed Emergenza OEI

Dott. Giovanni TURTULICI
Dirigente Medico Resp. S.S. Ecografia Diagnostica ed Interventistica OEI

Docenti

Dott. Enzo ANDORNO
Dirigente Responsabile UOS Chirurgia Trapianto di Fegato IRCSS A.O.U. San Martino – IST

Dott. Luca ANSELMI
Dirigente Medico Responsabile S.S. Dipartimentale Citologia ed Istologia a prevalente indirizzo territoriale P.O. Micone di Sestri Ponente - ASL 3 "Genovese".

Dott. Giulio BERGAMASCHI
Dirigente Medico Resp. S.S. Radiologia Oncologica OEI

Dott. Giuliano BOTTINO
Dirigente Medico presso UOS Chirurgia Trapianto di Fegato IRCSS A.O.U. San Martino – IST

Prof. Giovanni DE CARO
Direttore U.O. a Direzione Universitaria di Radiologia Vascolare e Interventistica presso l'E.O. Ospedali Galliera

Dott. Massimo DE LORENZI
Dirigente Medico OEI

Dott. Gianfranco PERCARIO
Dirigente Medico Responsabile S.S. Gastroenterologia OEI

Dott. Giuseppe PILOTTI
Dirigente Medico Resp. S.S. Radiologia d'Urgenza ed Emergenza OEI

Dott. Giuseppe Fabio STELLINI
Medico di Medicina Generale

Dott. Giovanni TURTULICI
Dirigente Medico Resp. S.S. Ecografia Diagnostica ed Interventistica OEI

Per informazioni rivolgersi alla segreteria organizzativa - Tel 010/5522.379
La scheda di iscrizione deve pervenire alla segreteria entro e non oltre il 3 settembre 2013
Il corso è in fase di accreditamento ECM

Giovanni Turtulici

SS di Ecografia Interventistica
Ospedale Evangelico Internazionale - GE - Castelletto

SC di Diagnostica per Immagini ed Ecografia Interventistica
(Dir. Enzo Silvestri)

www.oeige.org

Hepatocellular Carcinoma: Distinct Features

1. The tumor develops in the context of well-known environmental risk factors. The dominant role of HBV and HCV.

2. The tumor is strictly associated with chronic liver disease, mainly cirrhosis.

3. One of the few cancers not requiring histology for diagnosis in all cases. Radiological diagnosis possible in cirrhotics and HBV patients.

4. The sole solid cancer treatable by organ transplantation

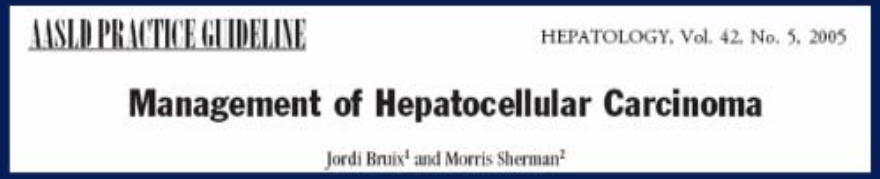
Evolving Concepts in the Clinical Management of Hepatocellular Carcinoma

2001 EASL


Journal of Hepatology 35 (2001) 421–430

Clinical Management of Hepatocellular Carcinoma. Conclusions of the Barcelona-2000 EASL Conference

2005 AASLD

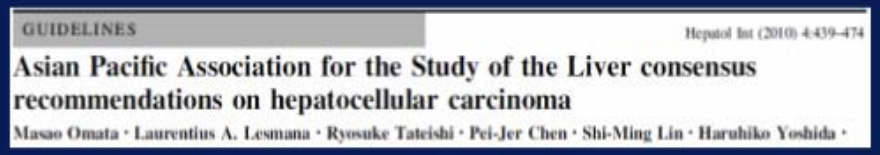

AASLD PRACTICE GUIDELINE

HEPATOLOGY, Vol. 42, No. 5, 2005

Management of Hepatocellular Carcinoma

Jordi Bruix[1] and Morris Sherman[2]

2010 APASL

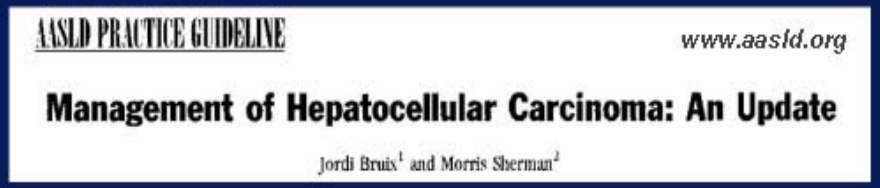

GUIDELINES

Hepatol Int (2010) 4:439–474

Asian Pacific Association for the Study of the Liver consensus recommendations on hepatocellular carcinoma

Masao Omata · Laurentius A. Lesmana · Ryosuke Tateishi · Pei-Jer Chen · Shi-Ming Lin · Haruhiko Yoshida ·

2010 AASLD

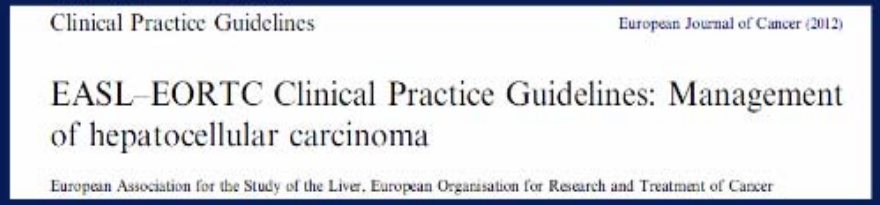

AASLD PRACTICE GUIDELINE

www.aasld.org

Management of Hepatocellular Carcinoma: An Update

Jordi Bruix[1] and Morris Sherman[2]

2012 EASL


Clinical Practice Guidelines

European Journal of Cancer (2012)

EASL–EORTC Clinical Practice Guidelines: Management of hepatocellular carcinoma

European Association for the Study of the Liver, European Organisation for Research and Treatment of Cancer

BCLC staging

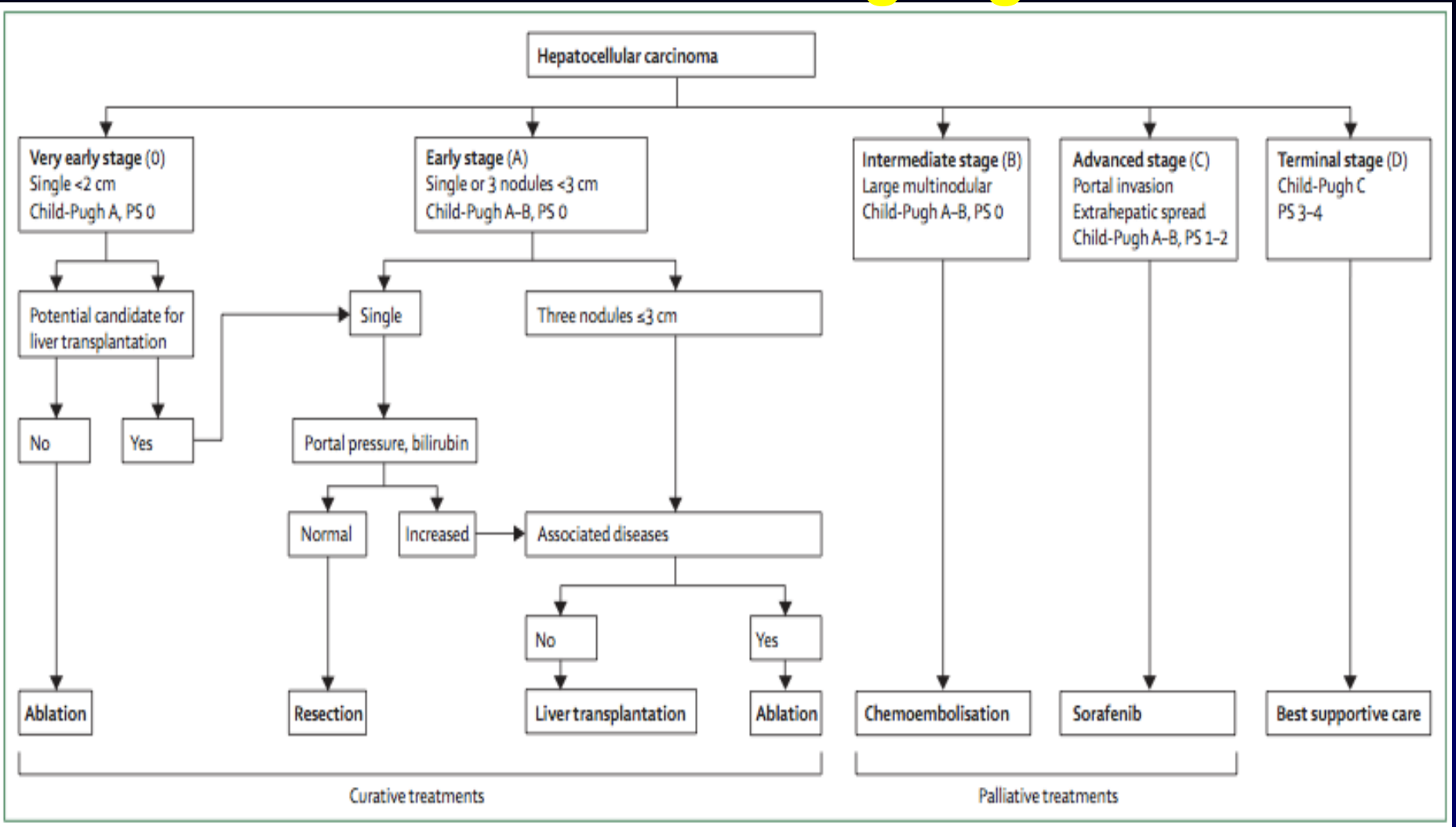
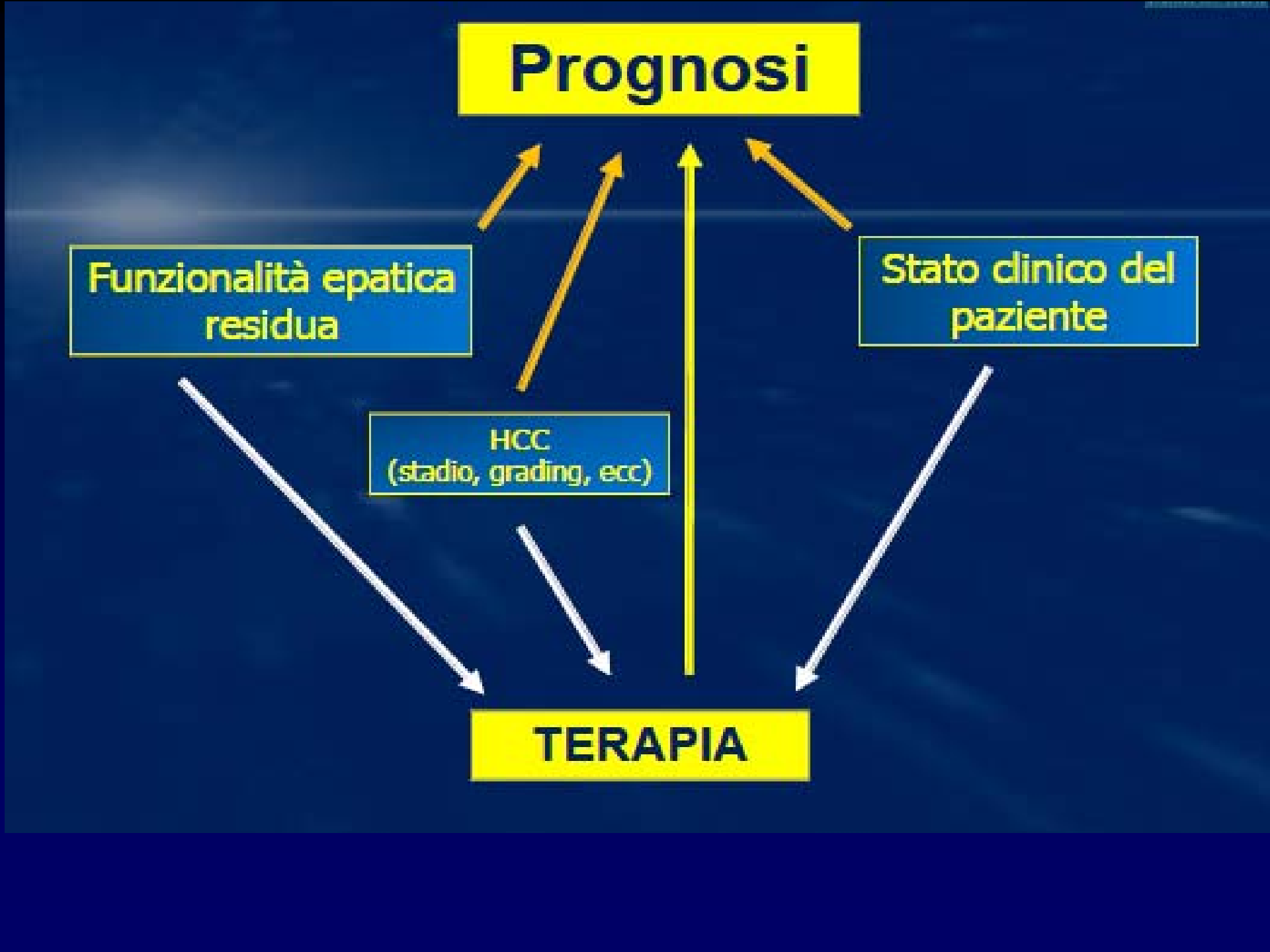


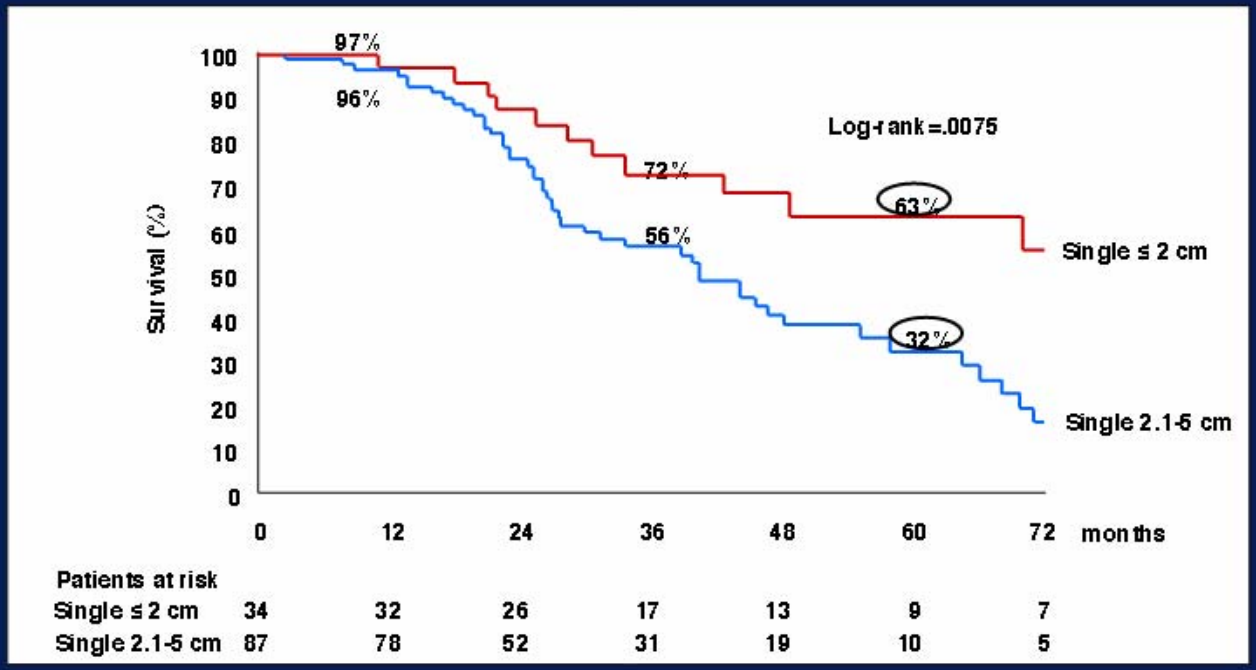
Figure 2: **BCLC staging and treatment strategy**


Prognosi
Funzionalità epatica residua
HCC (stadio, grading, ecc)
Stato clinico del paziente
TERAPIA

Forner A et al. Cancer 2009;115:616-623

Treatment of Early HCC: the Initial Tumor Volume Predicts Survival After Percutaneous Ablation

A retrospective study of 282 consecutive patients with a HCC within Milan criteria treated at BCLC, Barcelona during a 15-yr period.



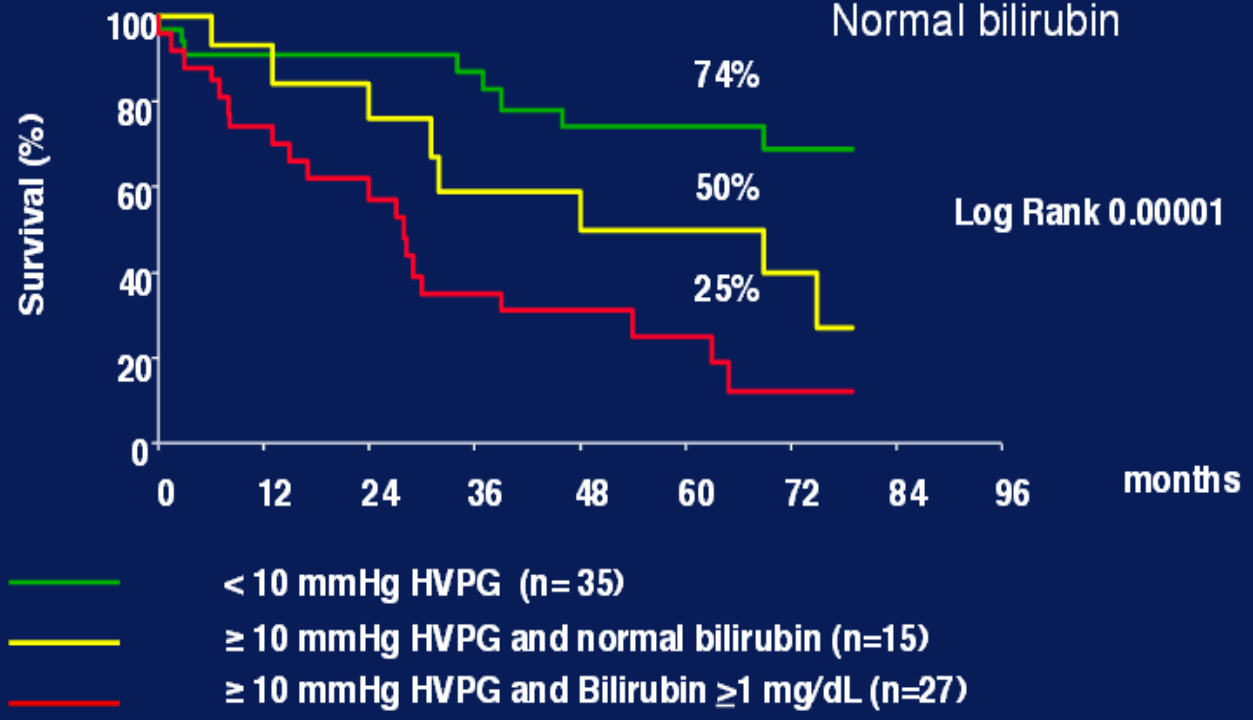
Sala M et al Hepatology 2004;40:1352-1360

Early Stage HCC: Survival after Resection Is Influenced by Portal Hypertension and Bilirubin

Best candidates for resection : Solitary HCC ≤ 5 cm

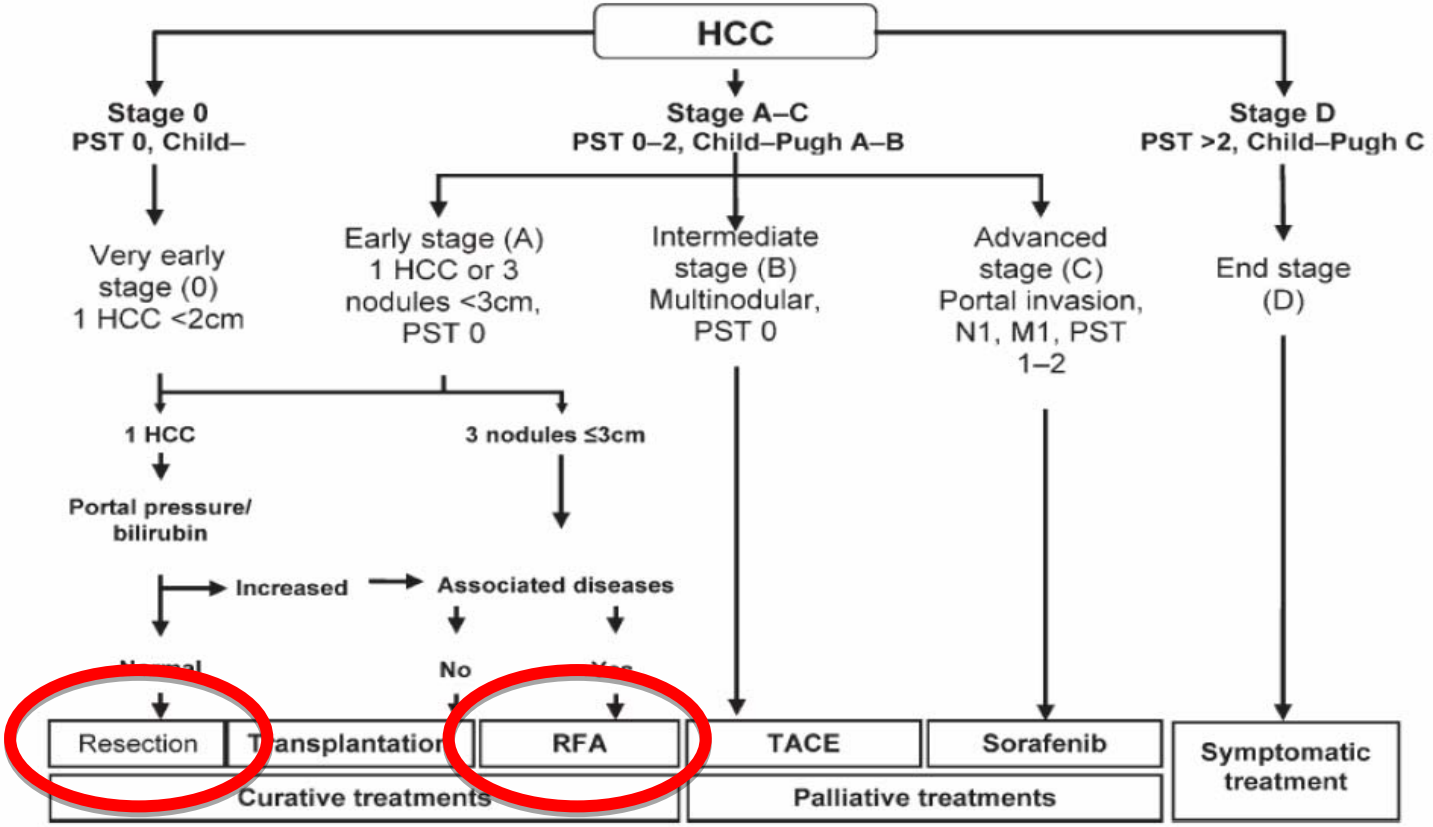
Child-Pugh A: Low portal hypertension

Normal bilirubin



Llovet JM et al, Hepatology 1999;30:1434-40

Scheda 3. *Sistema di stadiazione secondo Barcelona Clinic Liver Cancer (BCLC) per il paziente con HCC (tratto dalla voce bibliografica 1).*



10 years later……!

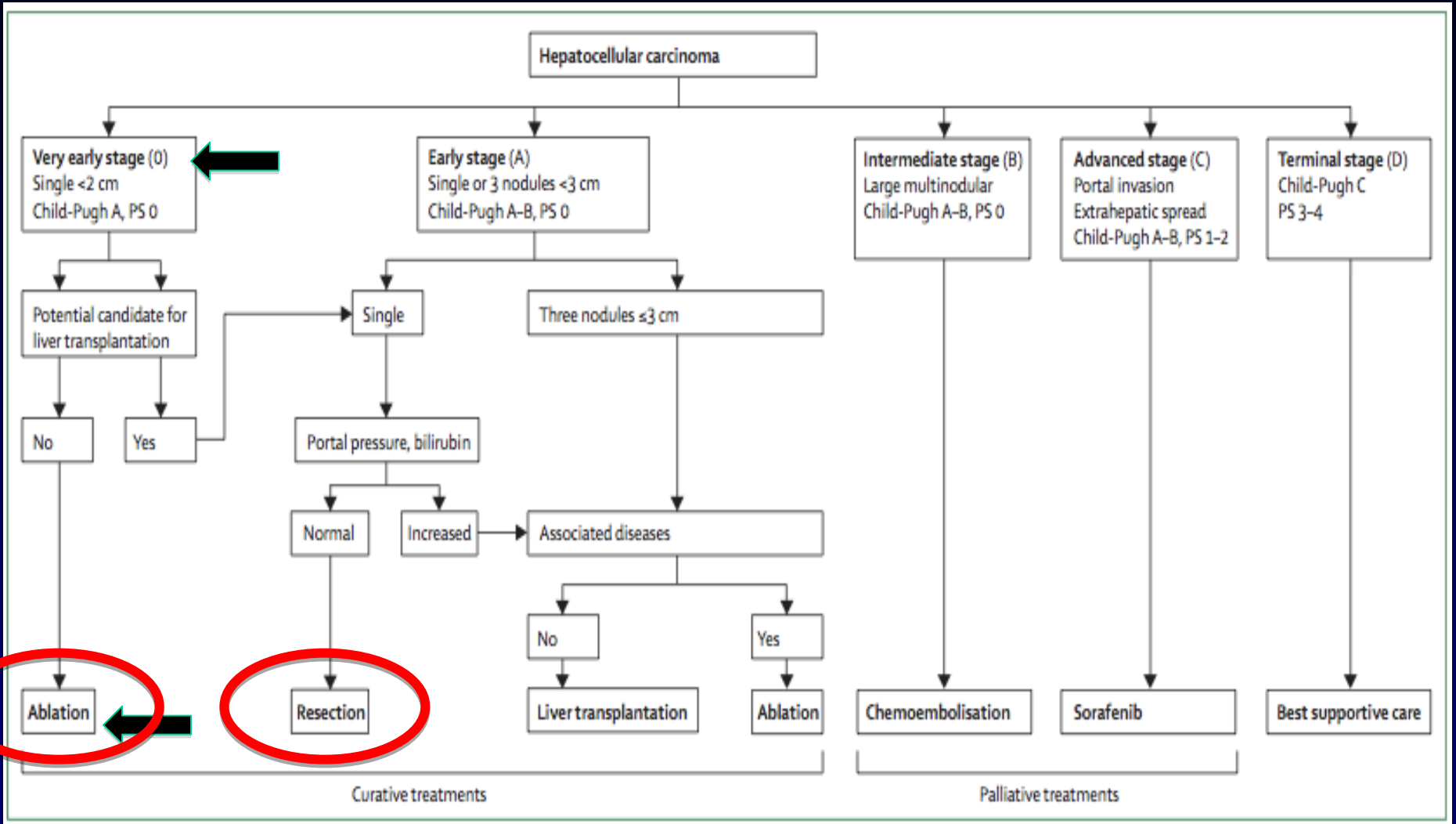
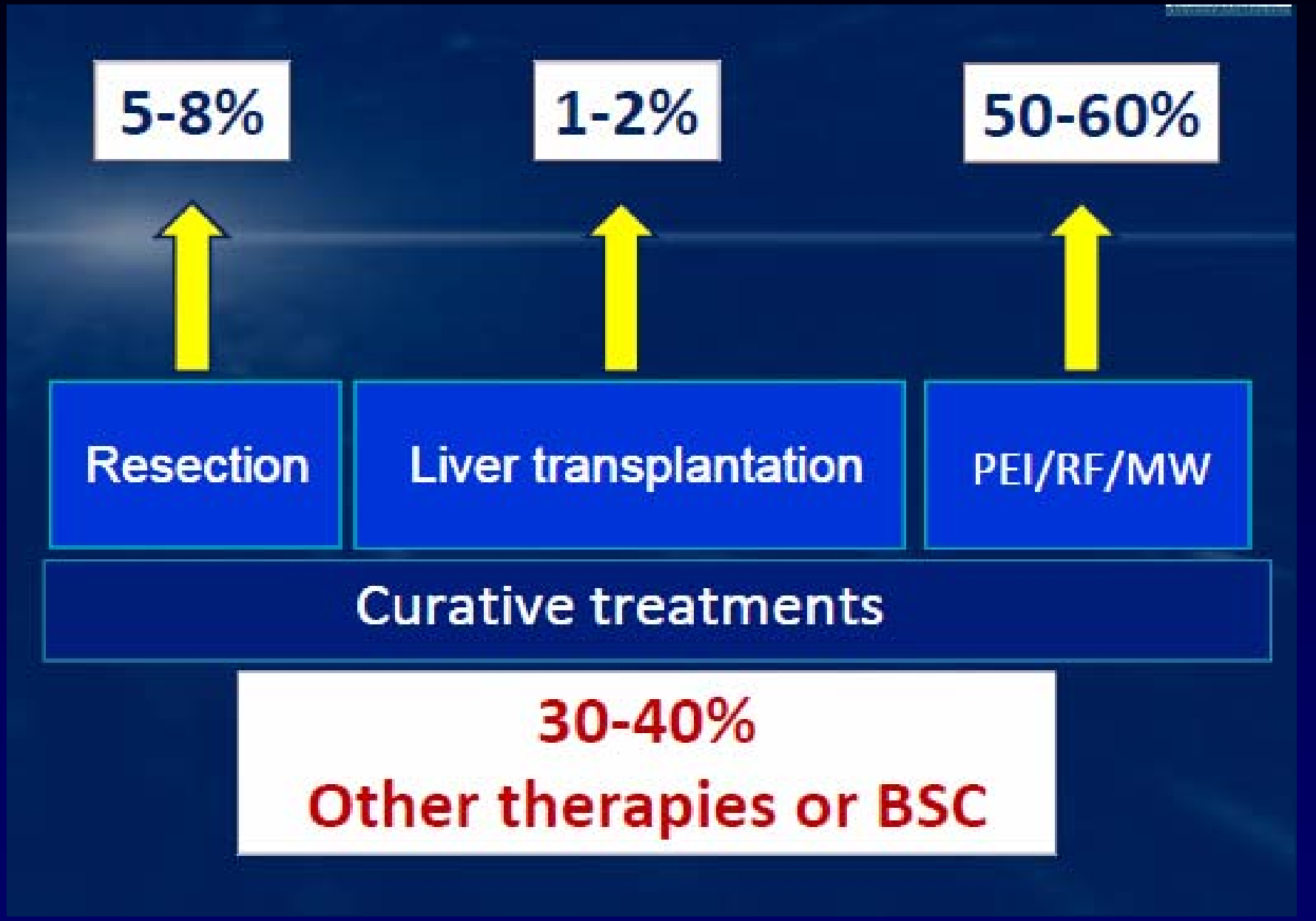


Figure 2: **BCLC staging and treatment strategy**

www.thelancet.com Published online February 20, 2012 DOI:10.1016/S0140-6736(11)61347-0


5-8%
1-2%
50-60%
Resection
Liver transplantation
PEI/RF/MW
Curative treatments
30-40%
Other therapies or BSC

The Barcelona Clinic Liver Cancer (BCLC) Staging Classification for Hepatocellular Carcinoma

BCLC stage	Performance status	Tumor volume,number and invasiveness	Child-Pugh
0 Very early	0	≤ 2 cm vaguely nodular	A
A Early	0	Single < 5 cm or 3 nodes < 3 cm each	A & B
B Intermediate	0	Large/multinodular	A & B
C Advanced	1-2	Vascular invasion and/or extrahepatic spread	A & B
D End-stage	3-4	Any of the above	C

Forner et al, Sem liver Dis 2010;30:61-74

What are ablations goals?

- Primary goal is to eradicate all viable malignant cells within a designated target volume
- Tumor ablation therapies are intended to include at least a 0.5–1.0-cm ablative margin of normal tissue
- Extend survival, when possible
- Being less invasive as possible
- Palliate symptomatic cancer (bone mets – pancreas)

Percutaneous Ablative Therapies to Treat Very Early/Early Hepatocellular Carcinoma (HCC)

- Percutaneous ethanol injection
- Acetic acid injection

→ Chemical ablation

- Hot saline injection
- Radiofrequency
- Microwaves
- Cryoablation
- Laser
- HIFU

→ Thermal ablation

- Irreversible electroporation
- Light-activated drug therapy

→ New non chemical/non thermal

Brief history of ablation

1986: PEI

Tito Livraghi, MD • Davide Festi, MD • Franco Monti, MD • Andrea Salmi, MD • Claudio Vettori, MD

US-guided Percutaneous Alcohol Injection of Small Hepatic and Abdominal Tumors[1]

PSIT

PAI

1990

RF

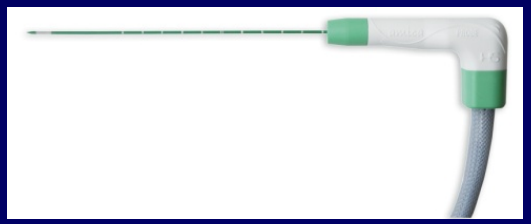
PMCT

Cryo

Laser

2000: RF

2009: MW



C'era una volta...

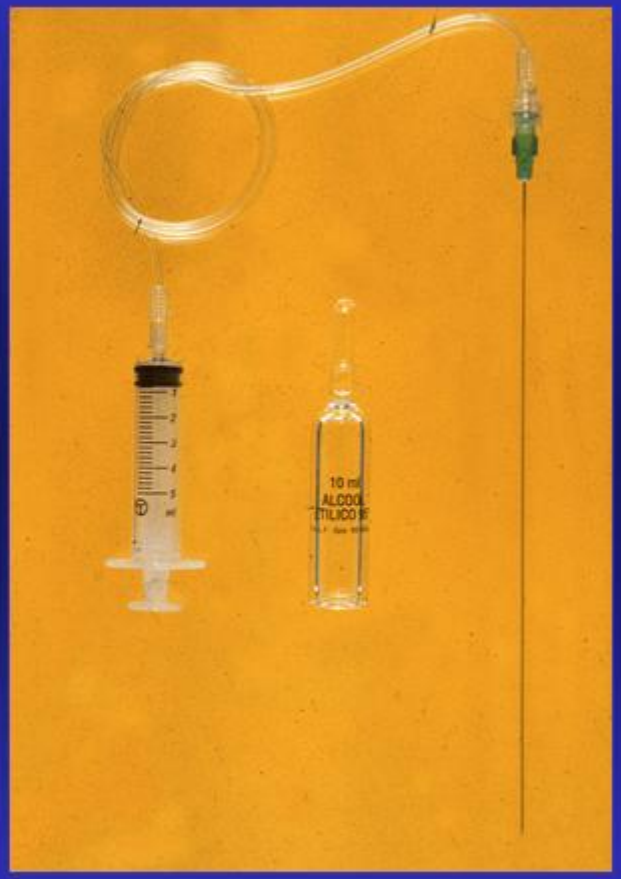
- Se si può raggiungere un bersaglio neoplastico con un ago per eseguire una FNB, perchè non provare ad iniettare un agente tossico nel suo interno?

PEI

1986

Tito Livraghi, MD • Davide Festi, MD • Franco Monti, MD • Andrea Salmi, MD • Claudio Vettori, MD

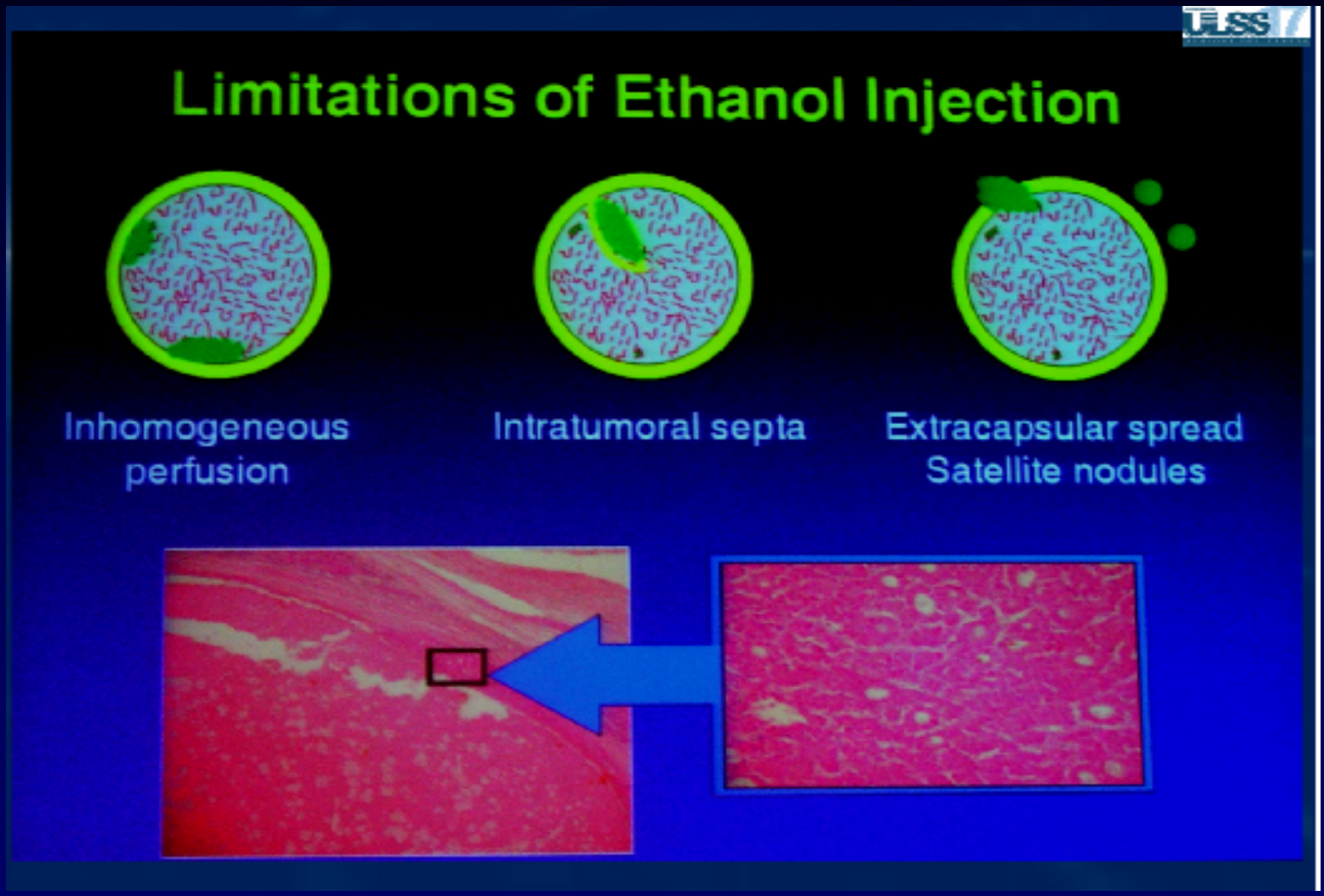
US-guided Percutaneous Alcohol Injection of Small Hepatic and Abdominal Tumors[1]



PEI: indications HCC

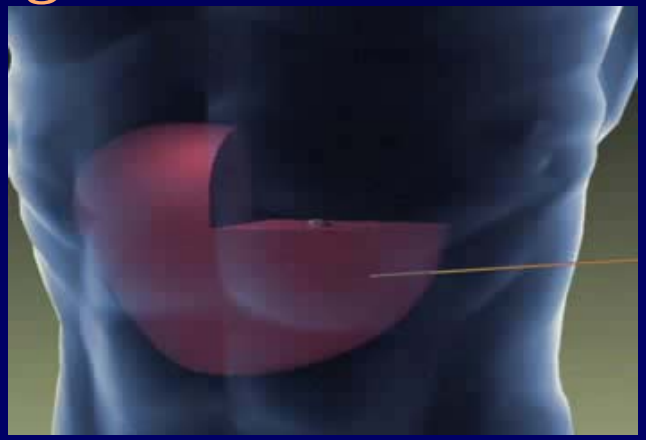
- Patients on Child class A-B9
- **Hypervascular lesions**
- Not infiltrating lesions
- Lesions near to great vessels
- Lesions near to hollow organs
- Small lesions near to the gallbladder
- Lesions technically difficult to treat

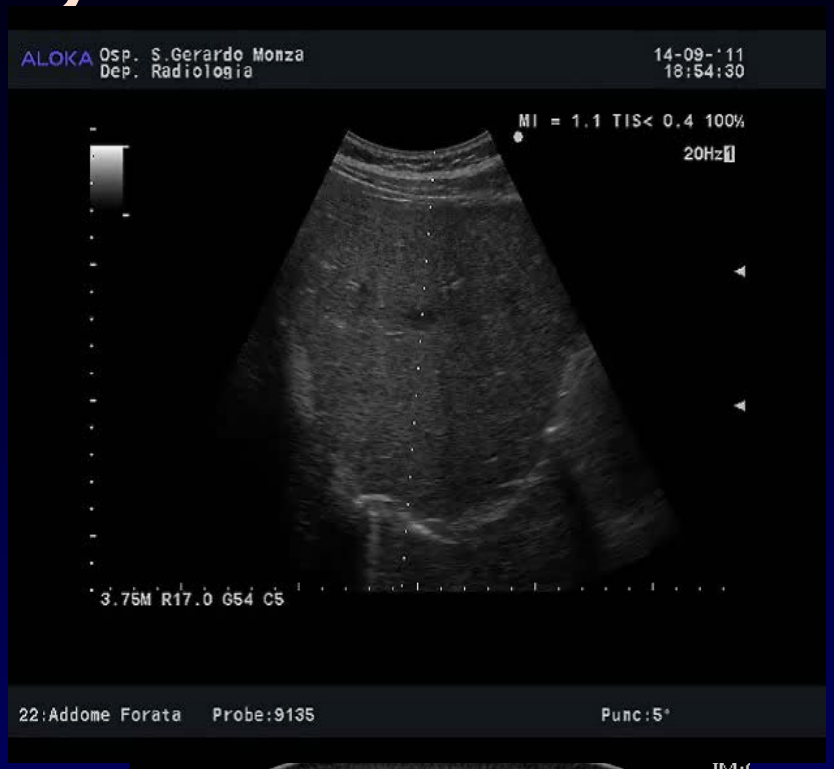
PEI


Limitations of Ethanol Injection
Inhomogeneous perfusion
Intratumoral septa
Extracapsular spread
Satellite nodules

Radiofrequency Ablation

- High-frequency current is delivered through an electrode in the lesion and causes ionic agitation, friction and tissue heating. The latter causes cellular deydratation resulting in coagulative necrosis





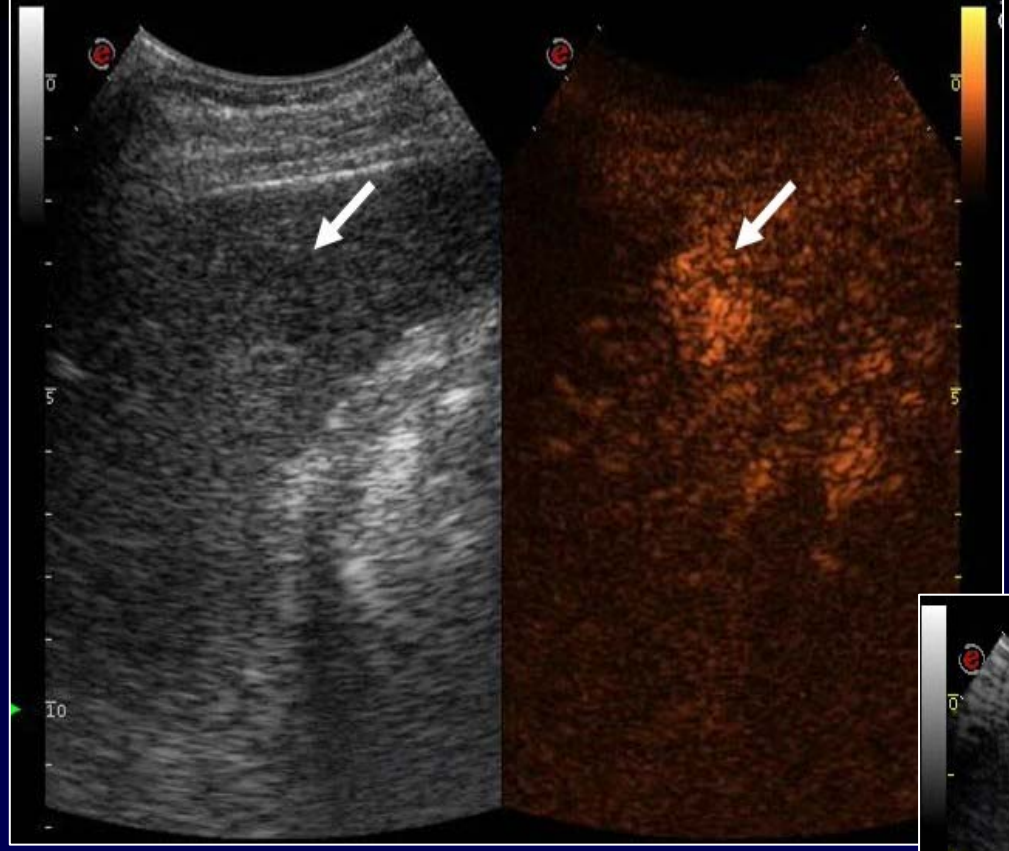
1. World J. Surgery 2006;30:992-9; 2. Gastroenterology 2008;134:1908-16; 3. Ann. Surgery 2009:250:922-8

Radiofrequency Ablation of Very Early HCC in Child-Pugh A Cirrhosis

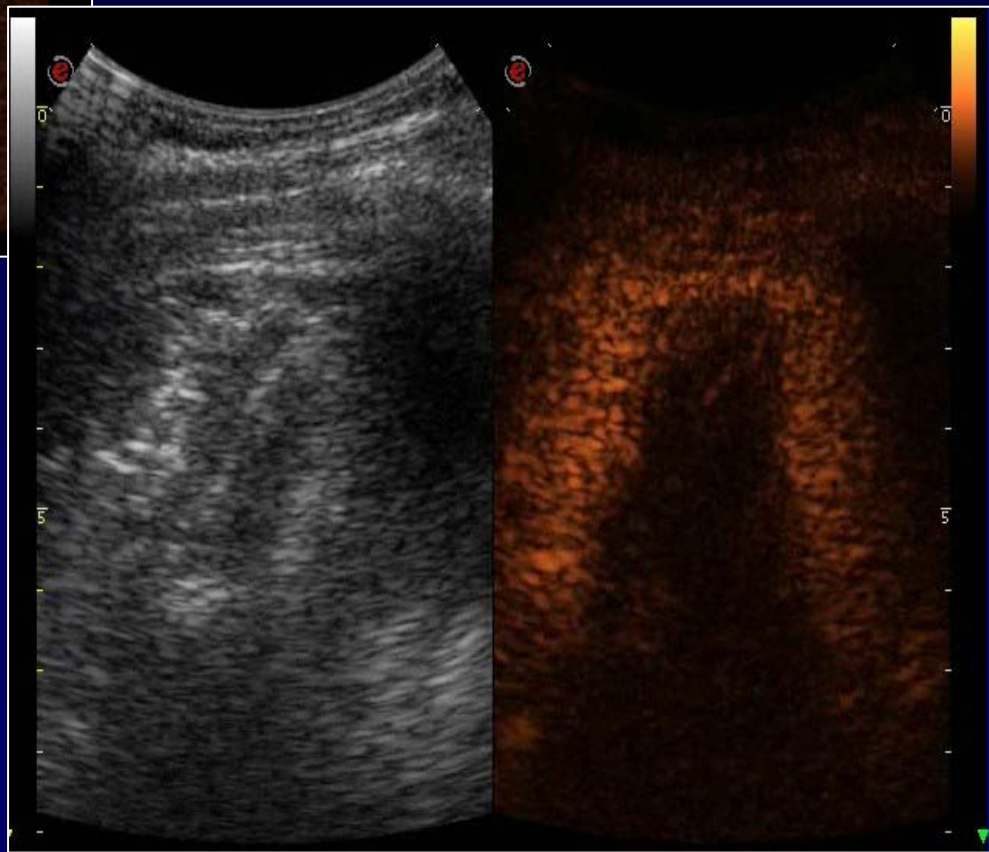
Study Period, Retrospective Collection, Yr	1995-2006
Patients Enrolled/Treated, n	232/218

Sustained Complete Response (31 mo.)	214 (98.1%)
Perioperative Mortality, n	0
Major Complication, n	4 (1.8%)
Five Year Survival: All Patients	68.5%
Candidates to Resection	68.0%

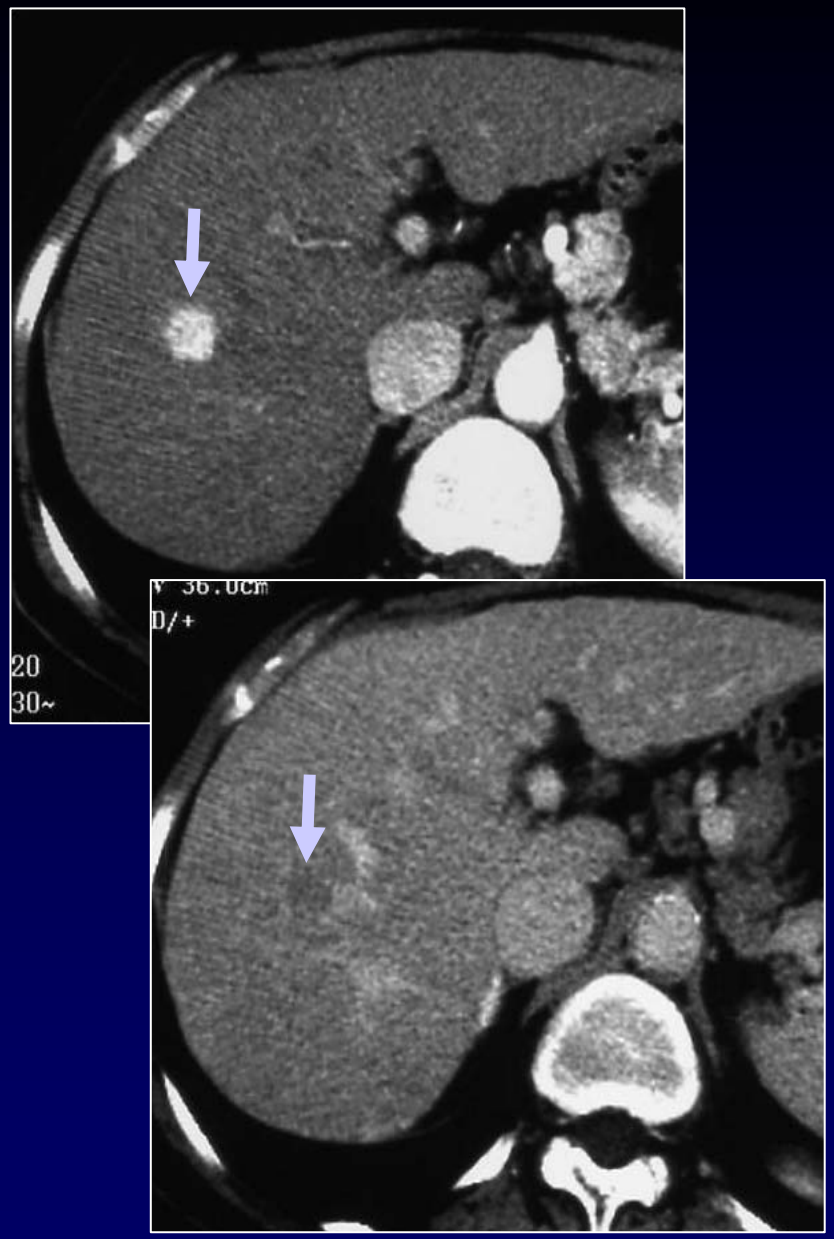
Livraghi et al, Hepatology 2008;47:82-89



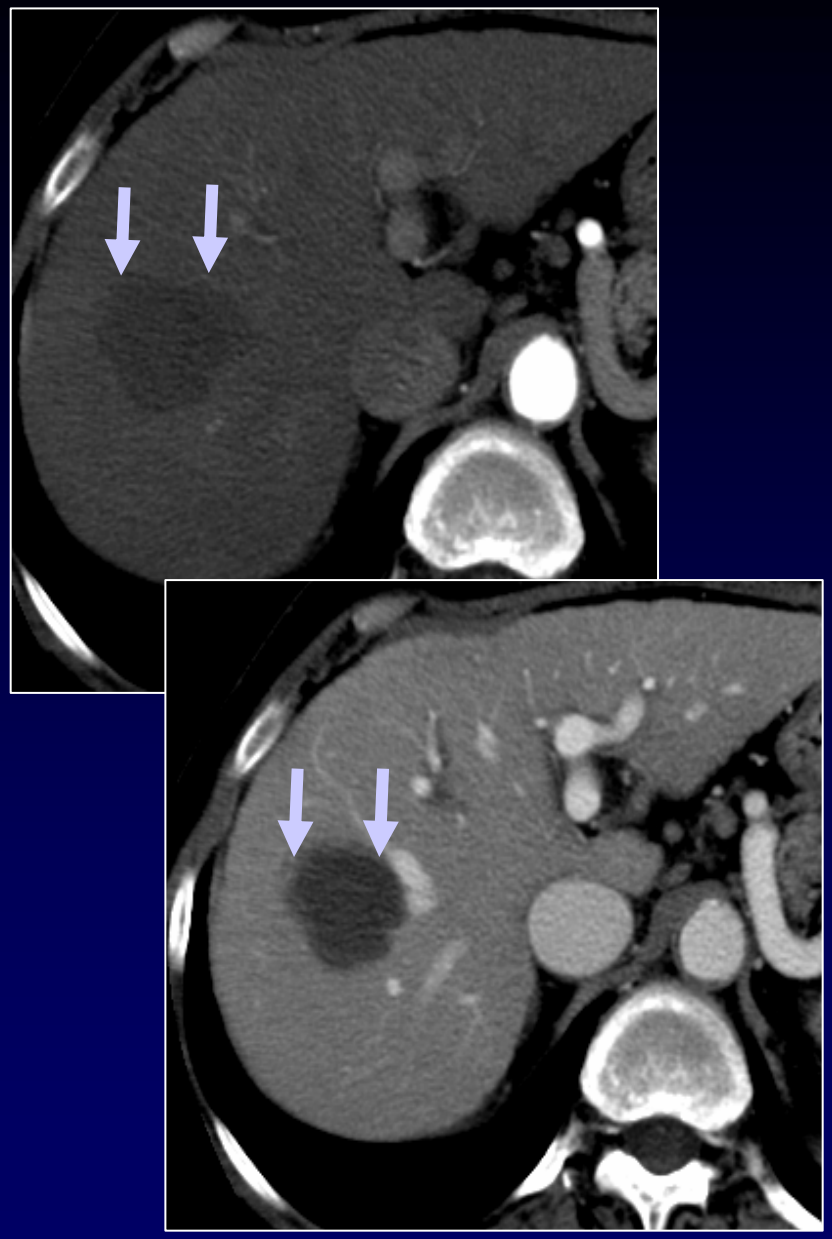
PRE-RFA



Immediately after RFA



PRE-RFA



POST-RFA

BMC Gastroenterology

BioMed Central

Research article

Open Access

Meta-analysis of percutaneous radiofrequency ablation versus ethanol injection in hepatocellular carcinoma

Carmen Bouza*, Teresa López-Cuadrado, Raimundo Alcázar, Zuleika Saz-Parkinson and José María Amate

Address: Healthcare Technology Assessment Agency, Carlos III Health Institute, Madrid, Spain

Email: Carmen Bouza* - cbouza@isciii.es; Teresa López-Cuadrado - teresalc@isciii.es; Raimundo Alcázar - ralcazar@isciii.es; Zuleika Saz-Parkinson - zuleika@isciii.es; José María Amate - jamate@isciii.es

* Corresponding author

- Superiority of RFA versus PEI in patients with relatively preserved liver function and early stage in non- surgical HCC

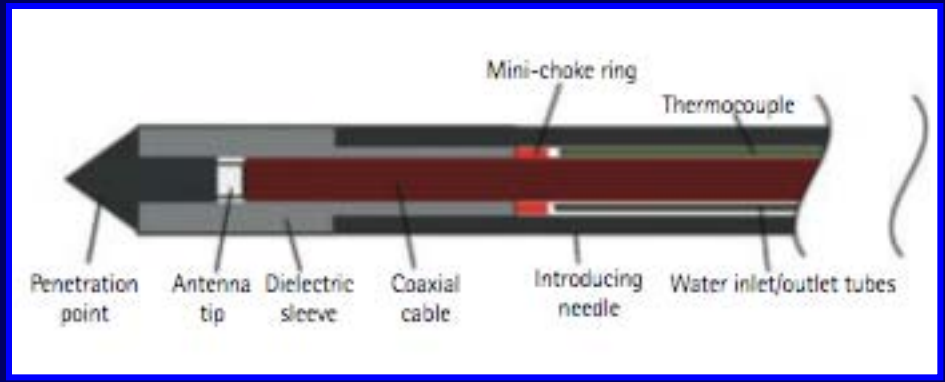
- A) survival ↑
- B) local control ↑
- C) adverse events ↓
- D) overall cost-effectiveness ↑

Microwave Ablation

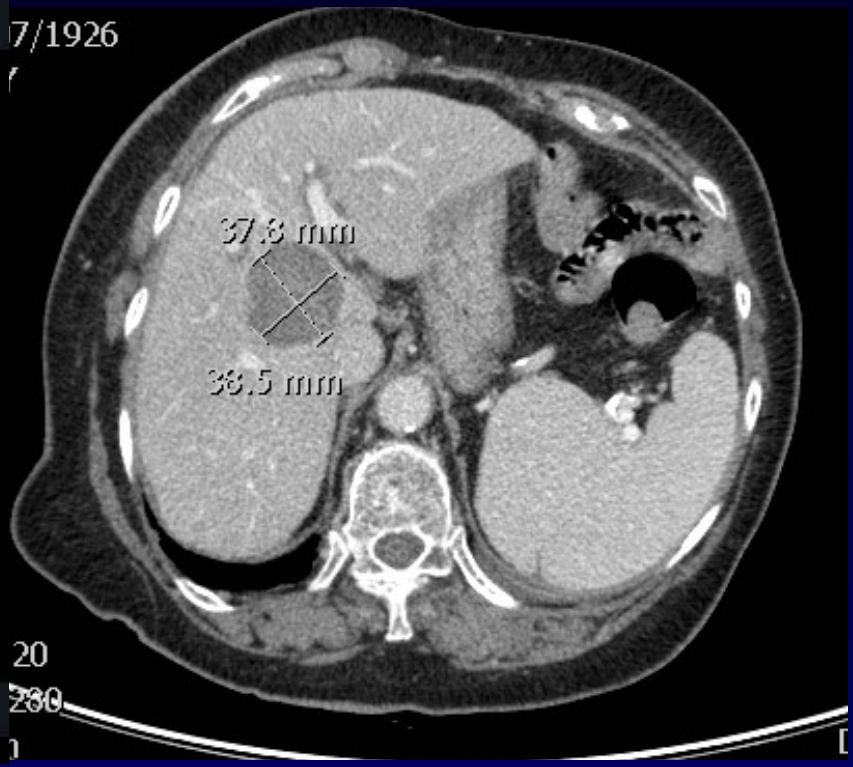
- Electromagnetic microwaves heat matter by agitating water molecules in the surrounding tissue, producing friction and heat, thus producing cellular death via coagulative necrosis

30 MHz to 30 GHz

14-gauge mini-chocked water-cooled antenna



Microwave Ablation



Similarities : RF and MW

- Both RF and MW induce cell destruction via direct effects of **heat**
- Cell death: 40-50 ° C for 6 minutes, almost instantaneous above 60°C
- Goal: to efficiently translate energies into heat

Advantages of MW on RF

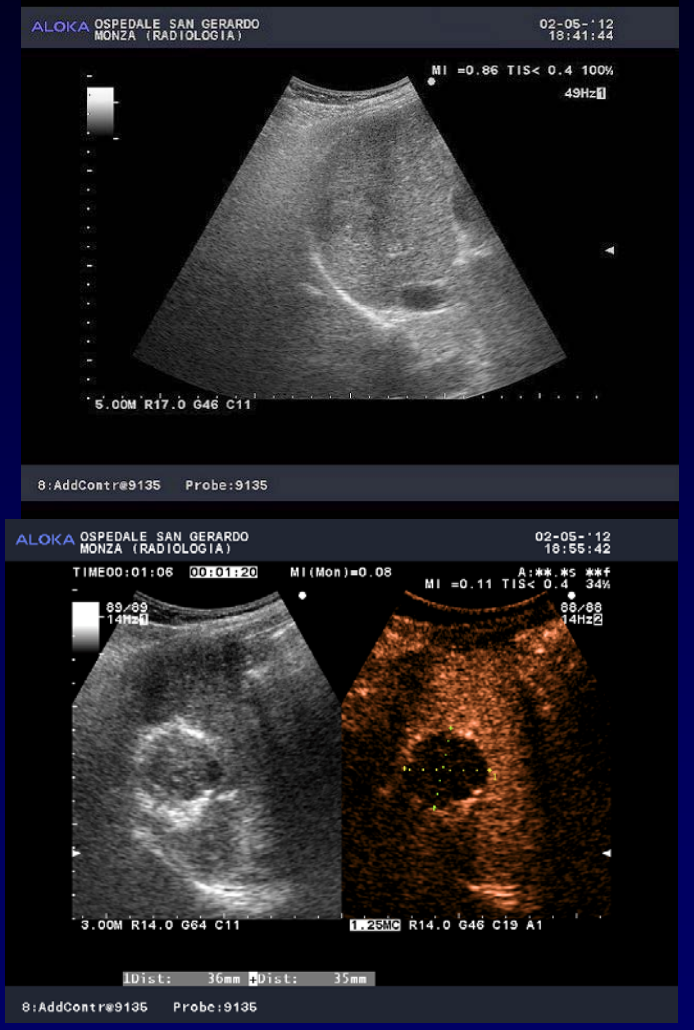
a) Rapid tissue heating that reduces the problem of heat sinking, allowing to treat lesions close to the vessels

b) Higher tissue temperatures (>150°C)

c) Shorter ablation time

d) Heating of tissue without the thermal conductivity dependance

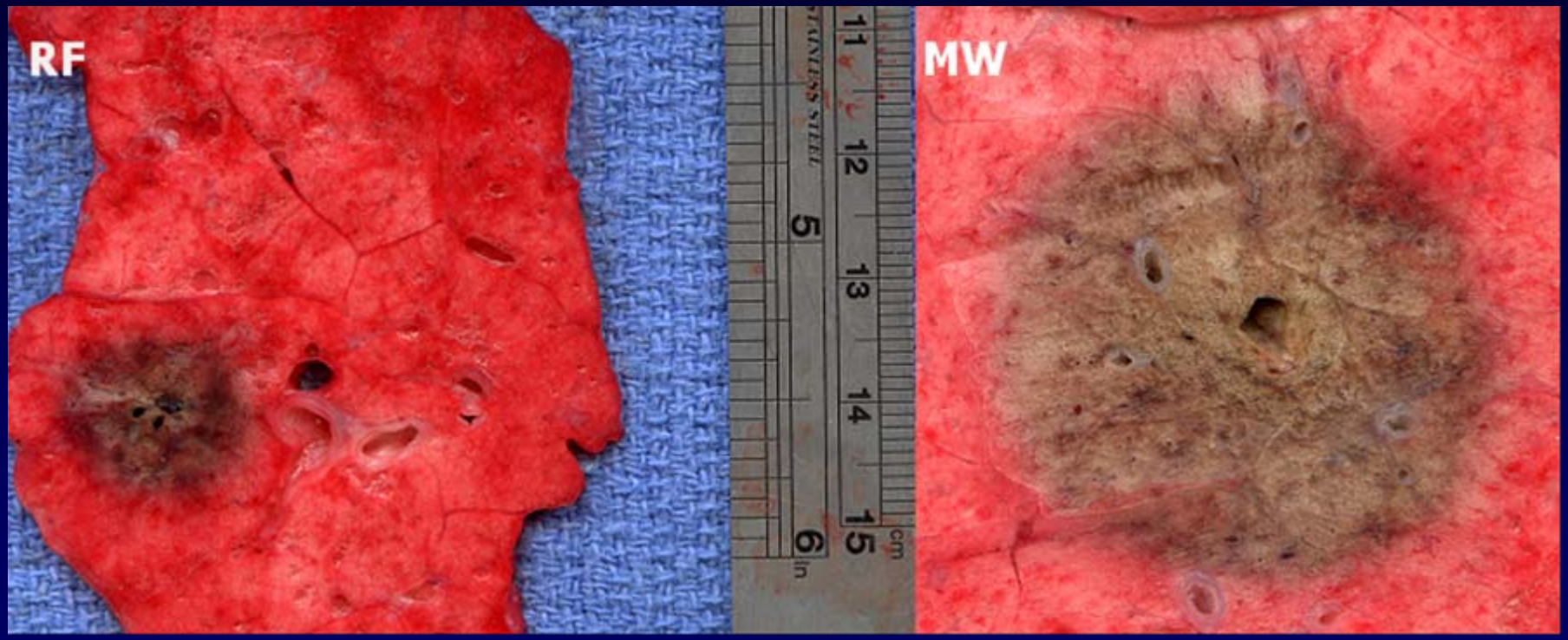
e) Absence of current flowing through the body and so no needs of grounding pads (no risk of skin burns)



RF vs MW

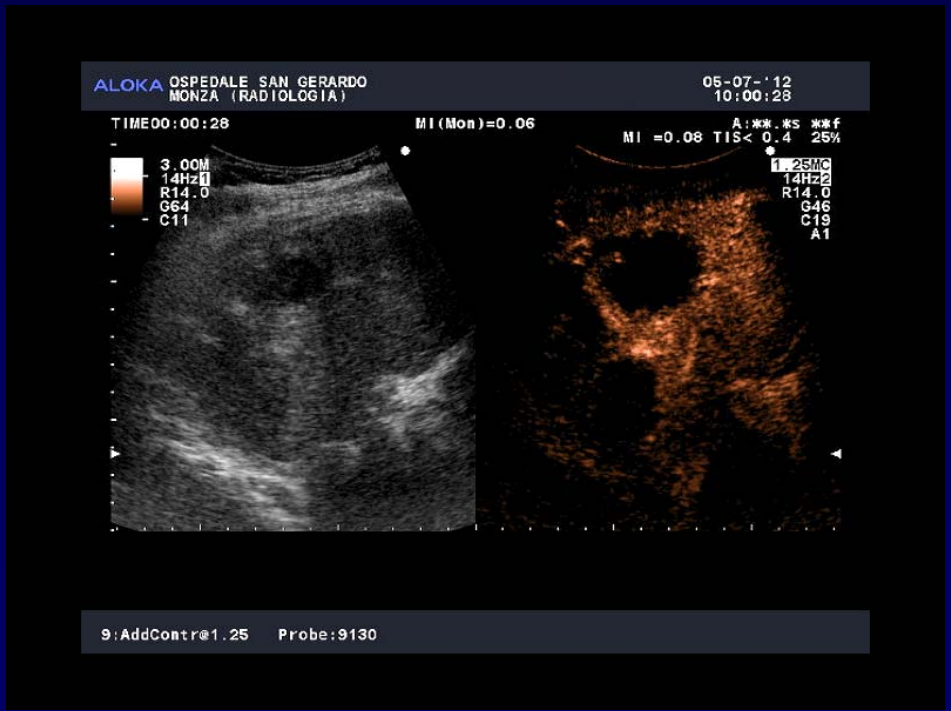
Microwaves create larger ablations than radiofrequency when controlled for power in ex vivo tissue. Med Phys. 2010

Andreano A, Meloni MF,



HCC: RF or MW ?

a. Size (<2 cm = RF; >2 cm = MW
b. Site (heat sink effect, risk structures)
c. Base-line echostructure
d. Morphology

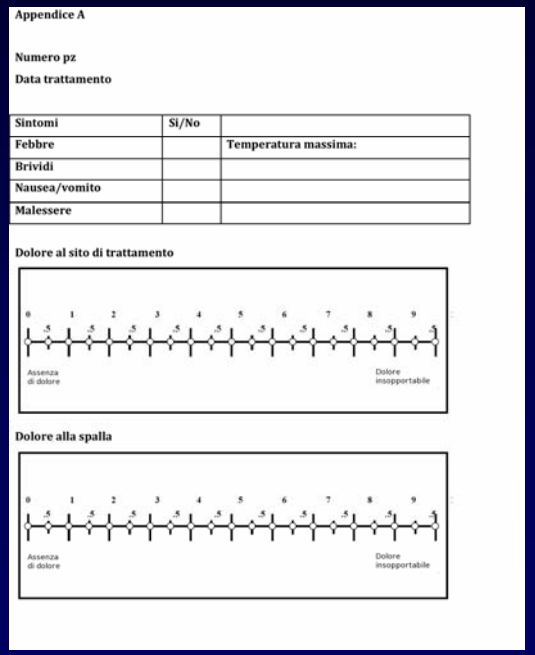


Post-ablation syndrome

Transient self-limiting symptom or sign complex of low- grade fever and general malaise
24h 1 week 40 days

a) Fever (38°C) for very short time
b) Less pain in superficial lesion or close gallbladder
c) Less than expectance of pleural and abdominal effusion
d) Hematuria for hemolysis some hours post ablation

MW PAS is similar to RF PAS



Appendice A

Numero pz

Data trattamento

Sintomi	Si/No	
Febbre		Temperatura massima:
Brividi		
Nausea/vomito		
Malessere		

Dolore al sito di trattamento

0 1 2 3 4 5 6 7 8 9 10

Assenza di dolore — Dolore insopportabile

Dolore alla spalla

0 1 2 3 4 5 6 7 8 9 10

Assenza di dolore — Dolore insopportabile

Sustained Complete Response and Complications Rates After Radiofrequency Ablation of Very Early Hepatocellular Carcinoma in Cirrhosis: Is Resection Still the Treatment of Choice?

Tito Livraghi,[1] Franca Meloni,[1] Michele Di Stasi,[2] Emanuela Rolle,[3] Luigi Solbiati,[4] Carmine Tinelli,[5] and Sandro Rossi[6]

- Multicentric study: october 2005-june 2006
- 218 patients (100 operable)
- 5 Centers : 1 Internal Medicine 2 gastroenterology and 2 radiology departments

• Complete Response	**97.2 %**
• Perioperative mortality	**0 %**
• Major Complications	**1.8 %**
• Seeding	**0.4 %**
• 3-5y survival	**76-55 %**
• Operable subgroup	**89-68 %**

*Hepatology 2008

Sustained Complete Response and Complications Rates After Radiofrequency Ablation of Very Early Hepatocellular Carcinoma in Cirrhosis: Is Resection Still the Treatment of Choice?

Tito Livraghi,[1] Franca Meloni,[1] Michele Di Stasi,[2] Emanuela Rolle,[3] Luigi Solbiati,[4] Carmine Tinelli,[5] and Sandro Rossi[6]

- This data indicated that RFA can be considered the treatment of choice for patients with single HCC $\leq$ 2.0 cm,

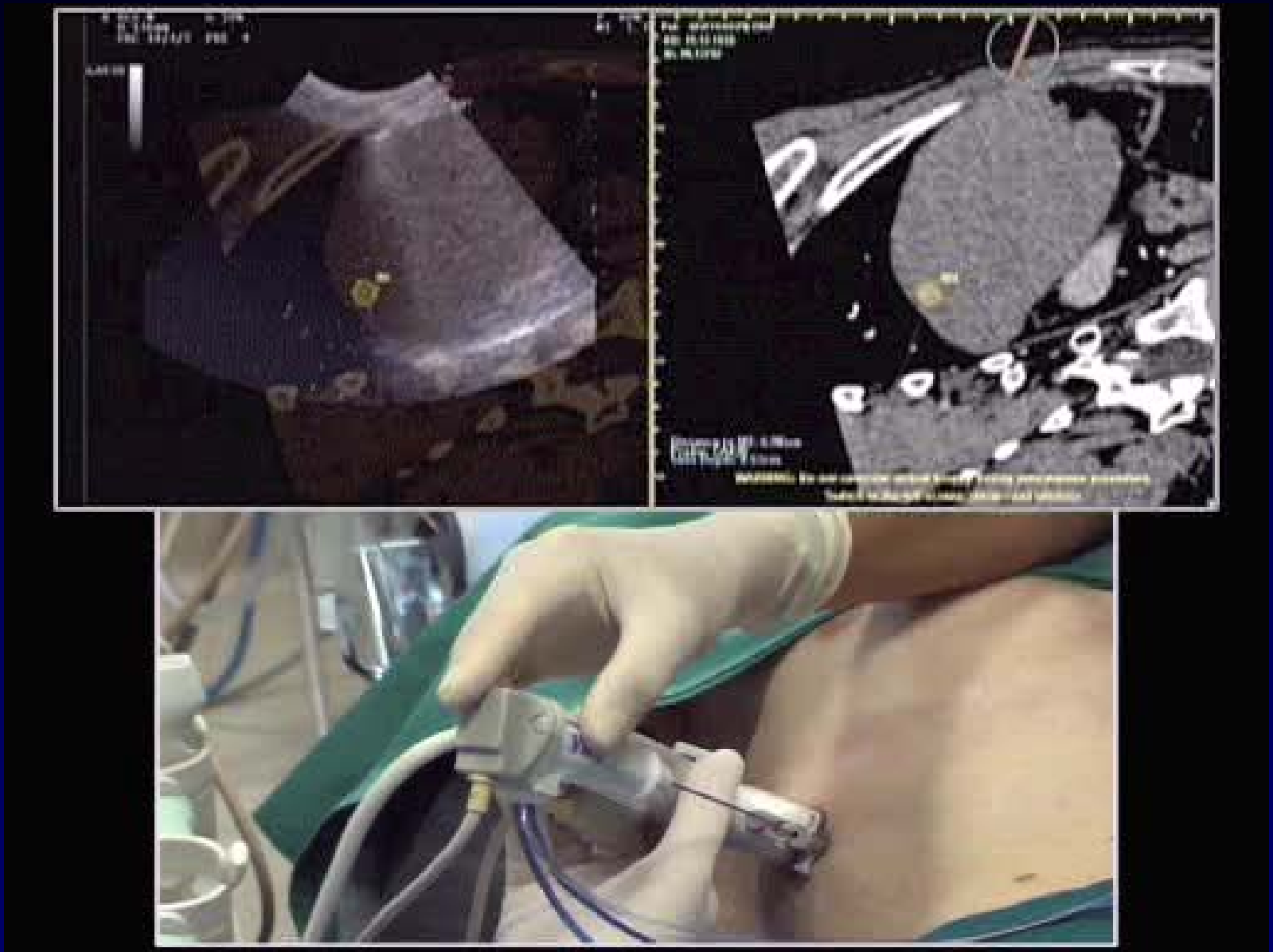
  even when surgical resection is possible

*Hepatology 2008

Percutaneous thermal therapies: limits

- Percutaneous thermal therapies are limited by the quality of imaging guidance and by complex anatomy and difficult access.

Electronic Devices



Management of Hepatocellular Carcinoma Requires a Multidisciplinary Approach