

# **Evolving Experience with SIRT in the Philippines**



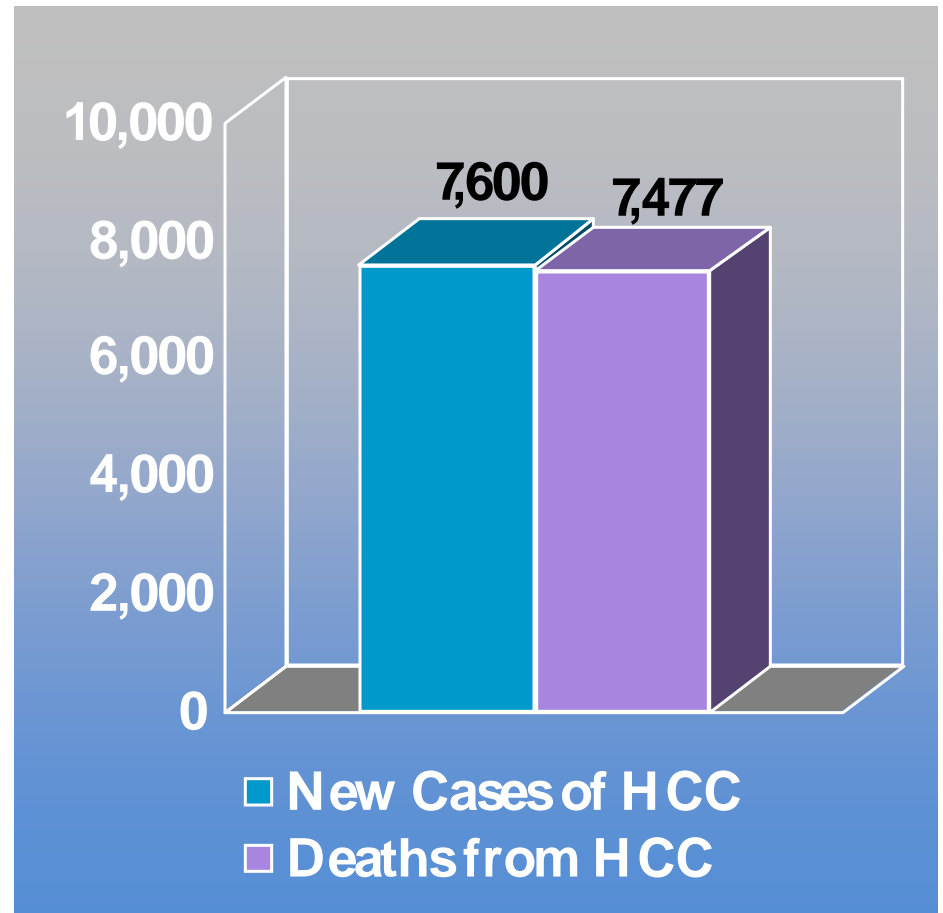
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**Center for Liver Disease Management  
and Transplantation**

**The Medical City**

# HCC in the Philippines

- 4th leading cause of cancer overall
  - 2nd among men and 7th among women
- 2nd leading cause of cancer death overall



# Treatment Options for HCC

- Surgical
  - Liver resection
  - Liver transplantation
- Non-surgical
  - Local ablation
    - RFA, PEI, Microwave ablation, HIFU
  - Locoregional
    - TACE
    - DEB-TACE
    - SIRT
  - Systemic
    - Chemotherapy, molecular targeted, biological agents
  - Palliative care

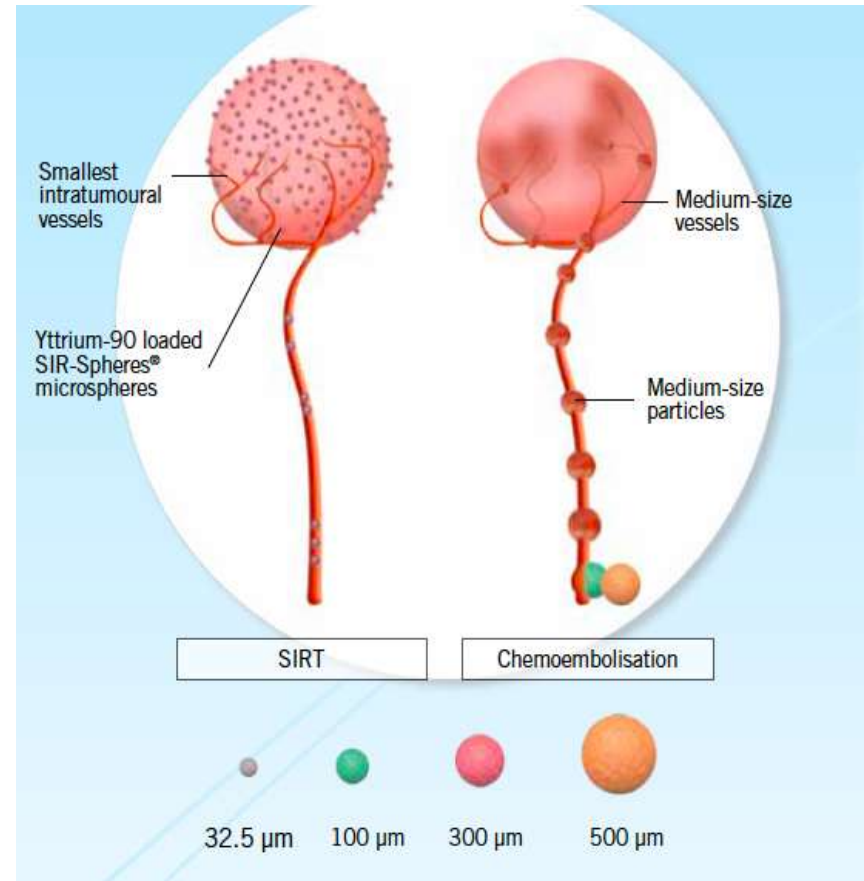
# Selective Internal Radiation Therapy (SIRT)

Intra-hepatic radiotherapy, also known as Selective Internal Radiation Therapy (SIRT), consists of intra-arterial administration of Yttrium 90, a radionuclide that is a pure beta radiation emitter.

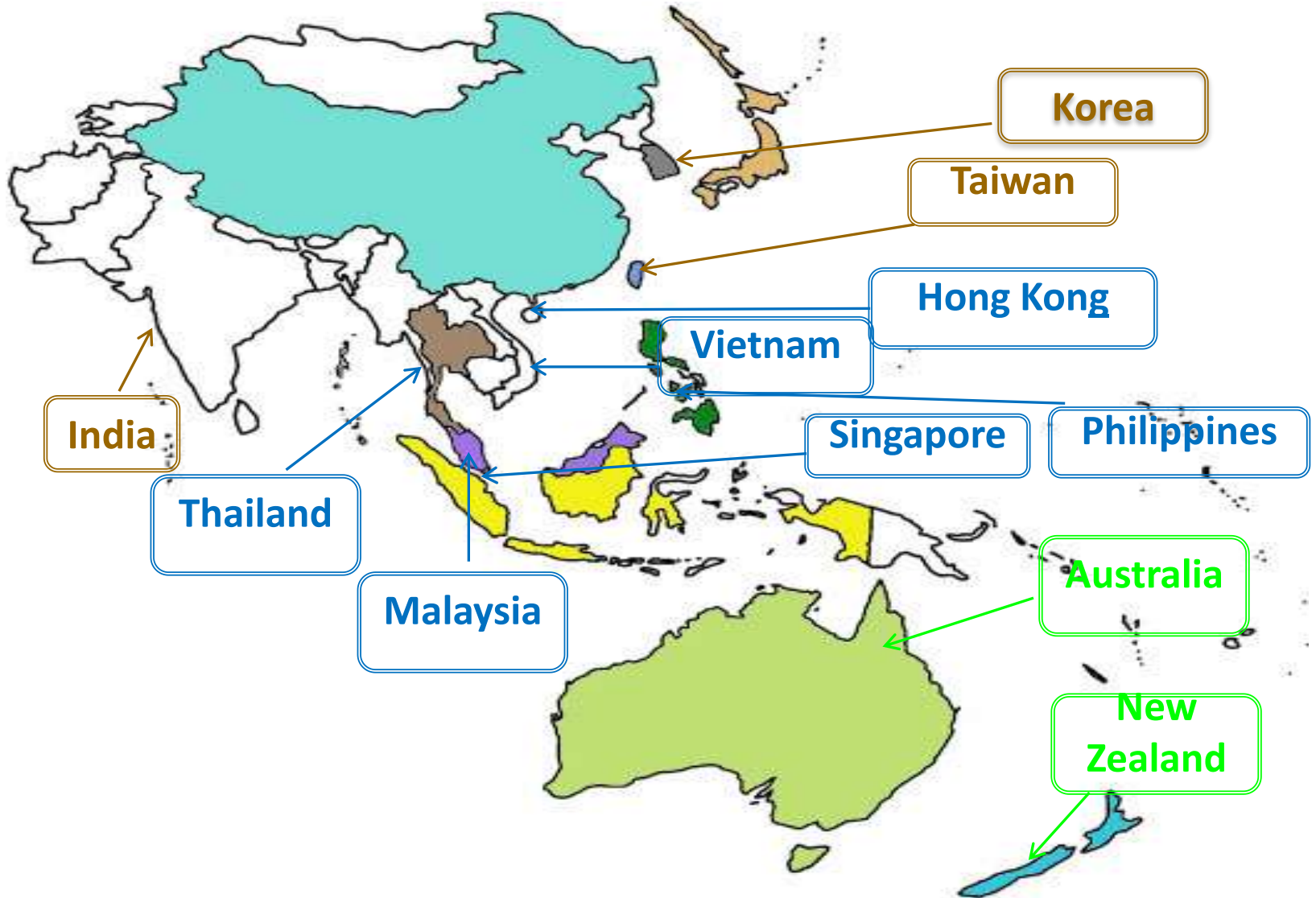
Radioactive microspheres deliver radiation and kill cancer cells

Flexible catheter

A flexible catheter is used, which is inserted into the femoral artery



# SIRT in the Asia Pacific



# SIRT in the Philippines

- SIR spheres approved by Philippine FDA in early 2008
- First 2 cases on July 30, 2008
- Performed at TMC & MMC
- Centers that offer SIRT and no. of cases
  - The Medical City 40
  - Makati Medical Center 20
  - St. Luke's Medical Center 17

# First SIRT in the Philippines



Dr. Ramon  
Santos-Ocampo

Dr. Lourens  
Bester

# Protocol

Initial Visit: History and P.E.

Work-up: Laboratory tests, Imaging

Diagnosis

Multidisciplinary Conference

**SIRT**

Yes

No

Mapping angiography  
+ MAA scan

Other options

Implantation of Y90 beads



# Follow-up

- Lab tests and imaging at 1 month
- Lab tests and imaging at 3 months
- Every 3 months thereafter

# SIRT Experience - The Medical City

- Retrospective, descriptive
- July 2008 – November 15, 2013
- Chart review
- Interview of patients, relatives, MDs & staff
- Number of cases
  - Mapping 49
  - SIRT 40 – 8 (SIRveNIB) = 32

# Demographics

## 32 cases

- Age, yrs
  - Mean (Range) 63 ± 12.5 (30-83)
- Sex
  - Male 24 (75%)
  - Female 8 (25%)
- Race
  - Filipino 29 (91%)
  - Canadian 1 (3%)
  - Korean 1 (3%)
  - Sri Lankan 1 (3%)

# Tumor Diagnosis

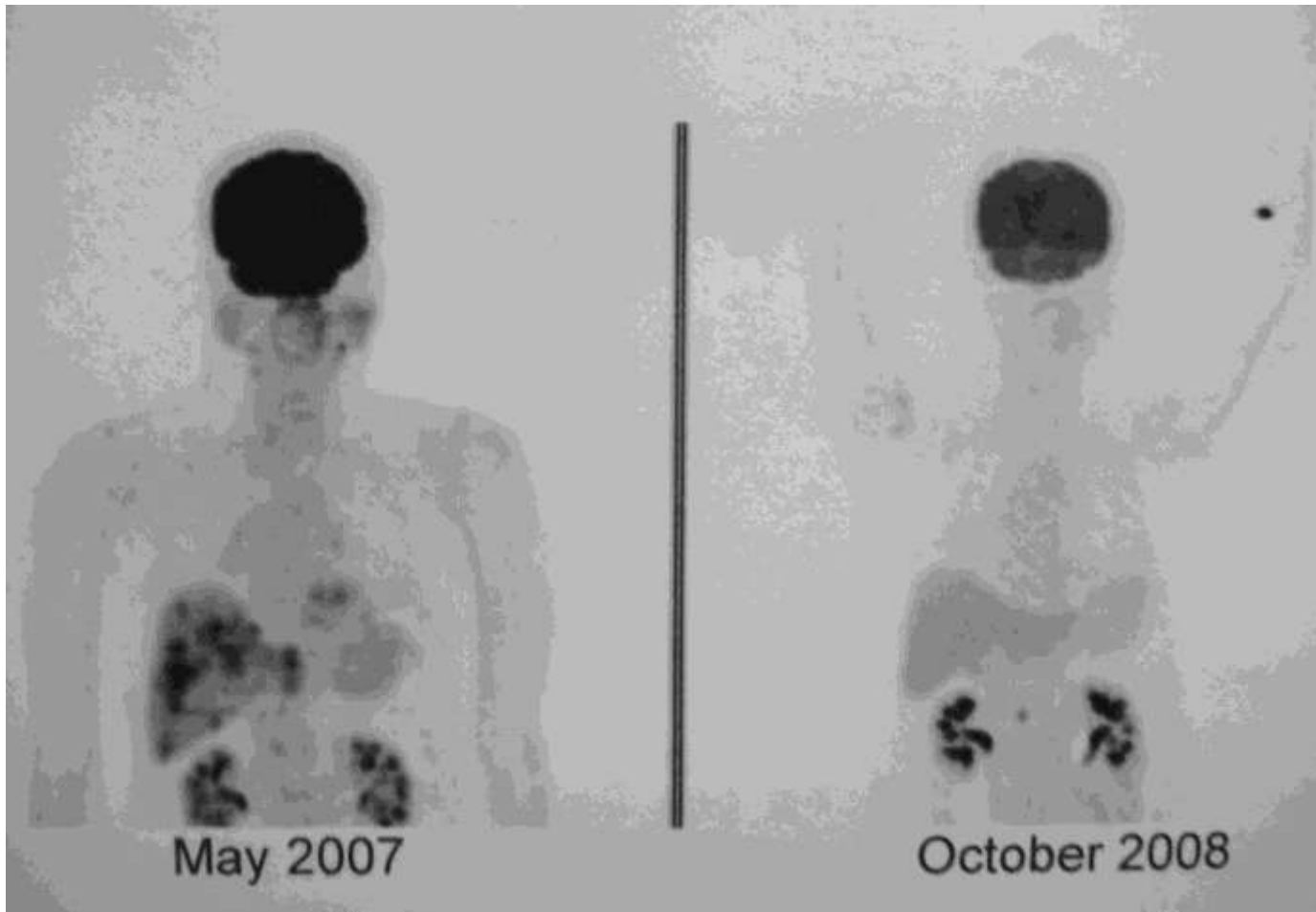
32 cases

- Etiology

- Hepatocellular Carcinoma (HCC) 22 (69%)
- Cholangiocarcinoma (CCa) 5 (16%)
- Colorectal Liver Mets (CRLM) 3 (9%)
- Others 2 (6%)
  - Breast Ca Liver Mets
  - Adrenal tumor with invasion of the liver

# D.U. 71/M CRLM

## SIRT on July 30, 2008

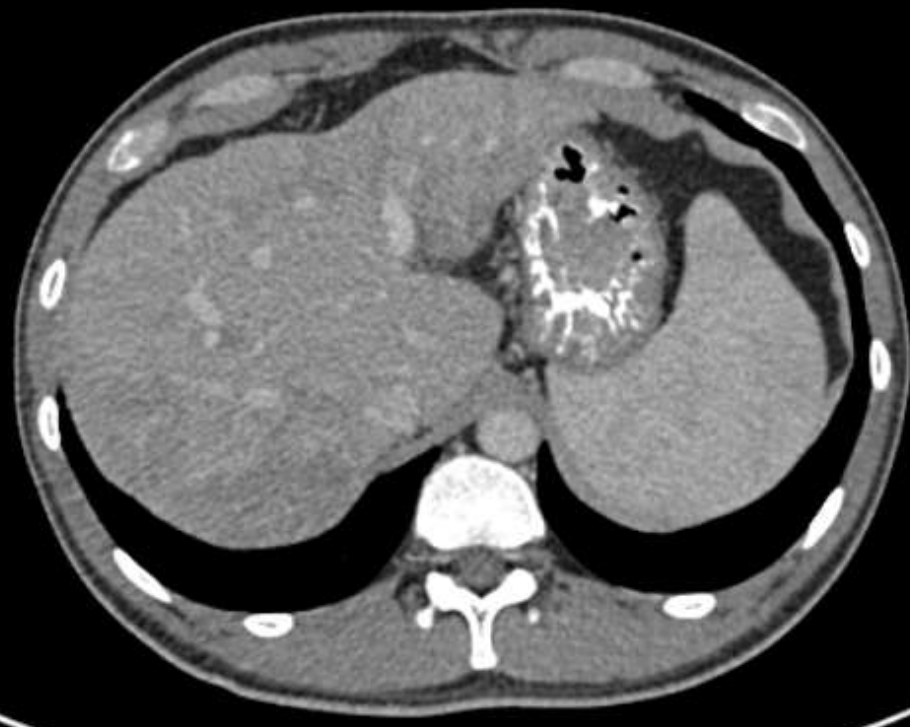


# J.C. 30/M CRLM

## SIRT on January 23, 2013



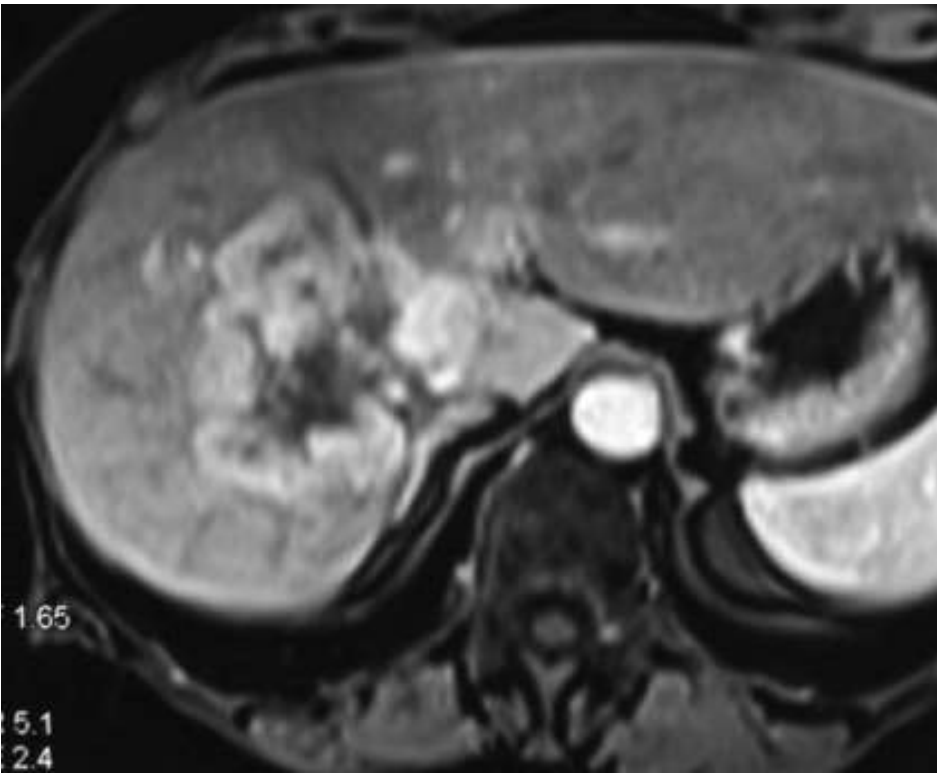
November 2012



May 2013

# C.R. 78/F CCa

## SIRT on Dec. 12, 2008



November 2008

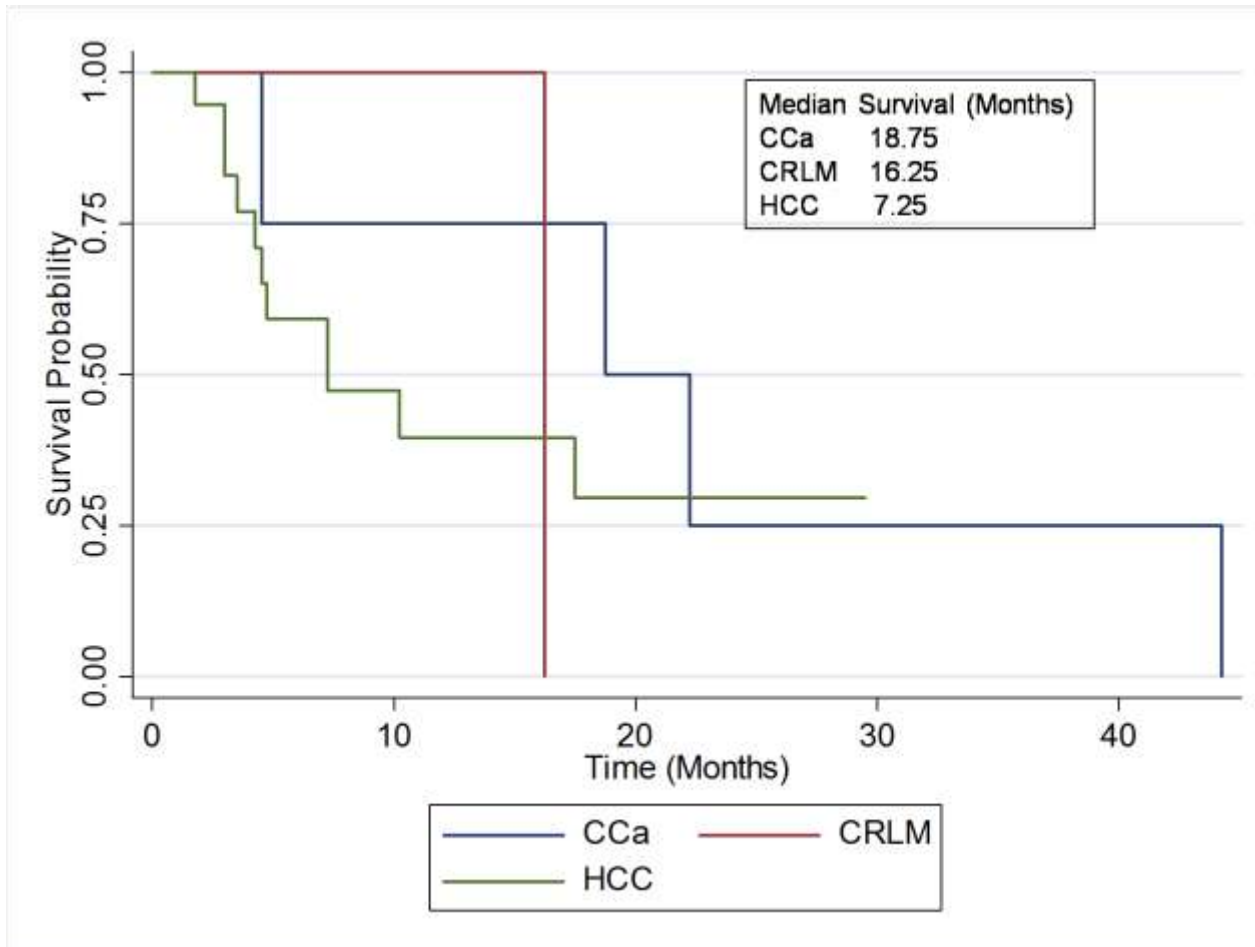


February 2011

\*Expired August 2012, SV 44 months

# Survival Outcome

## 32 cases





# SIRT for HCC

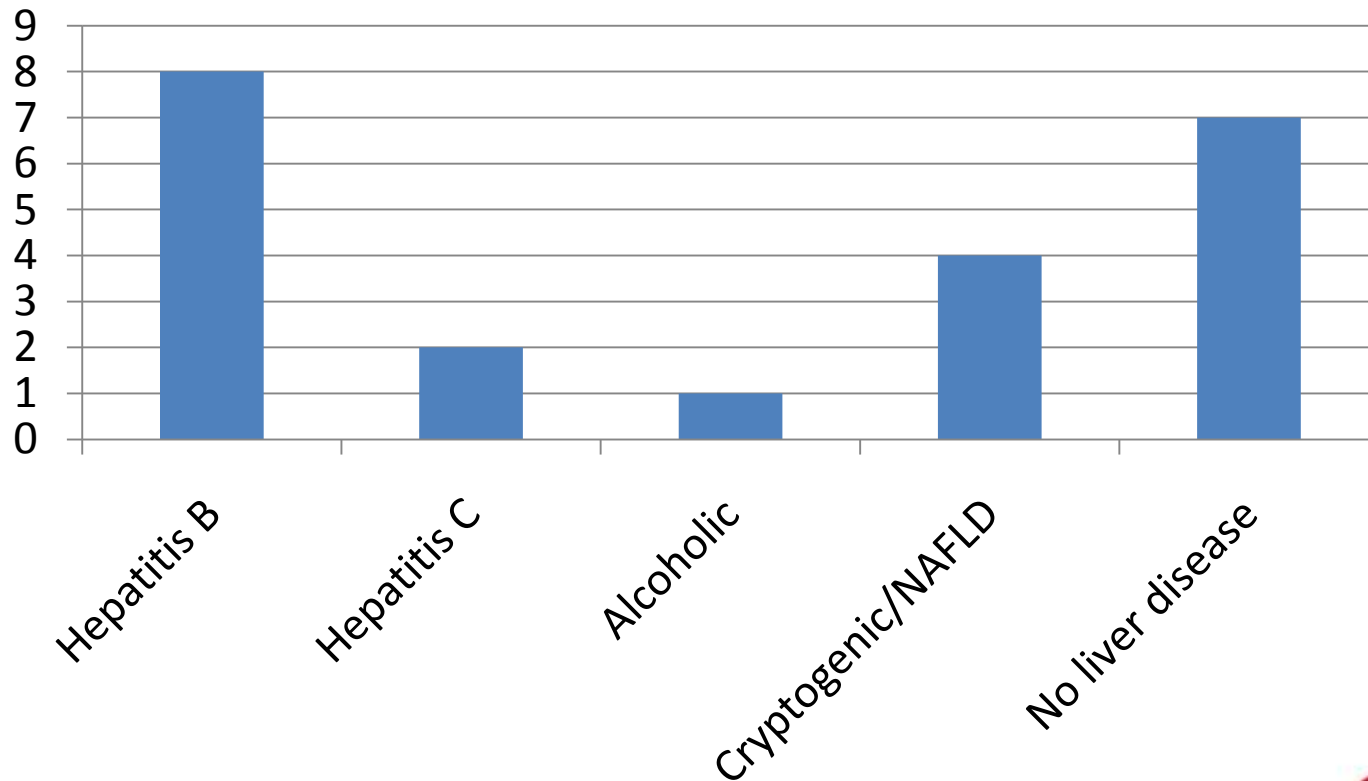
## 22 cases

- Age, yrs  
    Mean (Range)                      63 ± 11.6 (44-83)
- Sex
  - Male                                      19 (86%)
  - Female                                    3 (14%)
- Race
  - Filipino                                 22 (100%)

# SIRT for HCC

## 22 cases

### Etiology of Liver Disease



# SIRT for HCC

## 22 cases

- Prior treatment received

Surgery	2
TACE	3
RFA	2
DCT	2

- ECOG status

0	13 (59%)
1	6 (27)
2	3 (14%)

# SIRT for HCC

## 22 cases

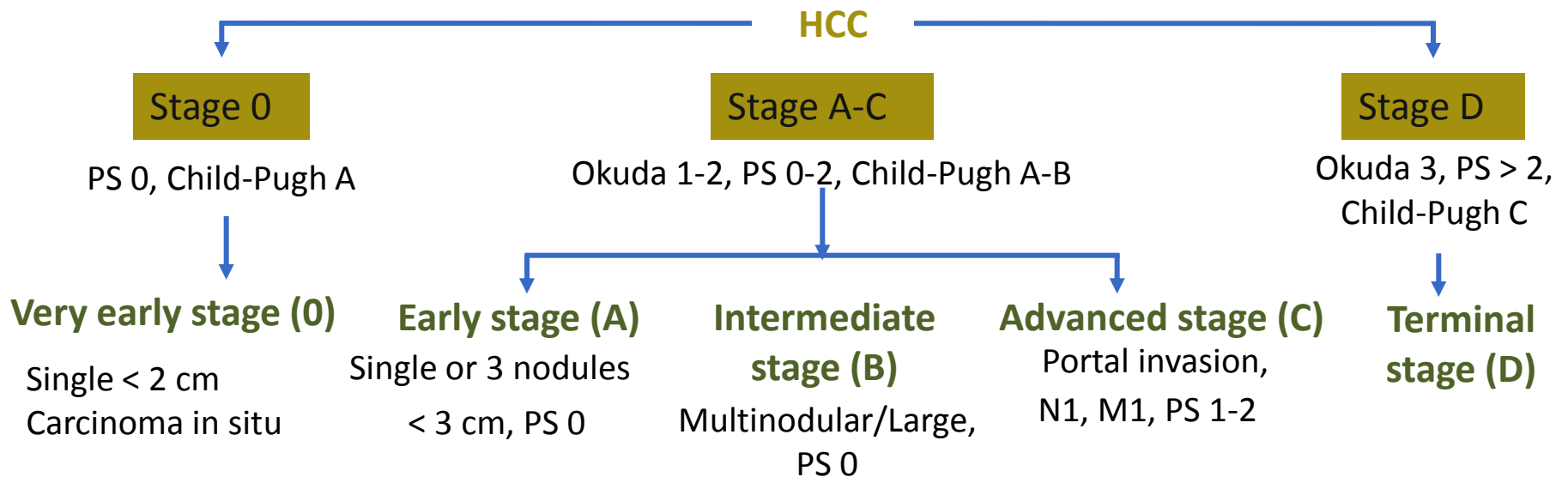
Parameter	Yes	No
Cirrhosis	7 (32%)	15 (68%)
Portal Vein Thrombosis	6 (27%)	16 (73%)
Ascites	2 (9%)	20 (91%)
Extrahepatic Disease	5 (23%)	17 (77%)

# SIRT for HCC

## Pre-treatment Lab Data

Parameter	Mean $\pm$ SD	Range
Total Bilirubin (mg/dL)	0.98 $\pm$ 0.49	0.45 – 2.30
Albumin (g/dL)	3.77 $\pm$ 0.52	2.79 – 4.6
INR	1.08 $\pm$ 0.11	0.96 – 1.3
ALT (U/L)	63.31 $\pm$ 46.98	22- 232
AST (U/L)	99.08 $\pm$ 74.54	23 - 296
Creatinine (mg/dL)	0.93 $\pm$ 0.36	0.37 – 1.92

# BCLC Staging System



# SIRT for HCC

22 cases

- Child Pugh Stage

A	20 (91%)
B	2 (9%)
C	0

- BCLC Stage

B (Intermediate)	13 (59%)
C (Advanced)	9 (41%)

# SIRT for HCC

## Tumor-related Data

- Size of biggest lesion

Mean  $\pm$  SD (range)                      12.3  $\pm$  3.4 (5.15-17.1)

- Distribution

Solitary    4 (18%)

Multifocal                                         18 (82%)

- Number of lesions

1    4 (18%)

2-5    12 (55%)

>5     6 (27%)



# SIRT for HCC

## Tumor-related Data

- Location

Unilobar	14 (64%)
Bilobar	8 (36%)

- AFP

<400	14 (64%)
>400	6 (36%)

# SIRT for HCC

## Treatment-related Data

- Lung Shunt

<10%	14 (64%)
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10-20%	7 (32%)
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>20%	1 (4%)
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- Dose administered, GBq

Mean $\pm$ SD (range)	1.7 $\pm$ 0.31 (1.1-2.3)
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# SIRT for HCC

## Treatment-related Data

- No. of treatments

1	22
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2	0
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- Target of treatment

Whole liver	8 (36%)
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Right lobe	12 (55%)
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Left lobe	2 (9%)
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Segmental	0
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# Outcomes Toxicities

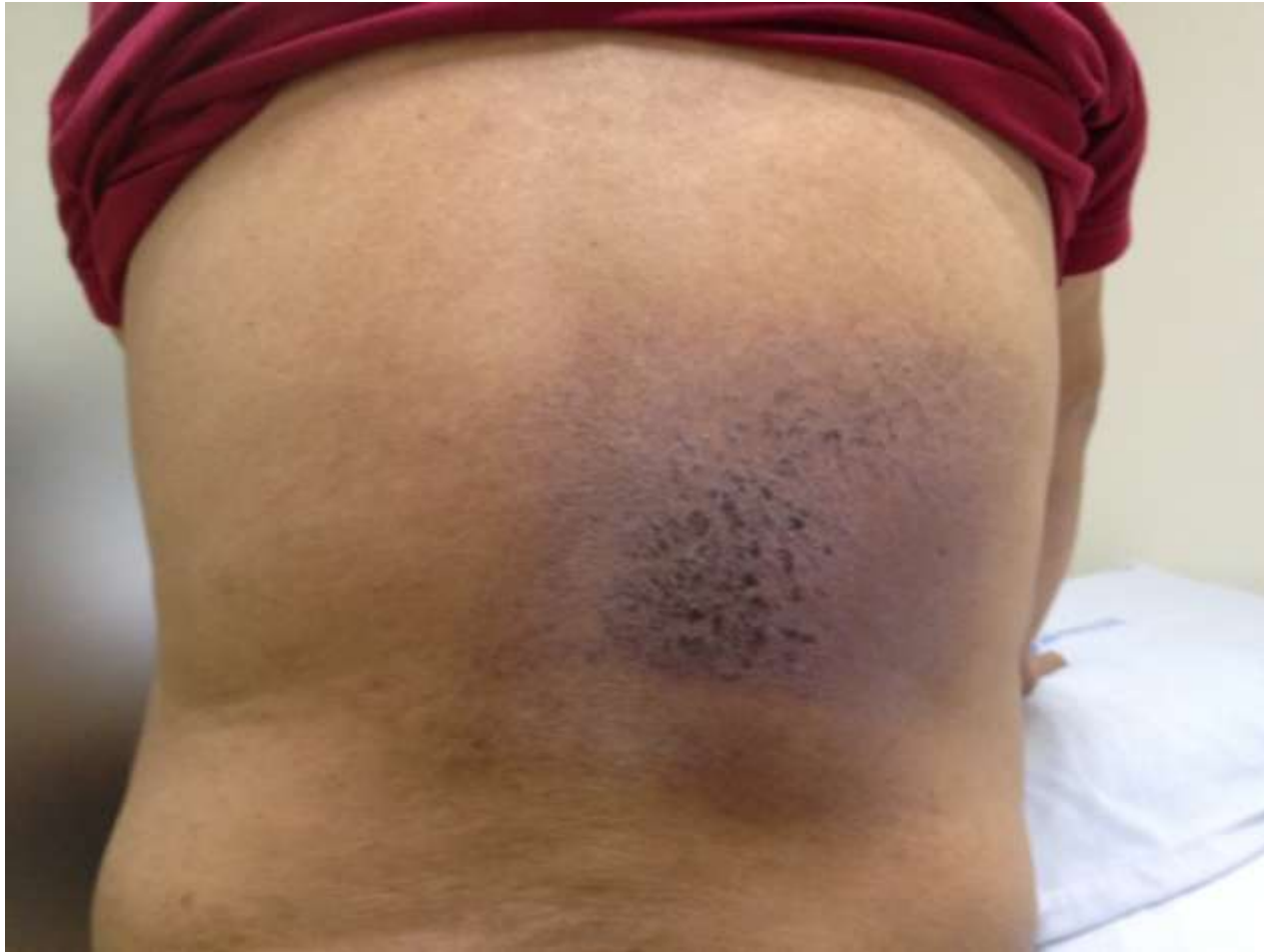
Sign/Symptom	Yes	No
Fatigue	8 (38%)	13 (62%)
Anorexia	5 (24%)	16 (76%)
Nausea/Vomiting	3 (14%)	18 (86%)
Fever	2 (10%)	19 (90%)
Pain	5 (24%)	16 (76%)
Bloating	1 (5%)	21 (95%)

# Outcomes

## Other Complications

- Radiation gastritis 0
- Radiation pneumonia 0
- REILD 0
- Pleural effusion 2
- Skin rash, back 3
- Ascites 1
- Anxiety-induced COPD exacerbations and hypertension 1

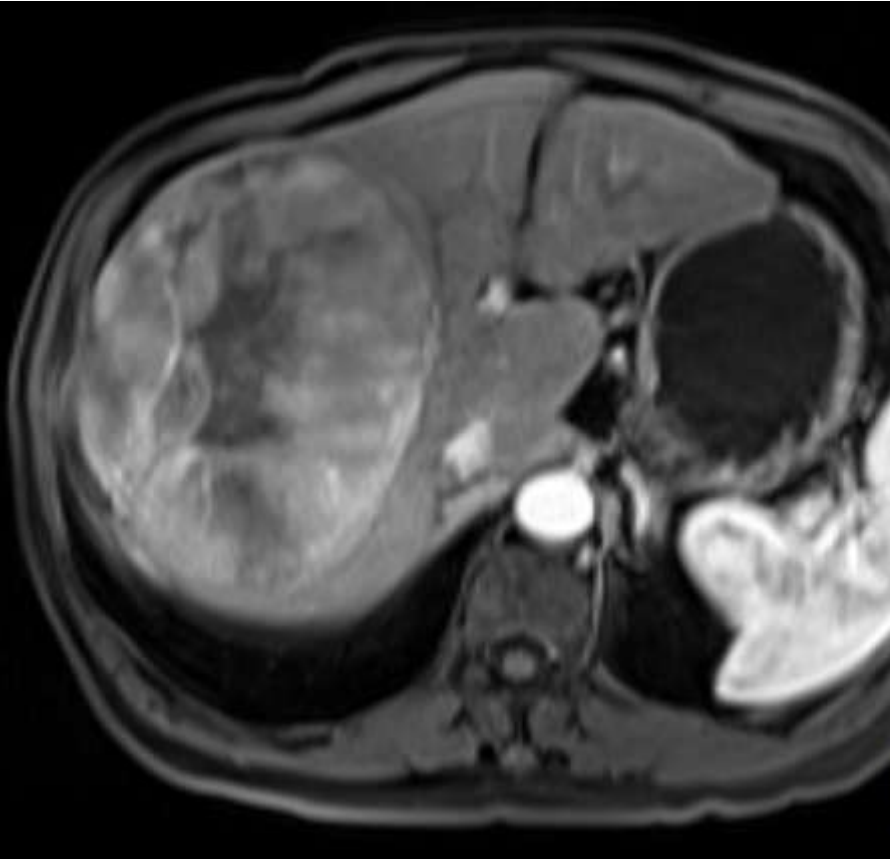
# Skin rash, back



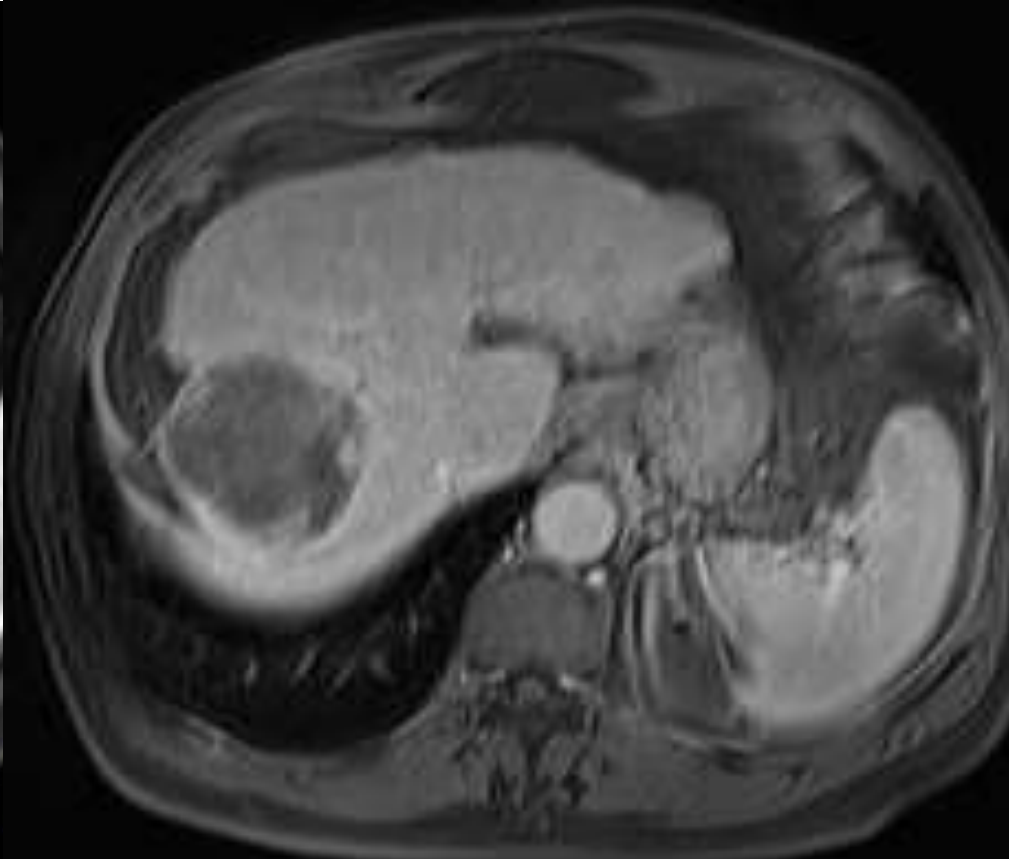
# Other Treatment post SIRT

- TACE 3
- DEB-TACE 1
- RFA 1
- Surgery 5
  - Resected 4

N.C. 77/M HCC  
SIRT on July 20, 2012



16 cm  
June 2012

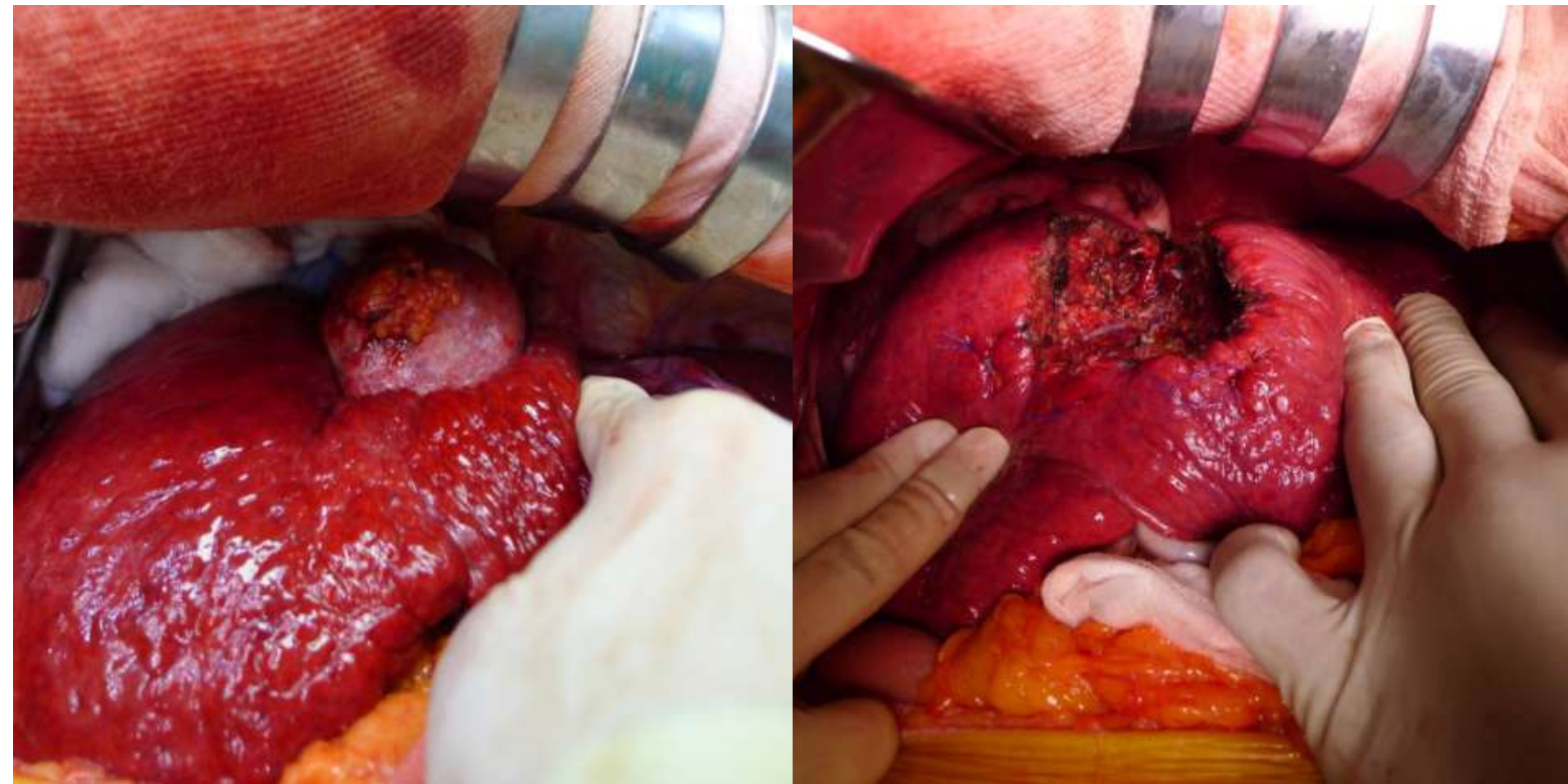


6 cm  
January 2013

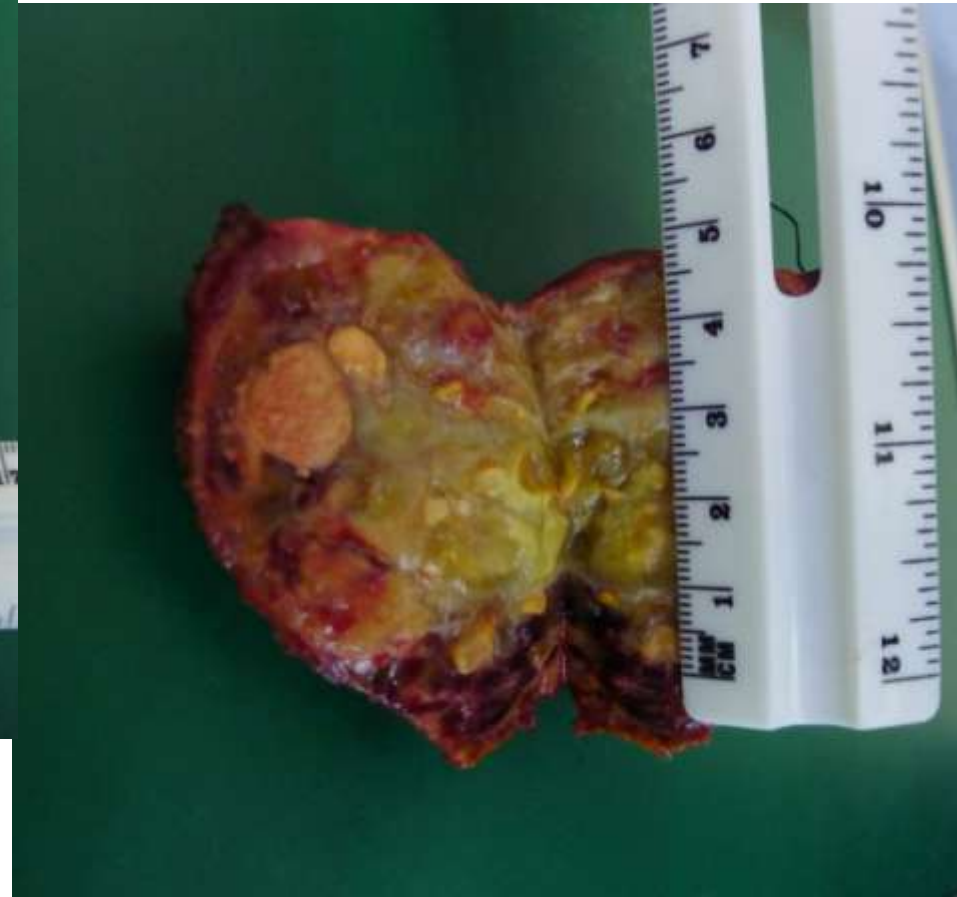


# Partial Hepatectomy

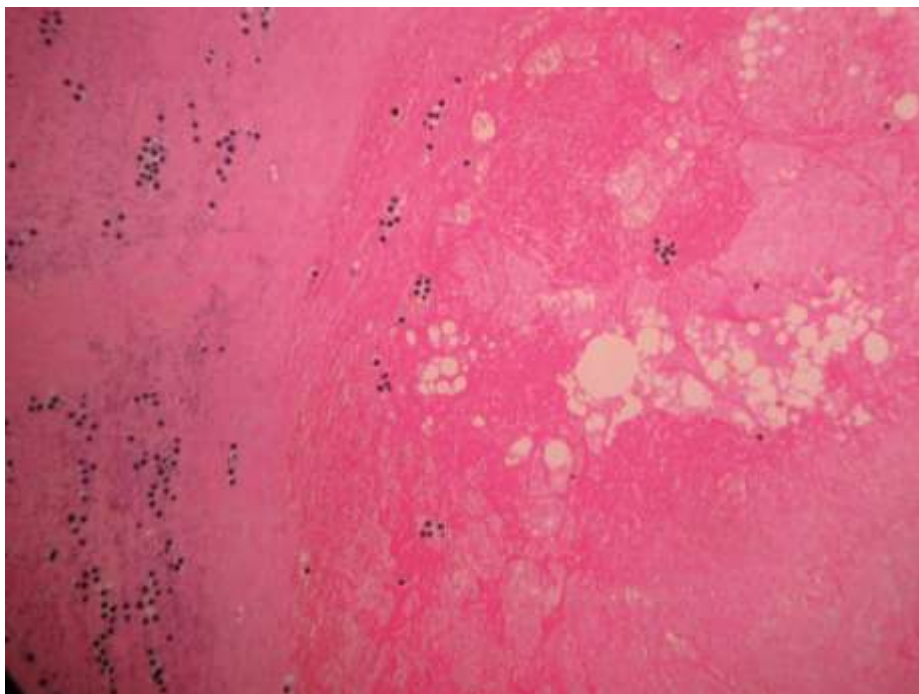
March 2013



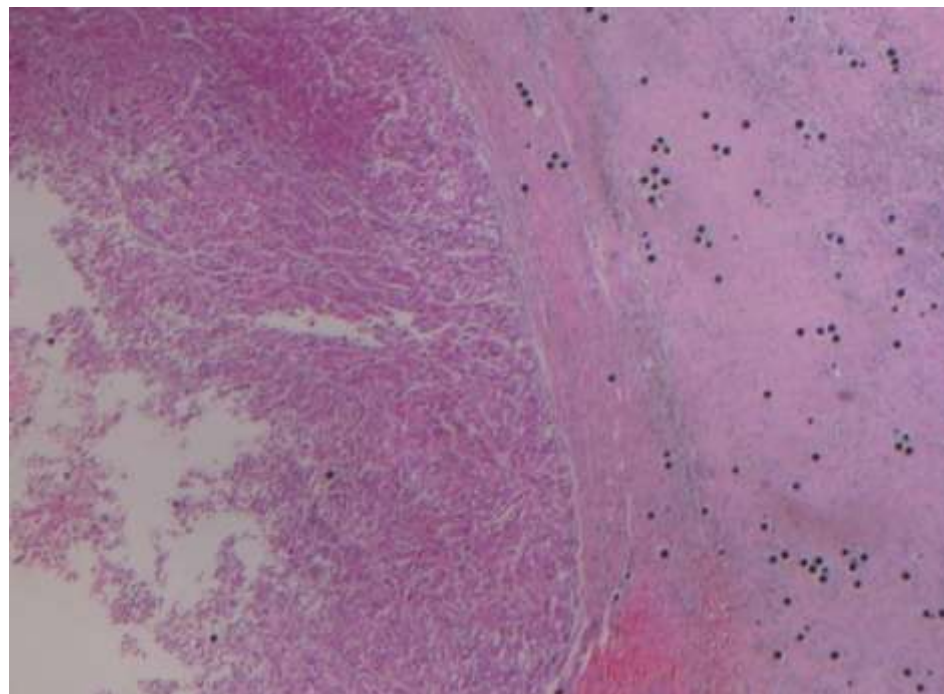
# Specimen



# Histopathology



HEMORRHAGIC NECROSIS  
OF MAIN TUMOR



SMALL  
VIABLE  
TUMOR

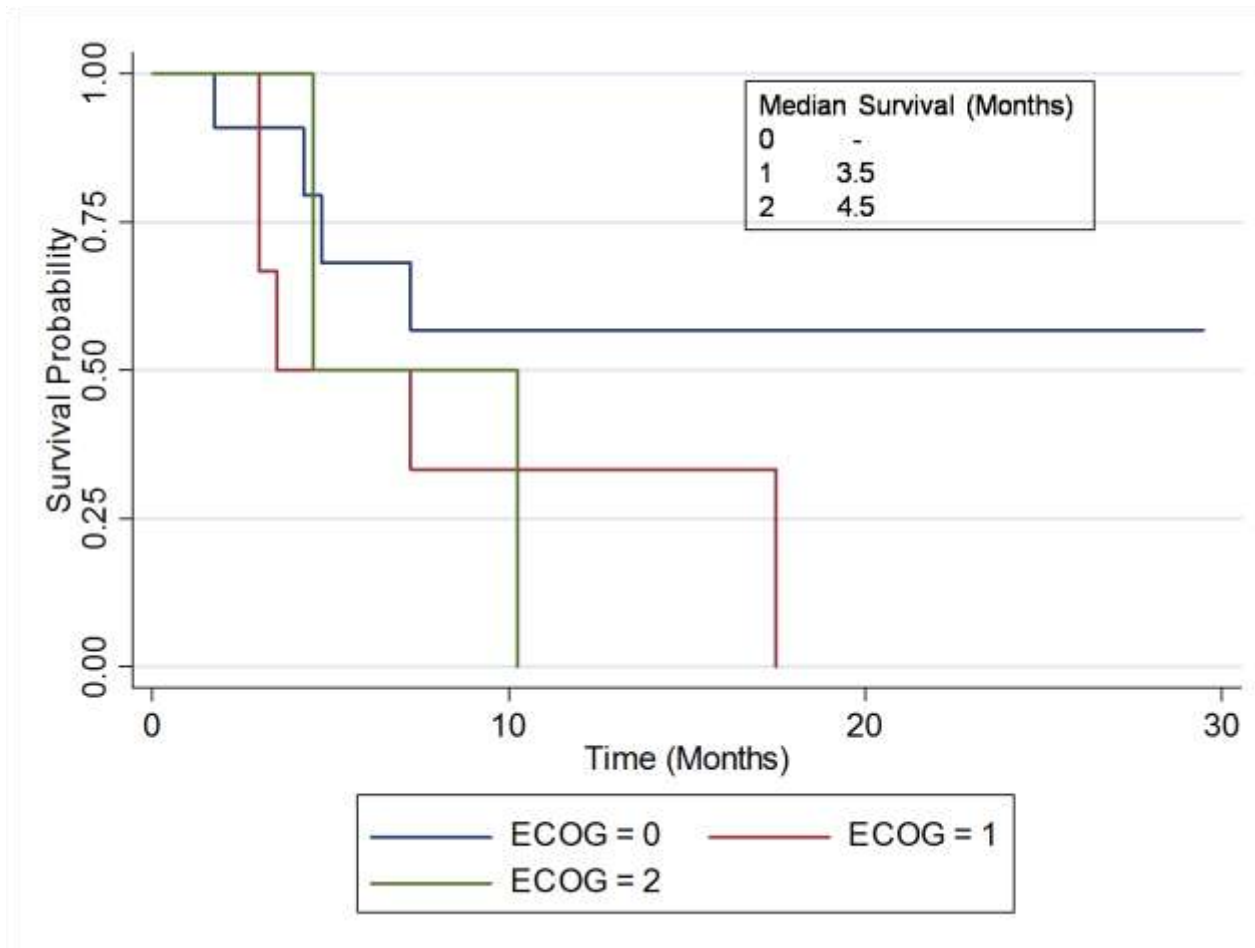
LARGE AREAS OF  
NECROSIS

# Outcomes

Status	Progressive Disease	Stable or No Disease	Unknown Status at Death
Dead	8		3
Alive	4	2	

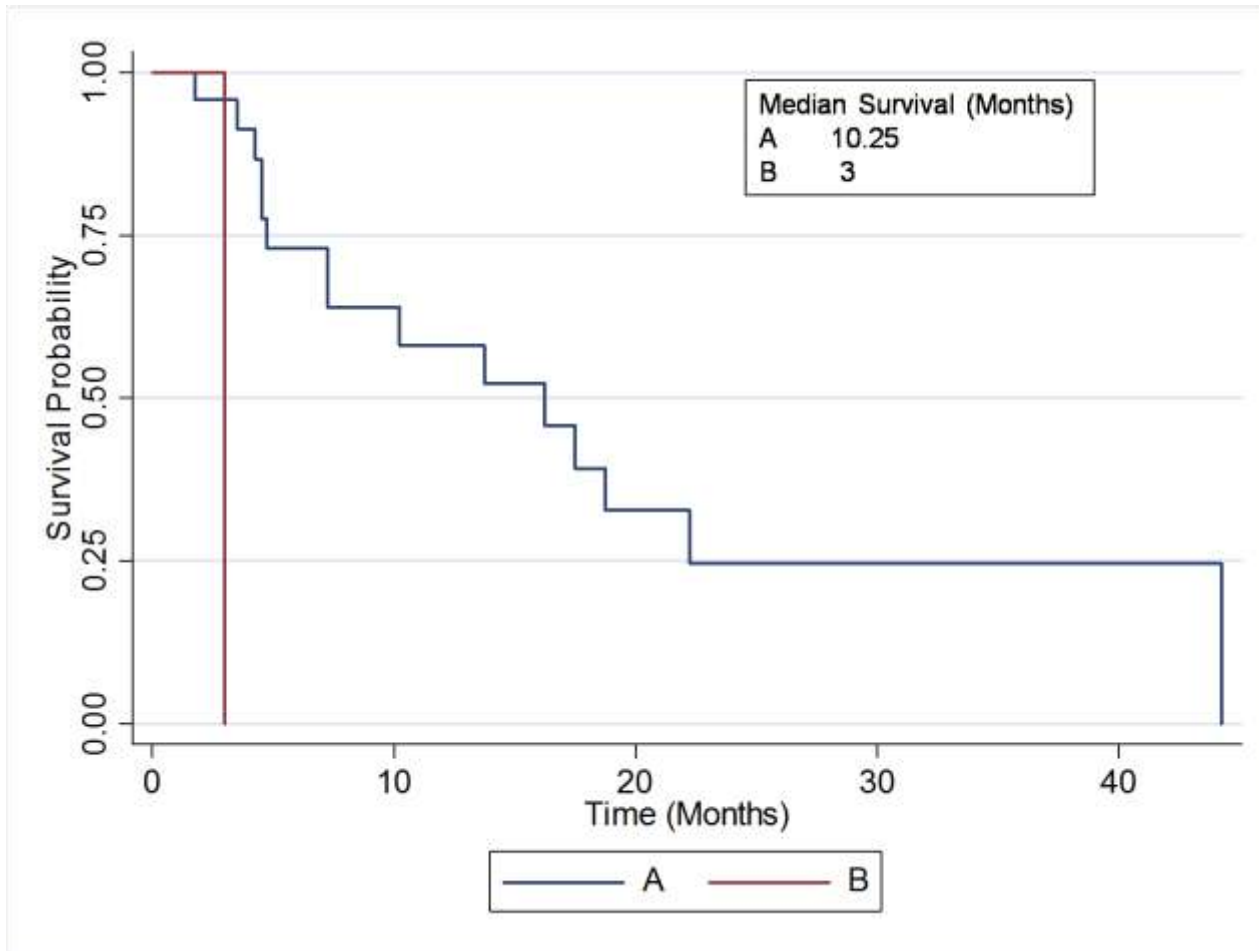
\*Only patients followed  $\geq 3$  months included, n=17

# Survival ECOG Status

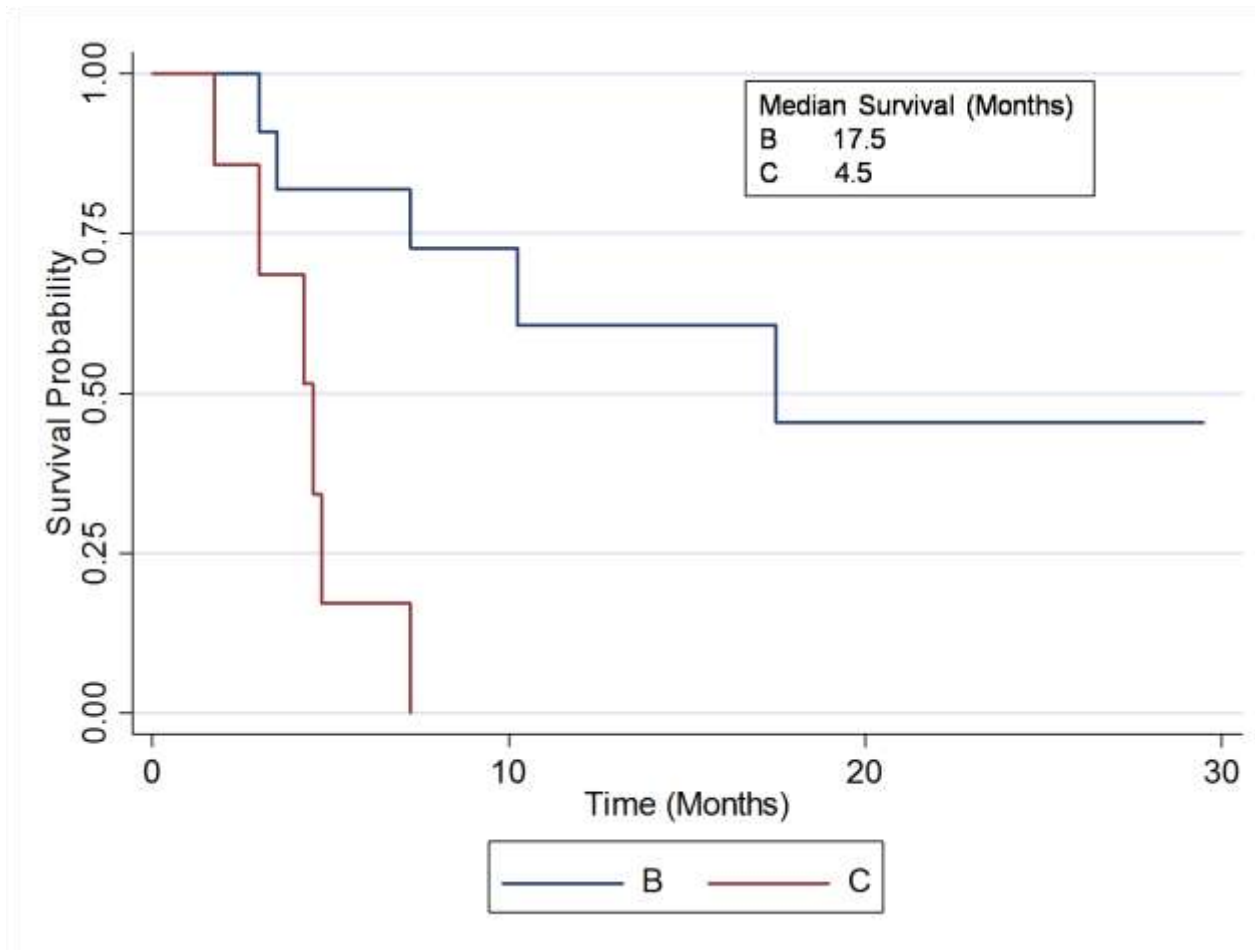


# Survival

## Child-Pugh Stage

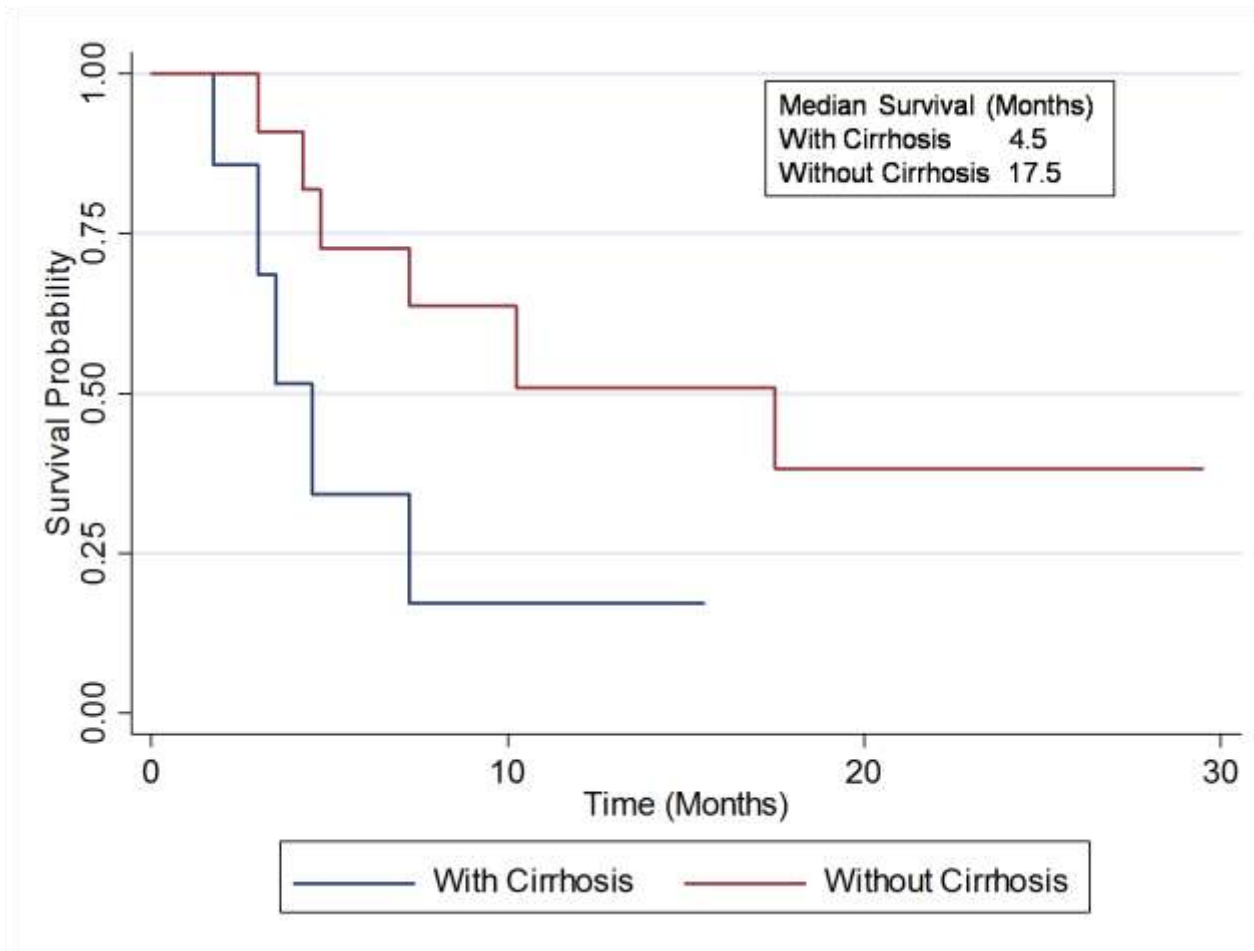


# Survival BCLC Stage



# Survival

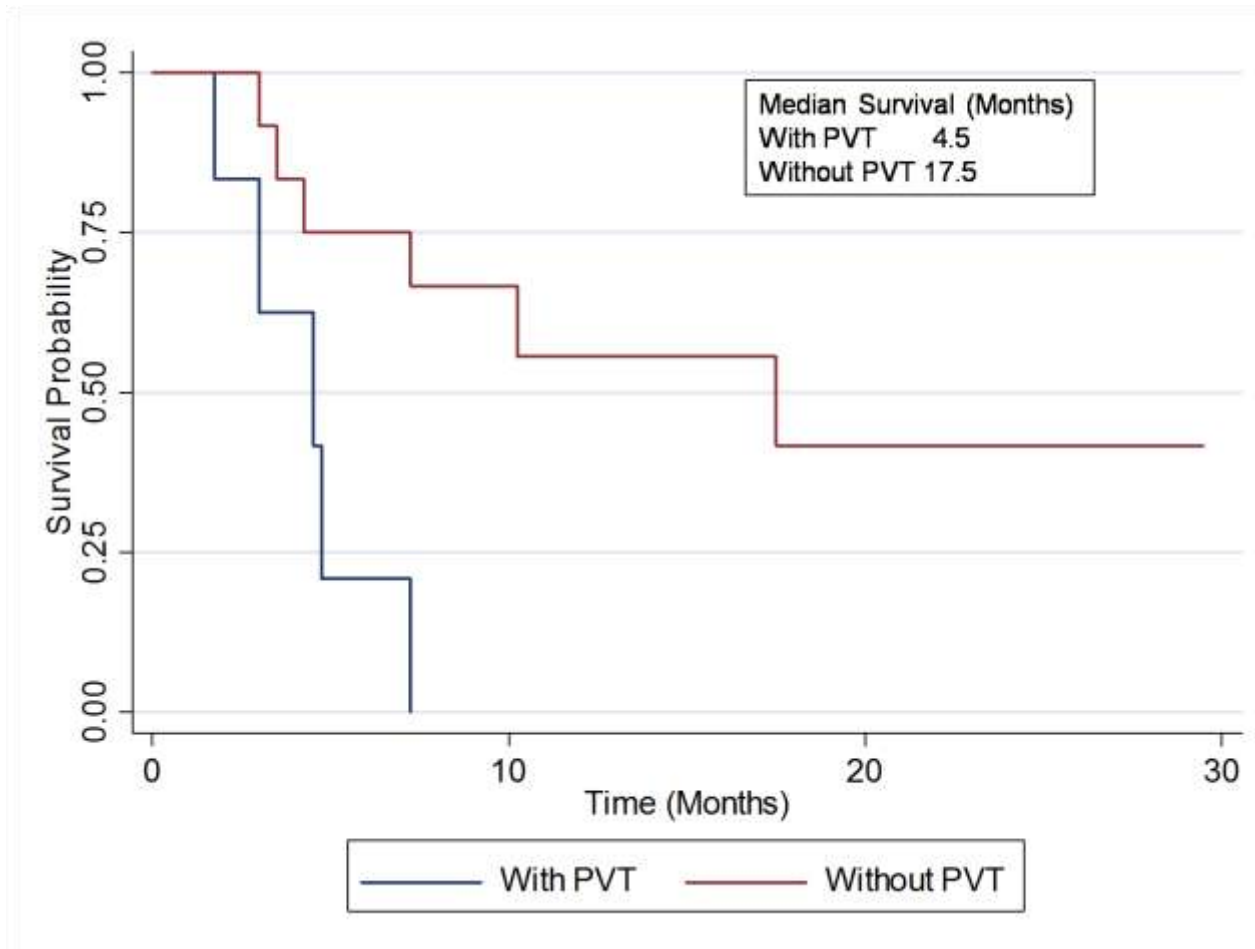
## Presence of Cirrhosis





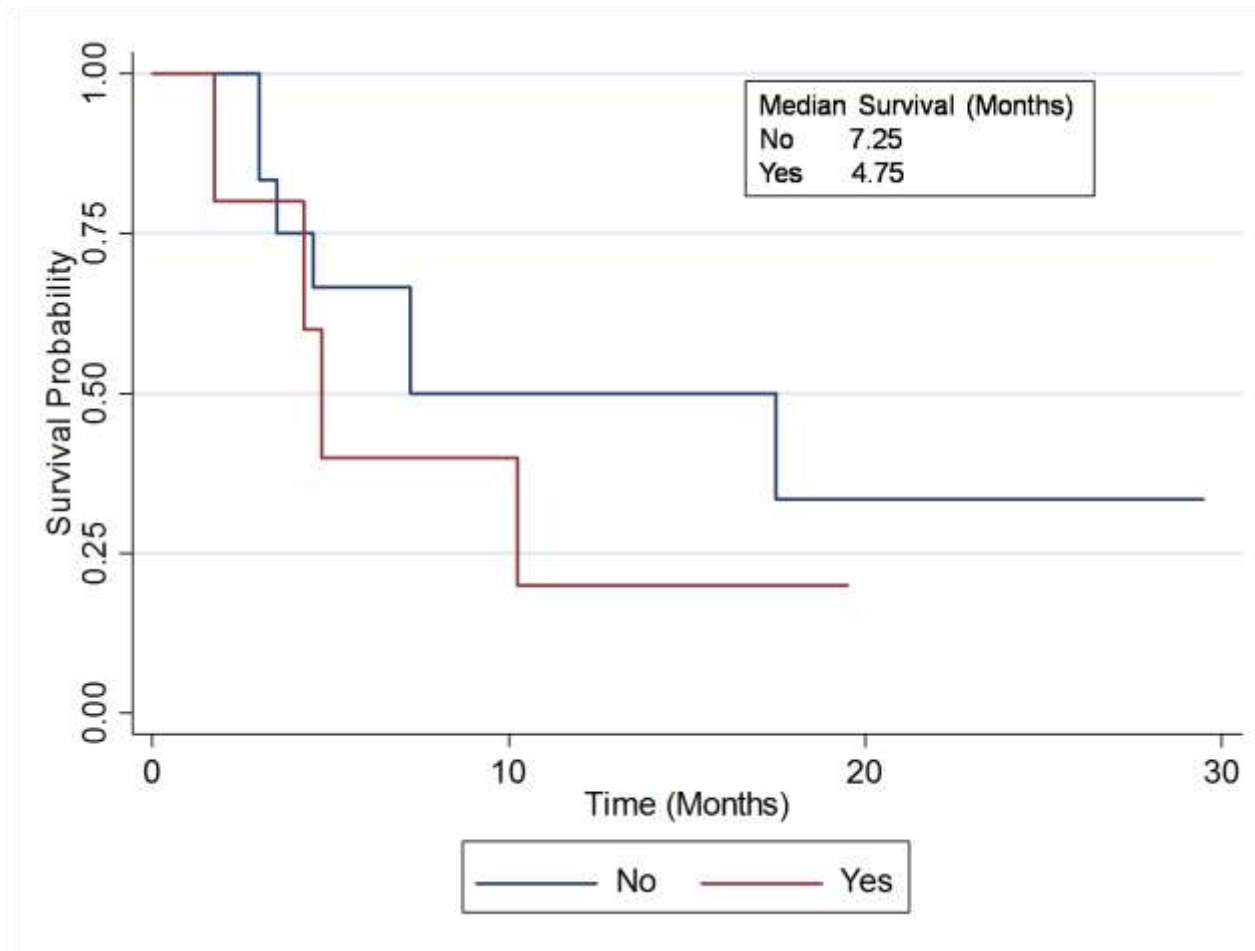
# Survival

## Presence of PVT



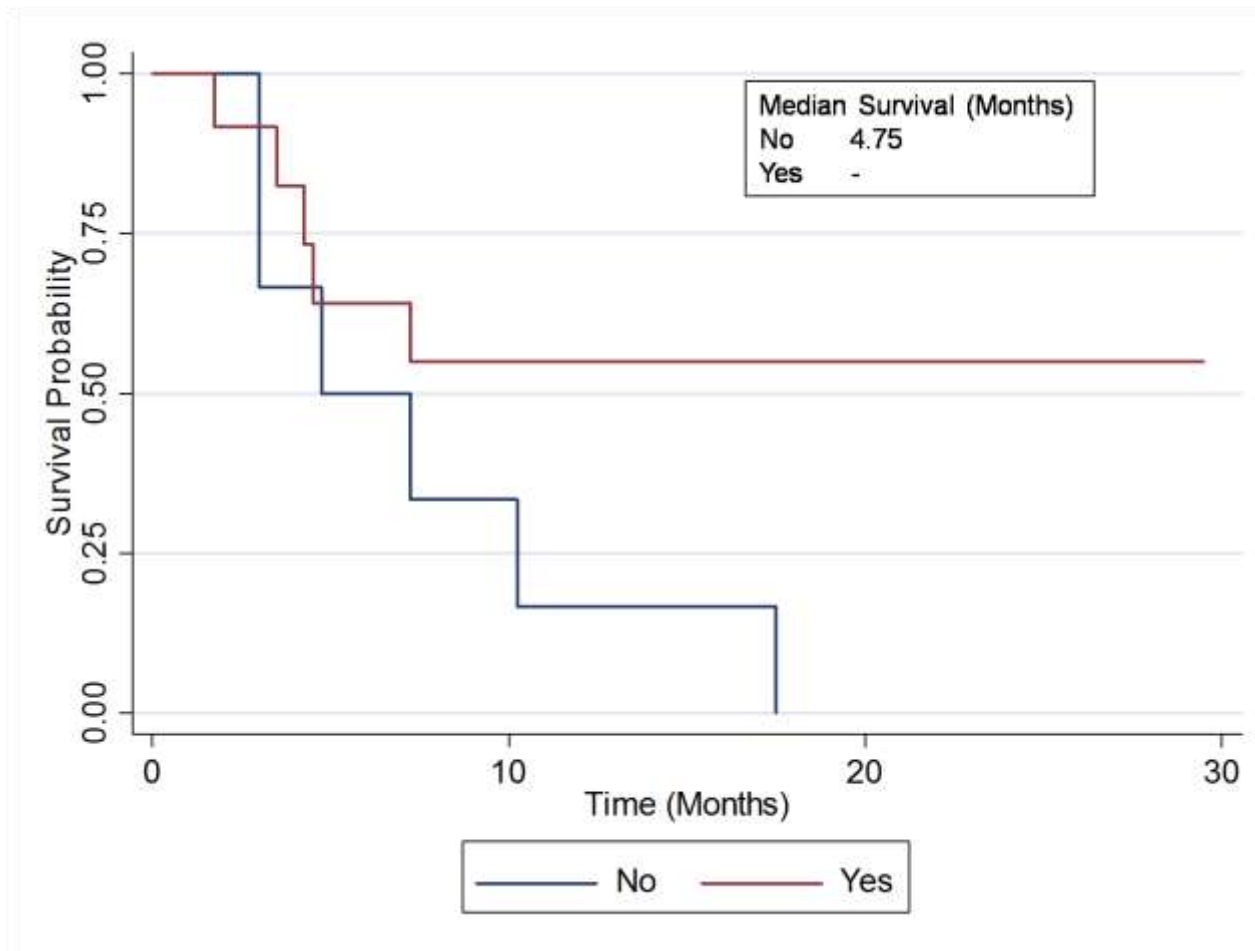
# Survival

## Extrahepatic Disease at Baseline



# Survival

## Post-SIRT Treatment



# Conclusion

- SIRT can now be successfully performed in the Philippines
- The most common etiology is HCC associated with Hepatitis B
- Acceptable outcomes with minimal toxicity although our numbers are still small
- Applicability limited by cost constraints
- Maximize benefit possibly in combination with other treatment modalities
- May effectively be used to bridge to liver resection or transplantation

*Thank you*

