Living related Donor Liver Transplantation (LDLT) for Hepatocellular Carcinoma

By

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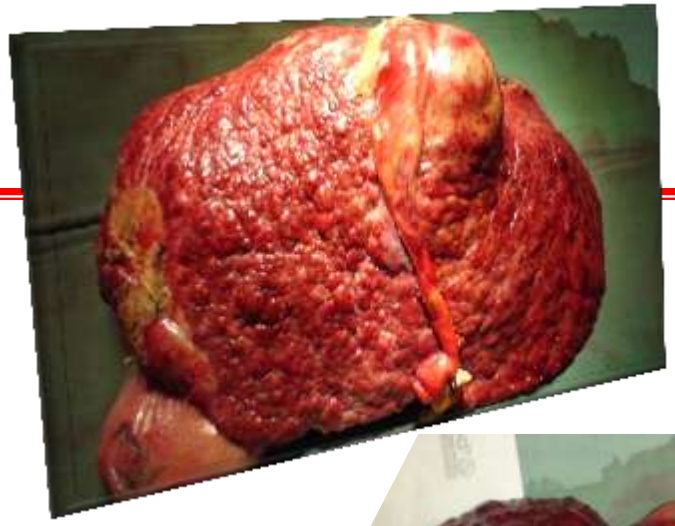
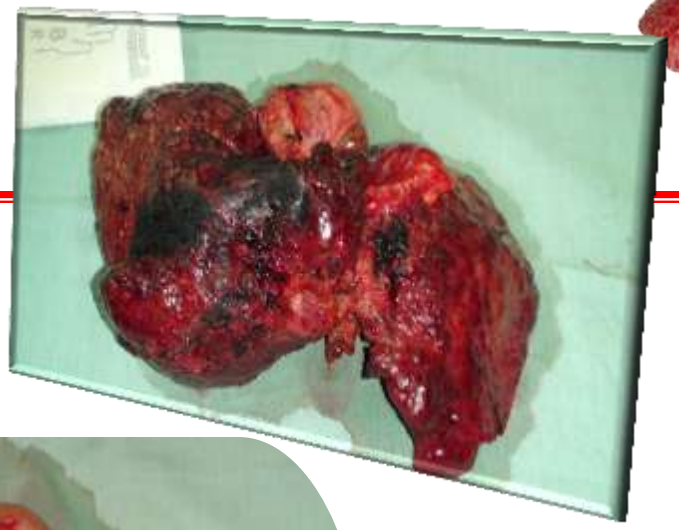
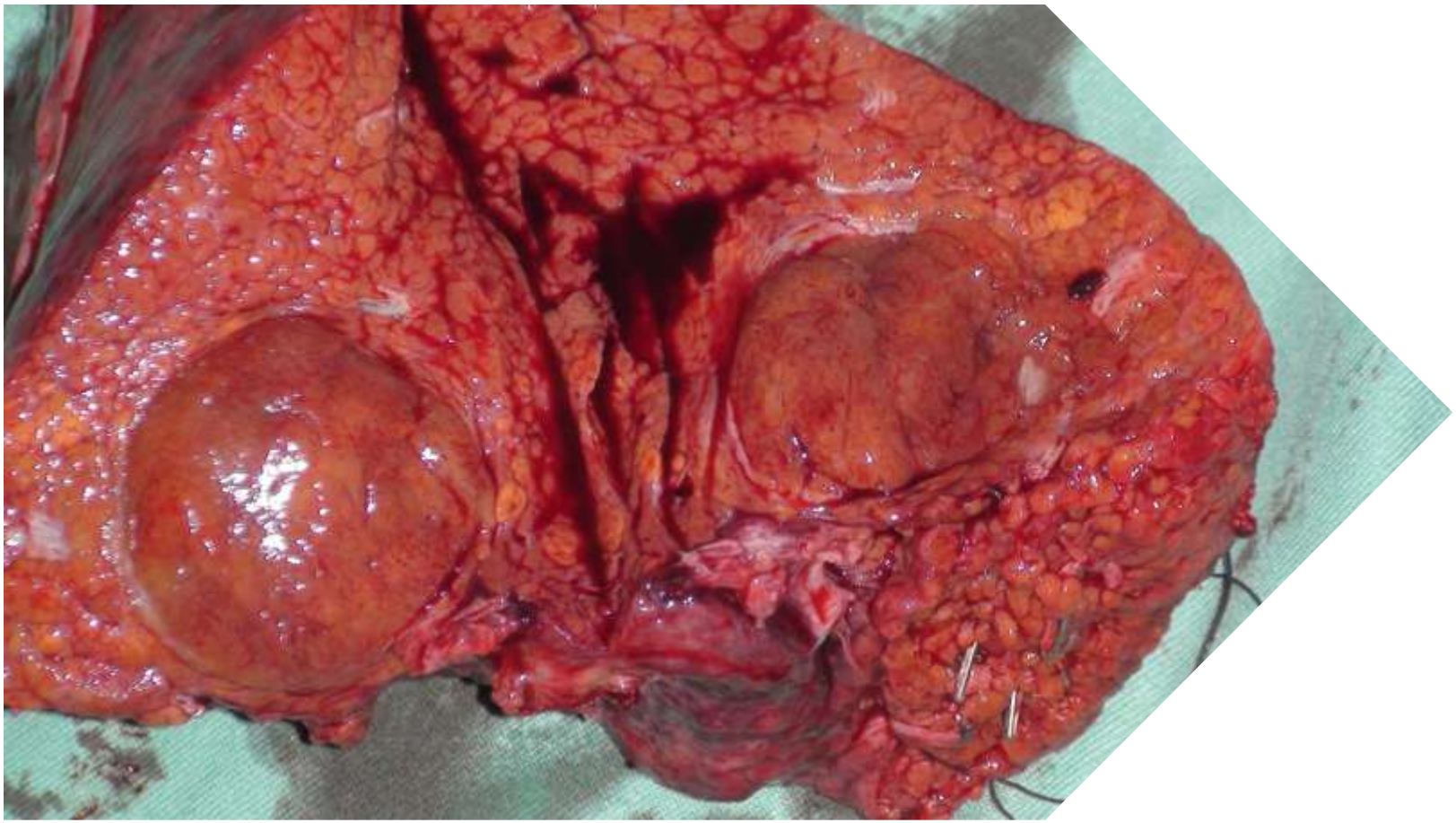







Liver Resection in Compensated Cirrhosis

"Why Not Transplantation?"

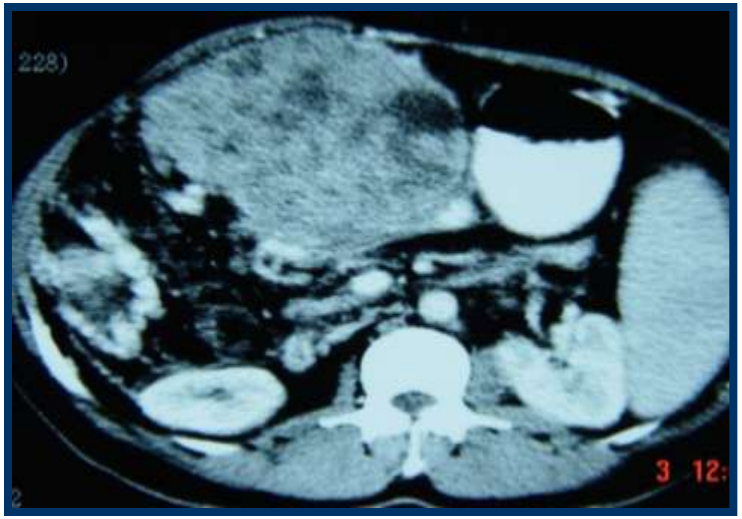
- Immunosuppressive therapy may accelerate the growth rate of recurrent HCC
- Mean tumour doubling times (TDT)
  - after transplantation is 40 days
  - after resection is 275 days

(Yokoyama et al, 1991)

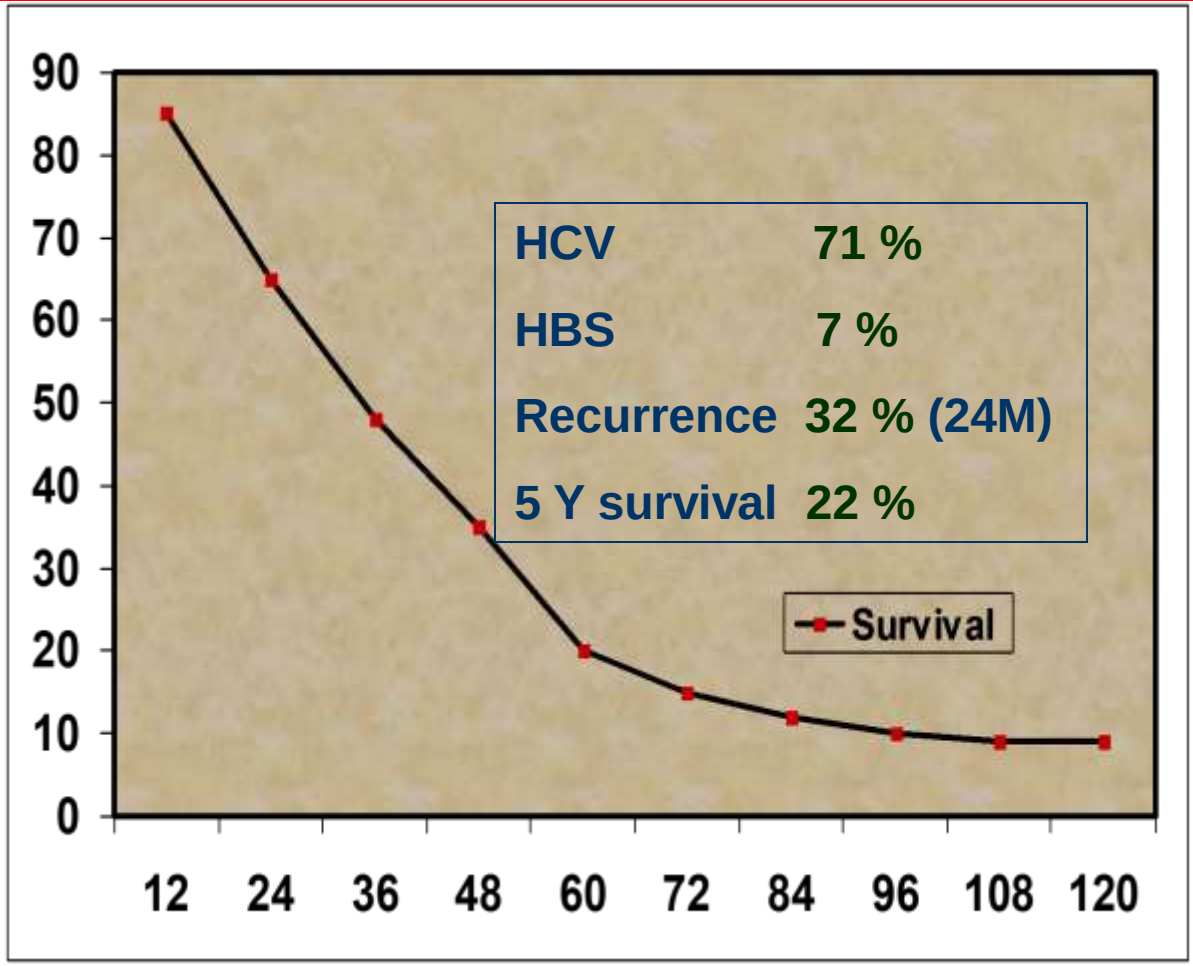
- Sever organ shortage
- Doubtful Diagnosis (regenerating nodules)

Resection depends on.

- ✓ Size of the tumor
- ✓ Underlying liver pathology.
- ✓ Hepatocyte function.
- ✓ Associated portal hypertension



Survival after hepatic resection in cirrhotic liver



R After R H (3 years)

Abedel wahab et al . Hepato-gastroentrology 2004

Out come of resection in Egypt

- **80%** of HCC developed in cirrhotic liver
- **15%** suitable for resection
- **22%** 5 year survival
- **32%** Recurrence at 18 months
- **26 %** post operative complications
  - Bleeding
  - Infection
  - Hepatic cell failure

Abed El wahab et al Hepatogastroenterology. 2004

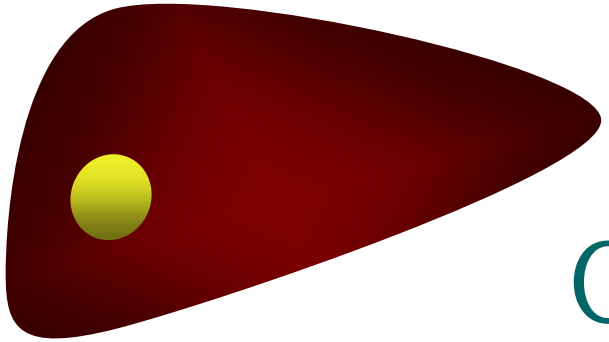
LDLT for HCC in Cirrhotics

"Why Not Resection?"

- HCC is associated with cirrhosis in 70-90% of cases; underlying cirrhosis is a pre-malignant condition
- LTX treats both the cirrhosis & the cancer
- Poor liver reserve limits tolerability of resection
- Multi-focal HCC is common findings at transplantation
  - ✓HCC < 5cm: 39% multifocal
  - ✓HCC > 5cm: 79% multifocal
- Often underestimated by current imaging
- Resection has High Recurrence Rates: (50-90%) by 5 yrs
- LTx has better Survival Rates without recurrence for small uninodular or binodular tumors (83% vs. 18%) by 5 yrs

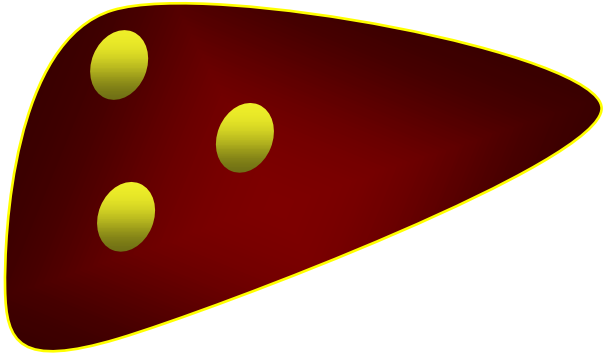
Liver Transplantation for HCC
"Patient Selection"

Milan's Criteria



OR

Single tumor ≤ 5 cm



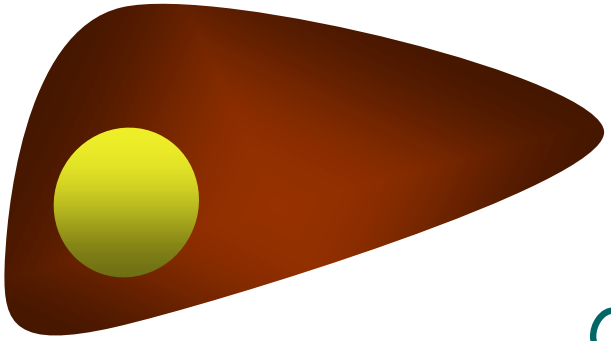
≤ 3 lesions, each lesion ≤ 3 cm

- **No Macro-Vascular Invasion**
- **No Extra-hepatic Spread**

(Mazzaferro et al, 1994)

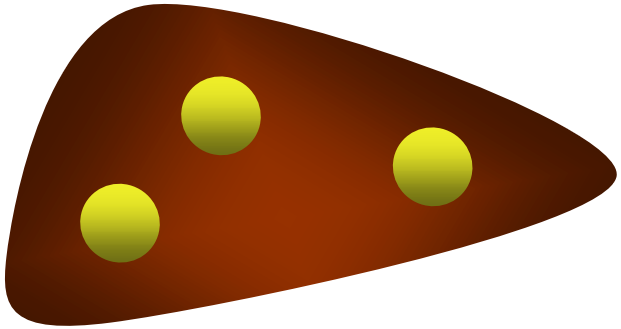
Liver Transplantation for HCC
"Patient Selection"

UCSF Criteria (Expanded Criteria)



Single tumor ≤ 6.5 cm

OR



≤ 3 lesions, each lesion ≤ 4.5 cm
+ Total tumor burden ≤ 8 cm

\+ No Macro-Vascular Invasion and No Extra-hepatic Spread

Expanded Criteria for Hepatocellular Carcinoma and Liver Transplantation

G. Moray, F. Karakayali, U. Yilmaz, F. Ozcay, B. Bilezikci, and M. Haberal

Patients with HCC and a cirrhotic liver but without extrahepatic disease should be candidates for liver transplantation whenever possible, Tumor size and the number of the tumor cannot be the sole criteria to abandon liver transplantation, the tumor cell burden in the circulation is more important than the local extent of the tumor. we will recommend liver transplantation regardless of tumor size and number.

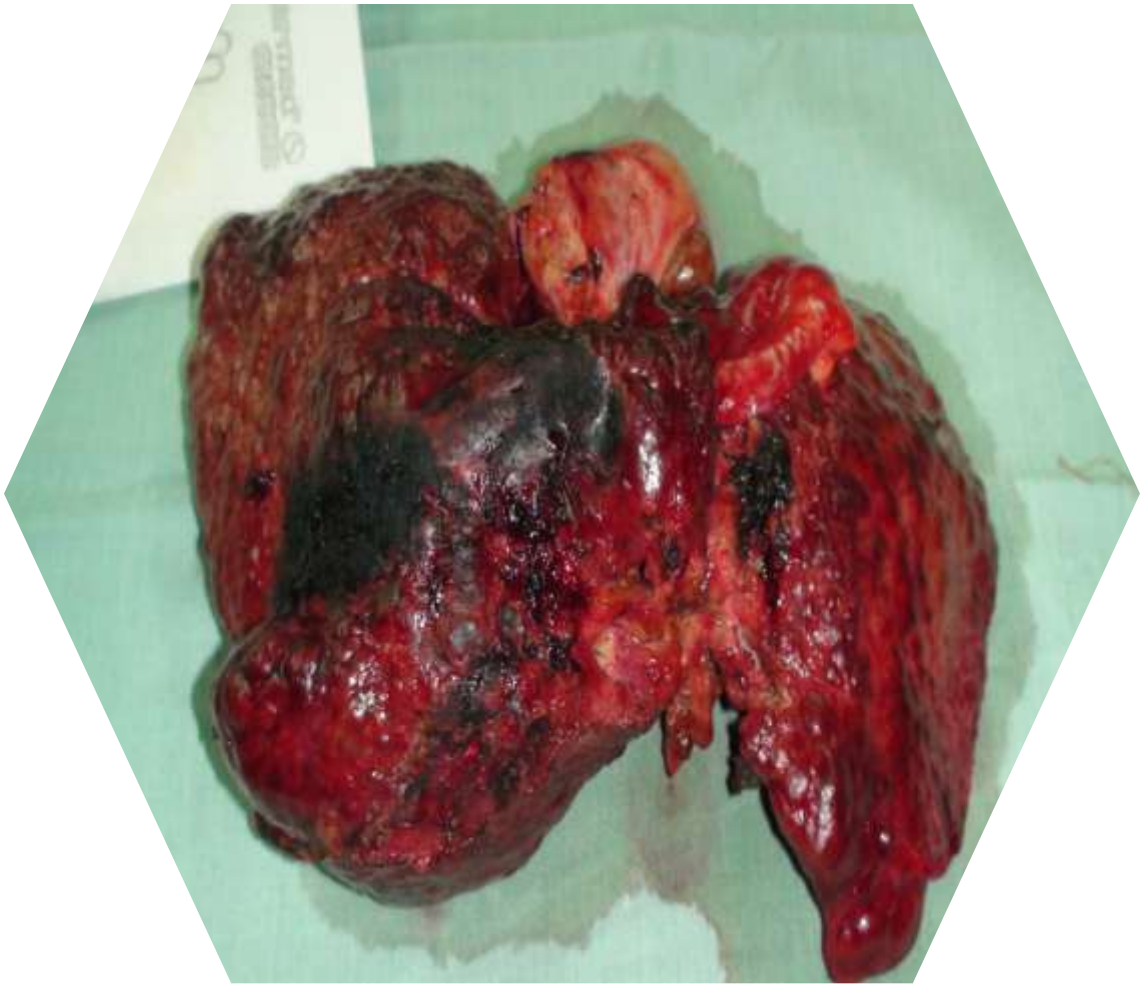
(Moray, karakayali, yilmaz et al-2007)

Tumor characteristics predictive of recurrence after liver transplantation

- Large tumour size (> 5 cm)
- Multiple lesions (> 3 lesions)
- Bilobar involvement
- Tumour ulcerating through the capsule
- Macro-vascular invasion
- Absence of pseudocapsule
- Lymph node involvement
- Extra hepatic spread
- Micro-vascular invasion
- Poorly differentiated HCC

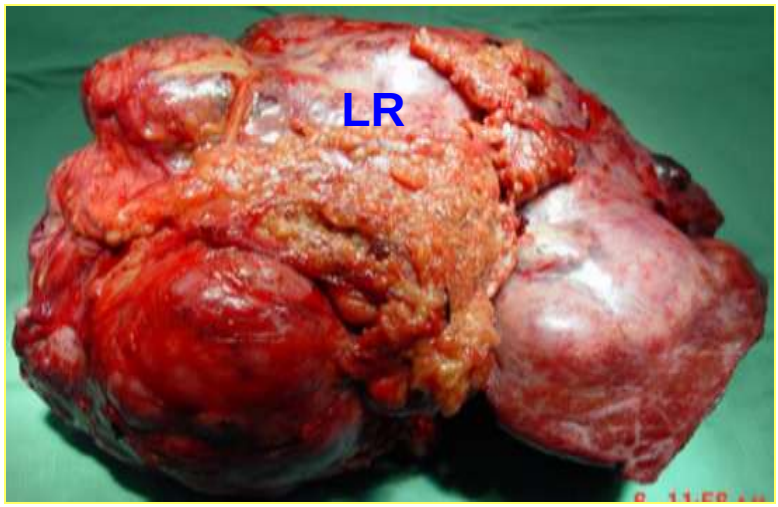
(Yao et al., 2002 - Hugentobler et al , France)

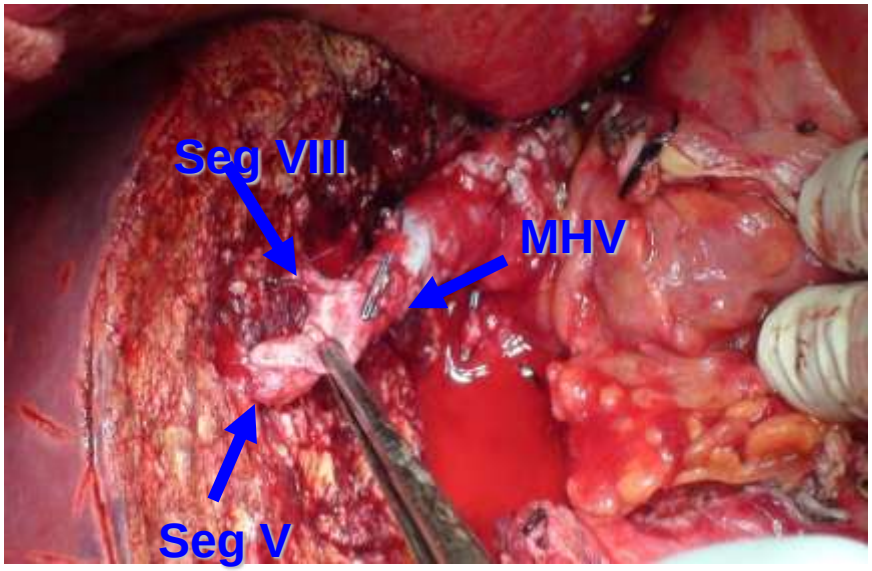
LIVER TRANSPLANTION IN EGYPT

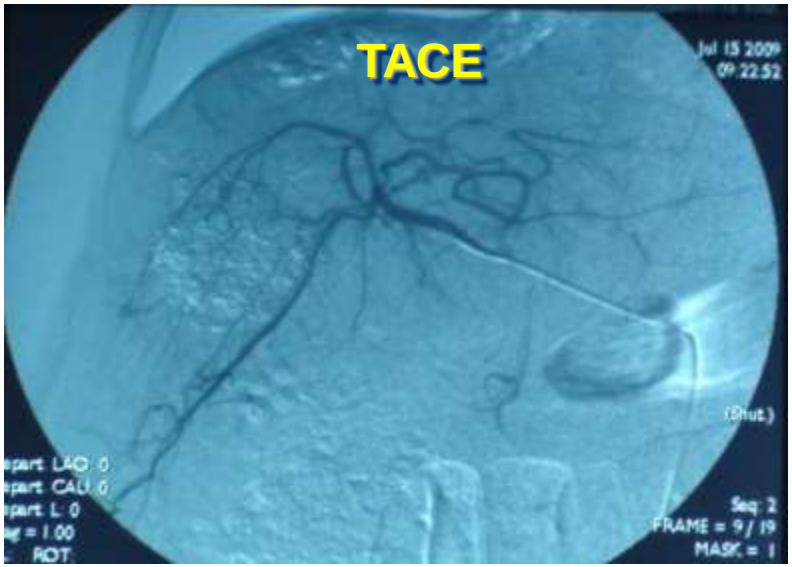


IN EGYPT

- Liver resection and local ablation are regarded as potentially curative treatments, for HCC in Egypt up to 2001
- Deceased donor Liver transplantation up tell now not allowed in Egypt
- In 10 centers LDLT started since 2001





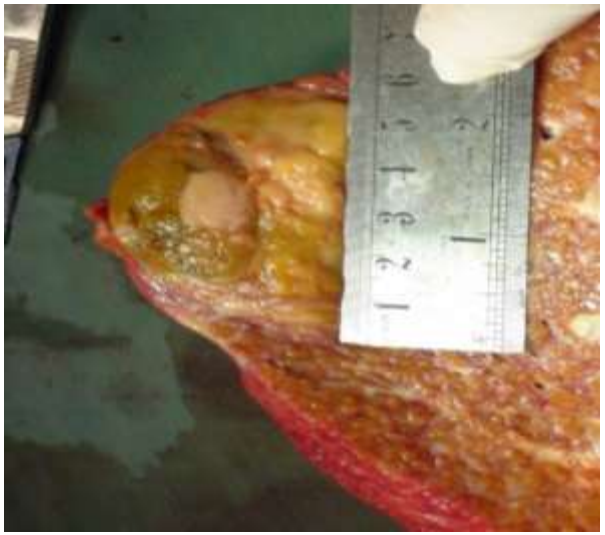


LDLT IN EGYPT

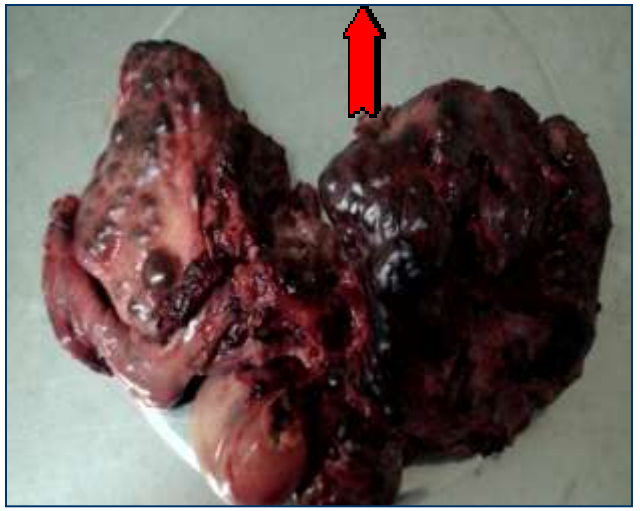
- Recent advances in adult LDLT using a right lobe graft have overcome the barrier of deceased donor and produce a drastic change in the role of transplantation surgery for HCC.
- Can potentially provide an essentially unlimited source of liver grafts for a planned transplant operation as soon as the diagnosis of HCC is made.

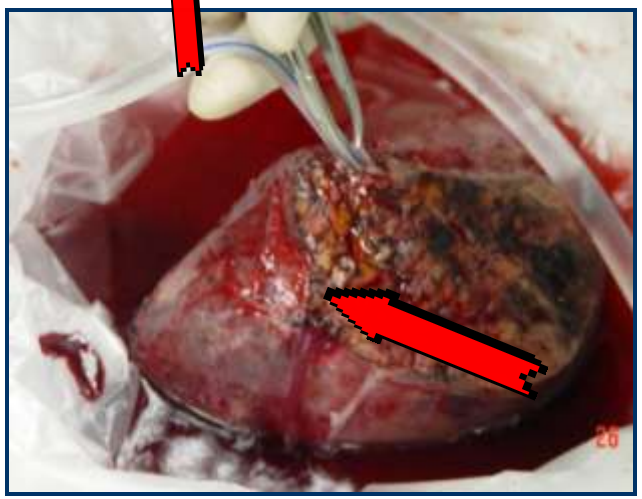
LDLT IN EGYPT

- A long waiting period can be much lessened and the possibility of tumor progression eliminated
- Live donor graft is a dedicated gift that is directed to a particular recipient



Mansoura Experience
LDLT in HCC





No of patient referred for Transplantation Mansoura Egypt

800 (5Y)

Indication	No	%
➢ Liver Cirrhosis	490	61
➢ HCC	250	31
➢ Other causes	60	8

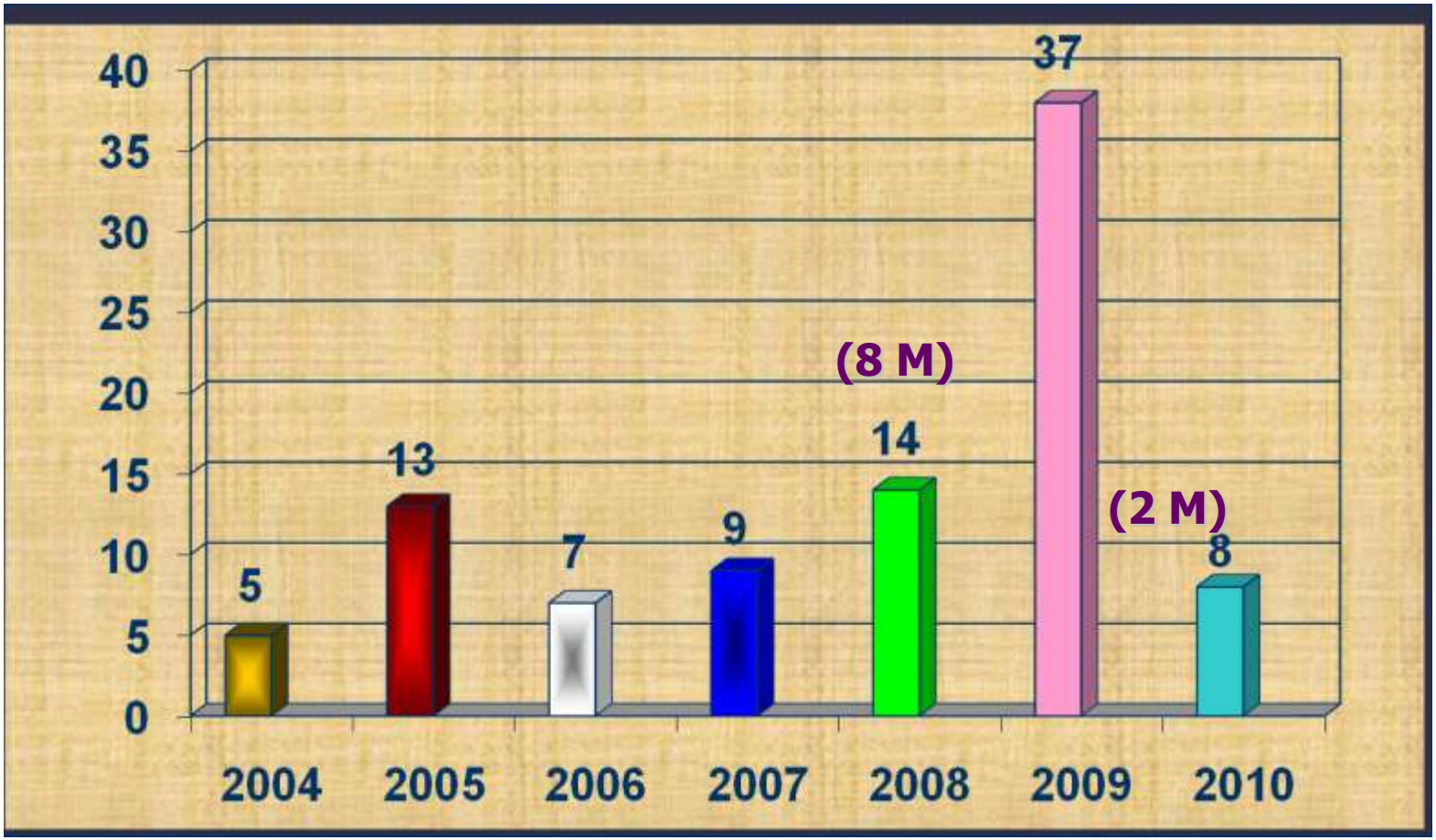
Final Out Come Of 800 Case

	No	%
Transplanted	٩3	12
Waiting	٤٦	3.5
Non	665	84

Causes Of Non Transplantation
665 cases (84%)

Transplantation	No	%
• Early cirrhosis	200	29
• Advanced HCC	140	17
• No Donor	75	10
• PV thrombosis	50	4.7
• NO information	120	14
• Death	50	8.5

Number Of LDLT Per year (93 cases)



LDLT Mansoura experience (93 case)

Mean age	46.67 Y
Indication	
– Cirrhosis	53
– HCC	35
– Budd chiari	2
– Auto immune	3

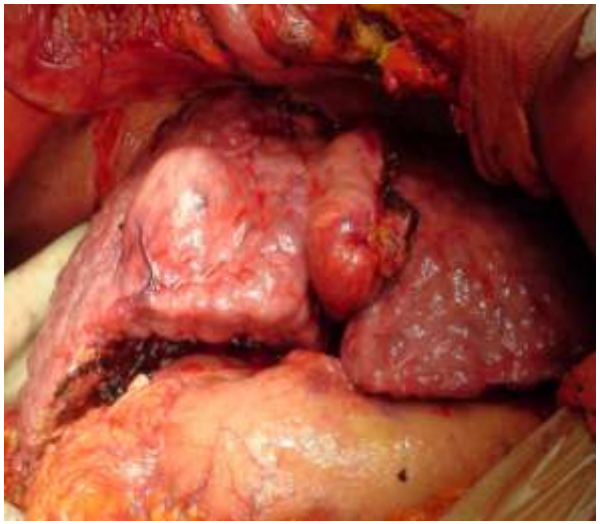
Experience with LDLT for HCC at:

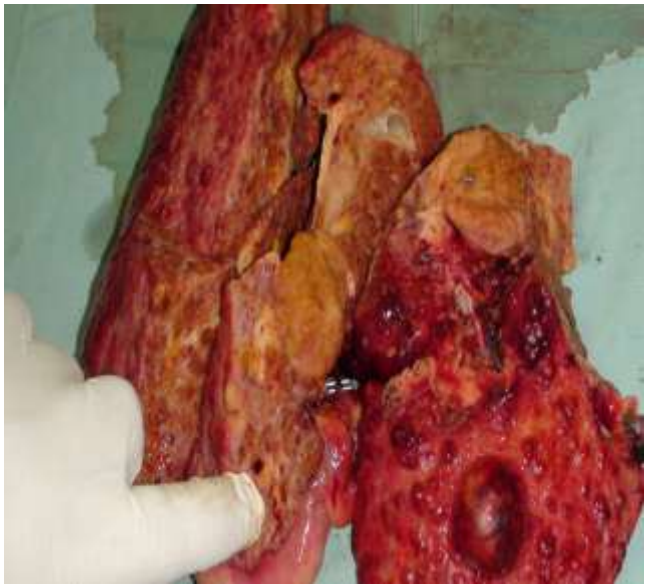
Gastroenterology Center Mansoura University

GEC 1990 – 100 beds - Tertiary Referral Research center

LDLT program was started in April 2004
Prof Mohamed Abedel wahab

35 LDLT Transplantation for HCC

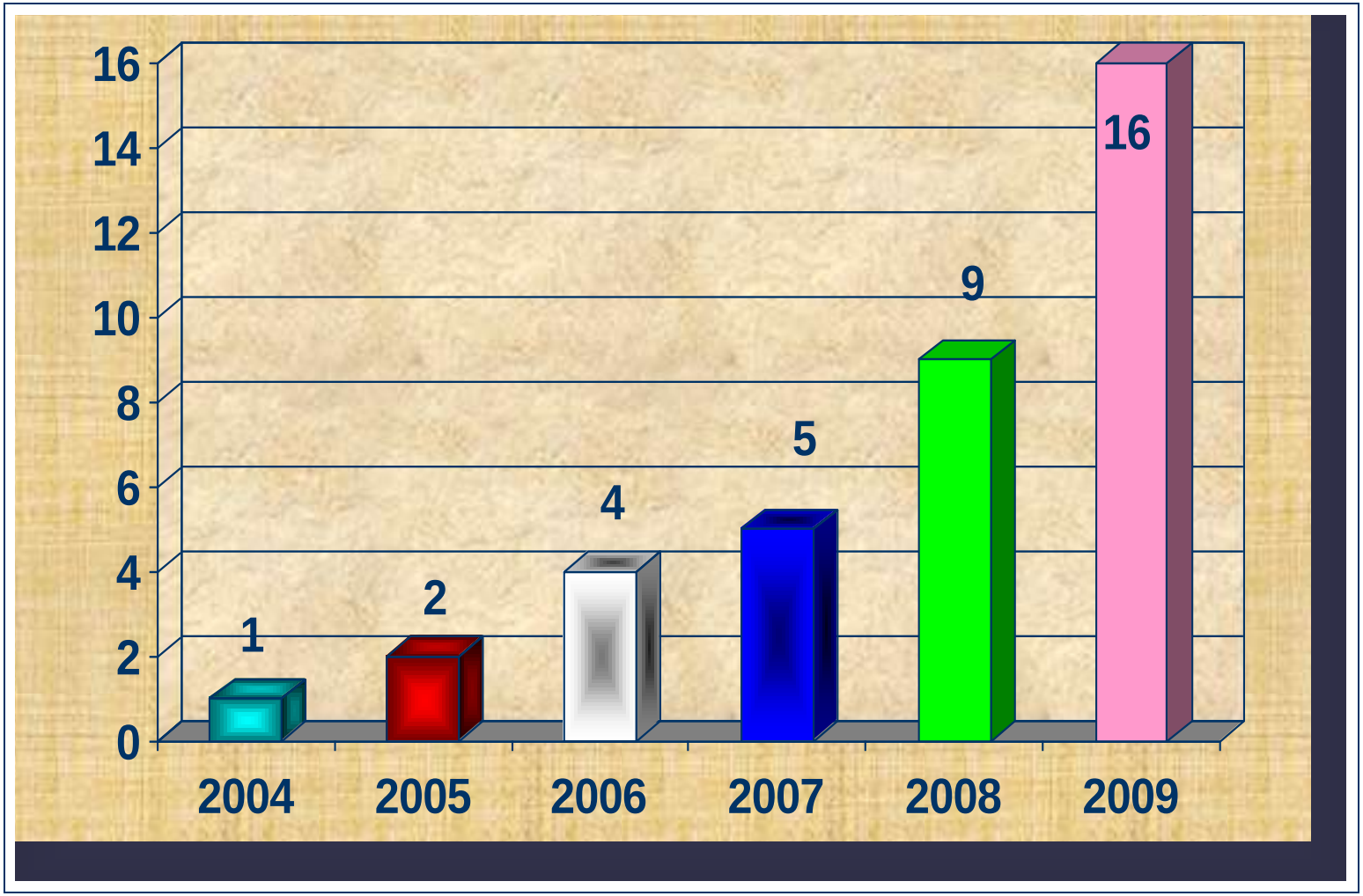




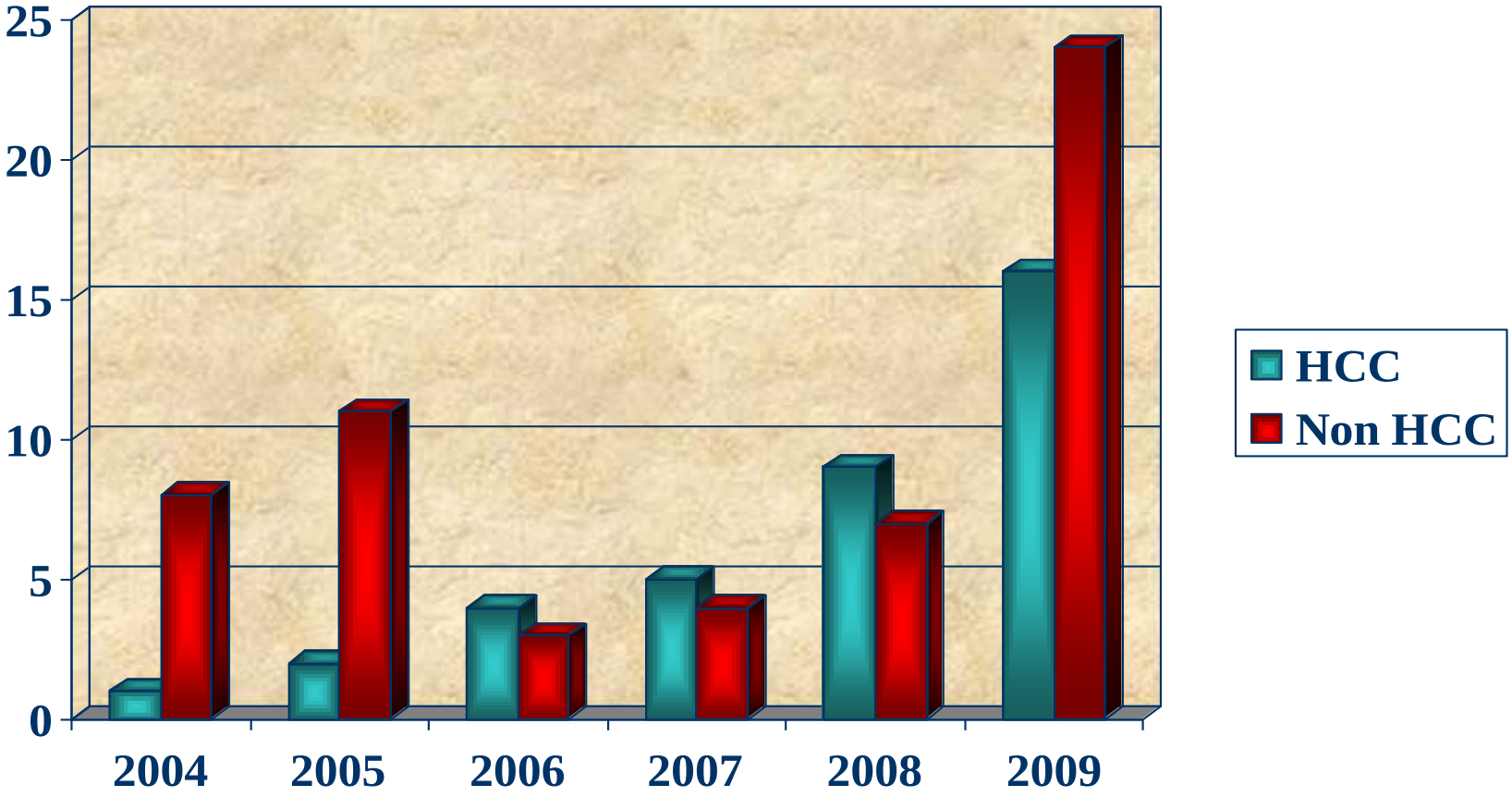
250 HCC referred for transplantation from 2004 : 2009

	No	%
Advanced HCC	117	٤٧
Transplanted	37	15
Distant Metastasis	35	١٣.٥
Death	20	8
PV thrombosis	18	٧
No donor	17	6.5
NO information	16	٦

Distribution of transplanted cases for HCC



Yearly transplanted cases (HCC , cirrhosis)

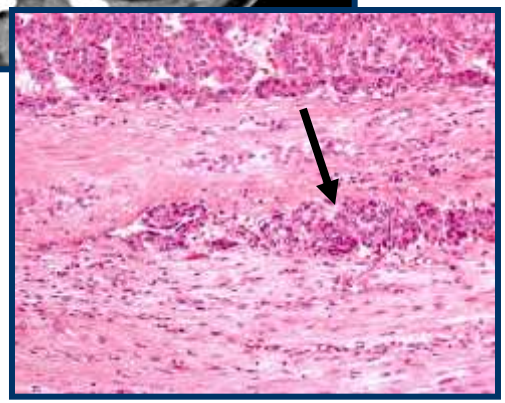


Mansoura Egypt

Management of HCC Patient While on the Waiting List

Regular Close Follow-up

- **Clinical**
- **Biochemical (AFP)**
- **Radiological (CT- MRI)**
- **Intervention**
  - **RFA or PEI**
  - **TACE**
  - **Resection??**
- **De-Listing**

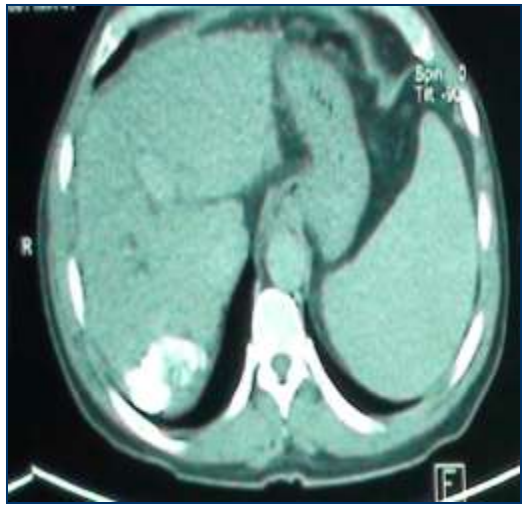


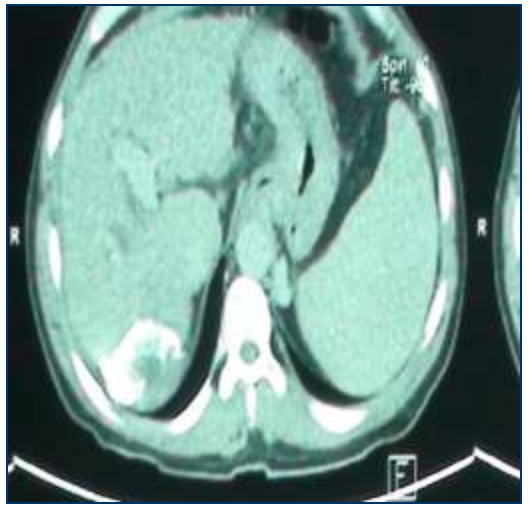
Management While on the Waiting List

- TACE **4** patient
- Radiofrequency **2** patient

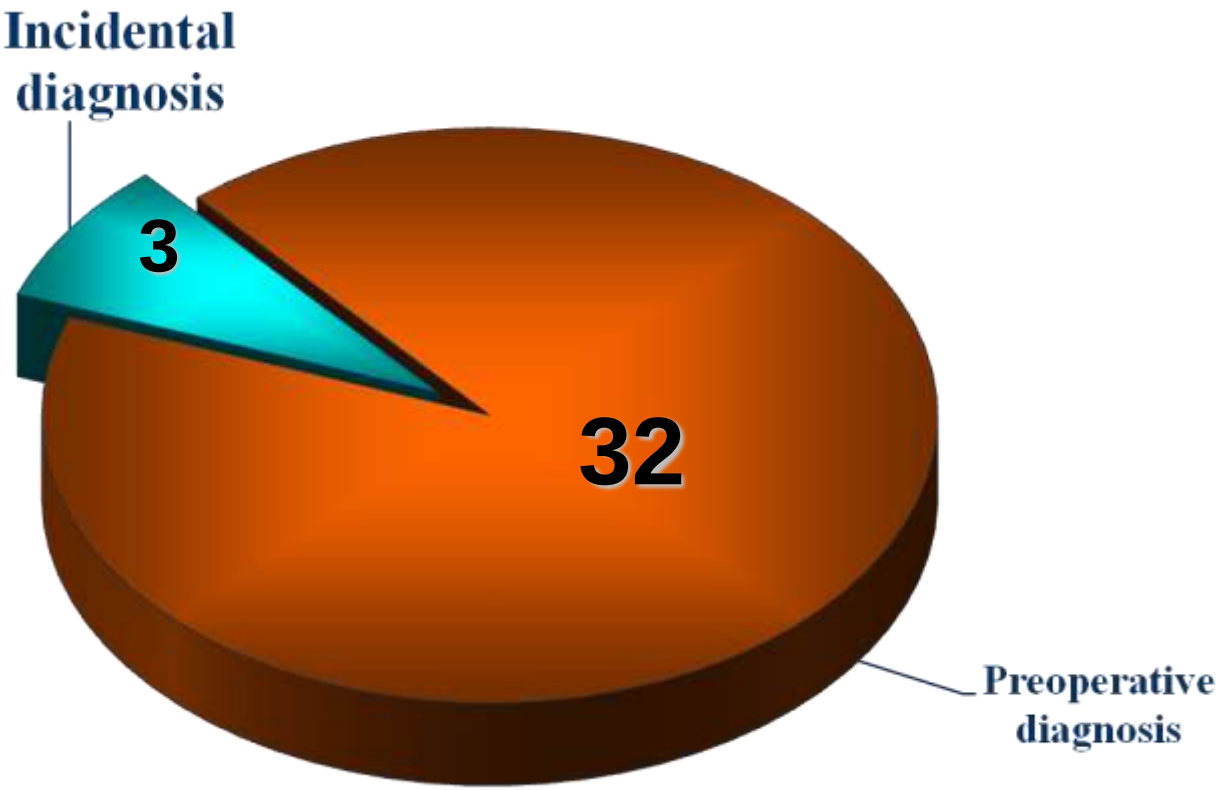
39 Patients Explored With HCC For LDLT

- 35 transplanted
- 4 exploration only
  - Diaphragmatic infiltration
  - Pelvic nodule after radiofrequency
  - Positive L.N metastasis
  - Suprarenal infiltration





Diagnosis

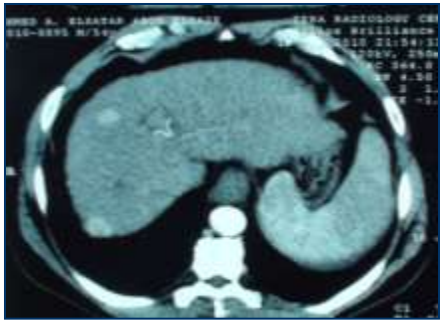


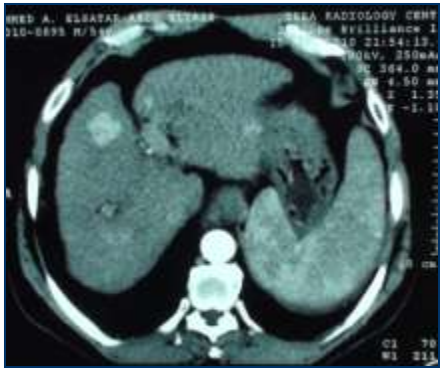
LDLT for HCC (35)form 2004 : 2010

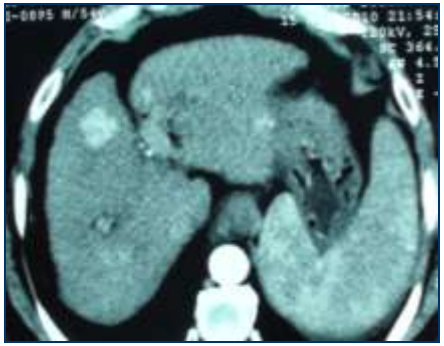
	NO
Age M/SD	50Y
Sex M/F	5/30
Causes of cirrhosis	
– HCV	33
– HBV	۲
Child classification	
–A	5
–B	15
–C	17
Meld	
–M	21.5
–Rang	12-35
–SD	5.2

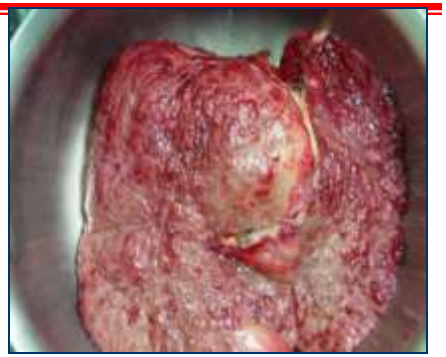
LDLT for HCC (35) Form 2004 : 2009

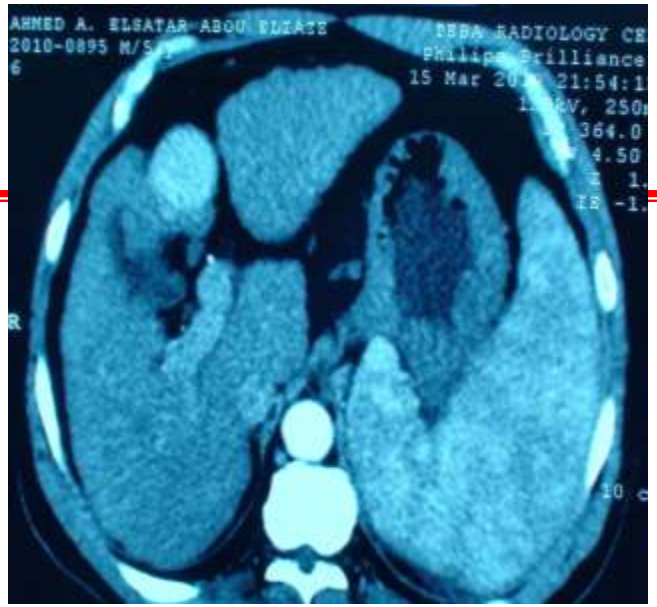
	NO
Site of the tumor	
–Right	18
–Left	5
–Multifocal	12
Number	
–Single	23
– Multiple II	8
III	3
VI	1
V	2
Size	
•<6	31
•>6	3
AFP	
–M	41.6
–S.D	106.45

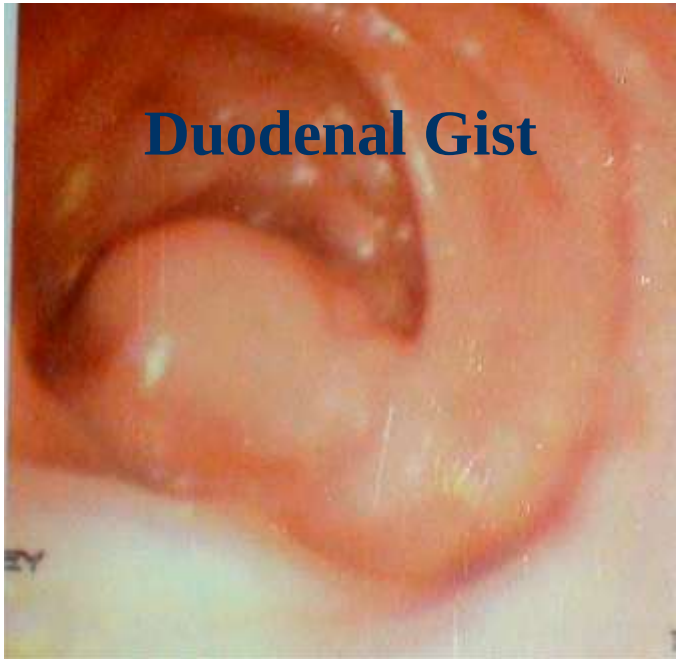




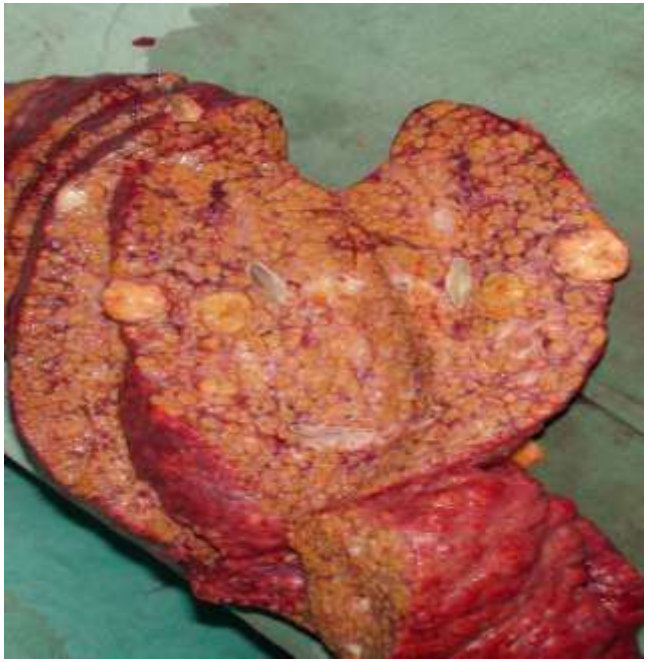








Duodenal Gist



Donor

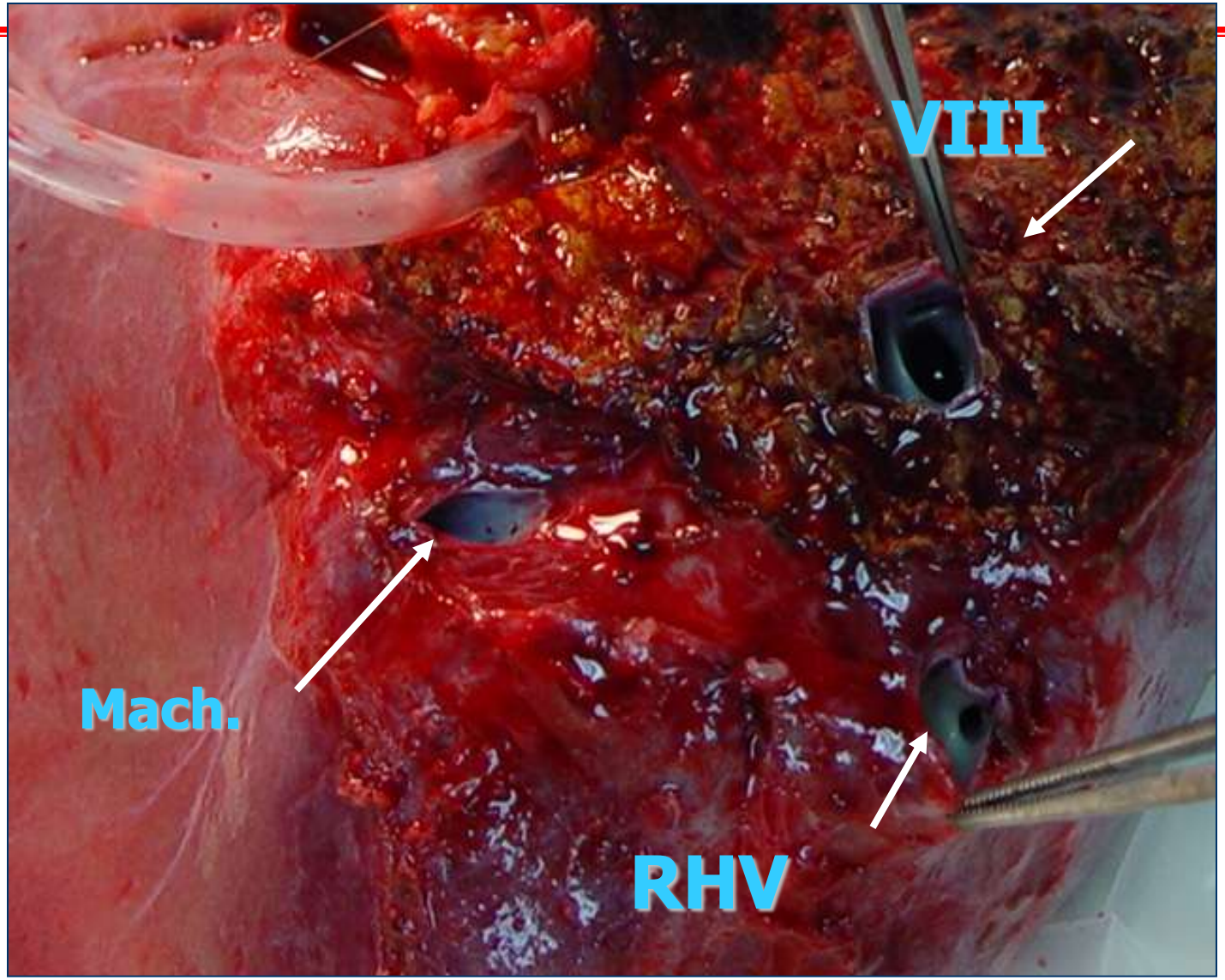
● Total No of Potential Donors evaluated	140	
● No of accepted donor	35	26 %
● Male / Female	٢6/ 9	75/25 %
● Age	M 27.6 ± 7.4	18:45
● Wt.	M 79 .5 ± 9.7	62:105
● Height	M 171 ± 7.5 27 ±	150:187
● BMI	2.9	20.8 :33.4

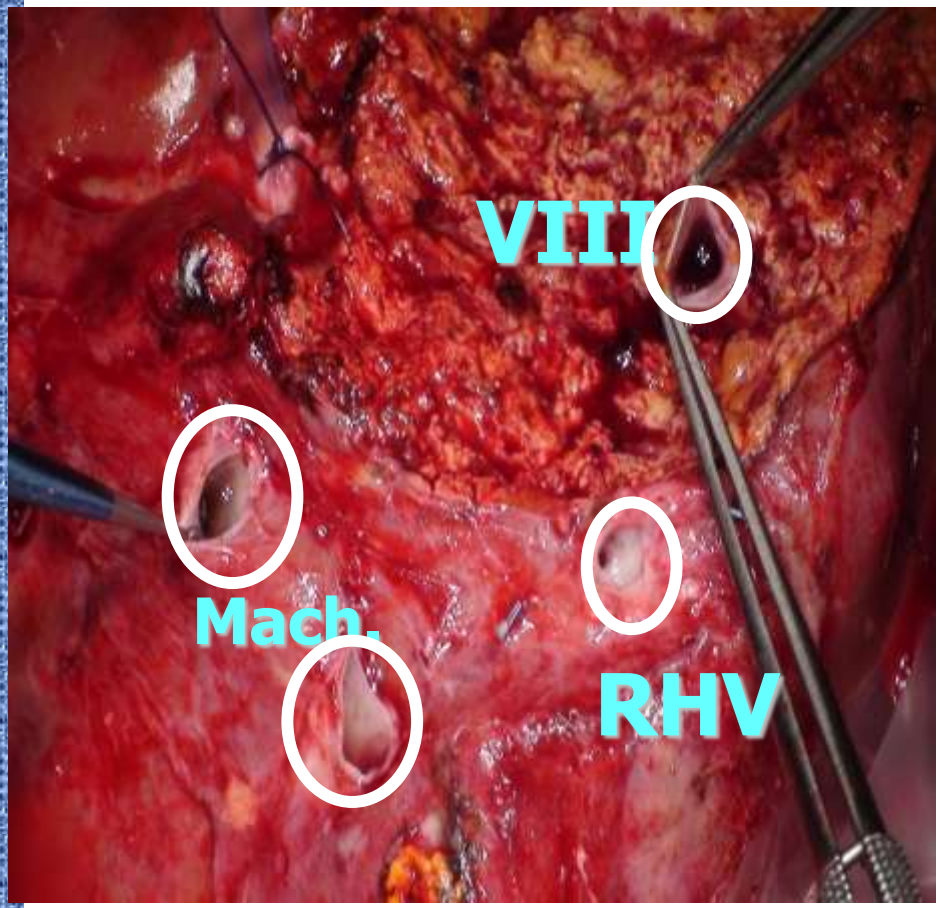
Donor Relationships (37)

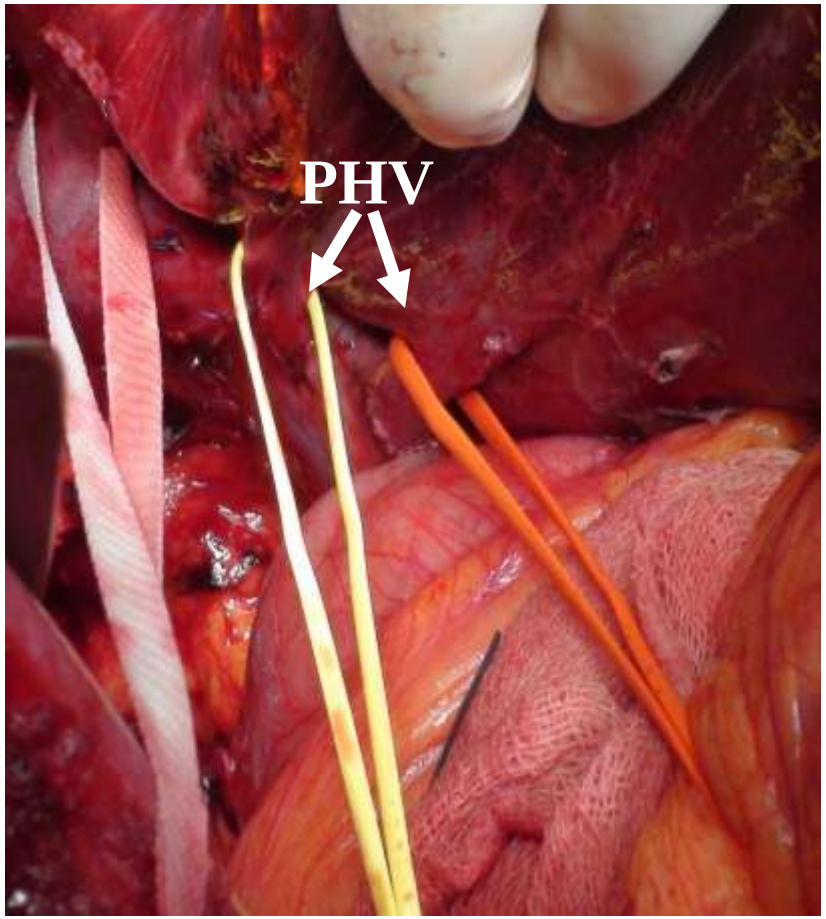
Son	11
Nephew	6
Wife	4
Cousin	2
The in laws	3
Brother	2
Daughter	2
Sister	1
Niece	2
Mother	1

Venous Outflow Reconstruction

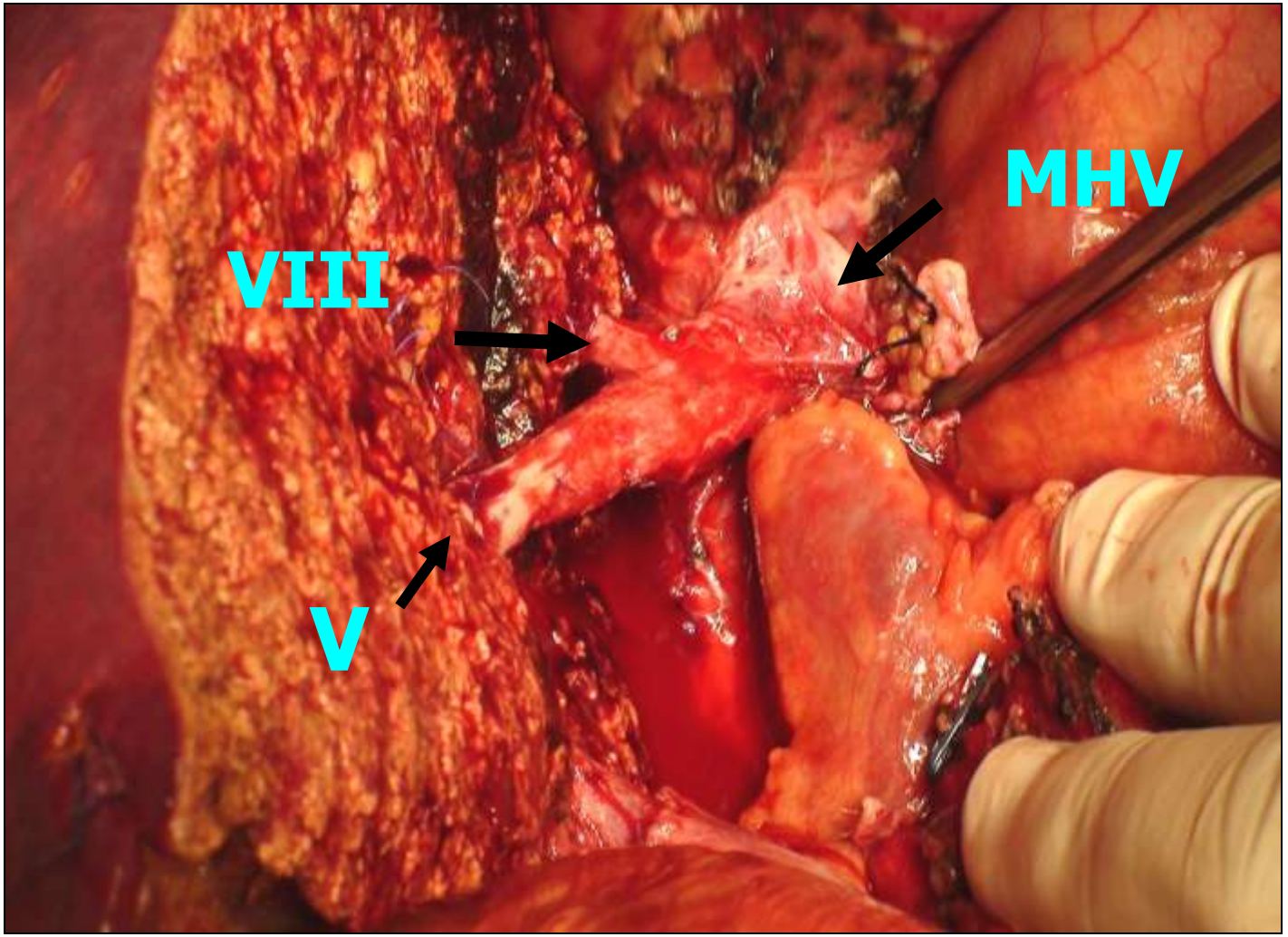
Type	No
Rt hepatic alone	22
Rt hepatic + posterior HV	5
Rt hepatic + seg V	3
Rt hepatic + seg VIII	3
Rt hepatic + posterior HV ,V,VIII	6


VIII
Mach.
RHV

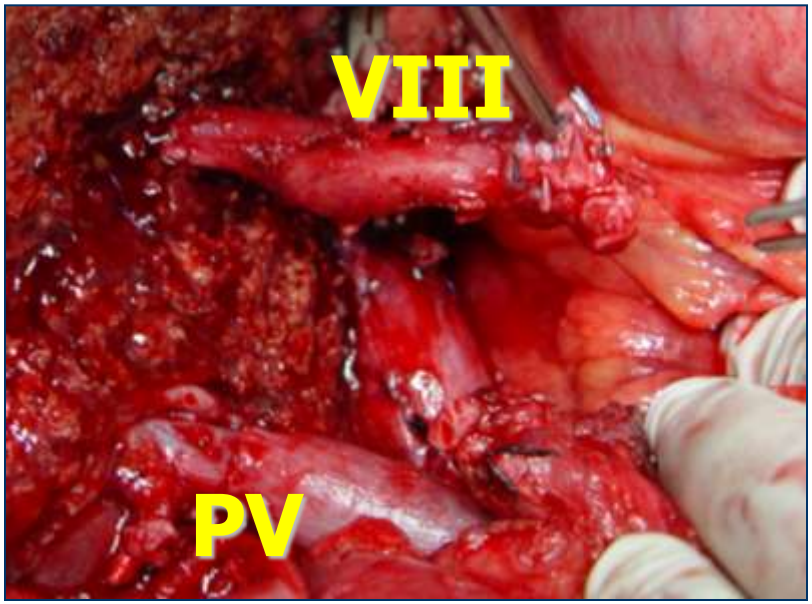

VIII
Mach.
RHV

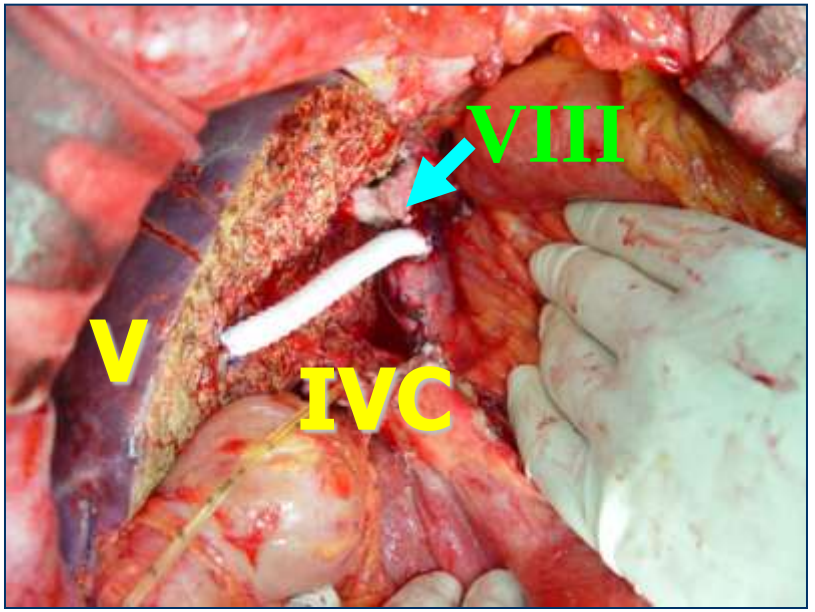

PHV

RHV + Mach.+ V +VIII

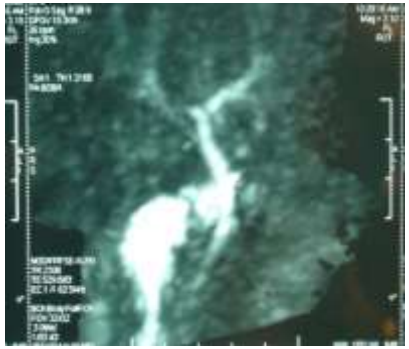
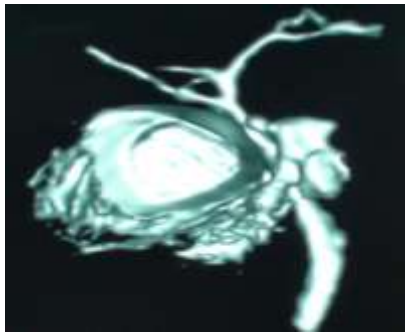



VIII


VIII
PV


VIII
V
IVC

Biliary anastomoasis

Single	٢٠	
Double	١٤	
Triple	٣	

Biliary + vascular complications

Type	No	Management
Leak	٢	Conservative
Stricture	٢	Stent, surg
PV stenosis	١	Dilatation

Bile Duct Complications
4 (37)

Bile duct stenosis

2

Bile leak with biloma

2

Complication after LDLT (35)

• Biliary leak	2
• Biliary stricture	2
• Graft failure	1
• Internal haemorrhage	2
• Tumor recurrence	1
• Cardio pulmonary	2
• Small for size syndrome	2

Mortality after LDLT for HCC 4/35 (12 %)

	Time	Causes
1	2 W	Brain stem infarction
2	3W	Graft failure
3	3 M	Abdominal infection & renal failure
4	12 M	Recurrence

Recurrence

Only one case (12 months)

with multiple HCC more than 8 cm with micro vascular invasion.

Comparison between resection & LDLT for HCC (2004 -2009)

- From 2004 – 2009
- 140 cases with HCC treated by resection
- 78 cases the tumor was less than 6 cm
- Comparison between resection & LDLT

Comparison between resection & LDLT for HCC (2004 -2009)

	Resection	LDLT
NO	78	35
AGE –M –S.D	54.9 (±9.3)	50Y
SEX –M/F	64/14	5/30
MELD –M –S.D	٩.٣ (±٢.٨)	21.5 5.2
CHILD –A –B –C	٧٠ ٨ 0	5 13 17

Comparison between resection & LDLT for HCC (2004 -2009)

	Resection	LDLT
NO	78	37
Tumor size –<6 –<6	 62 16	 34 3
Tumor NO –Single –Multiple	 60 18	 23 14
AFP –M –S.D	 ٦٣٧.٧٨ ١٣٦٣.٩١	 41.6 106.45
Vascular invasion –Yes / NO	 14 / 64	 3/37
Tumor grading –I / II / II	 32 / 28/ 18	 14/16/7

Comparison between resection & LDLT for HCC (2004 -2009) Mortality

	Resection	LDLT
NO	78	35
Hospital Mortality	5%	%8
Flow up – M – SD	 17.2 12.8	 18.67 M (± 16.54)
Survival	65%	89%
Recurrence	39 %	3%

CONCLUSION

Now in Egypt HCC↑ yearly

- 85 % not candid for resection
- The out come of resection is not satisfactory
- LDLT starting since 10 years in Egypt with good result up till now
- We are waiting for long term Flow up

THANK YOU

THANK YOU