

VI

Corso Nazionale
DI ECOGRAFIA
CLINICA SIEMC

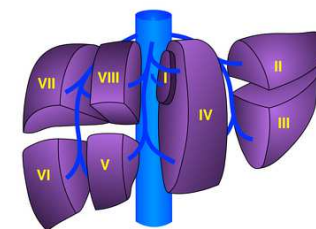
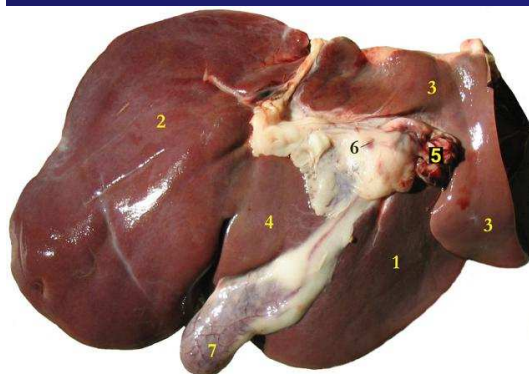
Napoli - Centro Congressi Federico II

19/22 OTTOBRE 2019



Fegato: anatomia ecografica

Ilario de Sio MD



TECNICA E METODOLOGIA

PAZIENTE A DIGIUNO : almeno 6-8 ore

APNEA INSPIRATORIA

DECUBITO: supino, laterale sx

SCANSIONI: obliqua sottocostale ascendente,
longitudinali, trasversali, oblique,
intercostali (paz.meteorici o obesi)

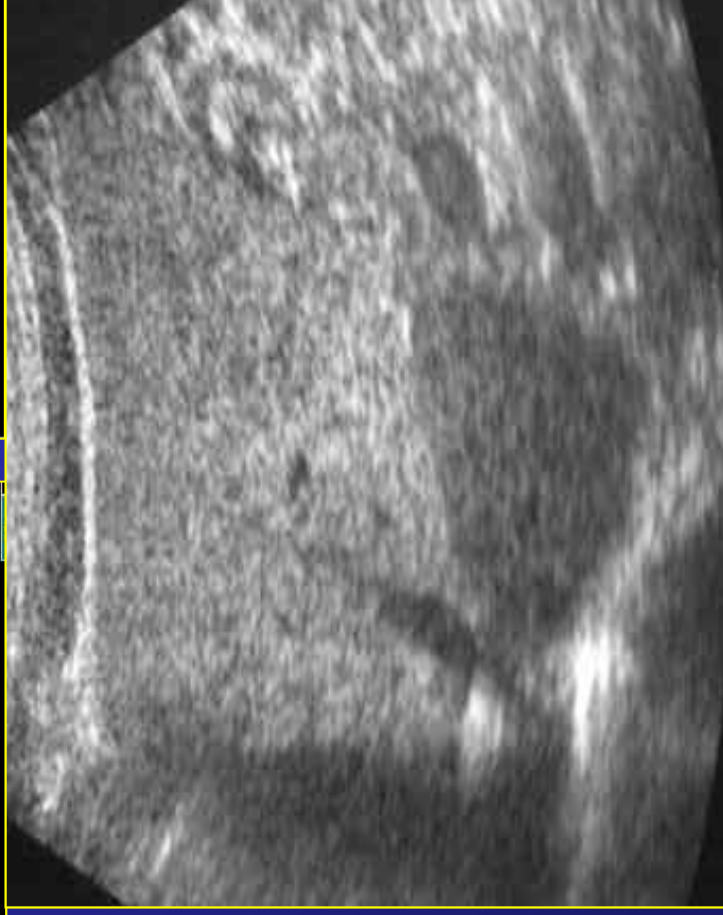
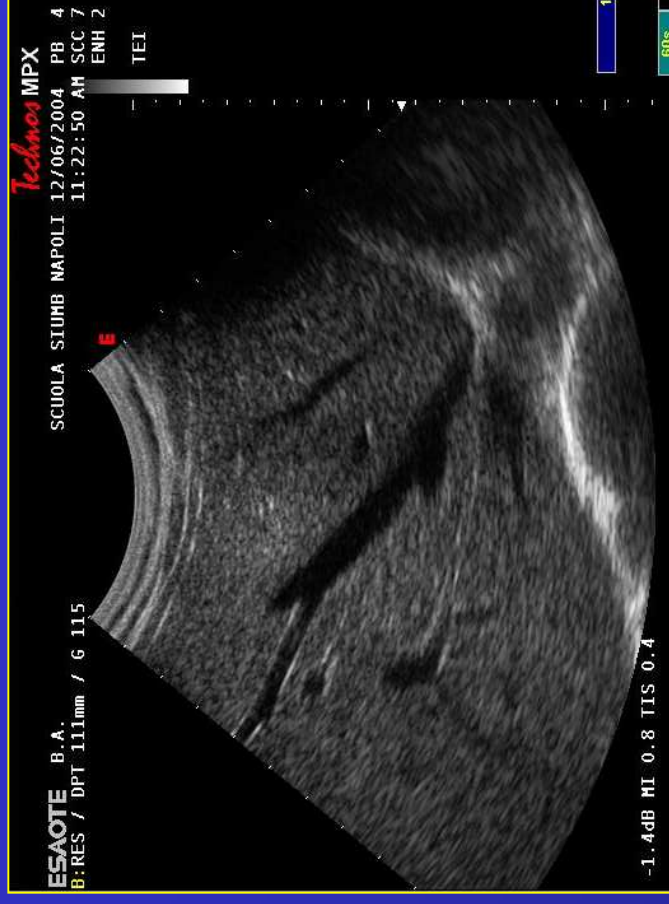
SONDE: 3.5-5 MHz; talora 7-10 MHz

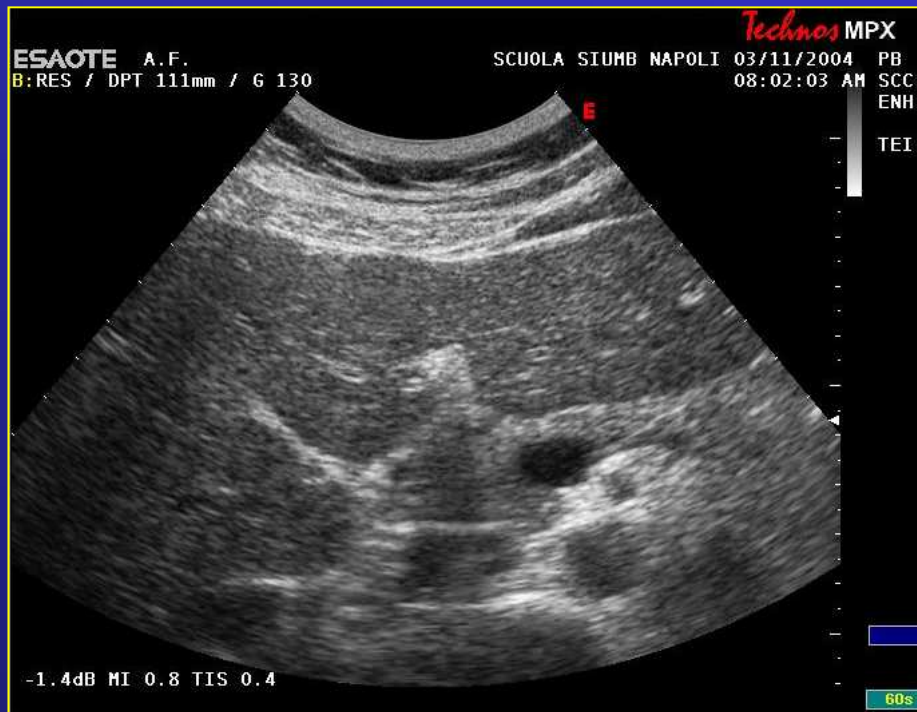
FEGATO: ANATOMIA ECOGRAFICA

- **CARATTERISTICHE ECOSTRUTTURALI DEL PARENCHIMA, SUPERFICIE E MARGINI**
- **STRUTTURE VASCOLARI INTRAEPATICHE**
- **RAPPORTI CON ALTRI ORGANI ADDOMINALI**
- **ANATOMIA SEGMENTARIA SU BASE SOVRAEPATICA E PORTALE**
- **TENTATIVI DI DEFINIZIONE VOLUMETRICA**

*CARATTERISTICHE
ECOSTRUTTURALI
DEL PARENCHIMA
SUPERFICIE
MARGINI*





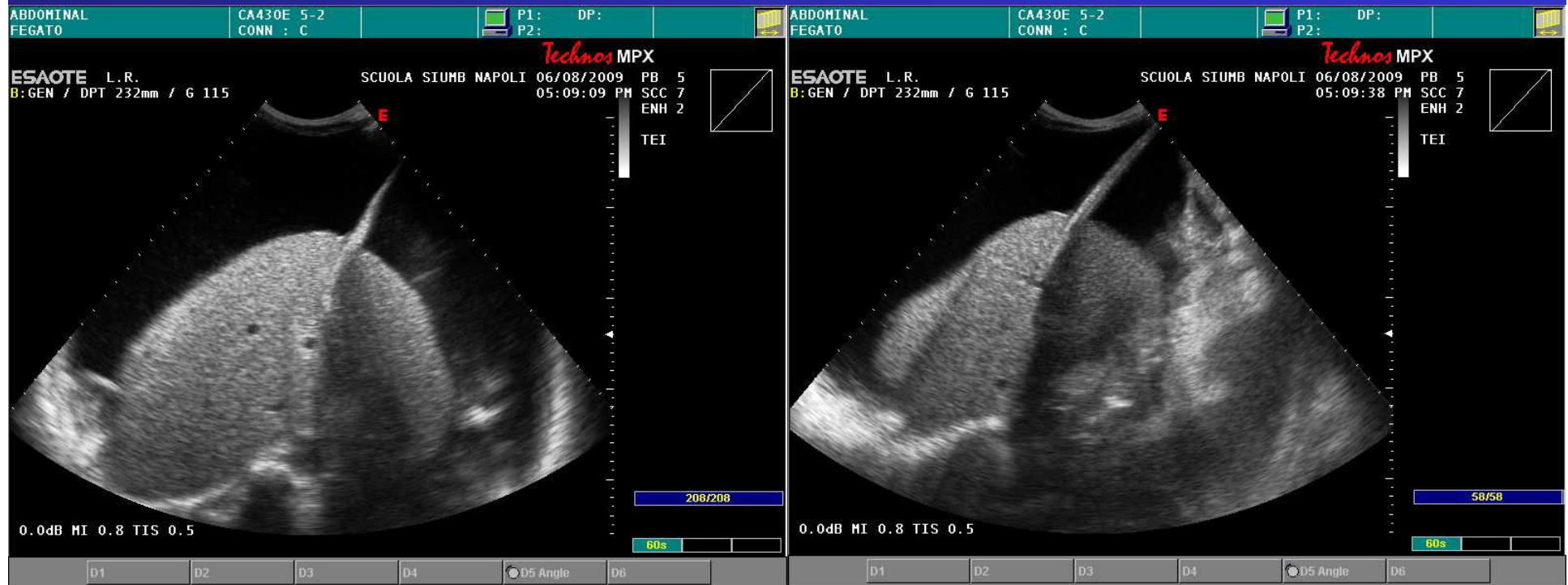


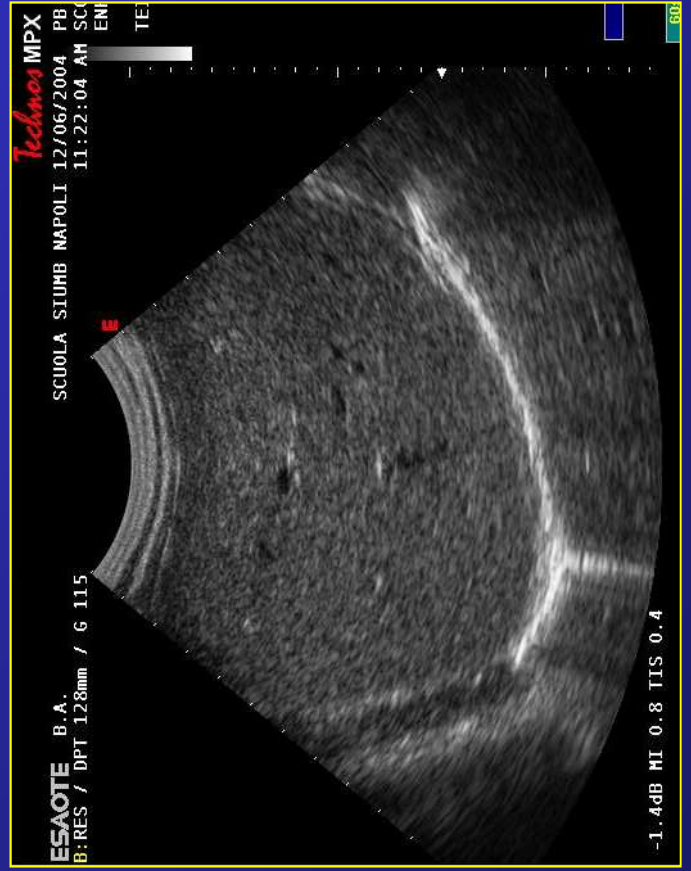
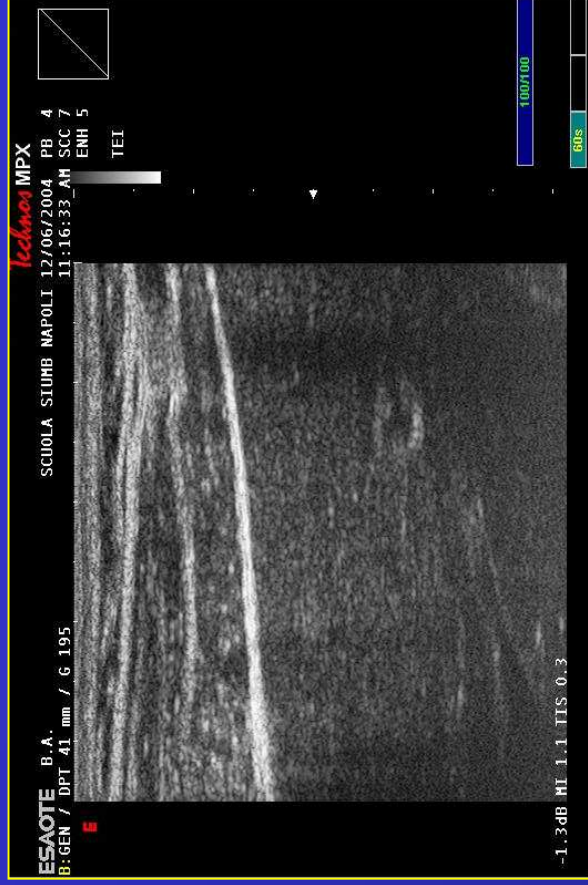
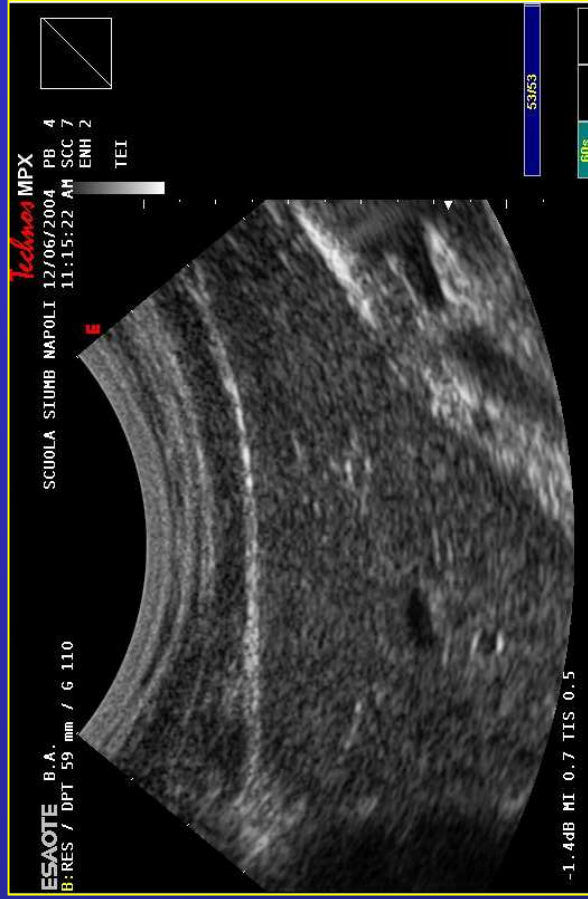
SCANSIONE TRASVERSALE

SCANSIONE LONGITUDINALE



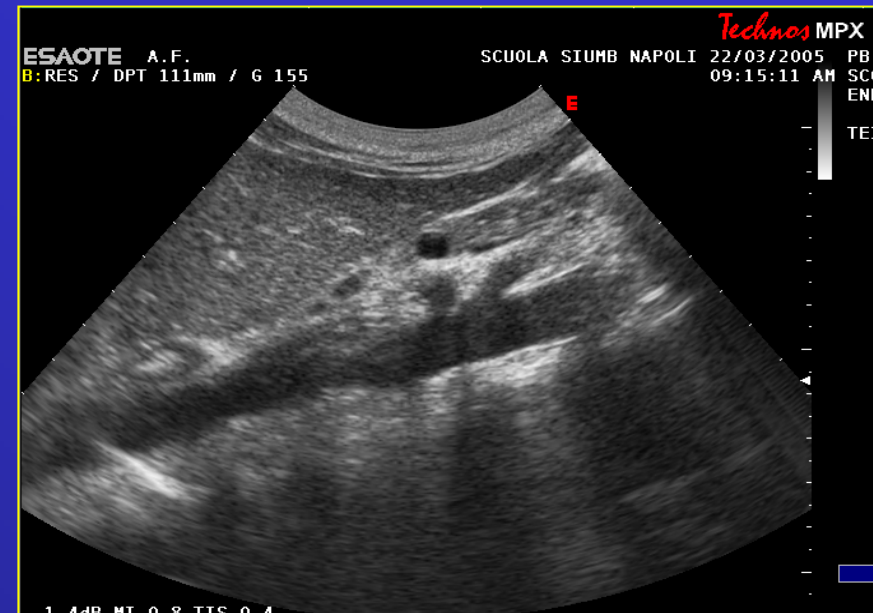
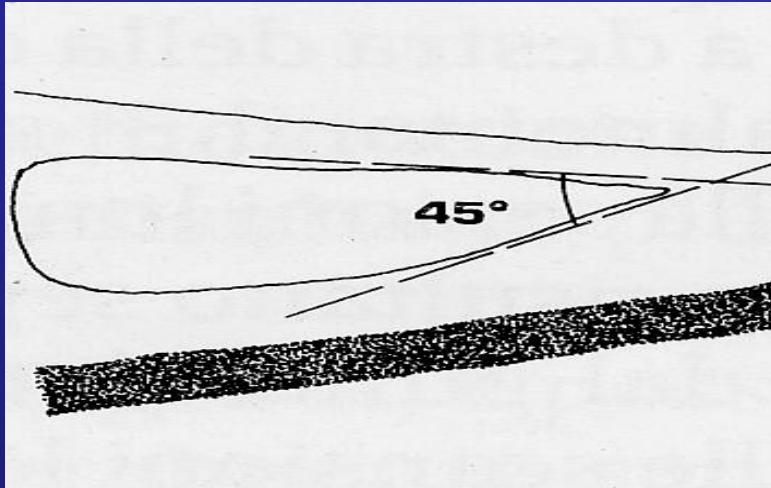
Legamento rotondo





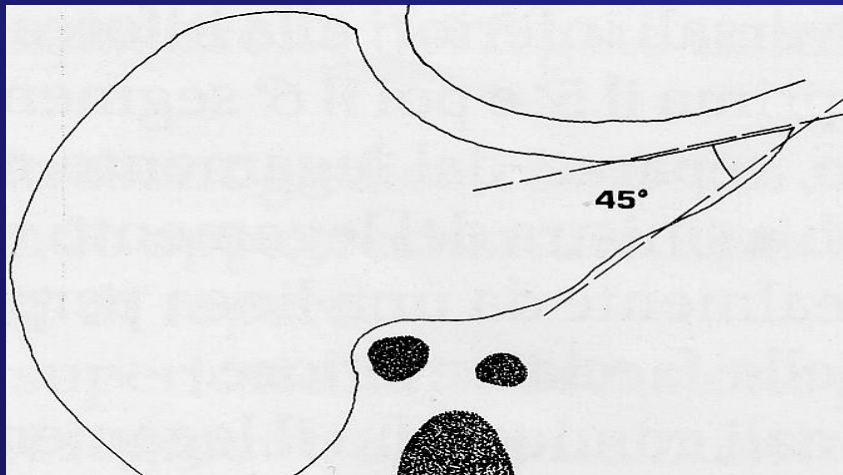
ANGOLO INFERIORE SX

Scansione Longitudinale



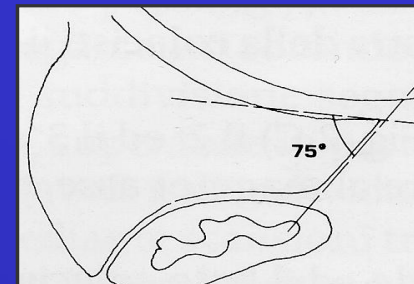
ANGOLO MARGINALE SX

Scansione Trasversale



ANGOLO INFERIORE DX

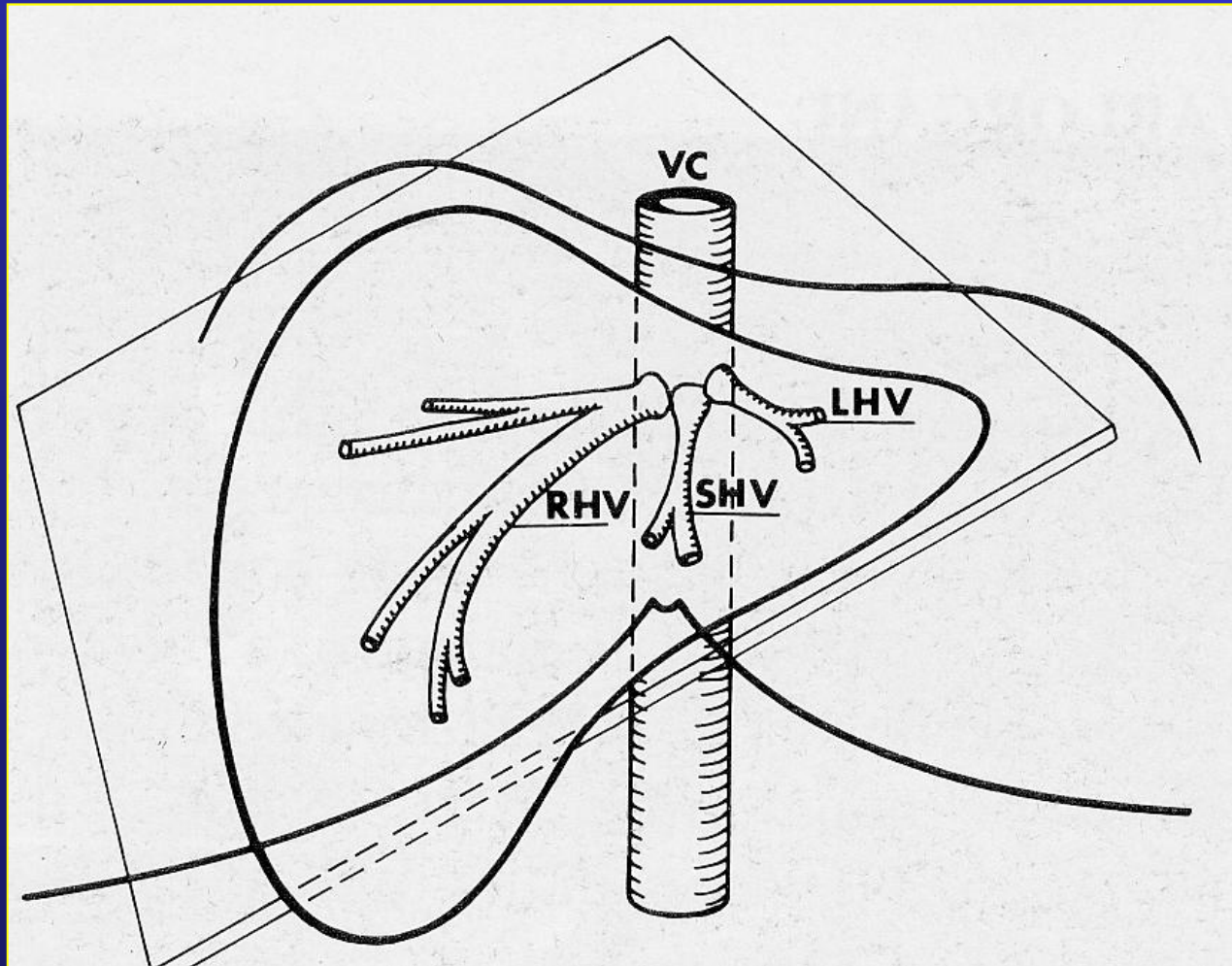
Scansione Longitudinale



STRUTTURE VASCOLARI E BILIARI INTRAEPATICHE

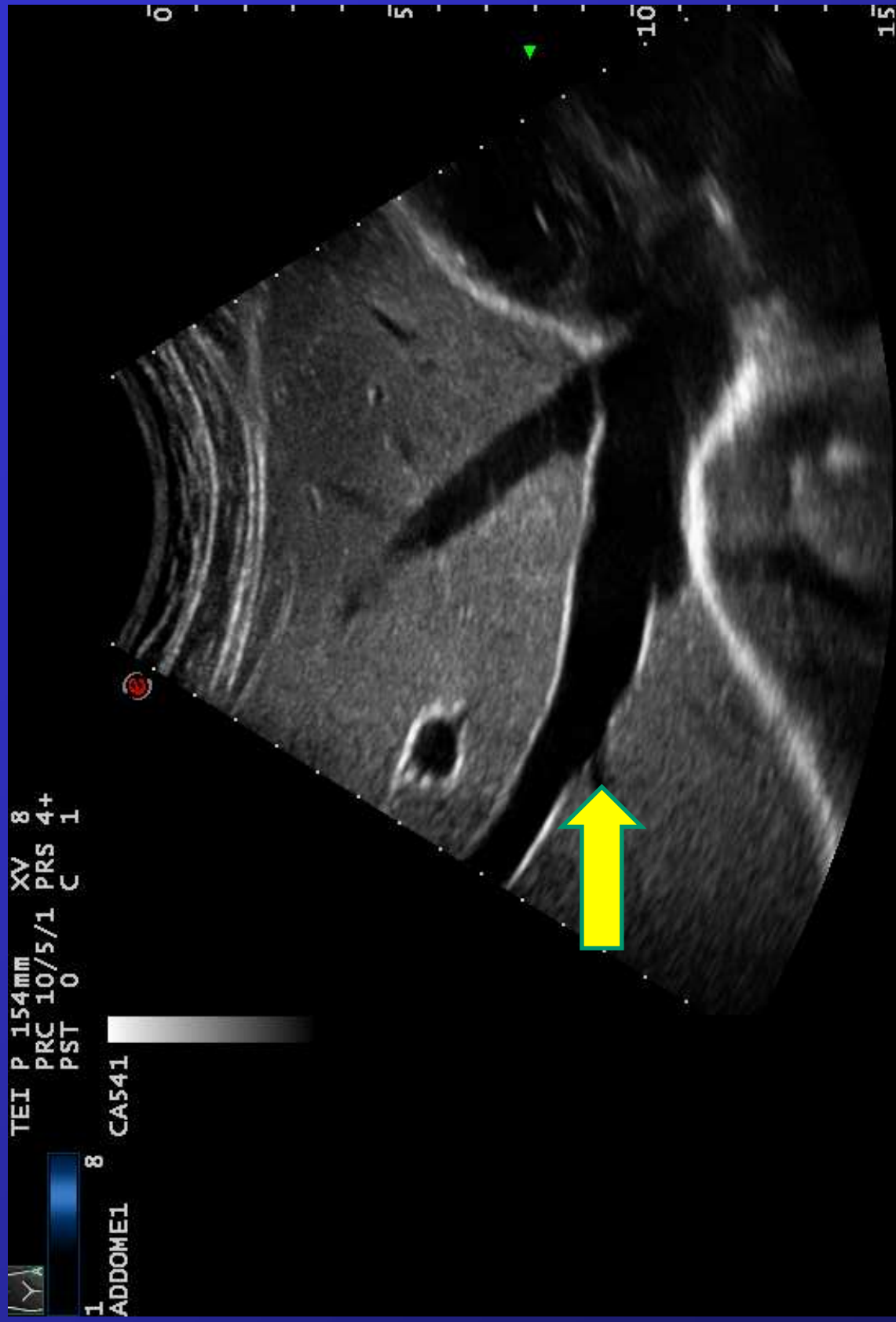
- **VENE SOVRAEPATICHE**
- **RAMI PORTALI**
- **DOTTI EPATICI PRINCIPALI**

VENE SOVRAEPATICHE

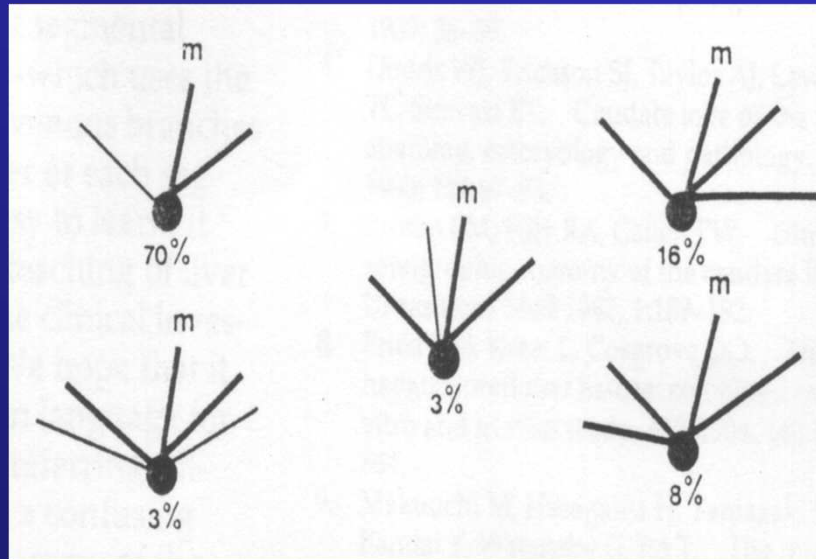




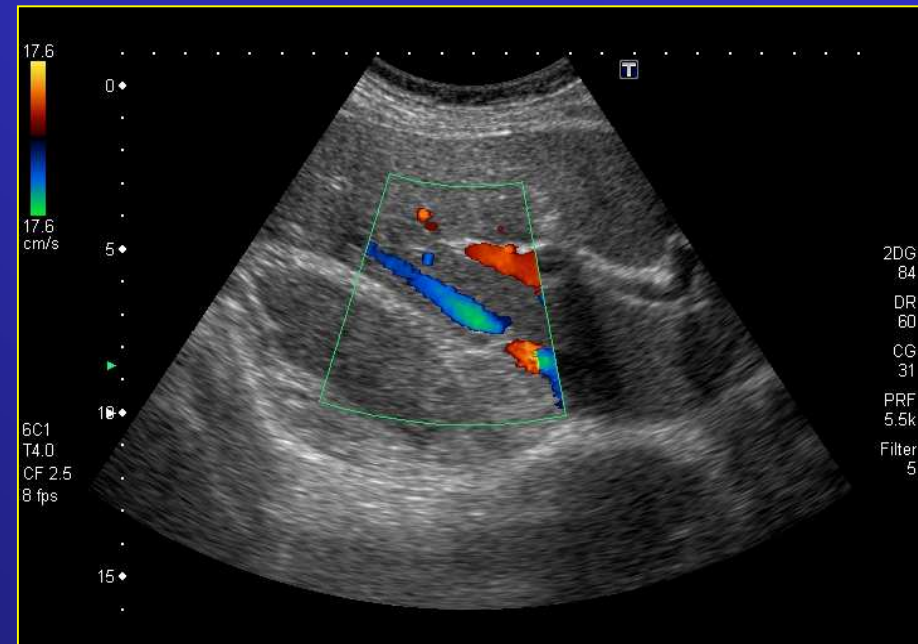
- Tre sovraepatiche 70% casi
- Confluenza variabile
- Spesso media e sx sbocco comune



SOVRAEPATICHE SOVRANNUMERARIE



SOVRAEPATICA ACCESSORIA (inferiore dx)

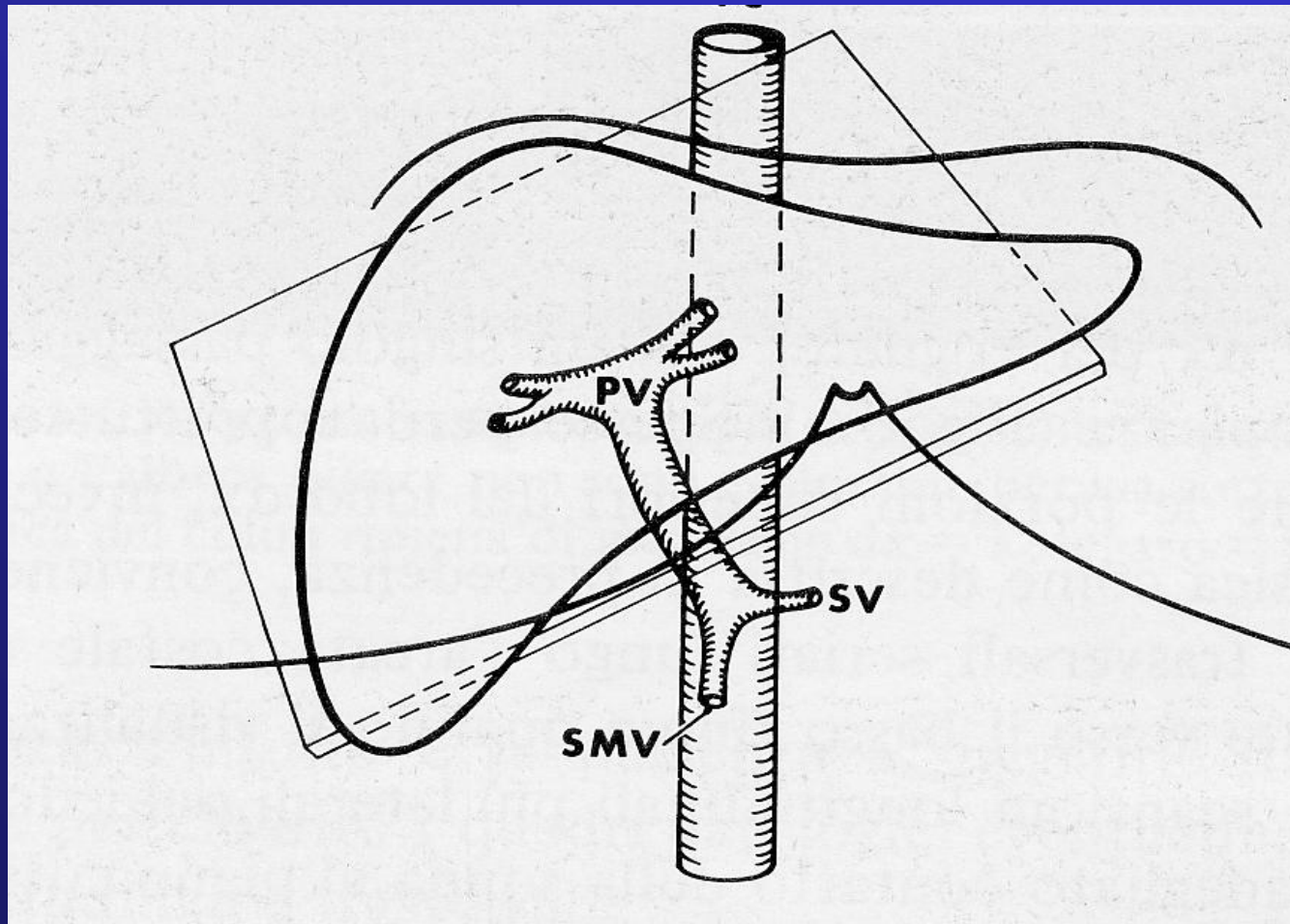


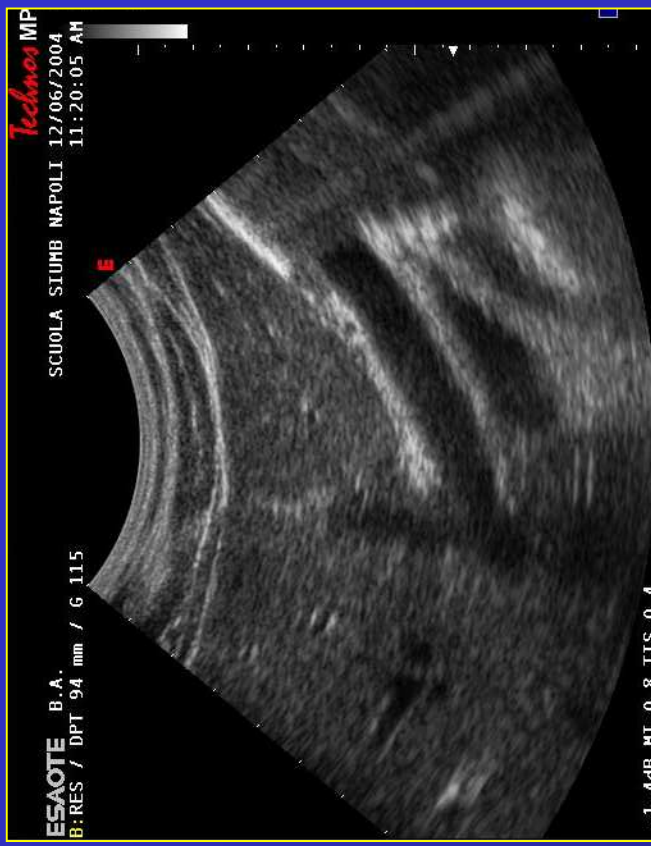
10% circa: sbocco in cava separato rispetto alle altre vene

Ramo venoso del caudato



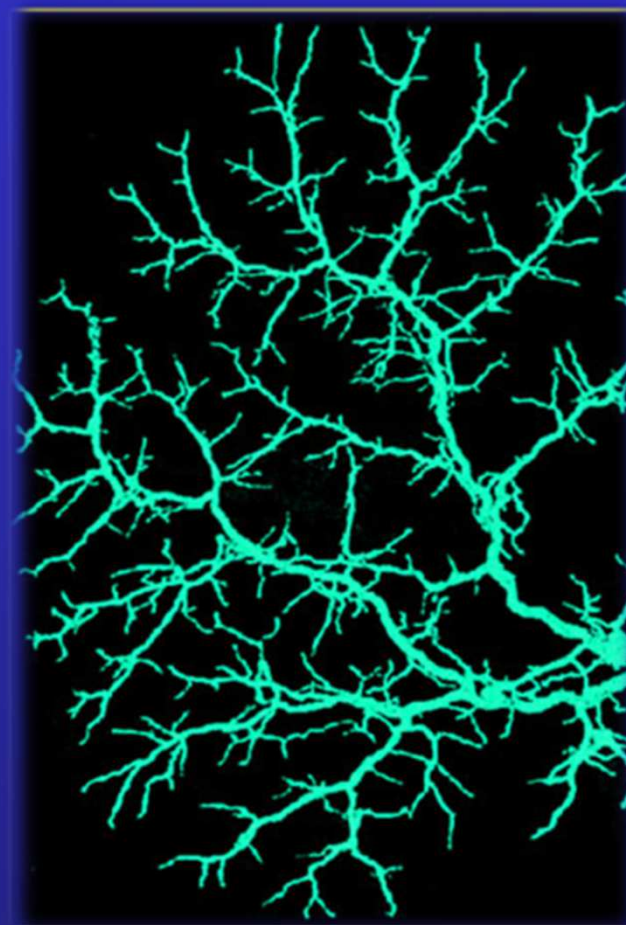
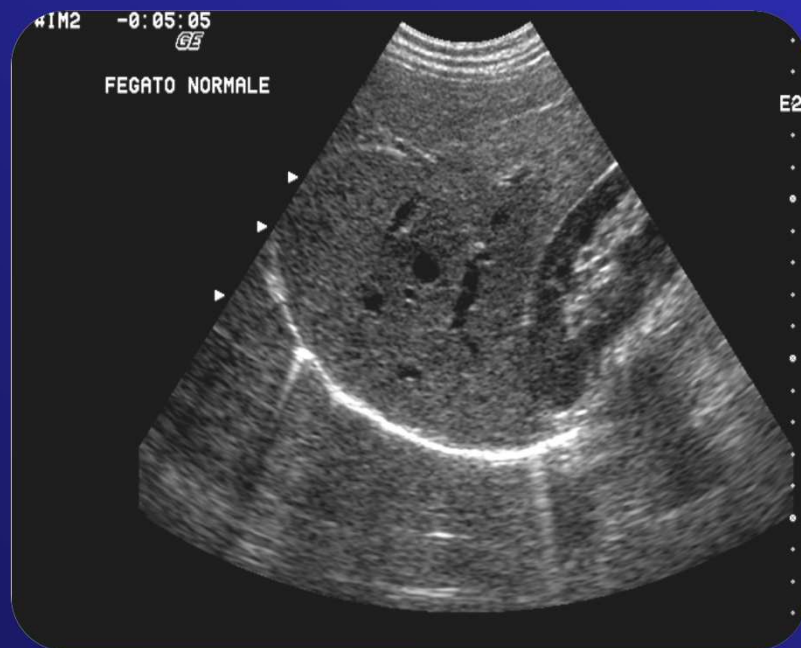
RAMI PORTALI

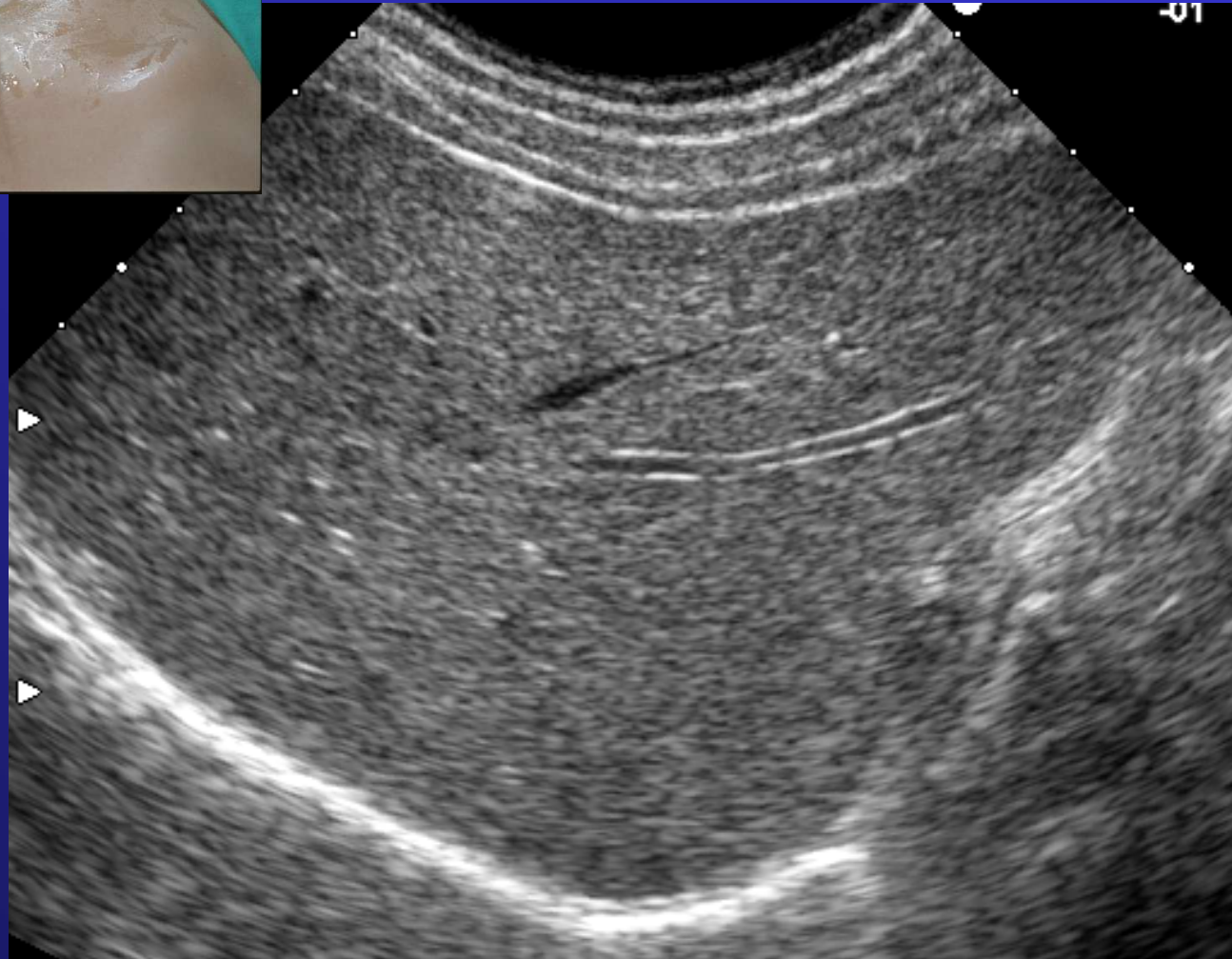




Vie Biliari Intraepatiche

Non visualizzabili in c.n.



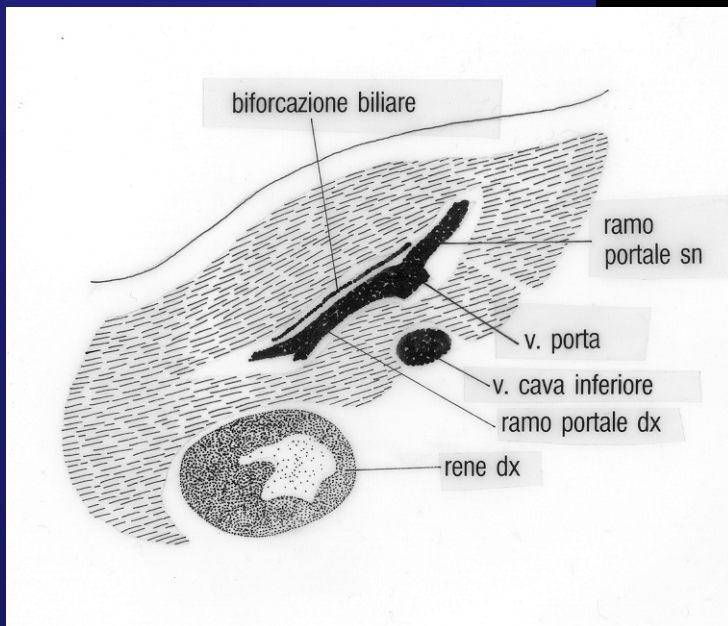
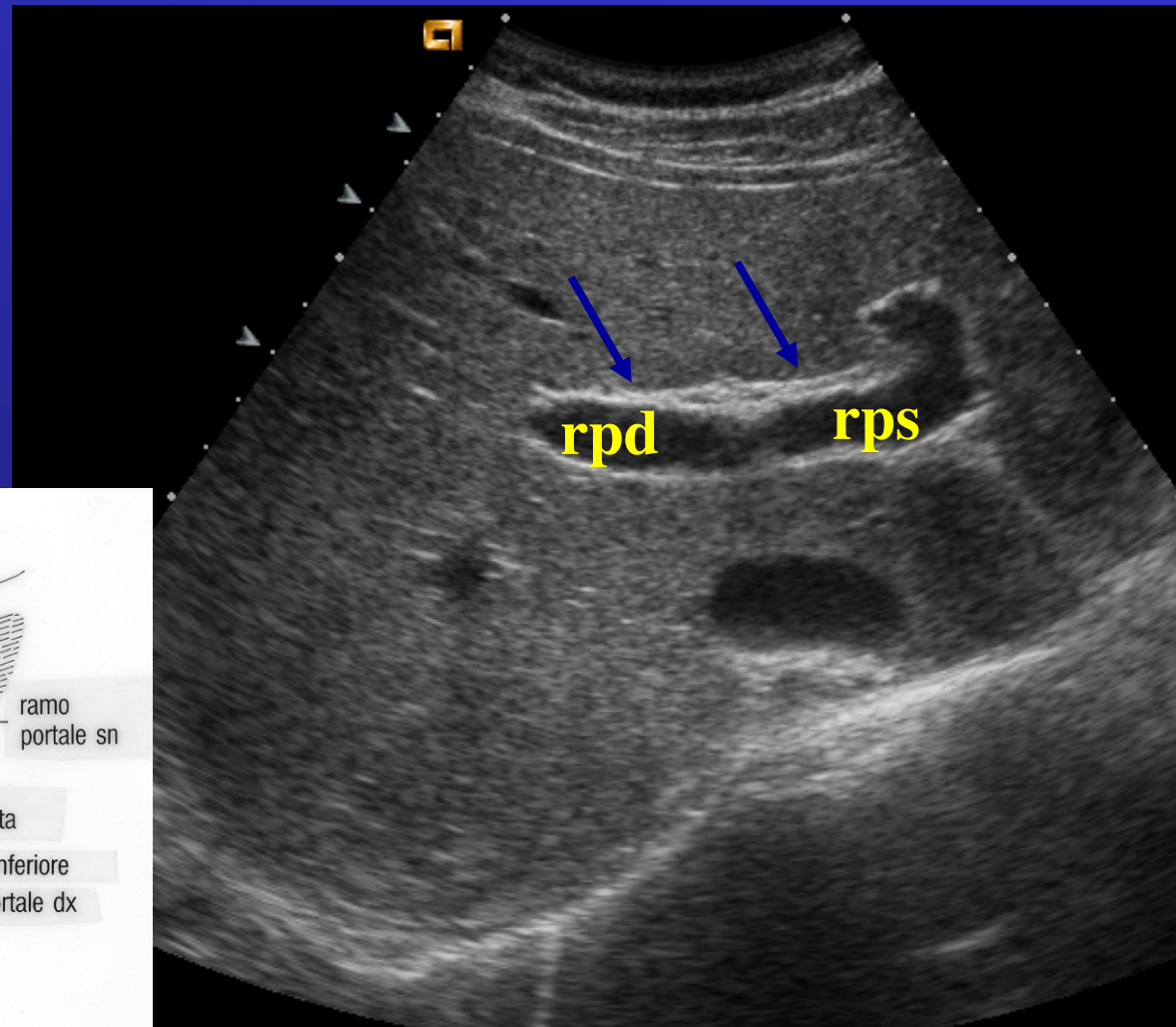


Vie biliari normali

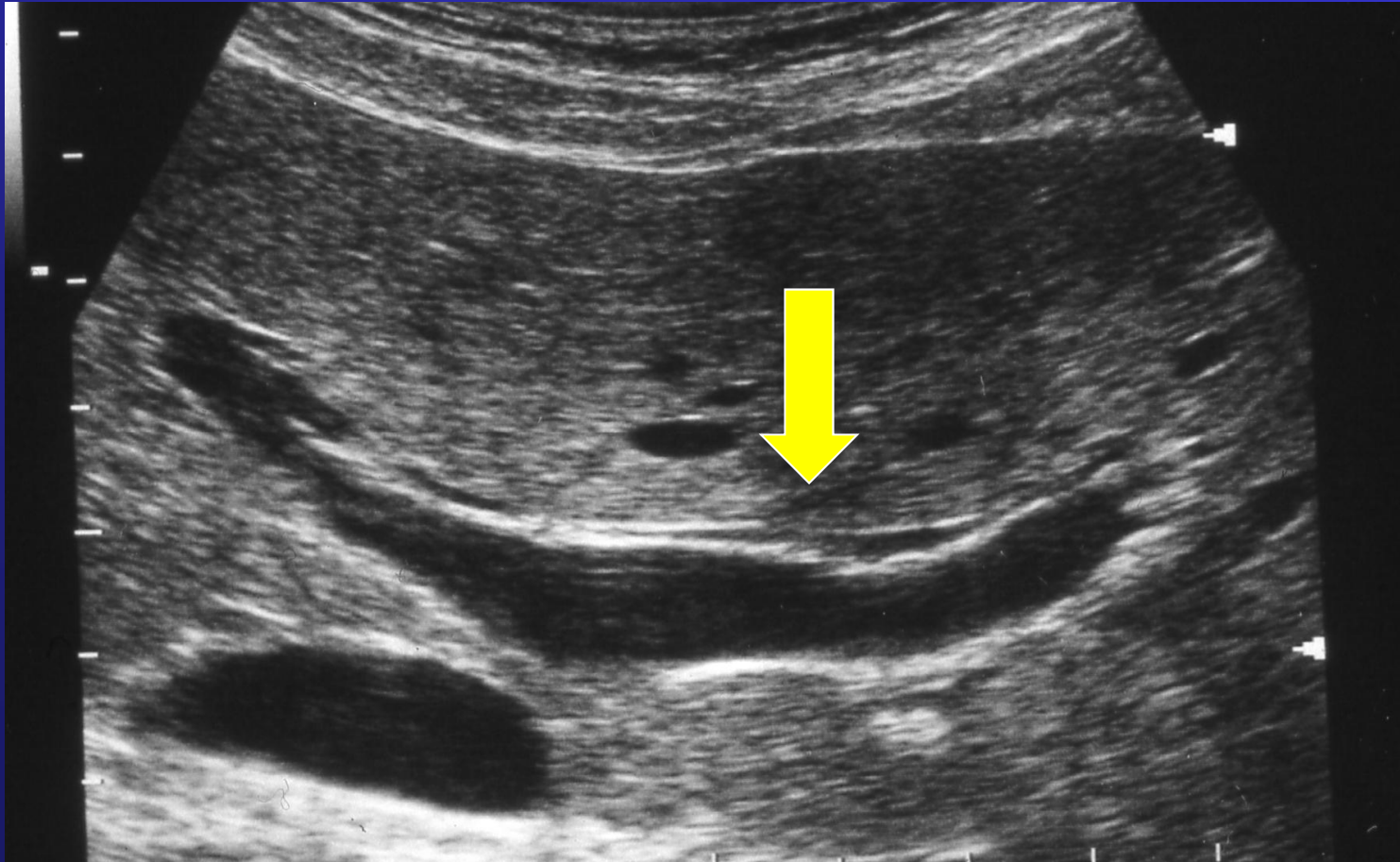


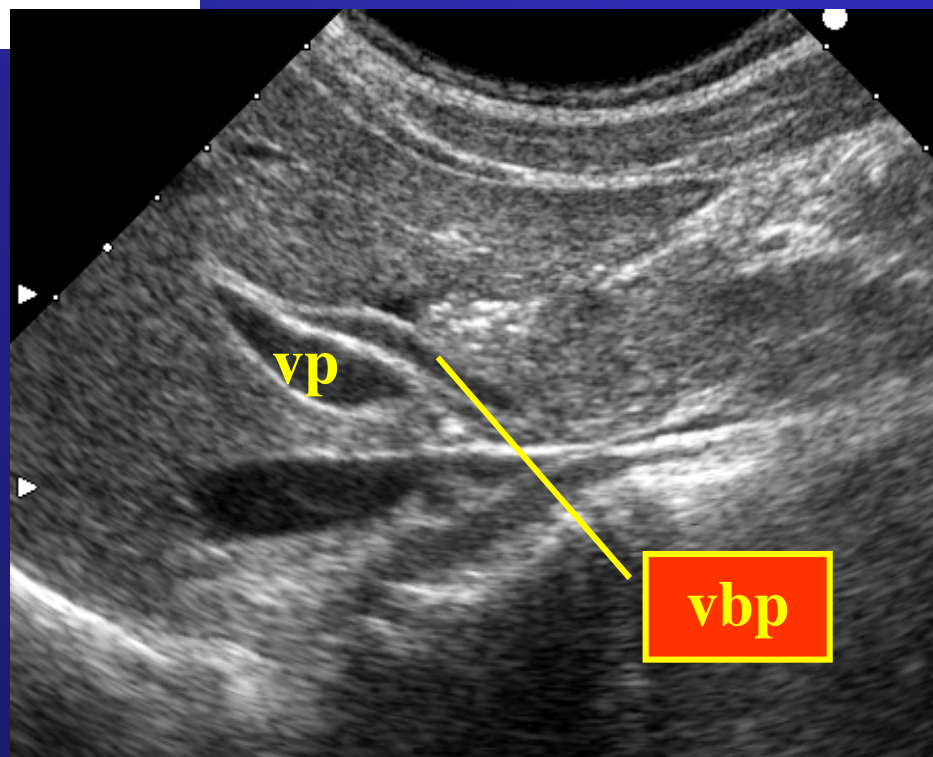
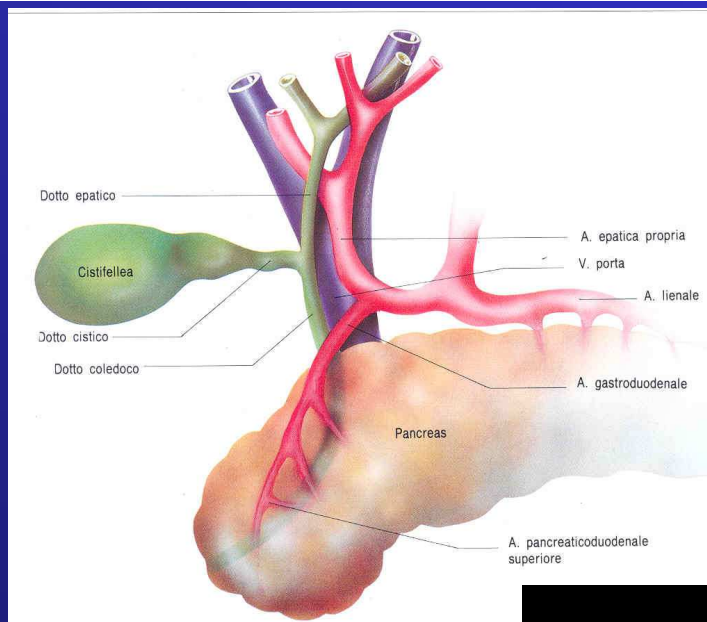
Vie biliari normali

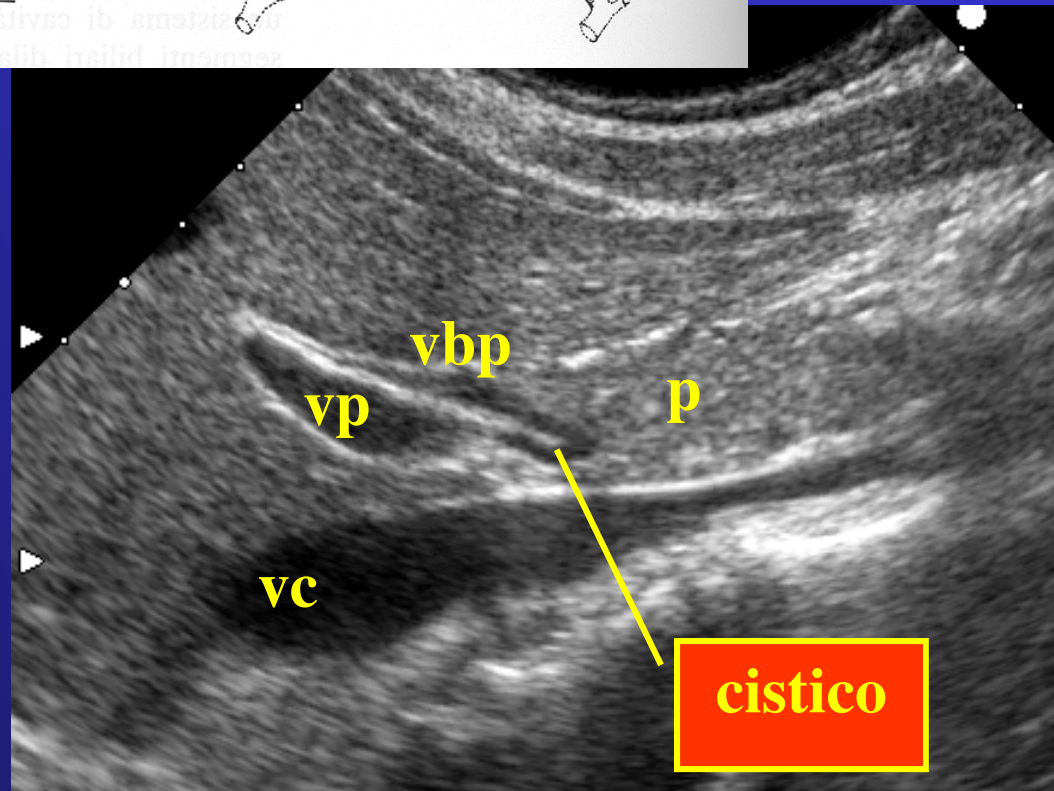
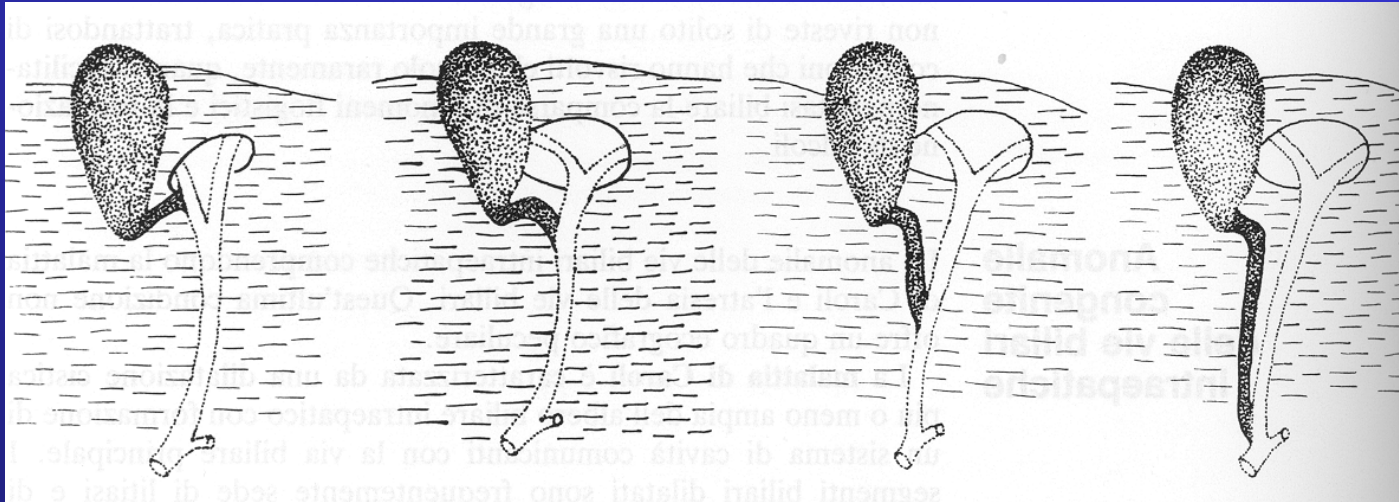
Vie biliari normali



DOTTI BILIARI

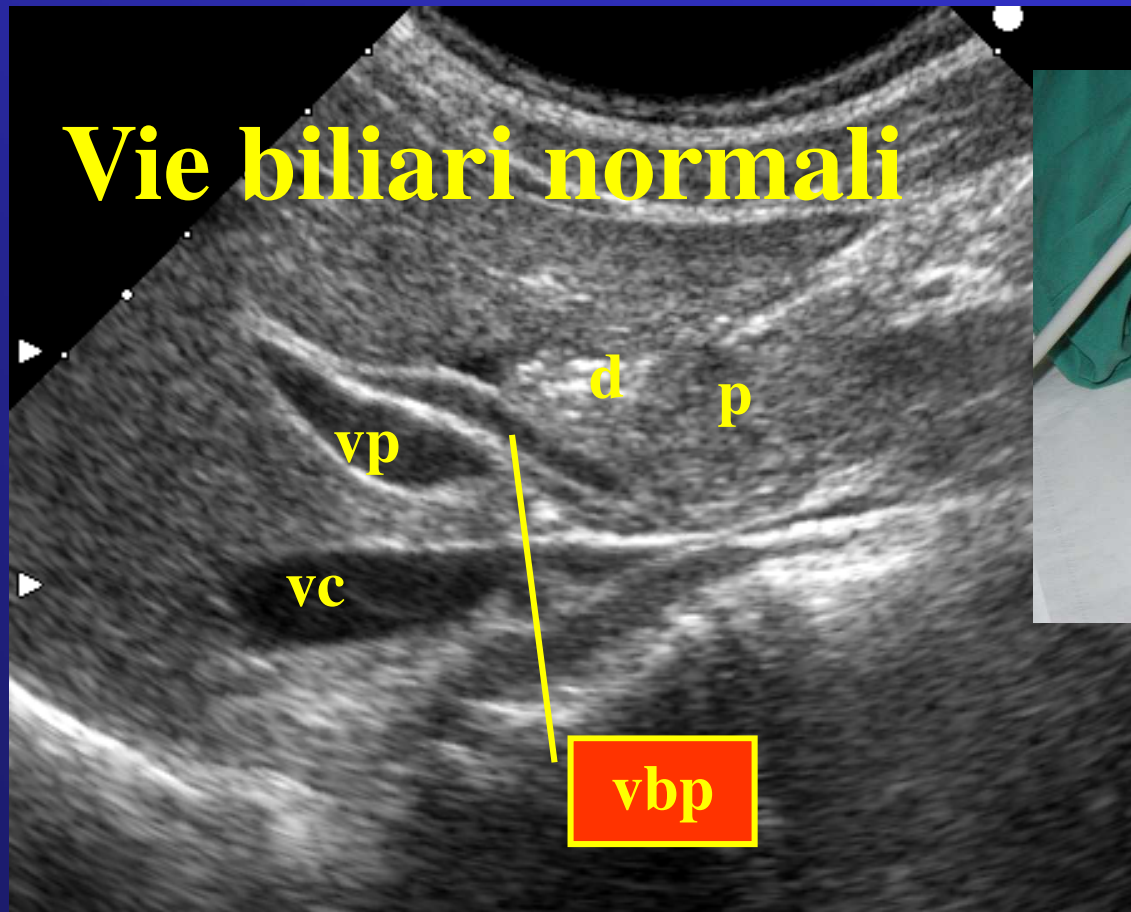






Dotto epatico comune + coledoco = Via biliare principale (VBP)

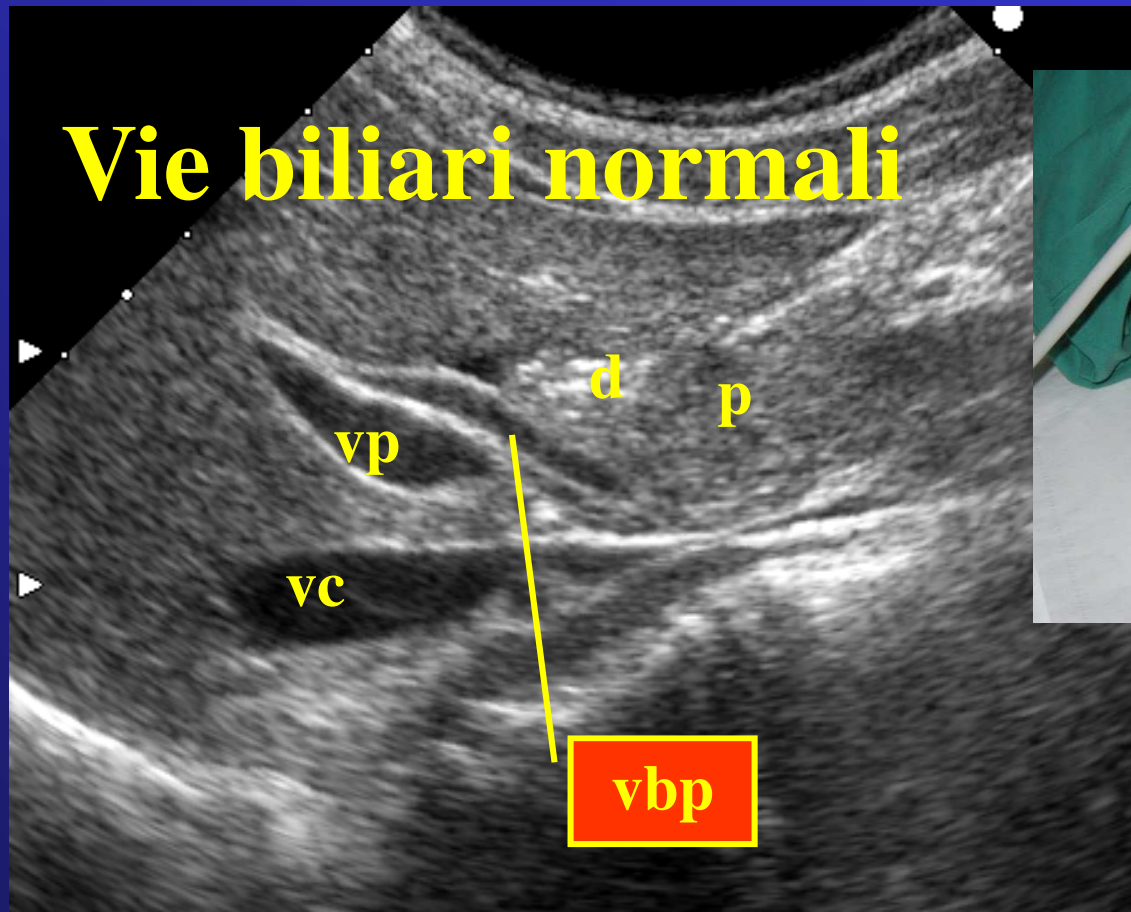
Vie biliari normali



VBP

sopraduodenale
retroduodenale
infraduodenale
(pancreatica)

Vie biliari normali

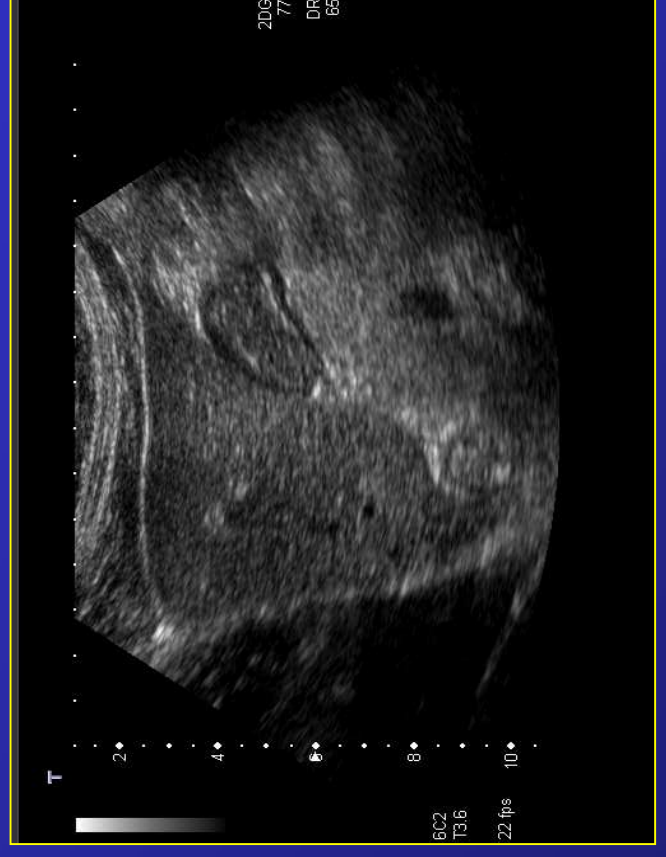
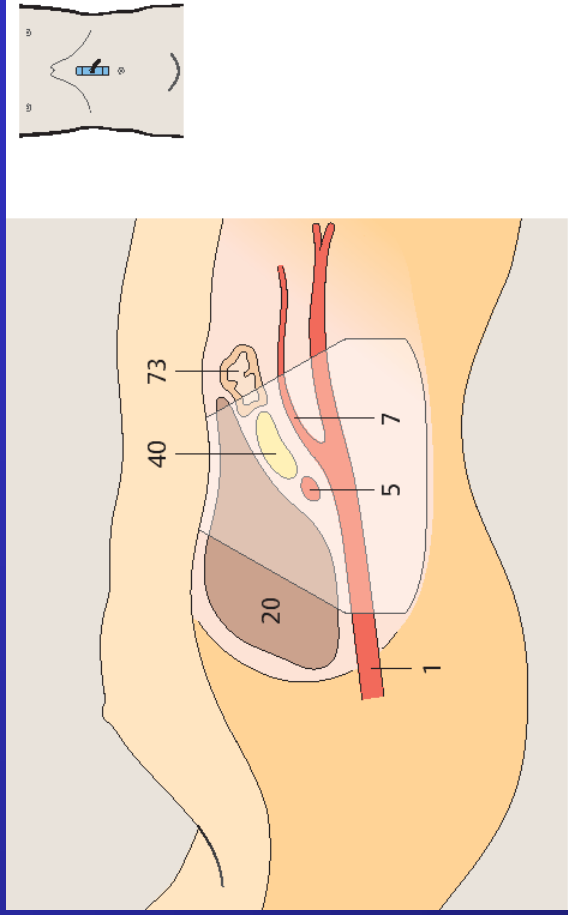


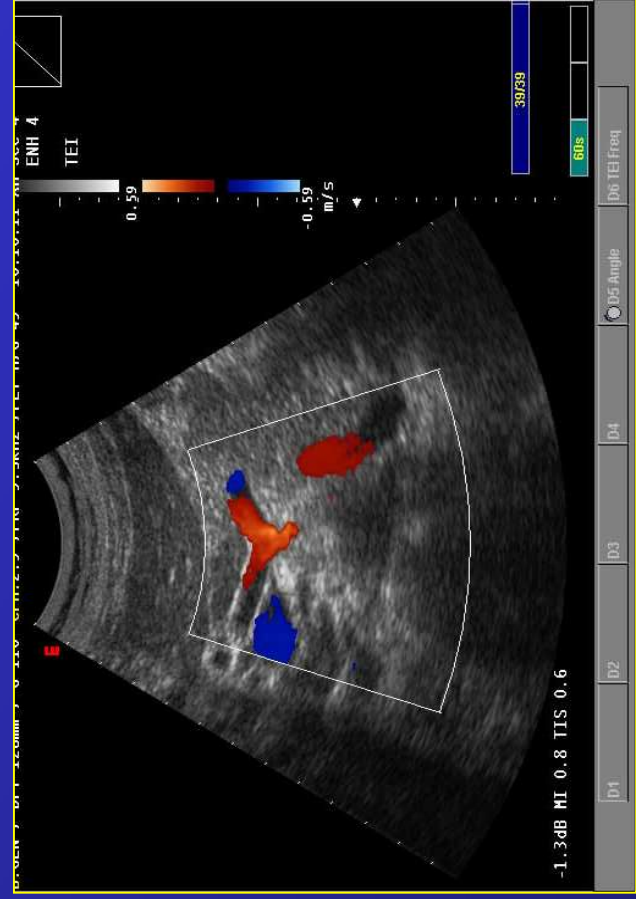
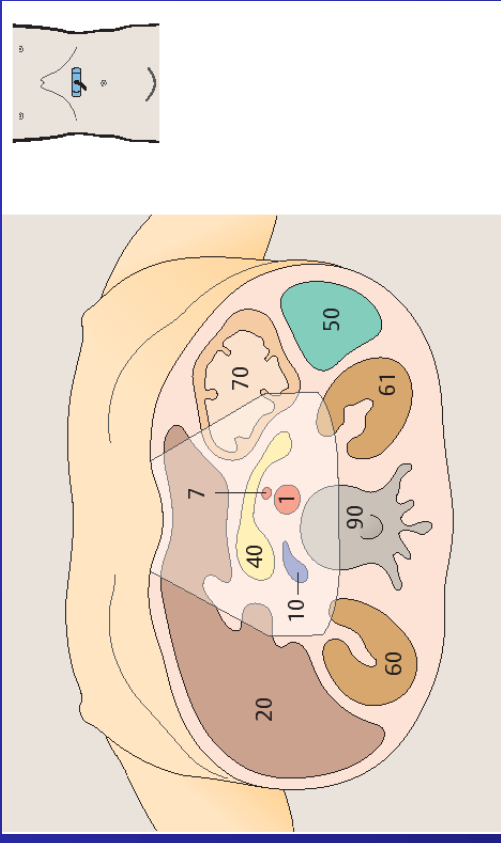
VBP

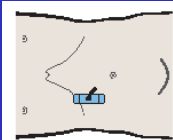
sopraduodenale
retroduodenale
infraduodenale
(pancreatica)

RAPPORTI CON ALTRI ORGANI ADDOMINALI

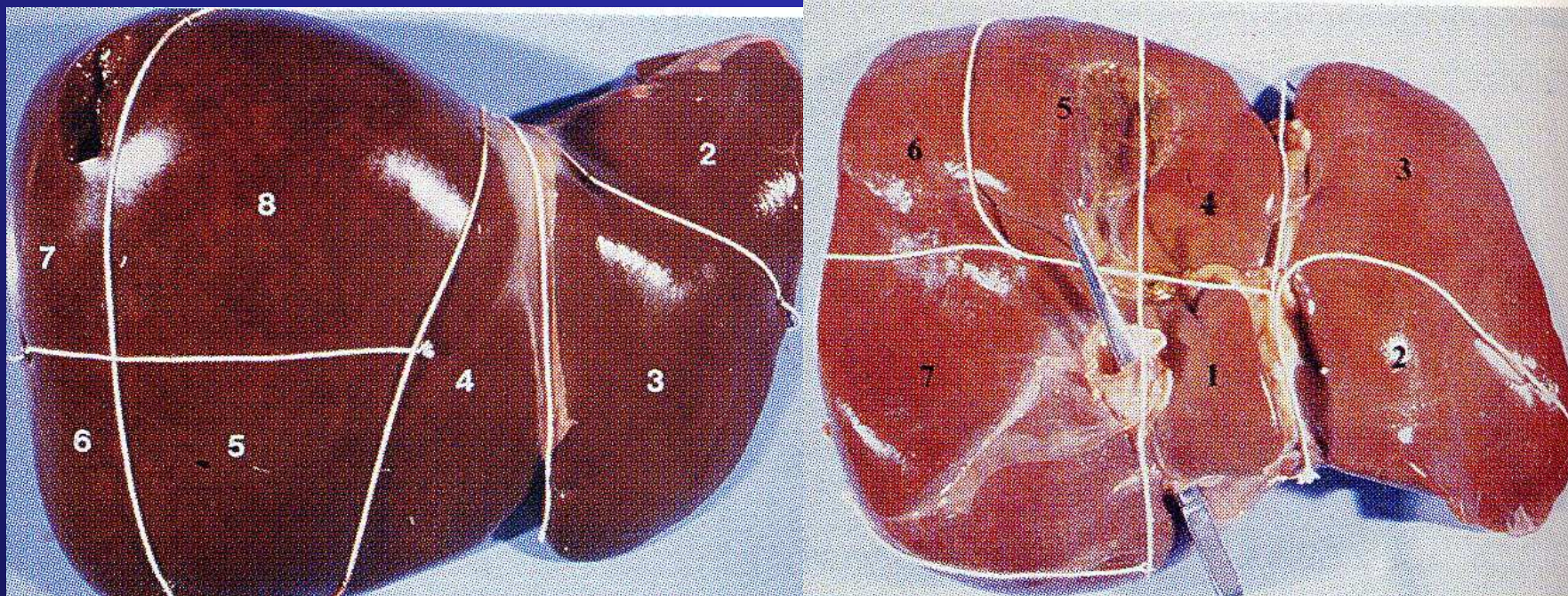








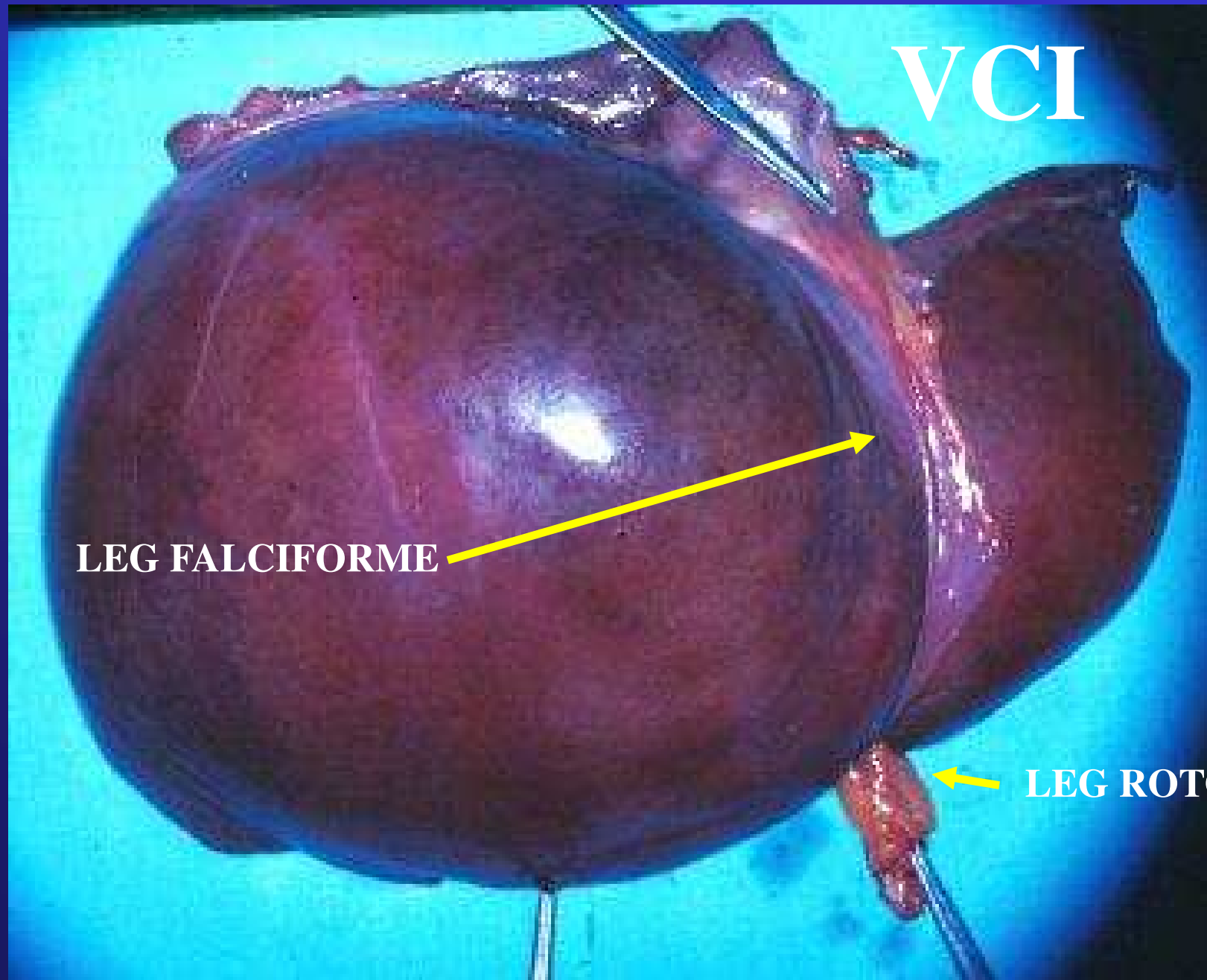
ANATOMIA SEGMENTARIA SU BASE SOVRAEPATICA E PORTALE



ANATOMIA DEL FEGATO

- **ANATOMIA MORFOLOGICA**
- **ANATOMIA FUNZIONALE**

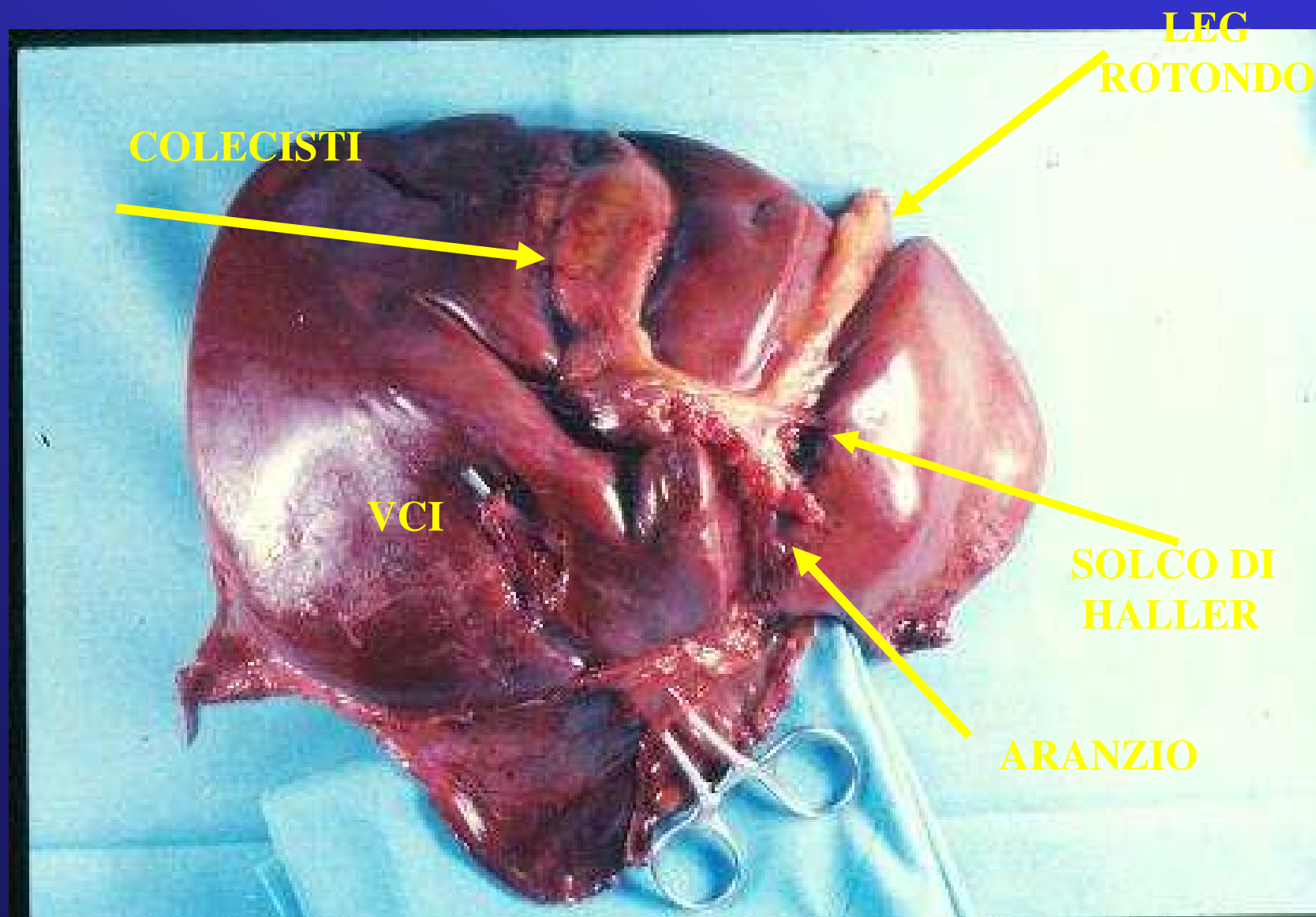
- **ANATOMIA MORFOLOGICA**



VCI

LEG FALCIFORME

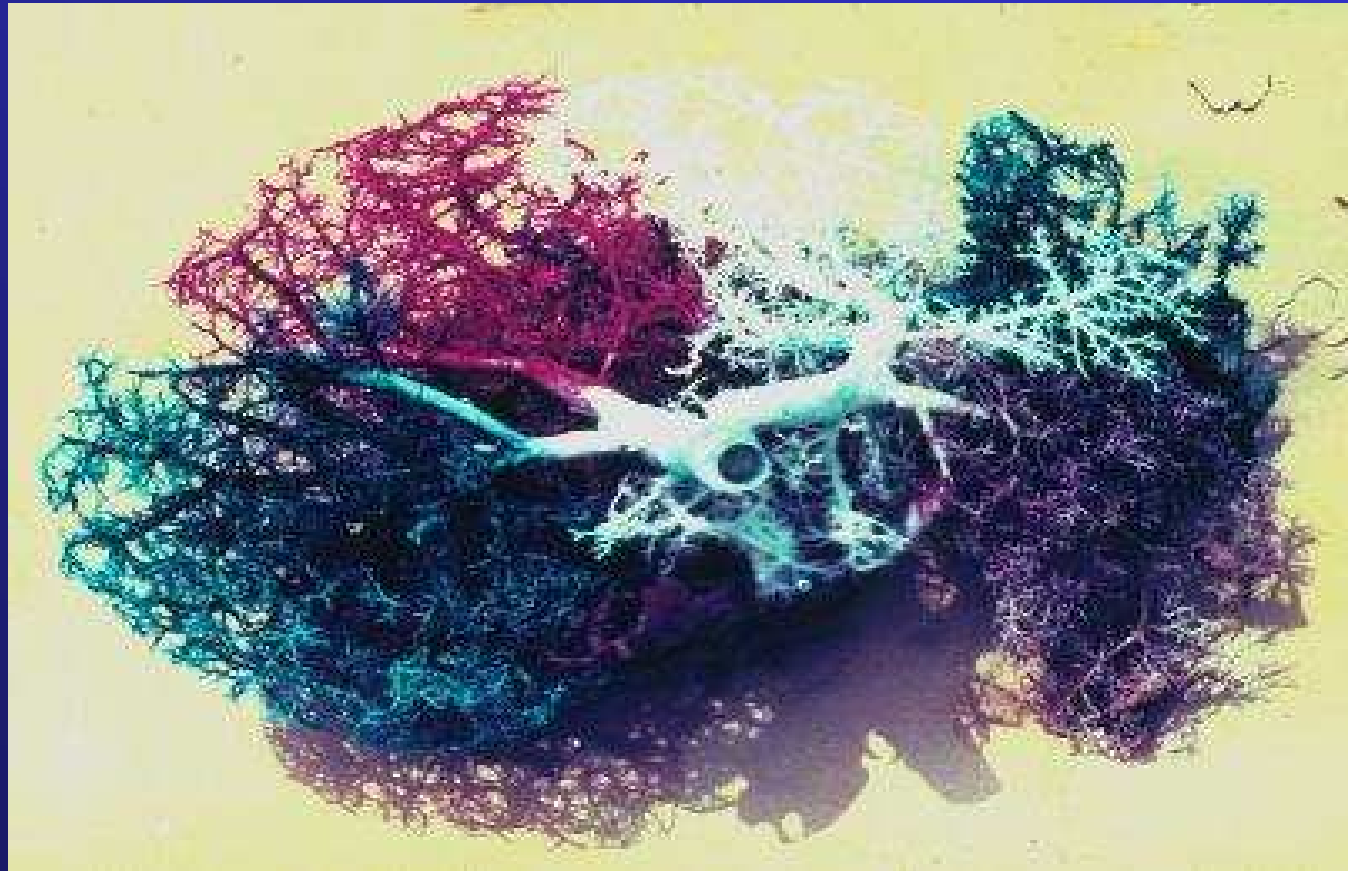
LEG ROTONDO





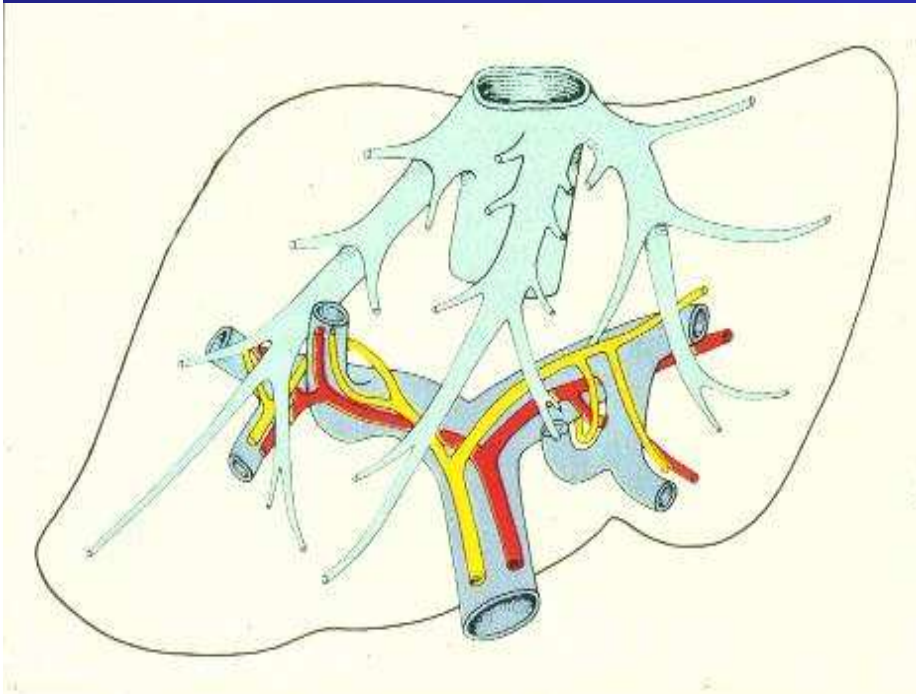
LOBO: PARTE DI PARENCHIMA DELIMITATO DA INCISURE NATURALI

ANATOMIA FUNZIONALE



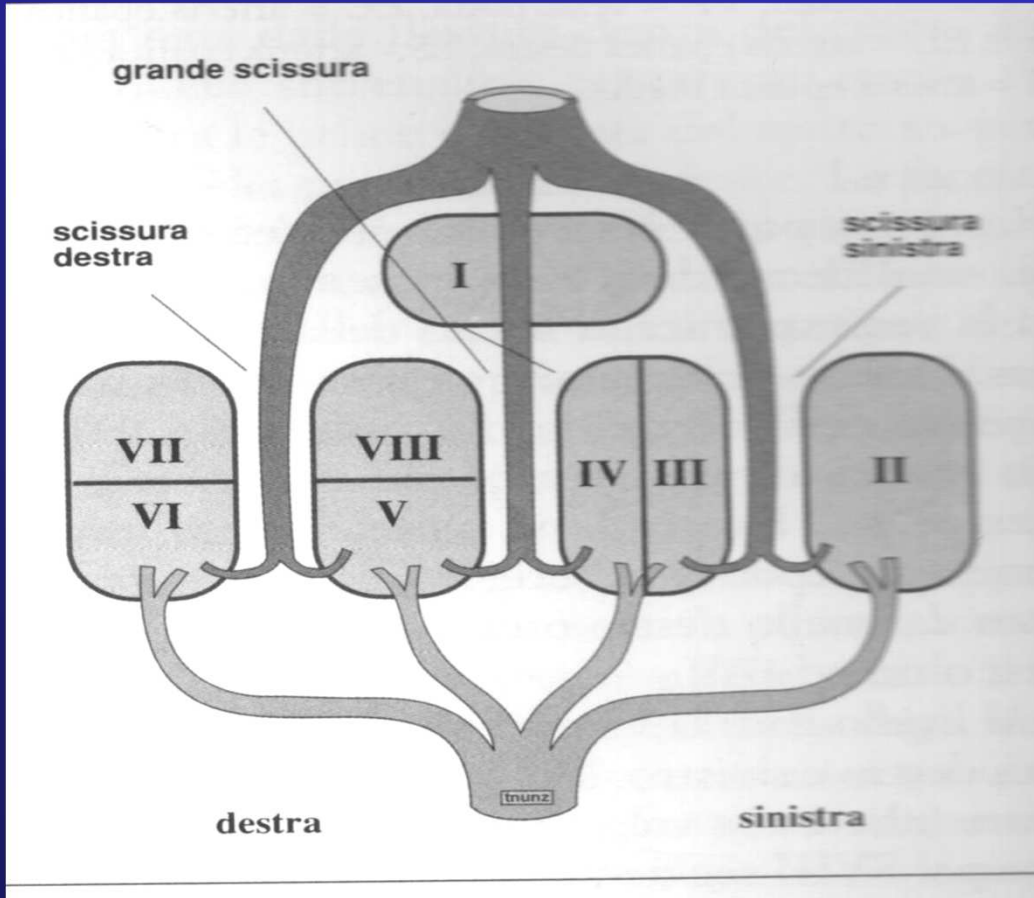
ANATOMIA FUNZIONALE

- **AI DUE LOBI PRINCIPALI DELL'ANATOMIA CLASSICA NON CORRISPONDE UNA IDENTICA DISTRIBUZIONE VASCOLO BILIARE E SOVRAEPATICA**
- **ANATOMIA CHE TENGA CONTO DELLA DISTRIBUZIONE INTRA ED EXTRAEPATICA DELLE STRUTTURE ARTERO-PORTO BILIARI E SOVRAEPATICHE**



- **Ramo portale dx/
emifegato dx**
- **Ramo portale sx/
emifegato sx**
- **Caudato apporto variabile**
- **La scissura principale
divide i due emifegati**
- **Ogni segmento è
identificato dalla
sua afferenza portale**
- **Le sovraepatiche
dividono settori e segmenti**

ANATOMIA SEGMENTARIA SU BASE SOVRAEPATICA E PORTALE

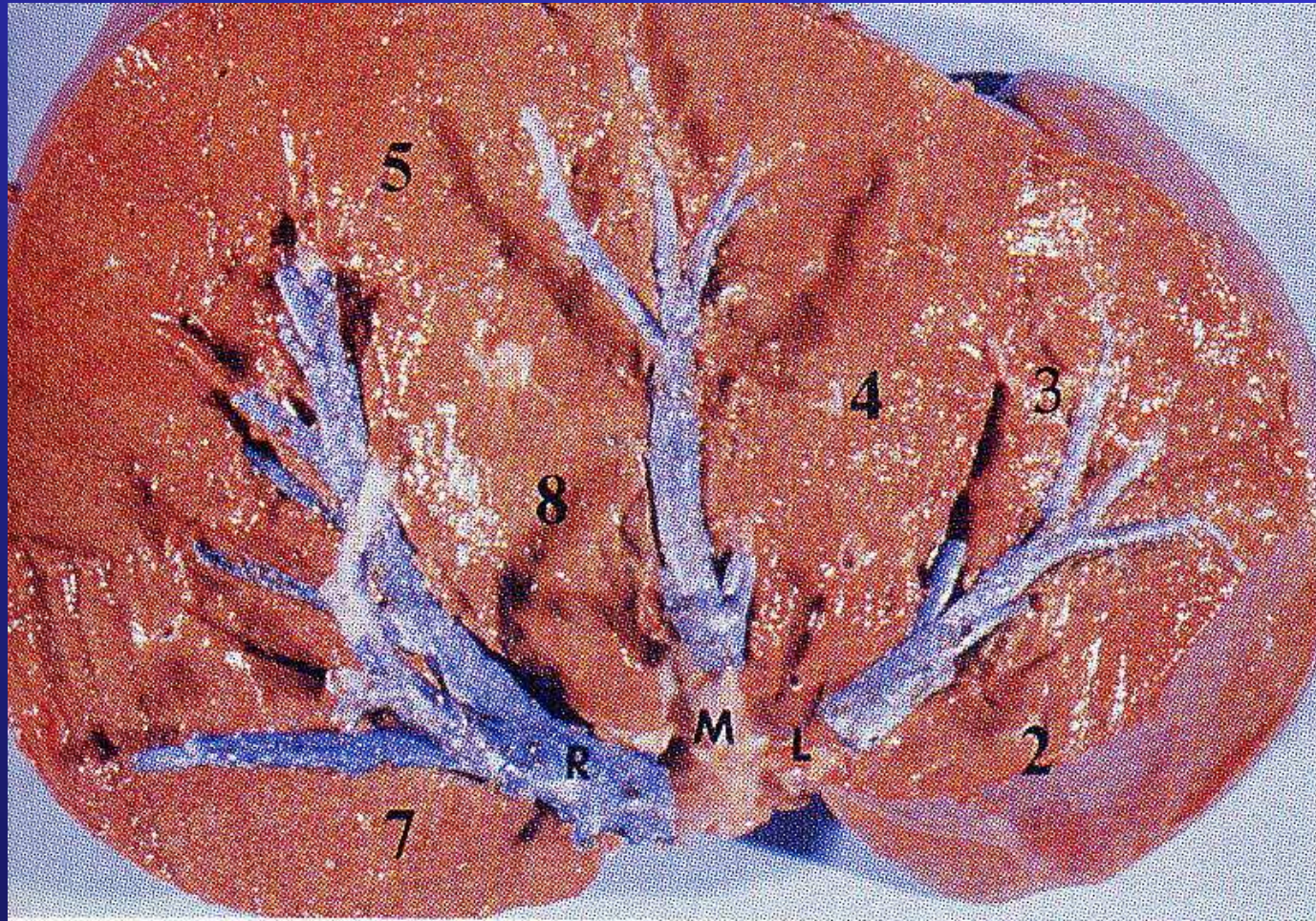


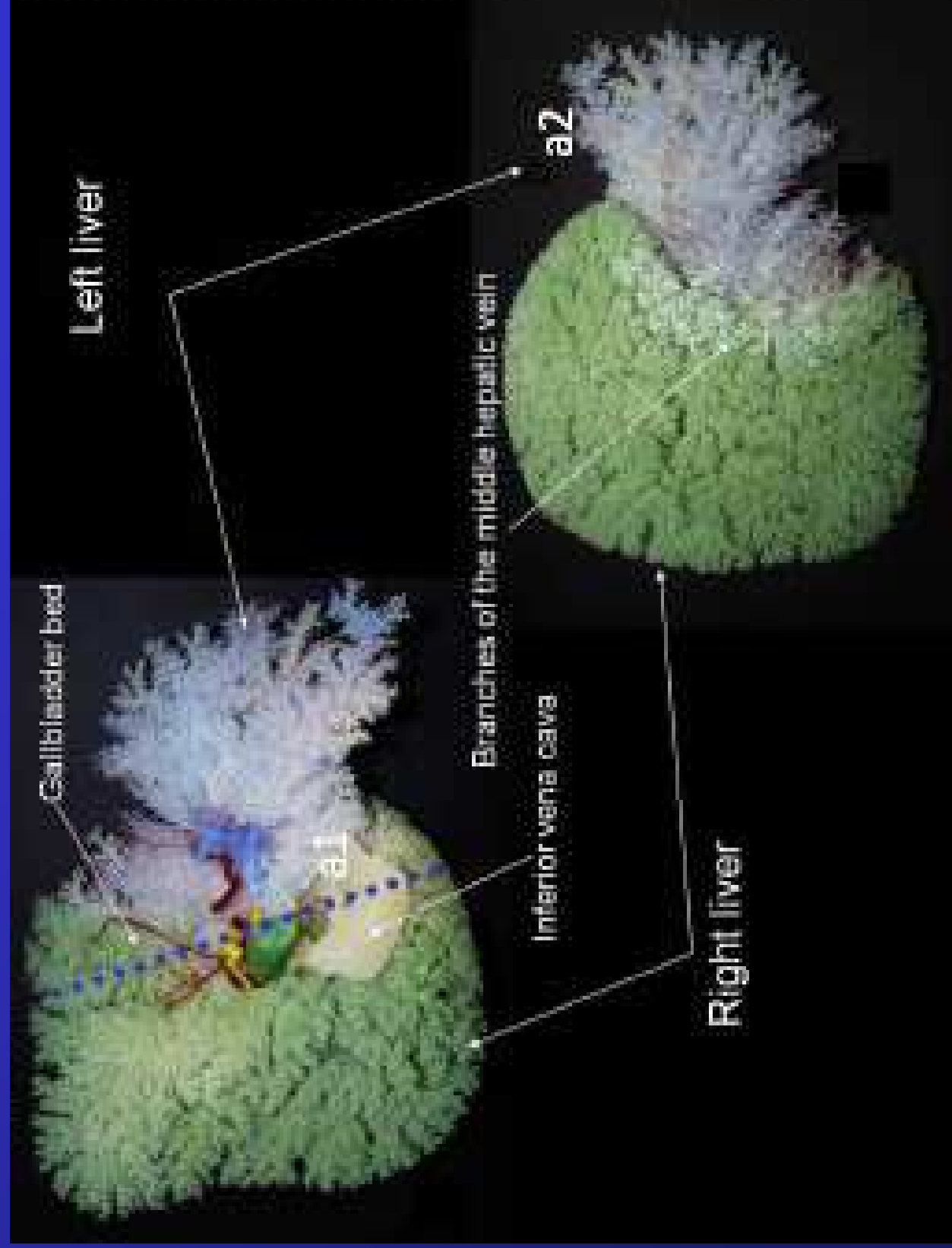
Lobo sx: II-III e IV s

Lobo dx: V , VI, VII e VIII s

Is : lobo caudato

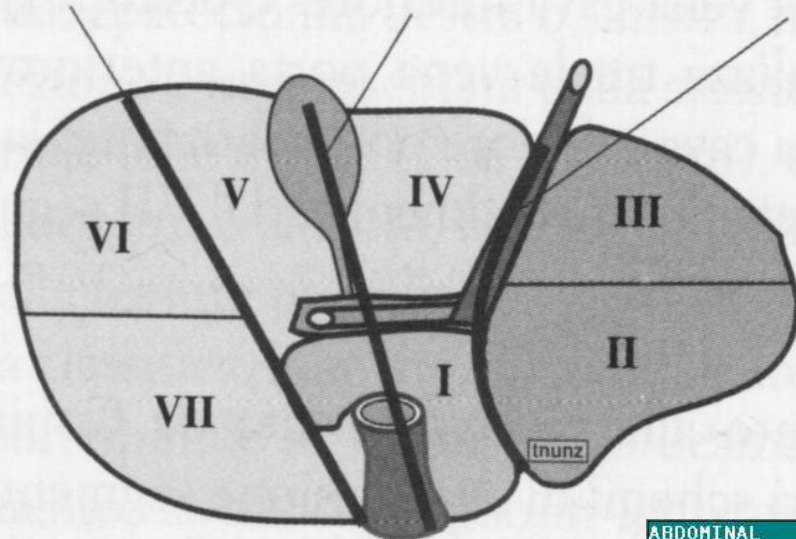
ANATOMIA SEGMENTARIA SU BASE SOVRAEPATICA





scissura destra scissura principale scissura sinistra

B



Sovraepatica media

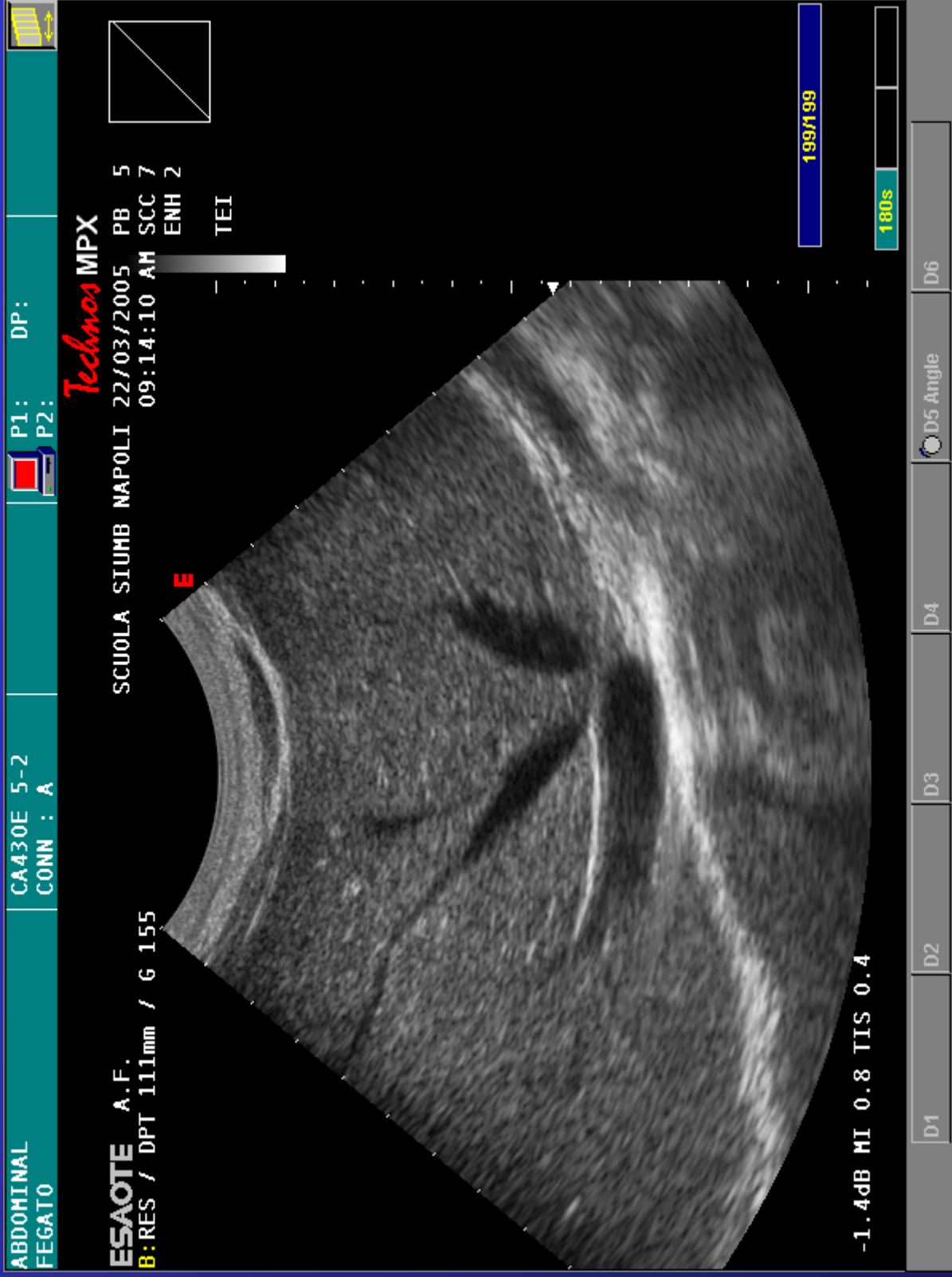












ABDOMINAL
FEGATO

CA430E 5-2
CONN : A



P1: DP:
P2:



ESAOTE A.F.

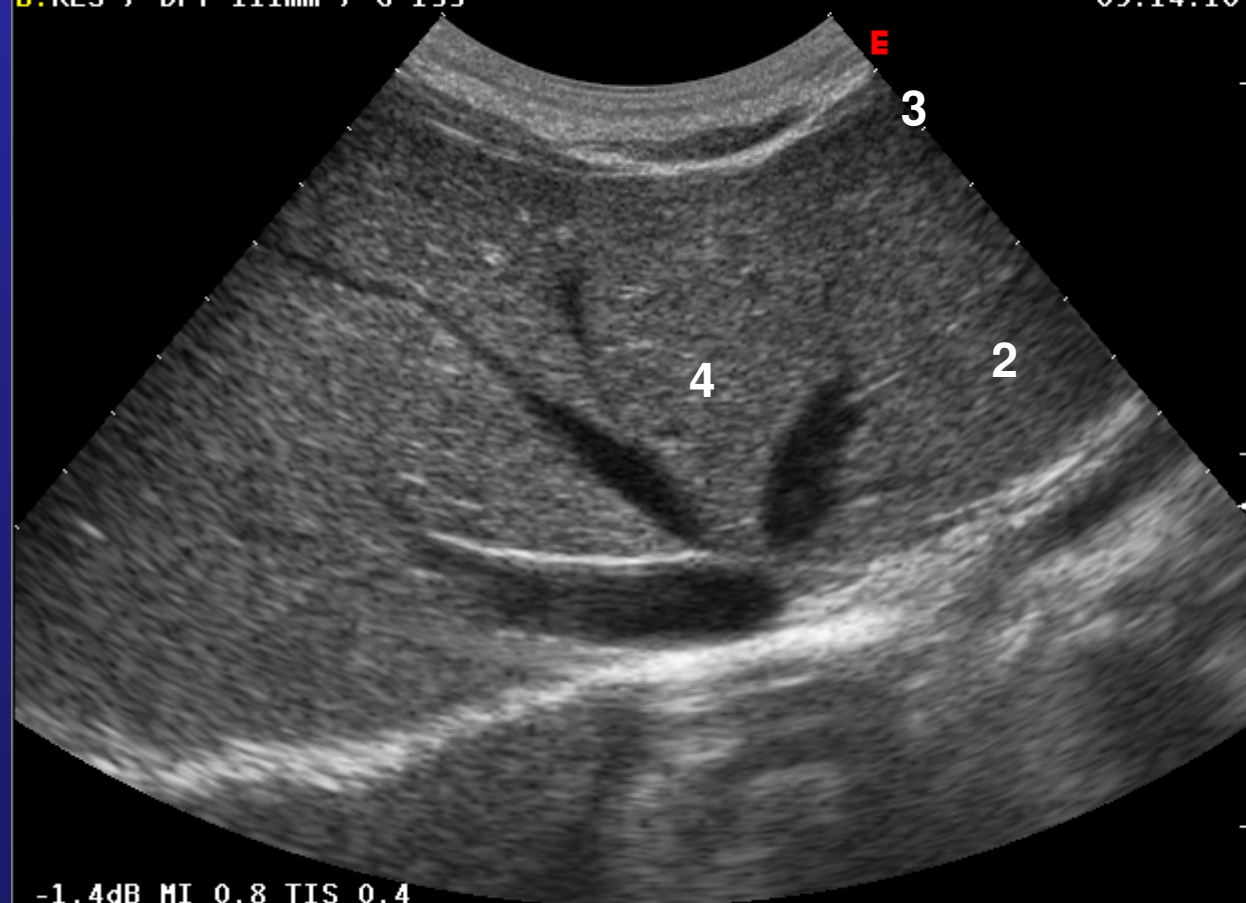
B:RES / DPT 111mm / G 155

SCUOLA SIUMB NAPOLI 22/03/2005 PB 5

09:14:10 AM SCC 7

ENH 2

TEI



-1.4dB MI 0.8 TIS 0.4

199/199

180s

D1

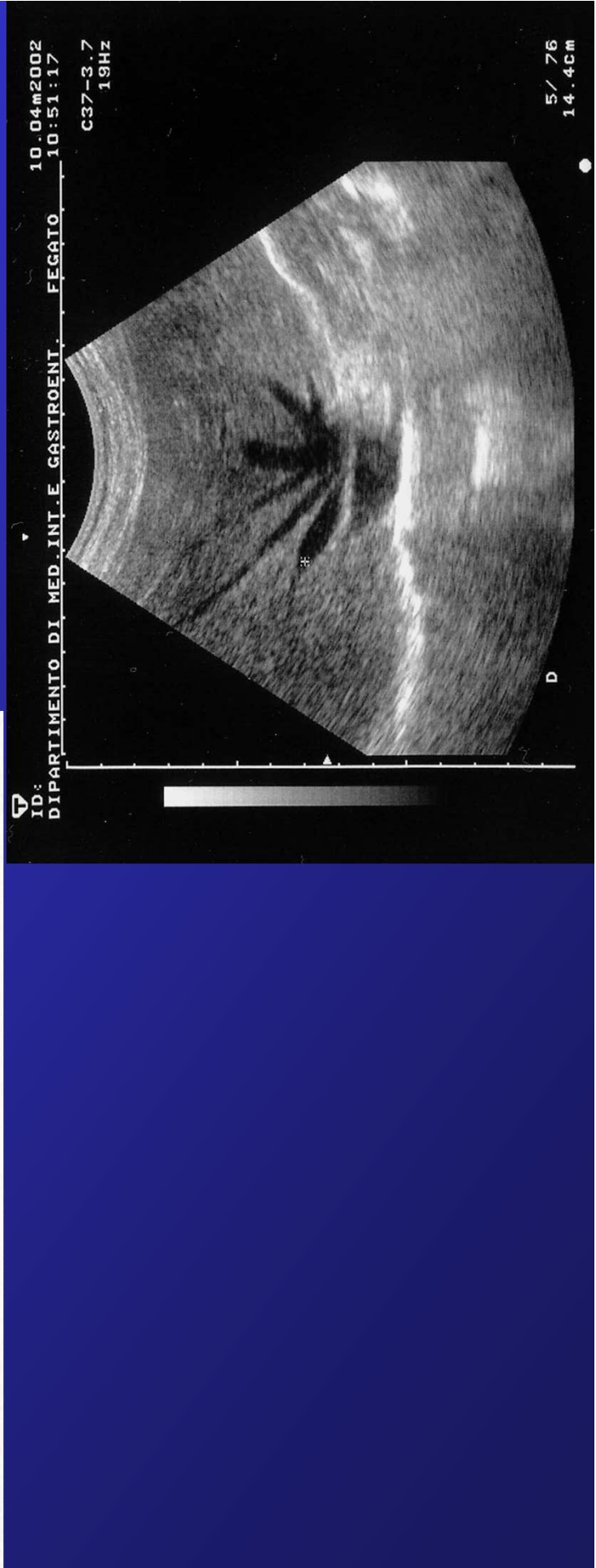
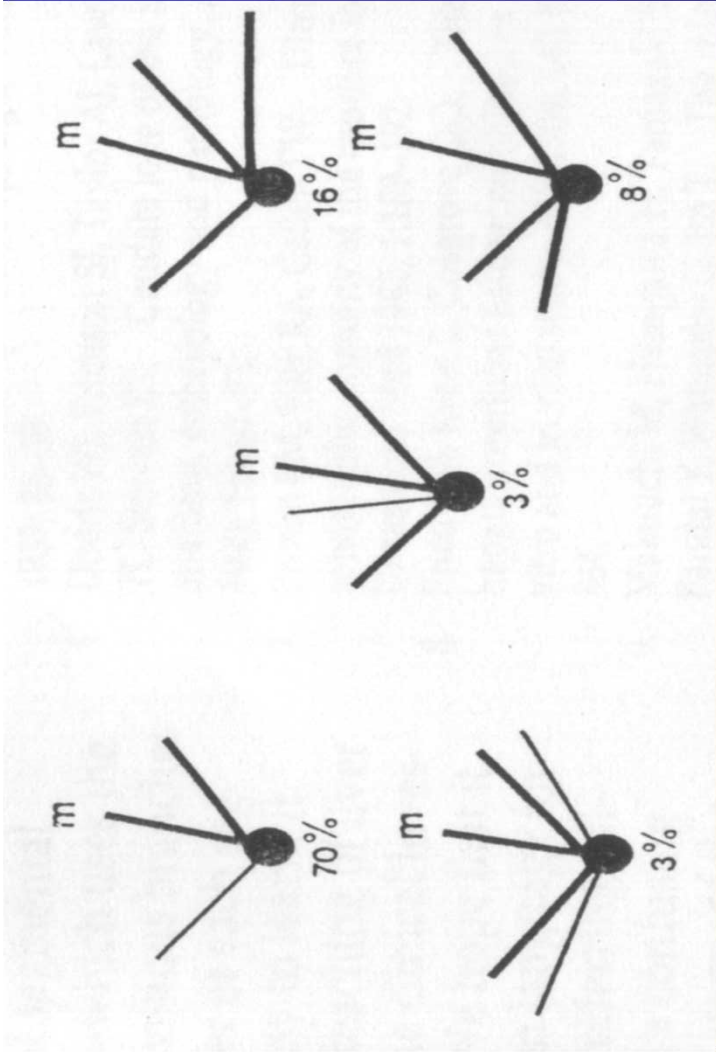
D2

D3

D4

☐ D5 Angle

D6



A Handy Tool to Teach Segmental Liver Anatomy to Surgical Trainees

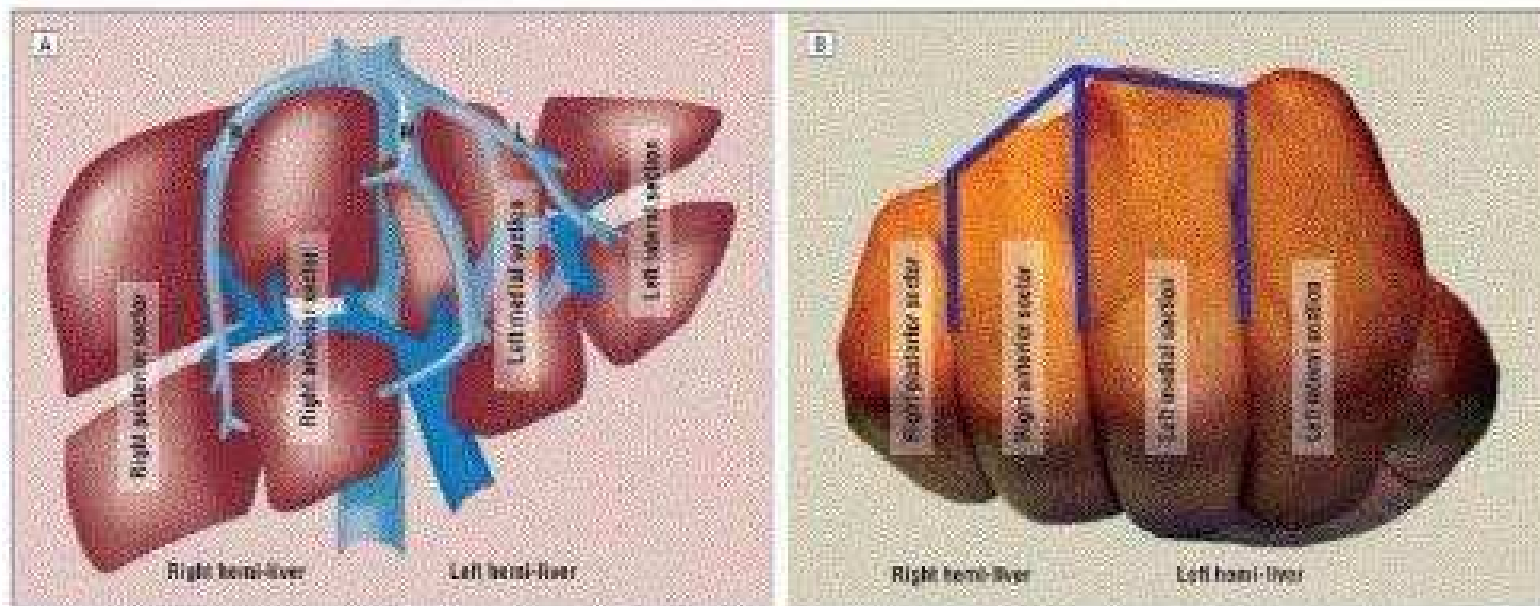


Figure 2. Right (R), middle (M), and left (L) hepatic veins demonstrating the 4 hepatic divisions and 2 hemi-livers. A, Veins overlaid on a model of the liver. B, veins overlaid on a model of the right hand.

Arch Surg 2012

A Handy Tool to Teach Segmental Liver Anatomy to Surgical Trainees

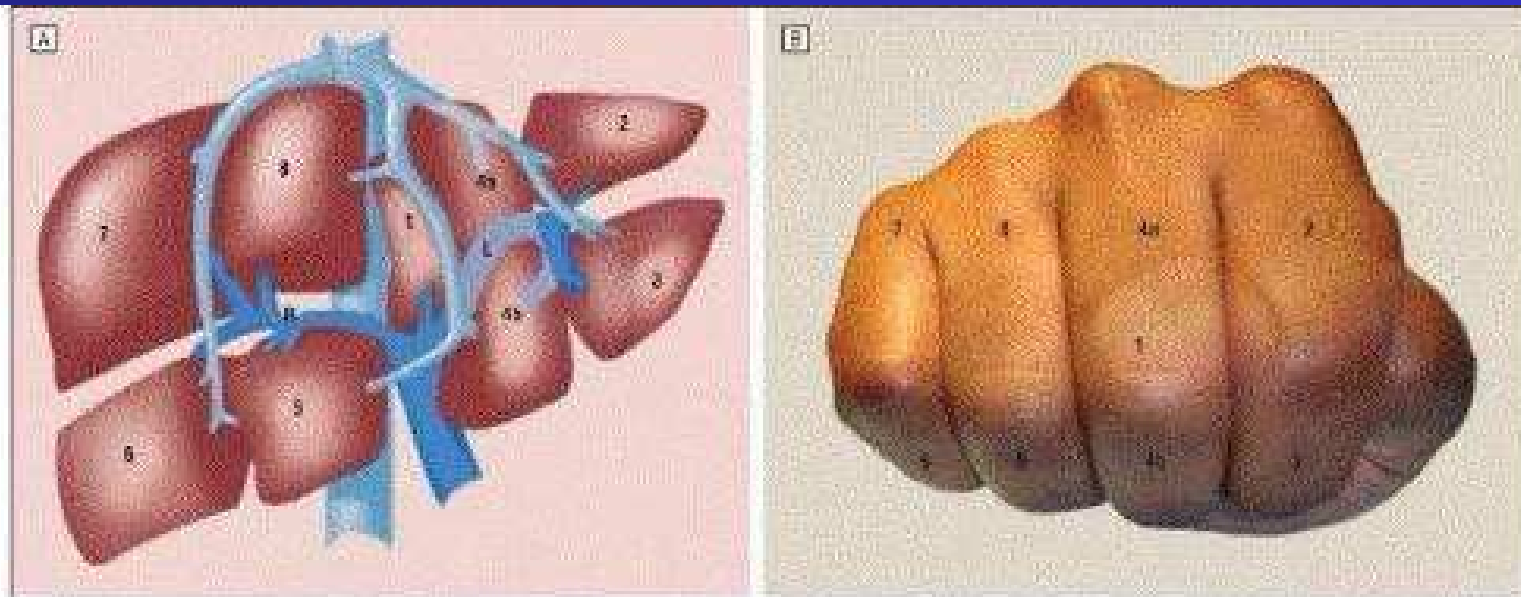
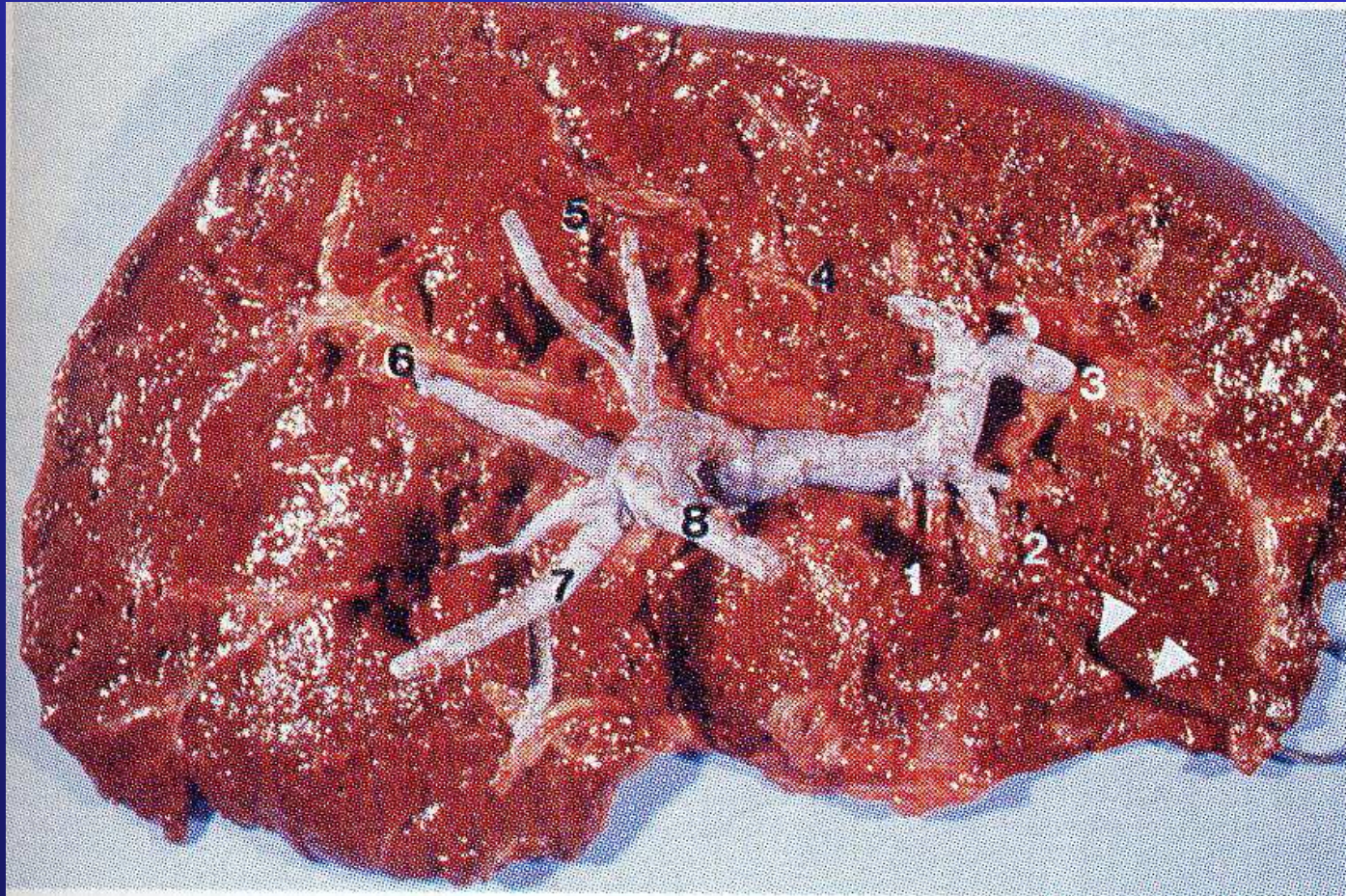


Figure 1. Couinaud segments 1 through 8. A, Segments overlaid on a model of the liver. R indicates right portal vein; L, left portal vein. B, Segments overlaid on a model of the right hand. The caudate lobe (segment 1) is represented by the thumb tucked behind the other digits.

Arch Surg 2012

ANATOMIA SEGMENTARIA SU BASE PORTALE



ABDOMINAL
FEGATO

CA430E 5-2
CONN : A

P1:
P2:

DP:

ESAOTE B.A.

B:RES / DPT 111mm / G 130

Technos MPX

SCUOLA SIUMB NAPOLI 12/06/2004 PB 4

11:17:12 AM SCC 7

ENH 2

TEI



-1.4dB MI 0.8 TIS 0.4

121M21

60s

D1

D2

D3

D4

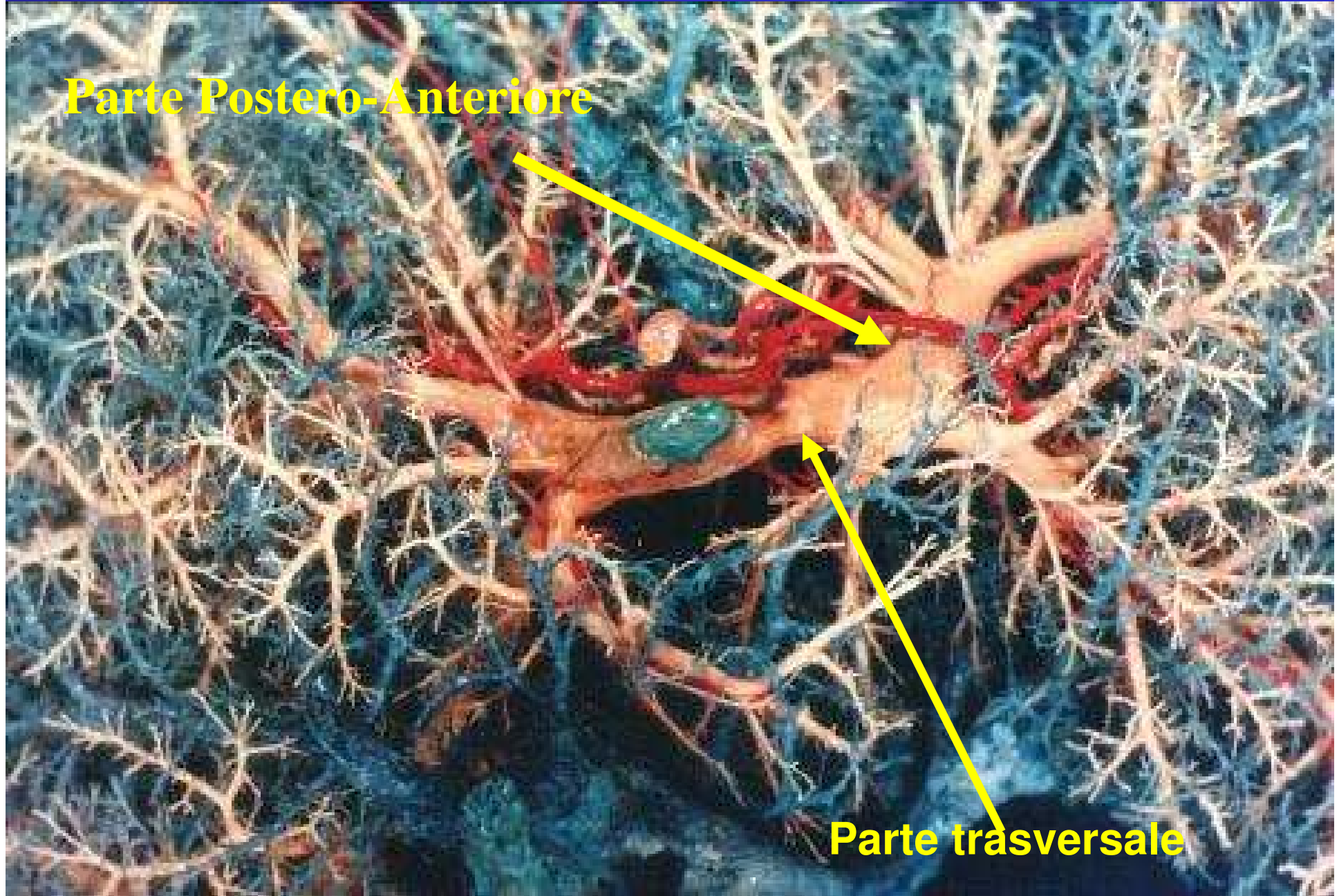
D5 Angle

D6

Ramo portale di sinistra

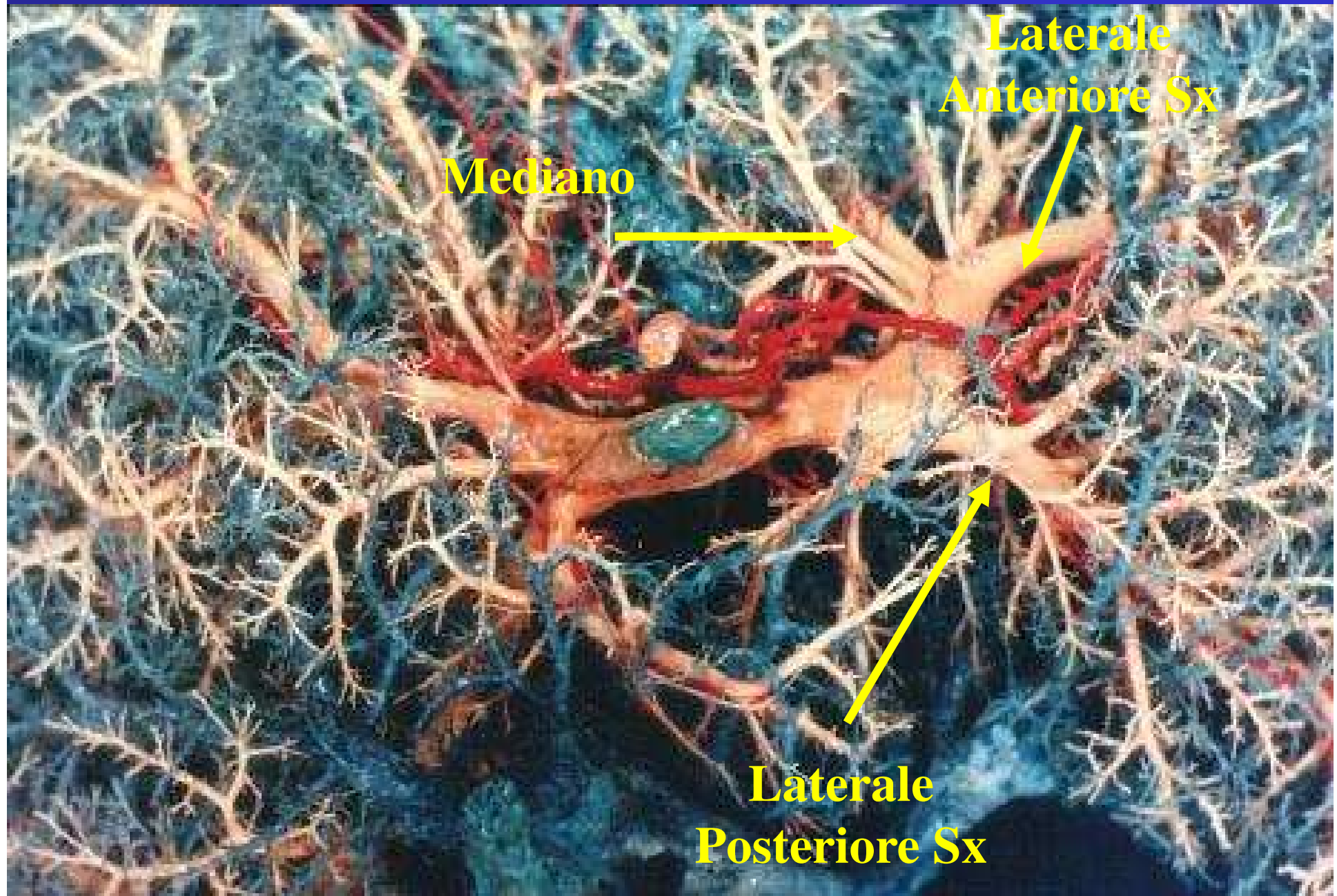
Parte Postero-Anteriore

Parte trasversale





RAMO PORTALE DI SINISTRA



ABDOMINAL
GENERIC

CA430E 5-2
CONN : A

P1:
P2:

DP:

ESAOOTE SCOGNAHIGLIO D.
B: RES / DPT 128mm / G 130

SCUOLA SIUMB NAPOLI 07/03/2004 PB 6
10:05:12 AM SCC 7
ENH 4
TEI



-1.4dB HI 0.8 TIS 0.4

297/297

60s

ABDOMINAL
GENERIC

CA430E 5-2
CONN : A

P1:
P2:

DP:

ESAOOTE SCOGNAHIGLIO D.
B: RES / DPT 77 mm / G 85

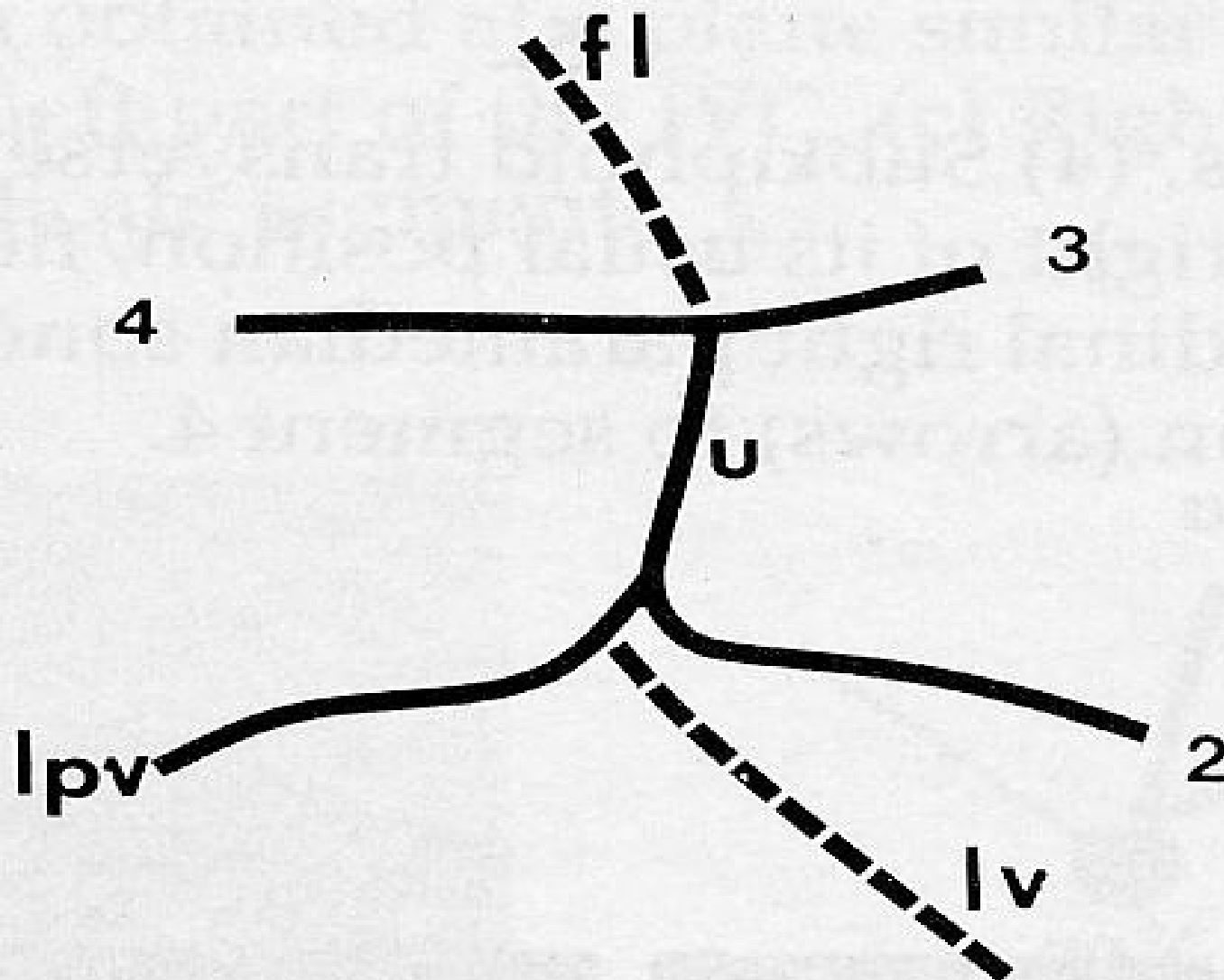
SCUOLA SIUMB NAPOLI 07/03/2004 PB 6
10:23:55 AM SCC 7
ENH 4
Zoom
TEI



-1.4dB HI 0.7 TIS 0.4

561/561

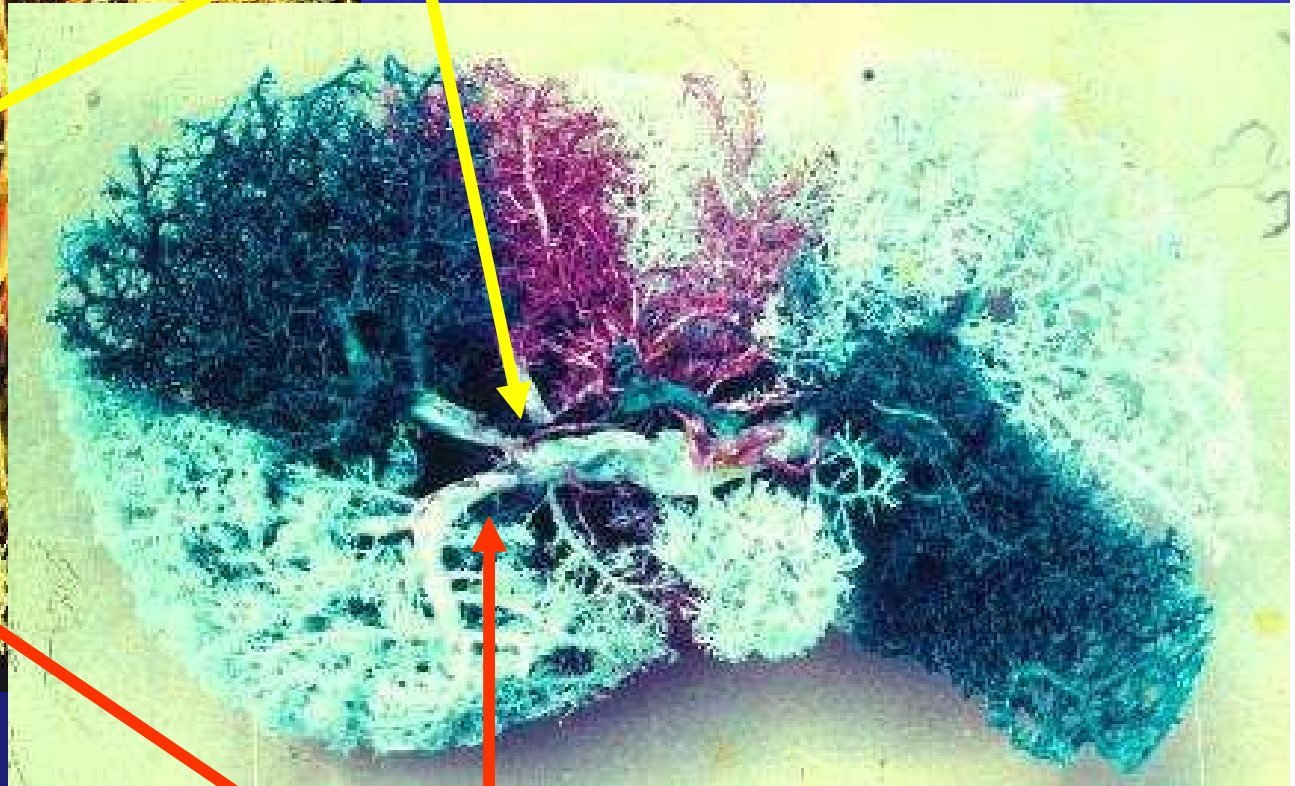
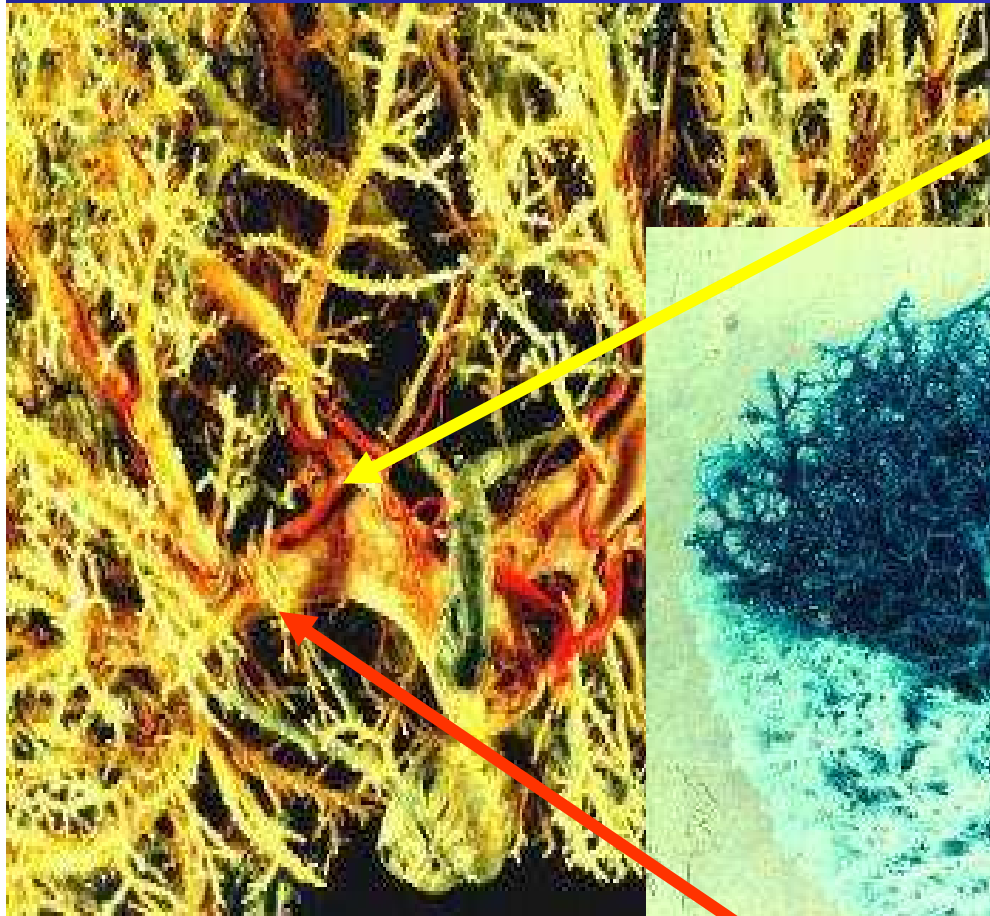
60s



98% dei soggetti normali: scansione obliqua sottocostale sottoxifoidea

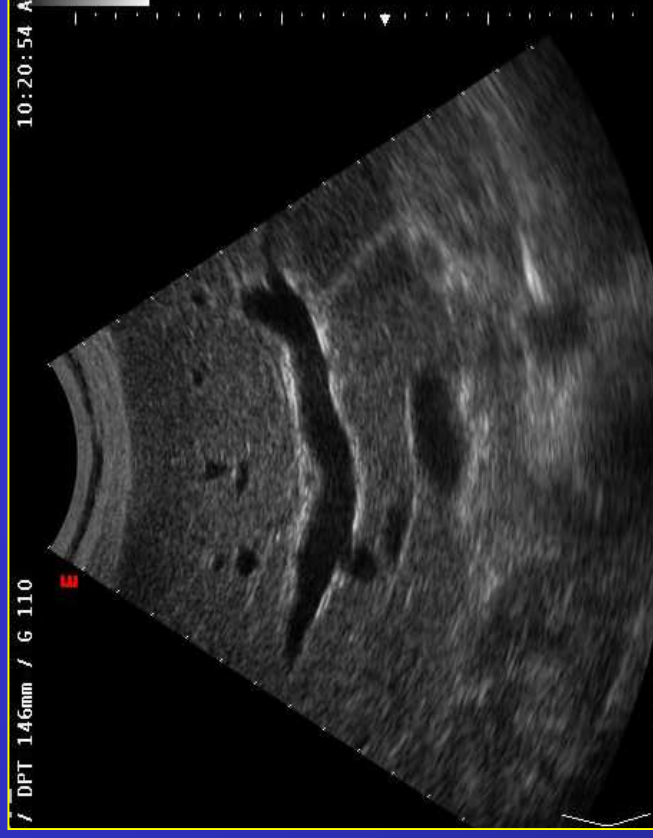
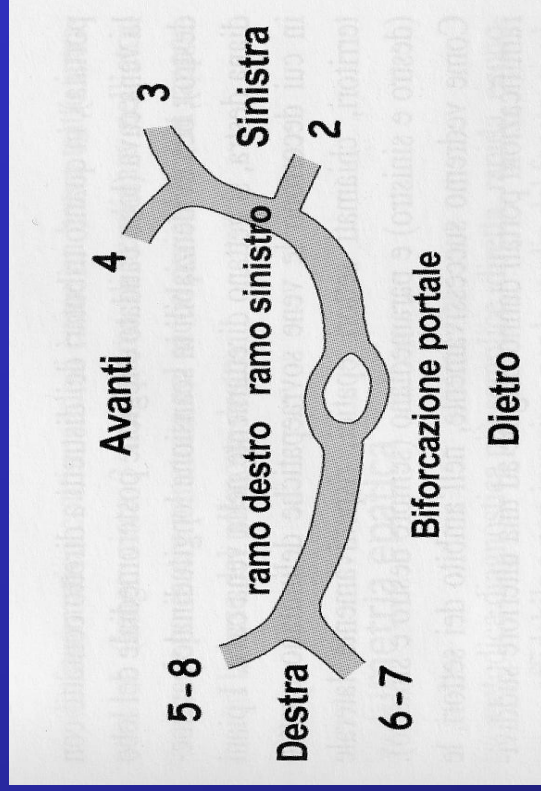
Ramo portale di destra

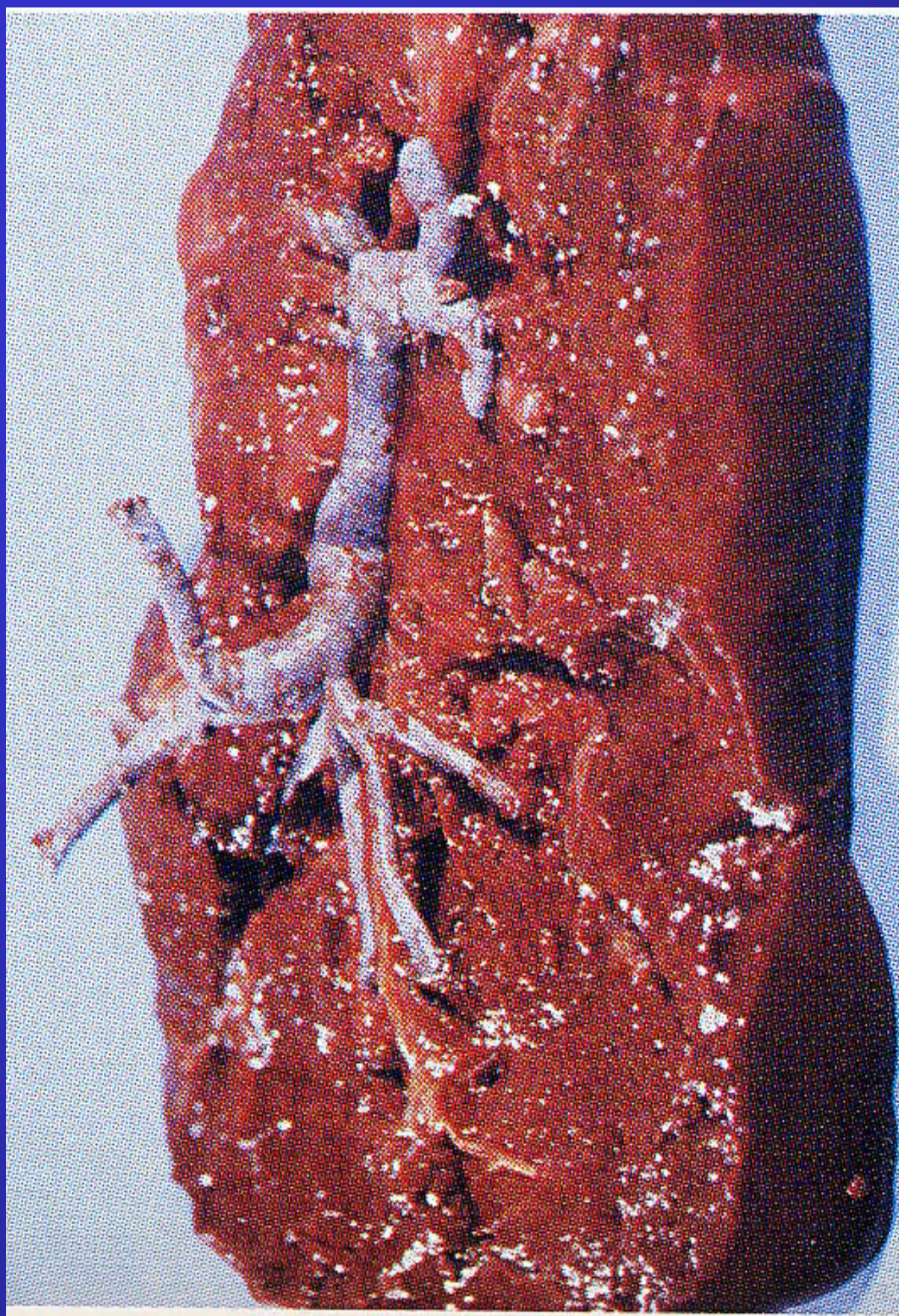
Ramo Verticale anteriore

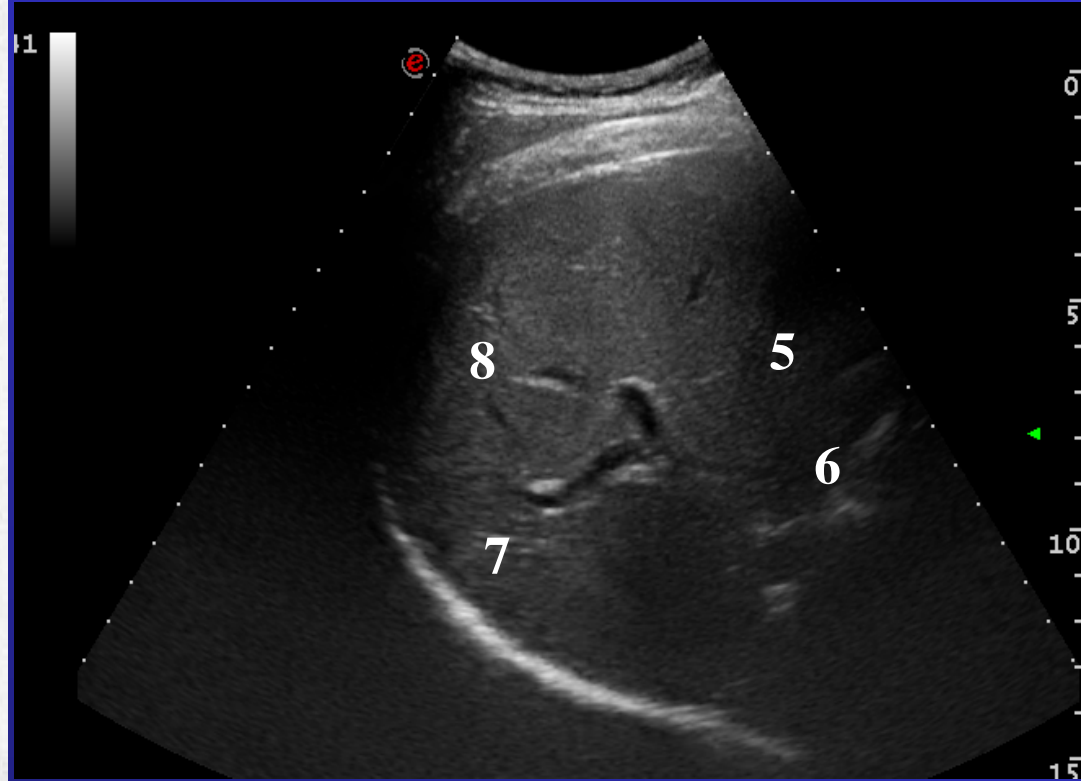
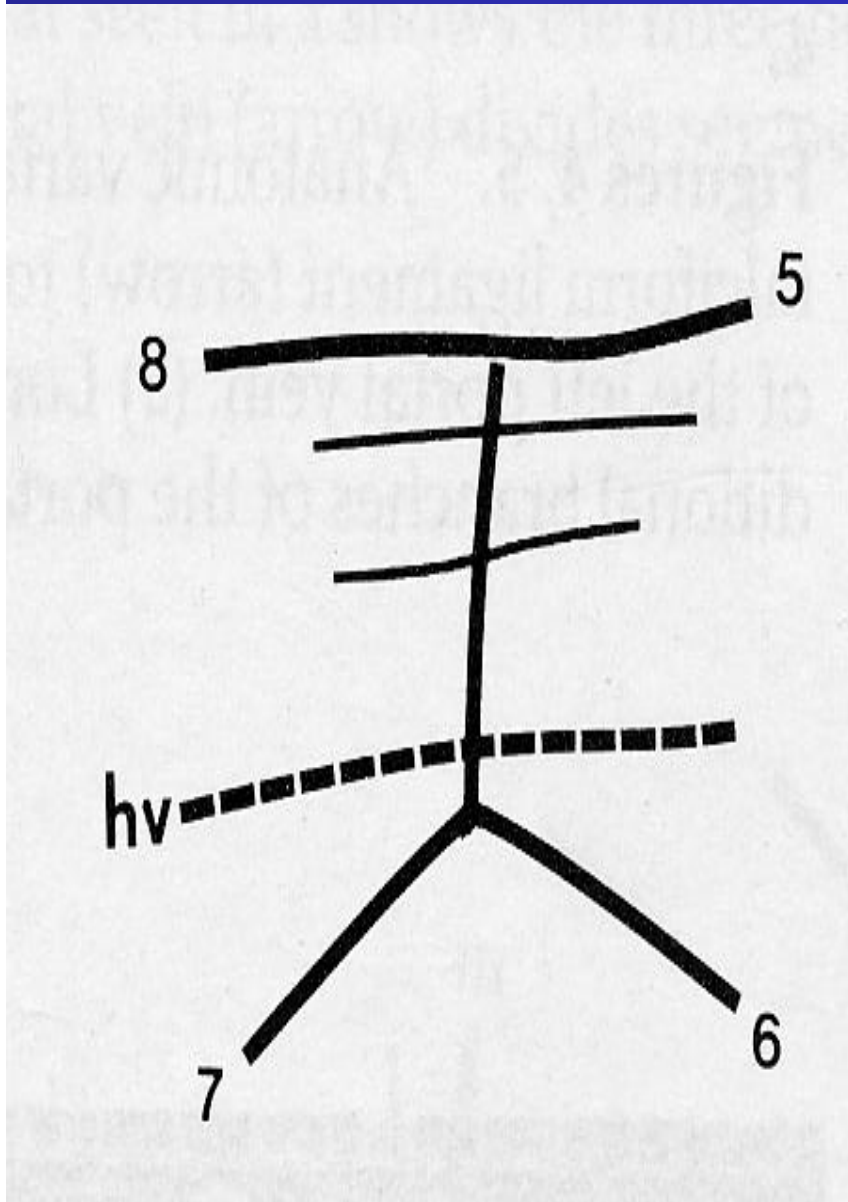


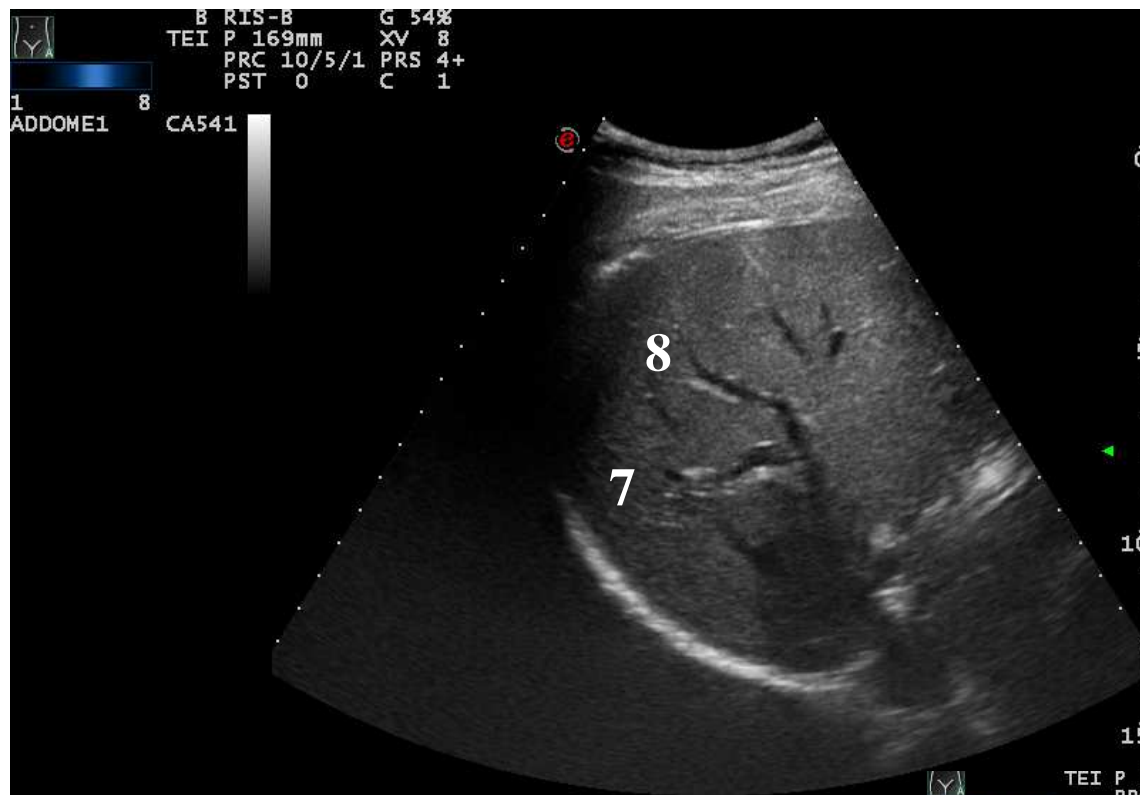
•Ramo Posteriore
Orizzontale













esaote MyLab

SCUOLA ECOGRAFIA INTERNISTICA SIUMB - NA

15 FEB 2013 11:05

C-----



B RIS-B
TEI P 169mm
PRC 10/5/1
PST 0

G 36%
XV 8
PRS 4+
C 1

CFM F 2.1 MHz G 60%
PRF 1.5 kHz
PRC M/ 1 PRS 6
FP 4

1
ADDOME1

8
CA541

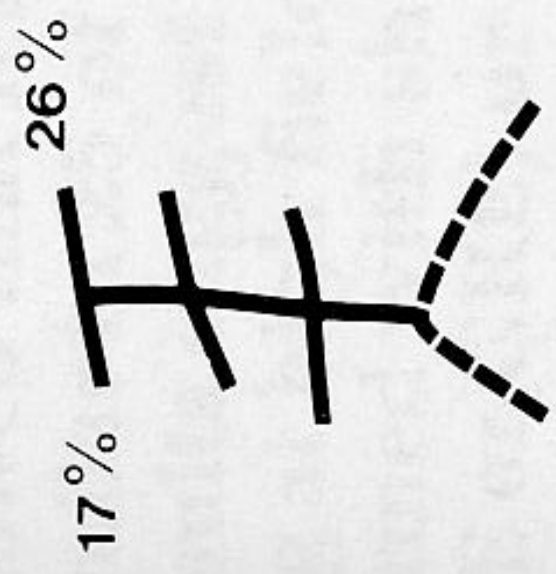
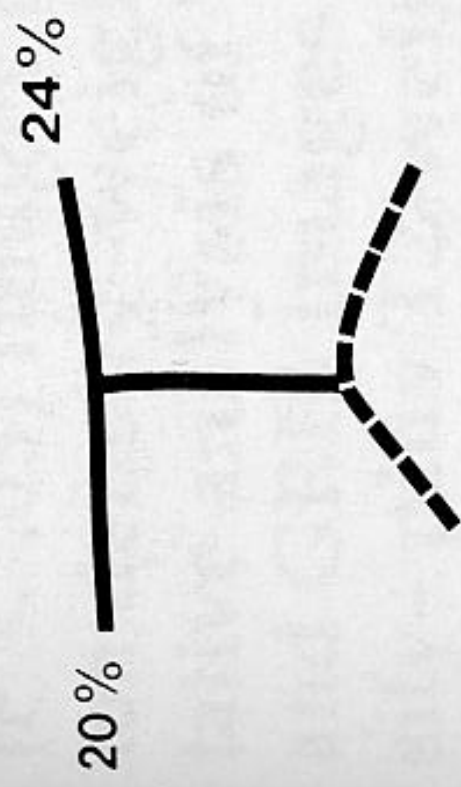
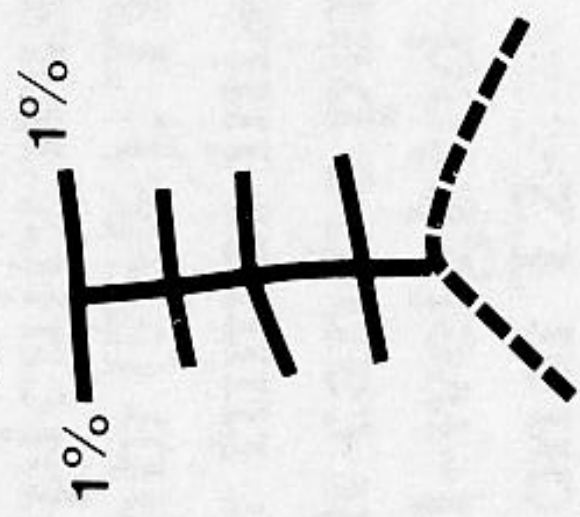
+.28

-.28
m/s

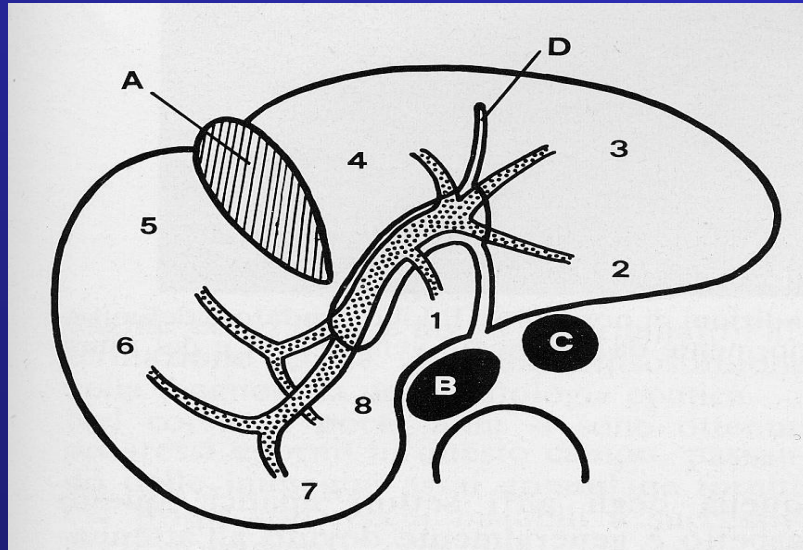
VIII

V

0
5
10
15



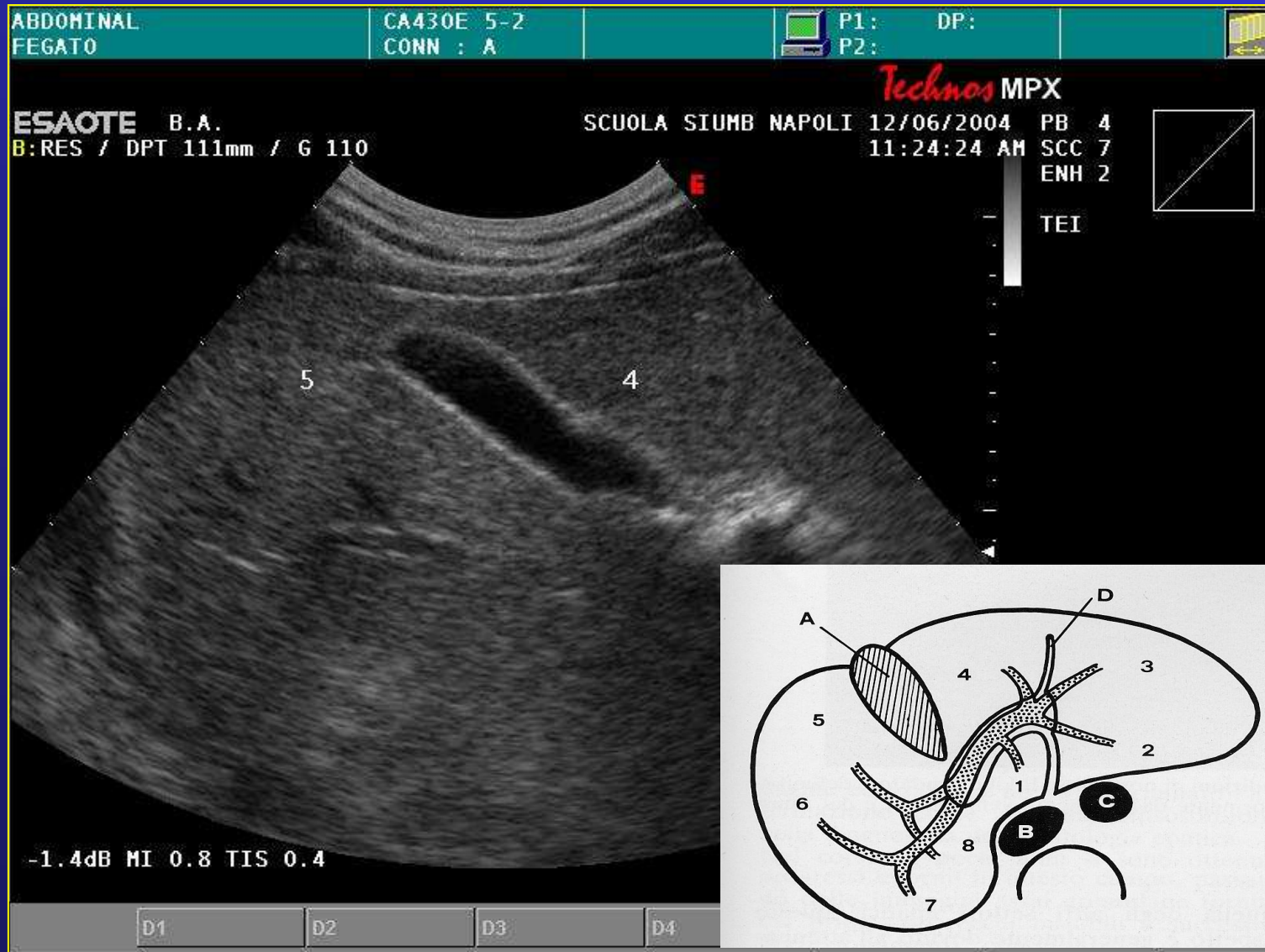
LOBO CAUDATO: 1 segmento



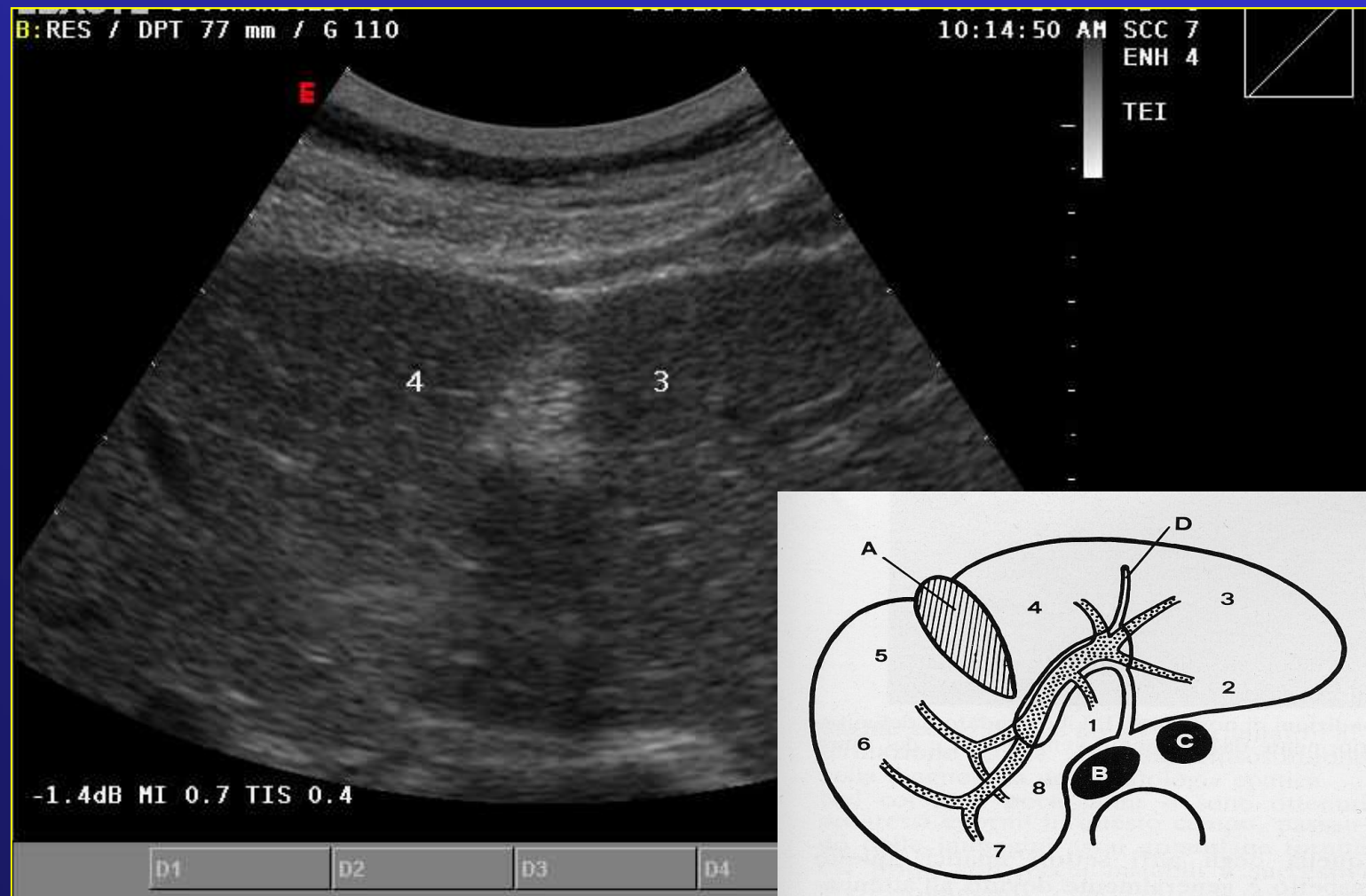
Reperi non vascolari

- Fossa colecistica
- Legamento rotondo
- Legamento venoso d'Aranzio

REPERI NON VASCOLARI: COLECISTI

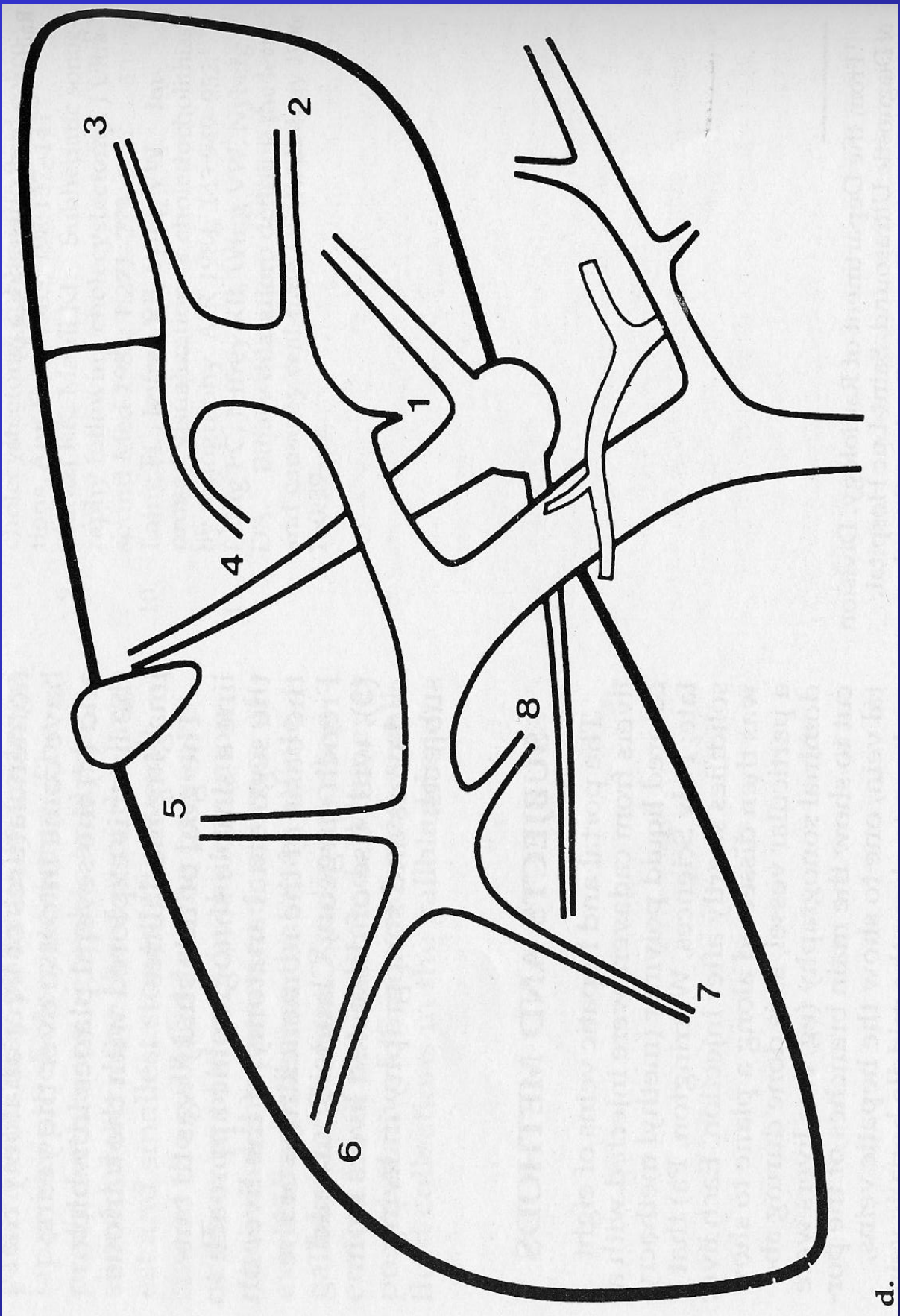


REPERI NON VASCOLARI: LEG. ROTONDO



REPERI NON VASCOLARI: LEGAMENTO VENOSO





d.

La Fortune : Radiology 1991; 181: 443-448

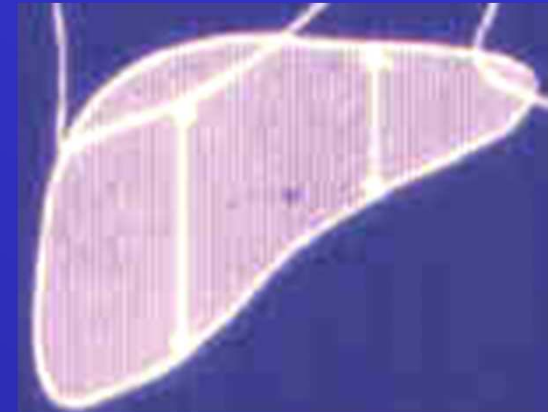
Michel Lafortune, MD • Francois Madore, MD • Heidi Patriquin, MD • Guy Breton, MD

Segmental Anatomy of the Liver: A Sonographic Approach to the Couinaud Nomenclature¹

TENTATIVI DI DEFINIZIONE VOLUMETRICA

- CARR 1976: Volume totale= (Σ aree di sezione)
- HARBIN 1980 : Rapporto caudato/lobo dx
- BOSCAINI 1982: Volume= $DT \times DAP \times DL / 27$
- NIEDERAU 1983: DL lobo dx; Cross sectional area ($DL \times DAP / 2$)
- VAN THIEL 1985: Volume= ($dx \times \Sigma$ aree)
- ZOLI 1989: Volume= $133.2 + 0.422 \times (DT \times DL \times DAP)$
- GOYAL 1990:: Lobo dx/lobo sx

METODI VOLUMETRICI



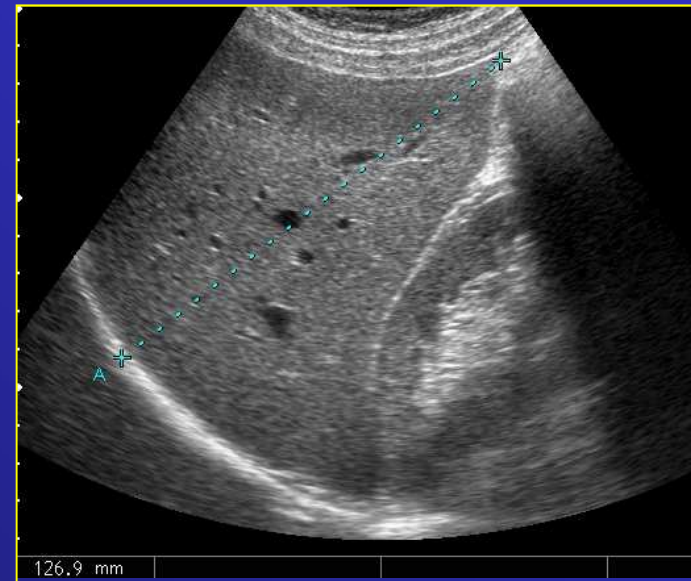
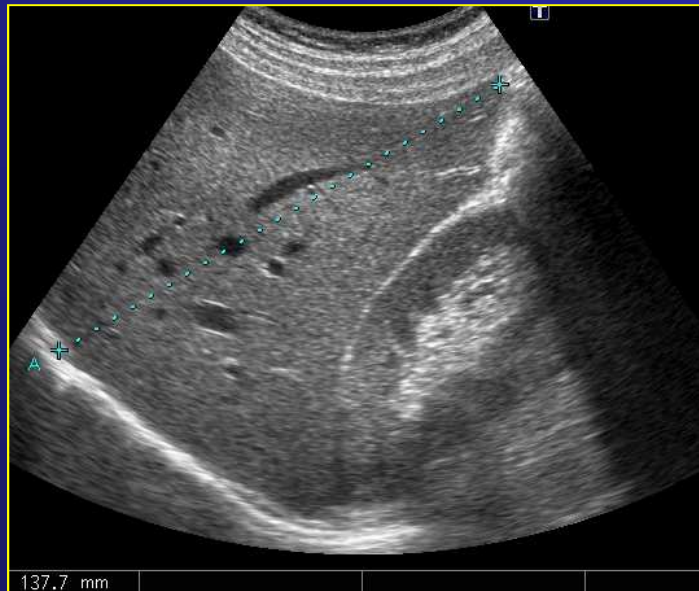
TIME-CONSUMING

**DIFFICILE DETERMINAZIONE
DIAMETRO TRASVERSO EPATICO CON
LE APPARECCHIATURE REAL-TIME**

**NON VALUTATI CON ADEGUATO GOLD
STANDARD**

MISURAZIONI LINEARI SEMPLICI

DIAMETRO LONGITUDINALE LUNGO LA EMICLAVEARE DESTRA



DIAMETRO LONGITUDINALE LUNGO LA EMICLAVEARE DESTRA $\leq$ 13 cm

GOSINK 1981
FEGATI AUTOPTICI

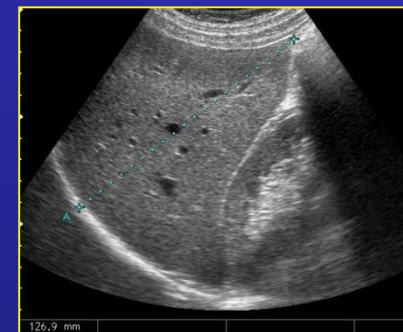
DL LOBO DX $\leq$ 13 cm
93% soggetti sani

DL LOBO DX $>$ 15 cm
75% fegato patologico

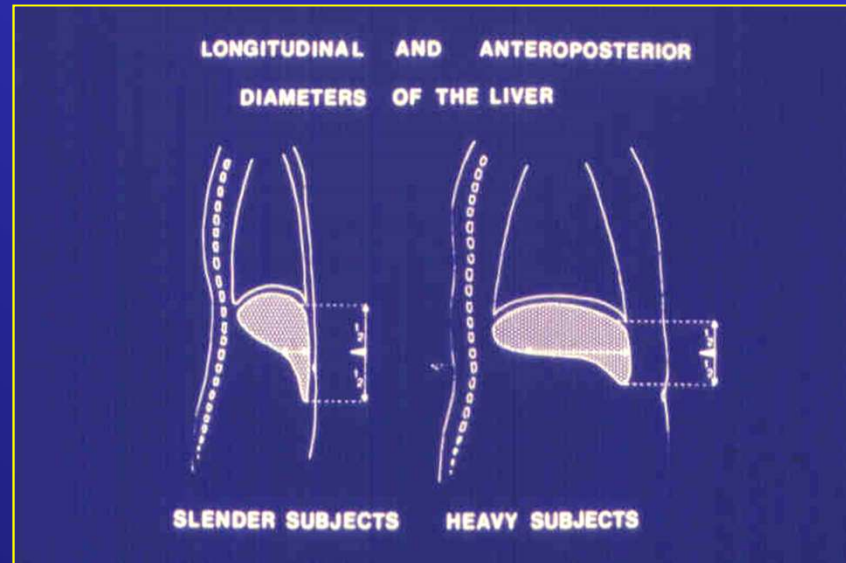
Buona concordanza inter ed intraosservatore

NIEDERAU 1983
SOGGETTI SANI

- Il diametro longitudinale lobo dx sull'emiclaveare non eccede 12,6-12,8 cm al 95esimo percentile



TENTATIVI DI DEFINIZIONE VOLUMETRICA



POSSIBILI VARIAZIONI

- **SESSO** $\uparrow$ MASCHI
- **ETA'** $\downarrow$ ANZIANI
- **TIPO COSTITUZIONALE**
- **PESO CORPOREO < 50 Kg** $\uparrow$ D.Long.
- **PESO CORPOREO > 95 Kg** $\uparrow$ D.Ant-post.

D. Cosgrove: Liver anatomy In Abdominal and general ultrasound-1993

- *For most departments therefore the evaluation of liver volume is too tedious and cumbersome for routine use....; in practice therefore, the ultrasound evaluation of liver size is a subjective affair.....; for example if both left and right lobes project below the costal margin, suspicion of hepatomegaly is raised and can often be confirmed by noting that the free edge of the liver has lost its normal sharp configuration and become rounded....; though crude, this form of subjective evaluation is often useful, especially in refuting a clinical impression of hepatomegaly.....*

