



2019  
台中榮總放射線部  
肝膽超音波簡介

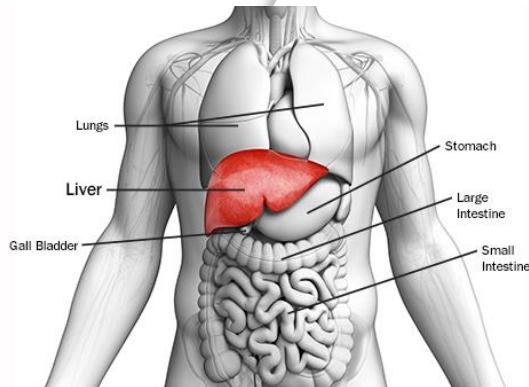
賴妍菲 醫事放射師

## CONTENT

- 01 解剖介紹
- 02 掃描技巧
- 03 掃描流程
- 04 常見疾病

### Part 01

### 解剖介紹

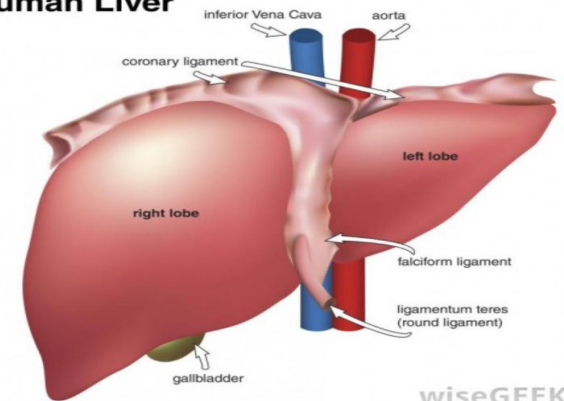


### ANATOMY

#### LIVER

- 代謝作用
- 轉化作用
- 合成功能
- 免疫功能
- 儲存功能
- 解毒功能
- 紅血球的分解

#### Human Liver



wiseGEEK

The liver!

## ANATOMY-LIVER

### 肝臟的血管分為

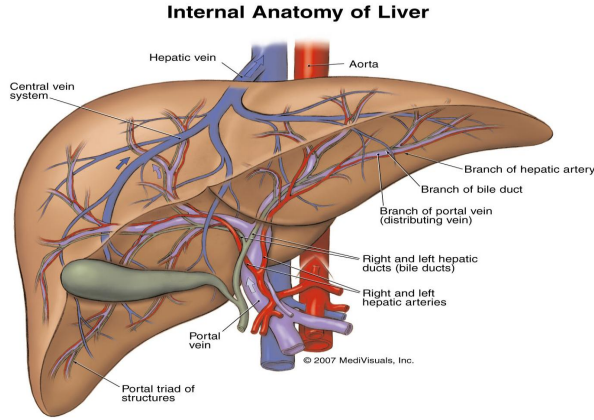
#### 入肝血

- PV (Portal vein) 門靜脈
- HA (Hepatic artery) 肝動脈

#### 出肝血

- HV (Hepatic vein) 肝靜脈

### BDS (Bile duct) 肝膽管



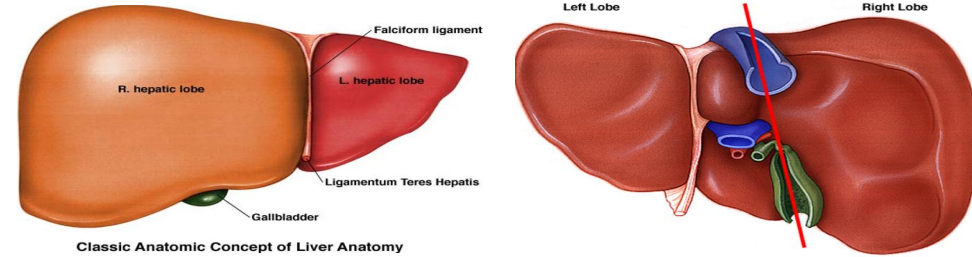
## ANATOMY-LIVER

### 表面解剖 - 鐮狀韌帶

將肝臟分成4葉，傳統分段法，根據外觀而區分，直觀而不實用

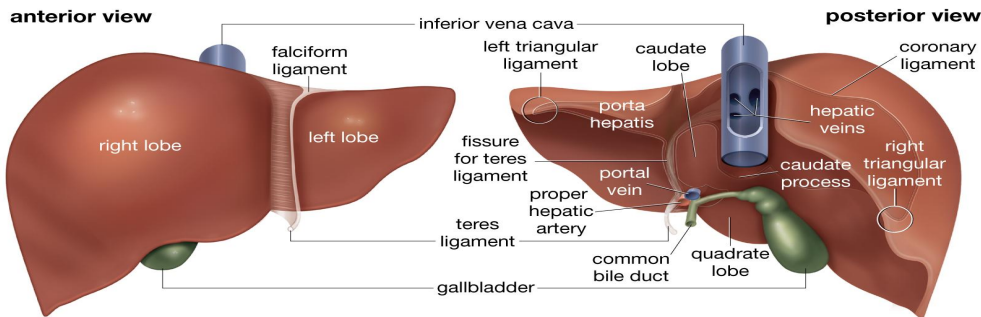
### 功能性解剖 - Cantlie line

1954年由法國 Couinaud提出的肝臟分段系統，是目前最廣泛使用的



## ANATOMY-LIVER-表面解剖

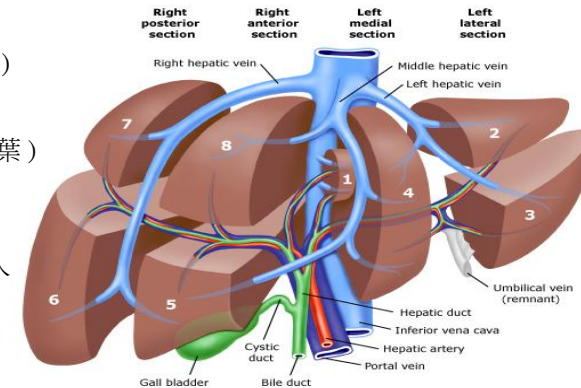
■ 表面解剖：將肝臟分成4葉；左葉、右葉、尾葉和方形葉。



## ANATOMY-LIVER-功能性解剖

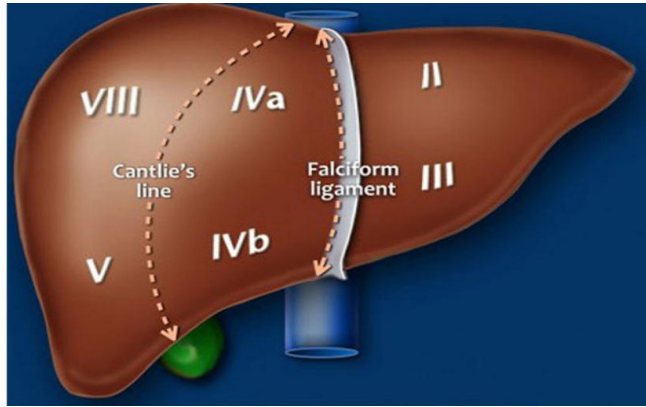
### 功能性解剖 - Couinaud 分段

- 肝右靜脈 - 分為前後段劃分(右葉)
- 肝中靜脈 - 將肝臟分為右和左
- 左肝靜脈 - 劃分成內側和外側(左葉)
- 門靜脈 - 將肝臟分為上段和下段
- 左邊和右邊的門靜脈分支下部伸入
- 每個段的中心
- 分為8個獨立的單位(S1-S8)

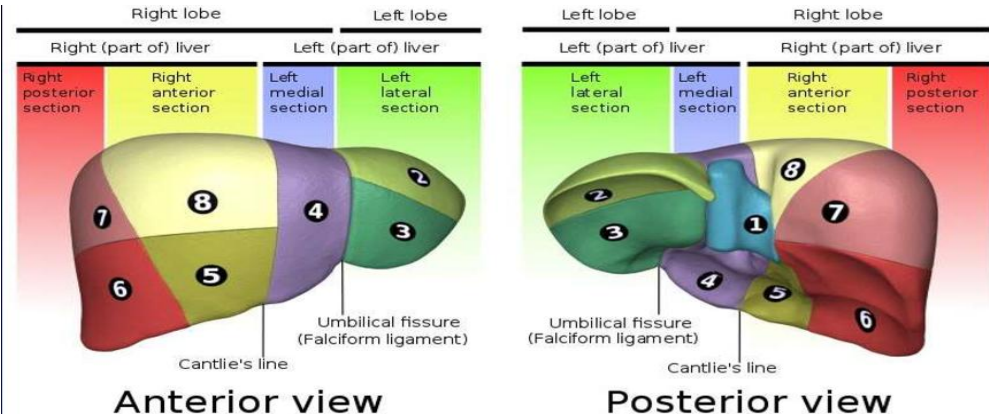


## ANATOMY-LIVER-功能性解剖

### • Cantlie line



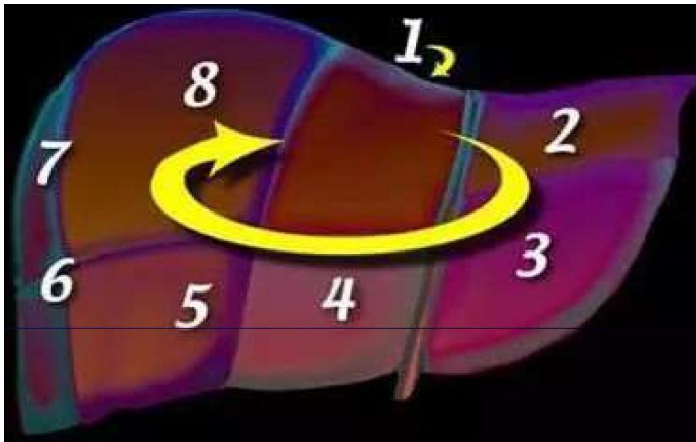
## ANATOMY-LIVER-功能性解剖



## ANATOMY-LIVER

### ➢ 依順時鐘方向

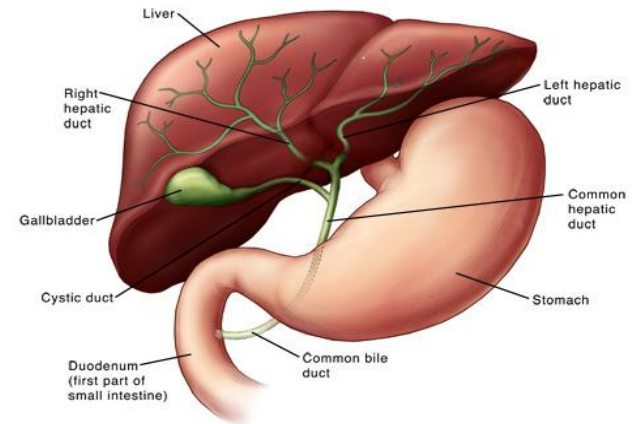
- 尾葉(S1)
- 四方葉(S4)
- 左葉(S2,S3)
- 外上(S2)
- 內下(S3)
- 右葉(S5-S8)
- 前上(S8),前下(S5)
- 後上(S7),後下(S6)



## ANATOMY

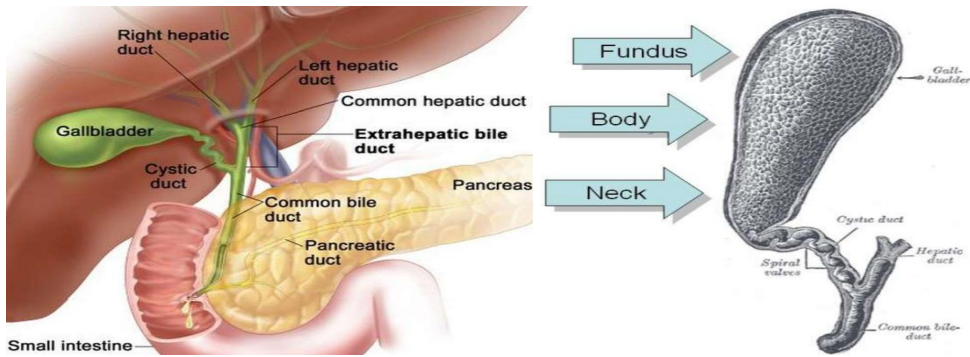
### GB&BD

- 儲存膽汁
- 濃縮膽汁
- 分泌粘液
- 排空



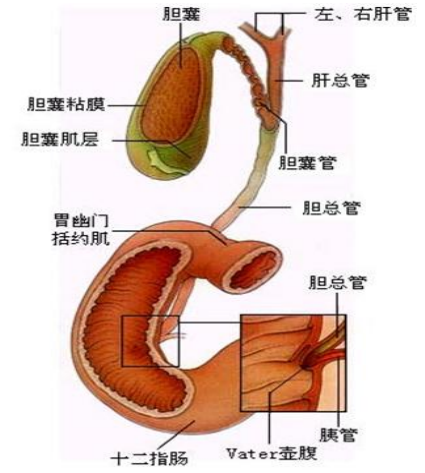
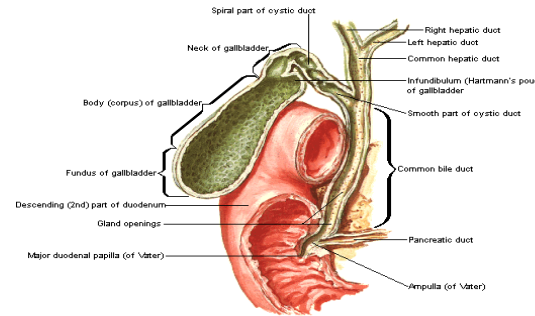
## ANATOMY-GALLBLADDER

■ 膽囊位於肝臟下面，正常膽囊長約8~12cm，寬3~5cm，容量約為30~60ml。



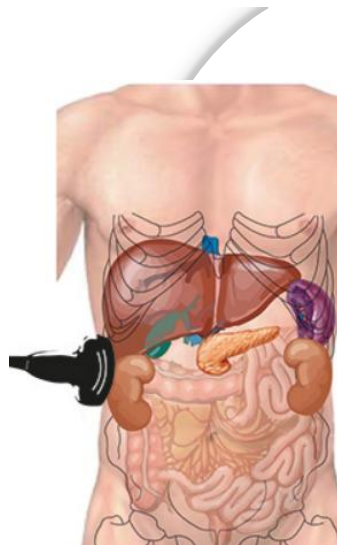
## ANATOMY-BILE DUCT

- 肝內膽管: 左+右肝管 (總肝管)
- 肝外膽管: 膽囊管+總肝管 (總膽管)



## Part 02

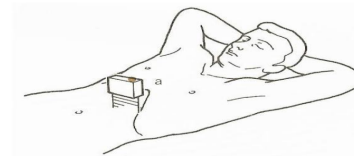
### 掃描技巧



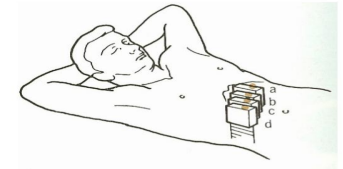
## SCAN SKILL

■ 探頭的掃描方式

1. 橫掃描 (Transverse scan)



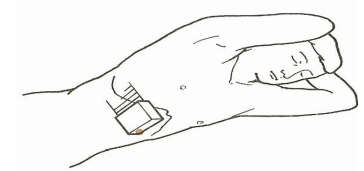
2. 縱掃描 (Longitudinal scan)



3. 右肋間掃描 (Right intercostal scan)



4. 右季肋部斜掃描 (Right oblique scan)

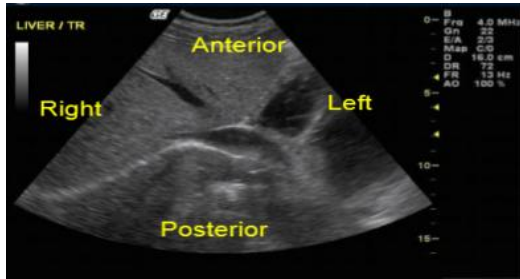


## SCAN SKILL

### ■ 影像判讀的概念

• Transverse scan

• Longitudinal scan)



## SCAN SKILL-LIVER

### ■ LIVER

- 禁食:6-8小時(可以喝少量水減少胃部氣體、膽囊脹大)
- 避免胃鏡檢查以減少腸道氣體。
- Position : supine、left lateral
- 雙手舉高放頭上:肋間空隙變大
- 配合呼吸
- Gain :橫隔膜清楚、肝臟回音均勻、管狀結構清晰
- 探頭 : 3-5MHZ(成人),6-8MHZ(小孩)

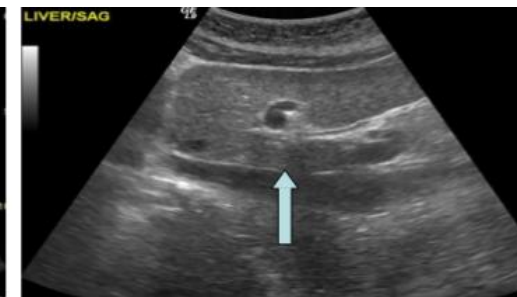
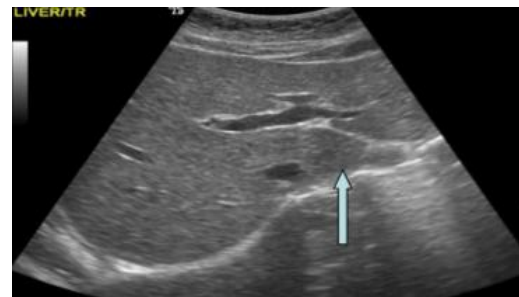
## SCAN SKILL-LIVER

### ■ 掃描注意事項

- 1) 肝臟的表面是否平滑
- 2) 肝臟邊緣是否銳角
- 3) 肝臟中間實質是否均勻，實質顆粒是否大小適中？
- 4) 肝內血管是否一一存在，走向是否正常，有無被腫瘤壓迫或侵犯到

## SCAN SKILL-LIVER

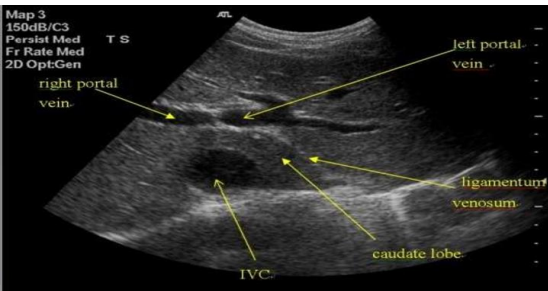
### ■ S1(Caudate lobe)



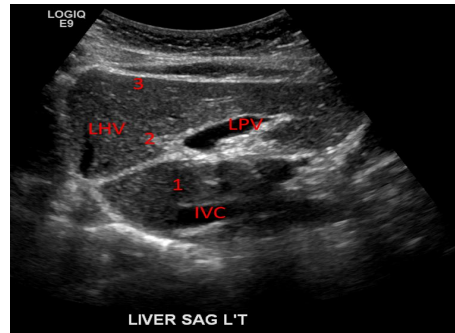
## SCAN SKILL-LIVER

### ■ S1(Caudate lobe)

- Transverse scan

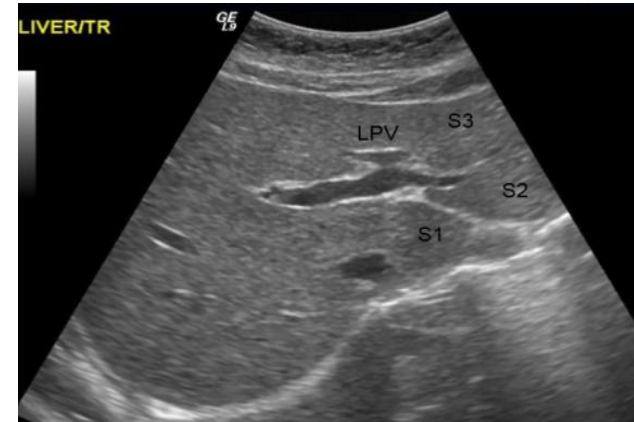


- Longitudinal scan



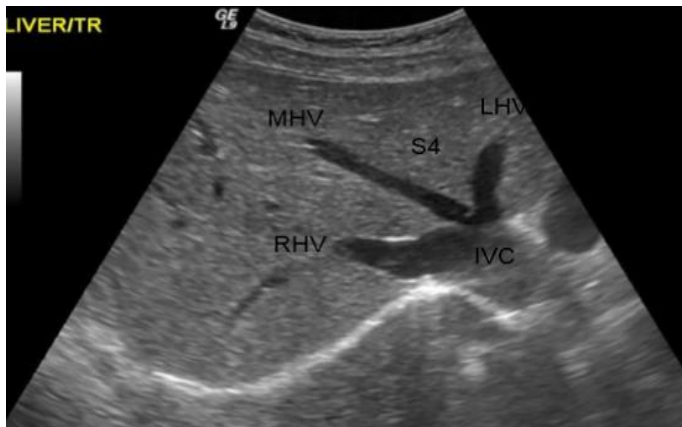
## SCAN SKILL-LIVER

### ■ S2,S3(Lateral segment)



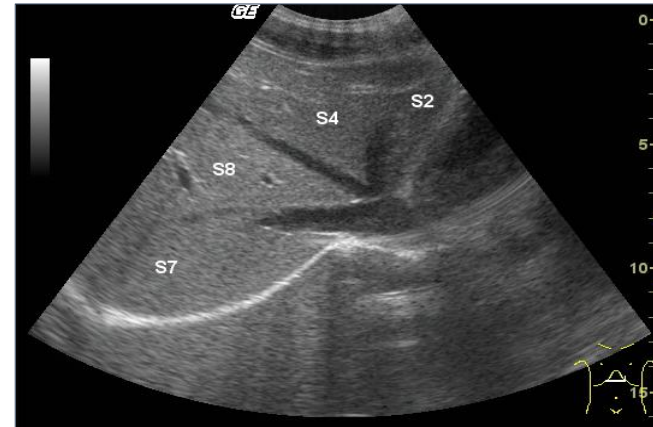
## SCAN SKILL-LIVER

### ■ S4(Quadrato lobe)



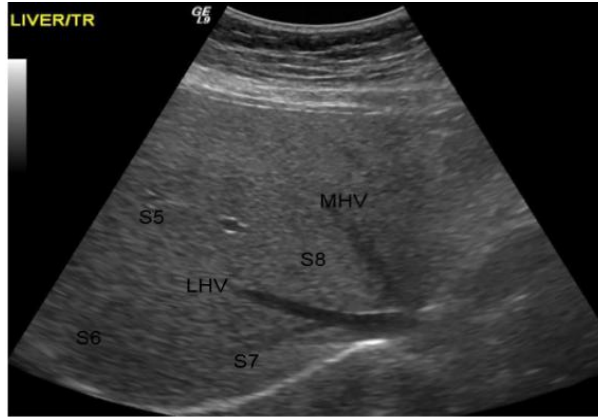
## SCAN SKILL-LIVER

### ■ S4(Quadrato lobe)



SCAN SKILL-LIVER

■ S5-S8 (Right lobe)



SCAN SKILL-LIVER

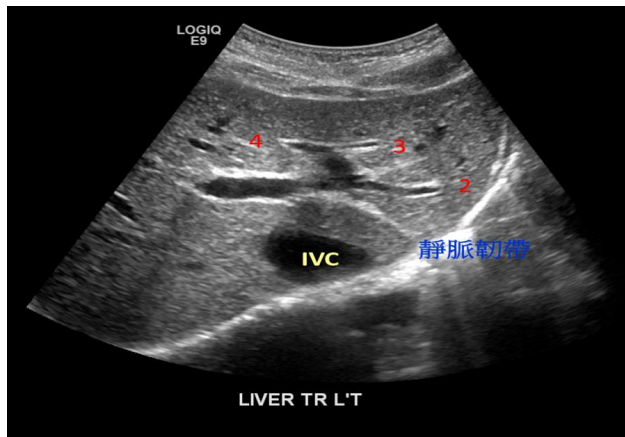
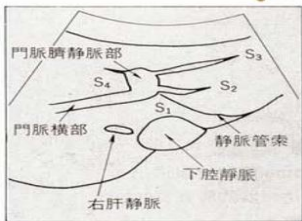
■ S5-S8 (Right lobe)



SCAN SKILL-LIVER

■ Portal vein 門靜脈

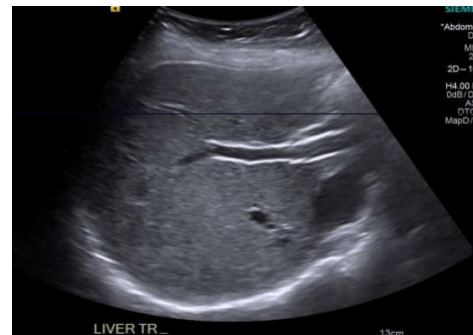
➢ 工字型



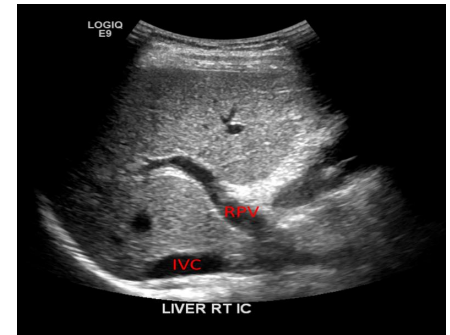
SCAN SKILL-LIVER

■ Portal vein 門靜脈

• Transverse scan (subcostal)



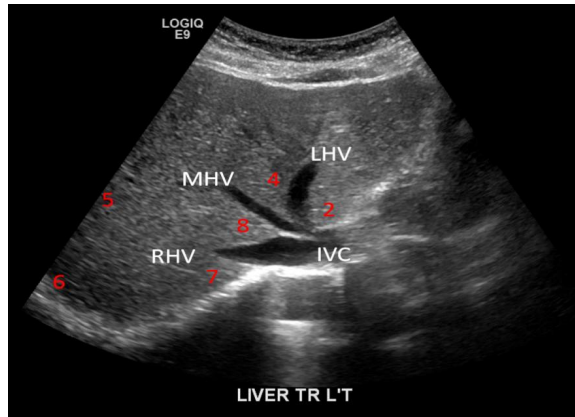
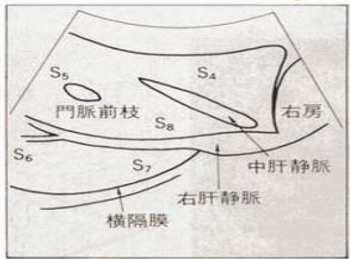
• Intercostal scan



## SCAN SKILL-LIVER

### ■Hepatic vein 肝靜脈

➢三叉(playboy sign)

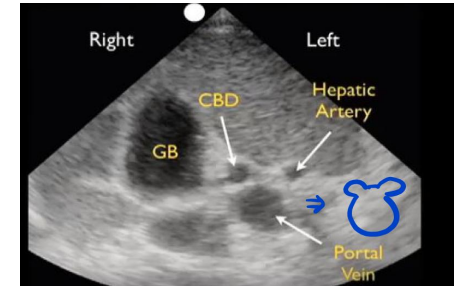
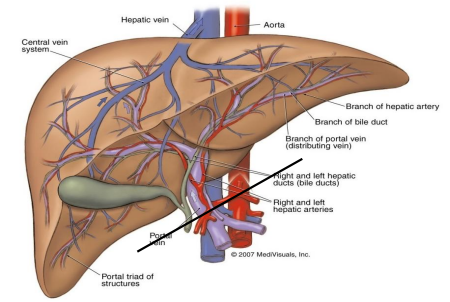
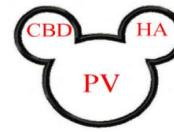


## SCAN SKILL-LIVER

### ■Portal triad 門脈三徵

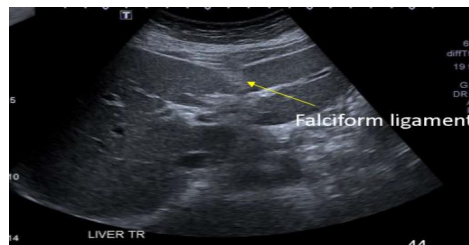
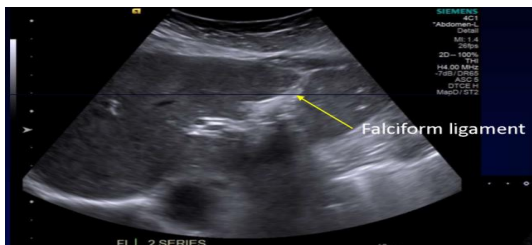
➢Mickey mouse face sign

- PV (Portal vein) 門靜脈
- HA (Hepatic artery) 肝動脈
- BDS (Bile duct) 肝膽管



## SCAN SKILL-LIVER

### ■Falciform ligament



## SCAN SKILL- GB&BD

### ■GB&BD

- 禁食: 6-8小時
- 雙手舉高放頭上: 肋間空隙變大
- Position : supine 、 sitting 、 left lateral
- 掃描位置 : RT subcostal 、 RT intercostal
- 配合呼吸
- 若腸氣太多可改變姿勢
- 死角: neck fundus
- 學習目標: GB的最大徑, 含頸(neck)、體(body)、底部(fundus)



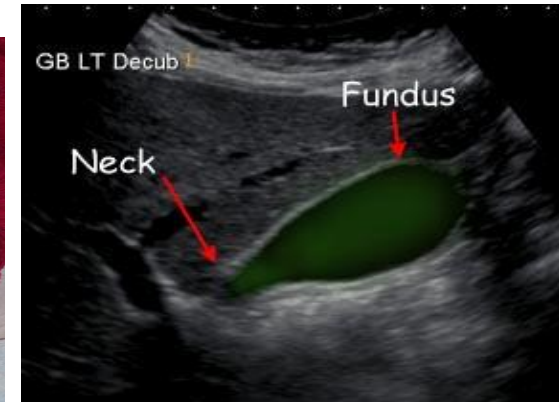
## SCAN SKILL-GALLBLADDER

### ■掃描注意事項

- 膽囊大小
- 膽囊壁是否太厚
- 是否有不正常回音(polyp或tumor)
- 是否有stone 或 sludge

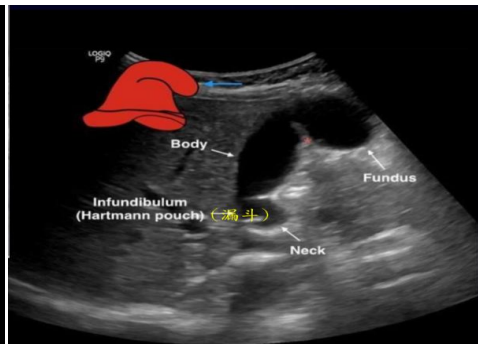
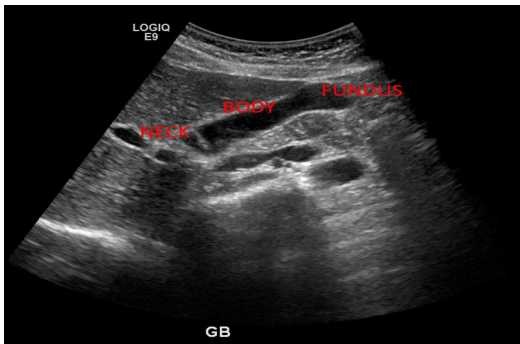
## SCAN SKILL-GALLBLADDER

### ■ Scanning position



## SCAN SKILL-GALLBLADDER

### ■Portal vein 門靜脈



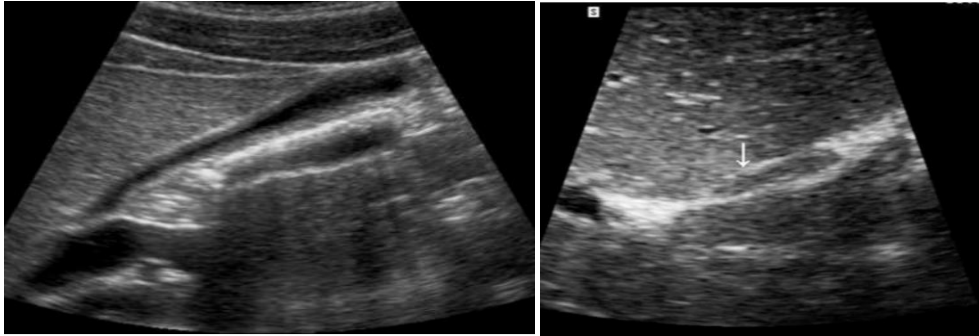
## SCAN SKILL-GALLBLADDER

### ■Nonvisualization of the GB

- 沒有禁食
- 手術切除
- 充滿石頭萎縮
- 先天性發育不全或先天沒有
- 處於一個不尋常的位置

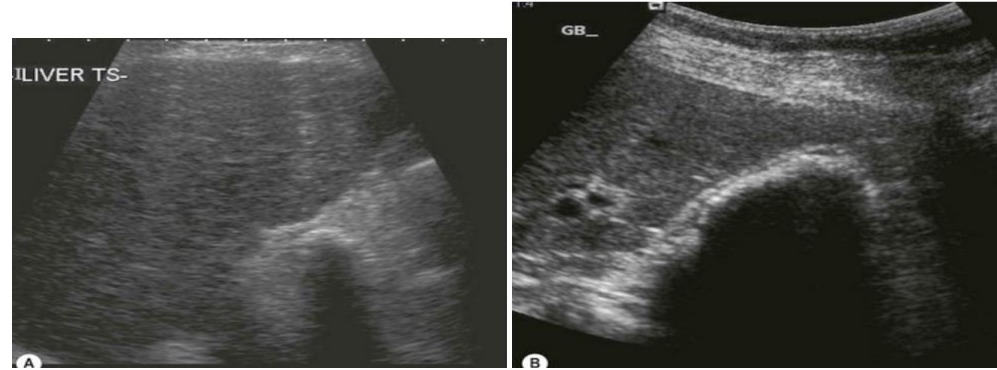
## SCAN SKILL-GALLBLADDER

■沒有NPO



## SCAN SKILL-GALLBLADDER

■充滿石頭萎縮



## SCAN SKILL-Common Bile Duct

■CBD

- 位置：平行Main Portal Vain
- Position：supine、left lateral
- 掃描位置：RT subcostal、RT intercostal
- 學習目標：CBD(深處有 IVC及平行的MPV，包含PV和HA)
- CBD normal range：<7mm
- Post cholecystectomy：>11mm

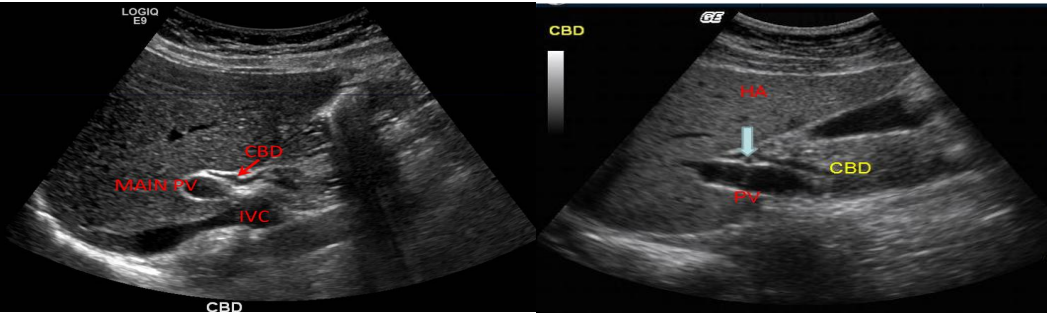
## SCAN SKILL-Common Bile Duct

■掃描注意事項

- 管徑是否正常
- 管腔內有無結石或腫瘤
- 管腔是否 <7mm

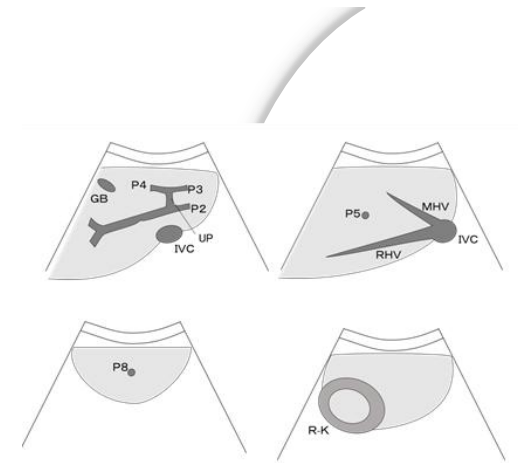
# SCAN SKILL-Common Bile Duct

■ CBD



# Part 03

## 掃描流程



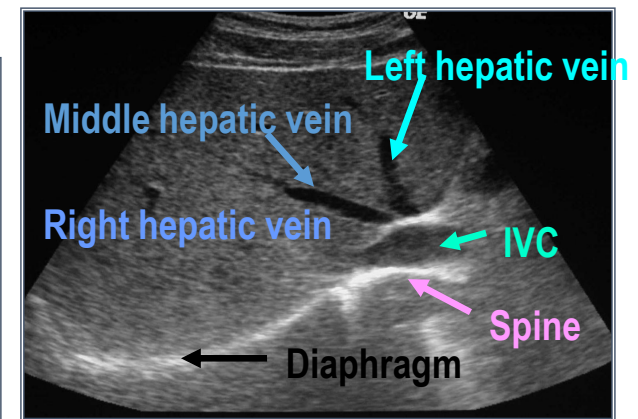
# SCAN PROTOCOL-LIVER Transverse scan

■ 肝臟左葉  
左肝角



# SCAN PROTOCOL-LIVER Transverse scan

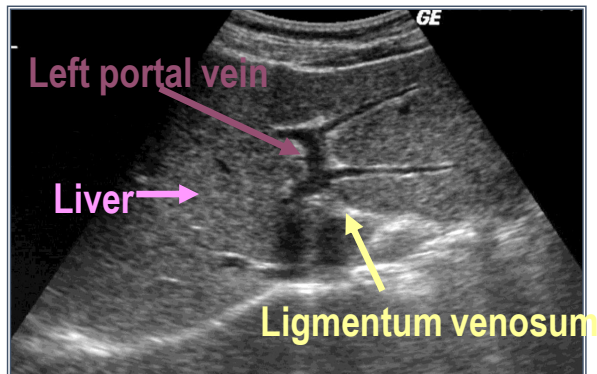
■ 肝臟左葉 三叉



### SCAN PROTOCOL-LIVER Transverse scan

■ 肝臟左葉

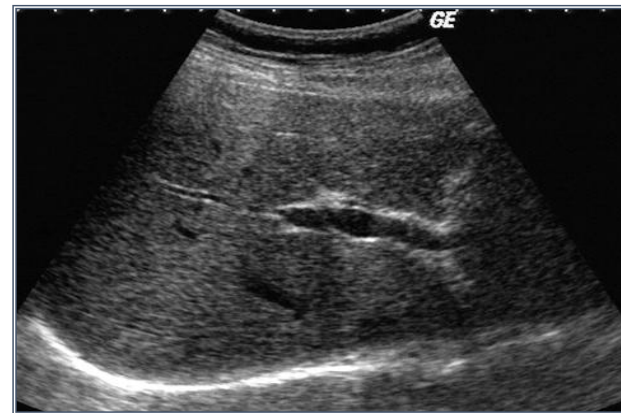
工字



### SCAN PROTOCOL-LIVER Transverse scan

■ 肝臟右葉

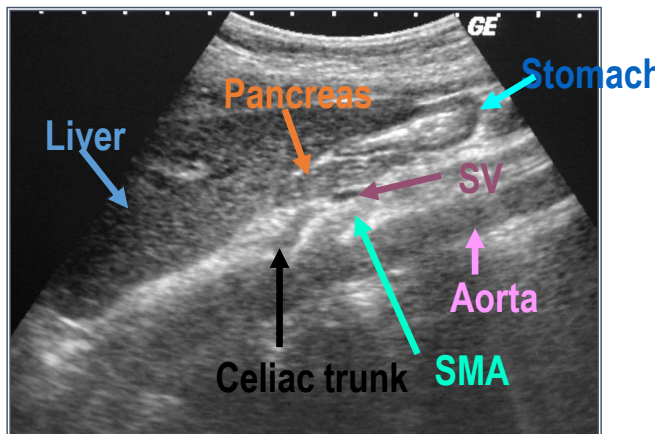
PV



### SCAN PROTOCOL-LIVER Longitudinal Scan

■ 肝臟左葉

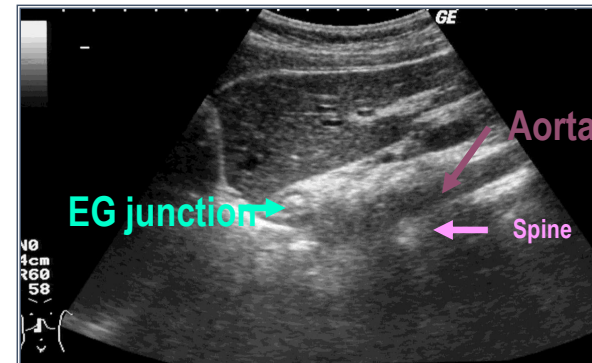
Aorta



### SCAN PROTOCOL-LIVER Longitudinal Scan

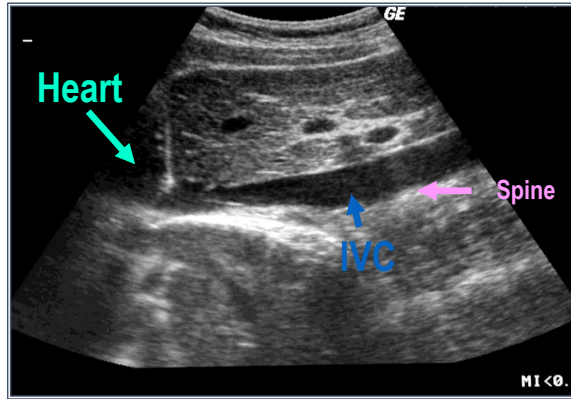
■ 肝臟左葉

Aorta



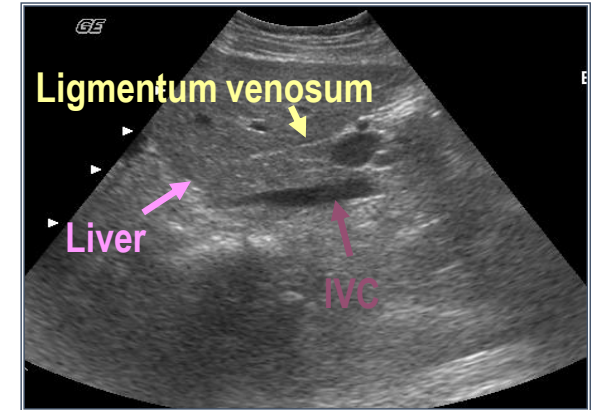
### SCAN PROTOCOL-LIVER Transverse scan

■ 肝臟左葉  
IVC



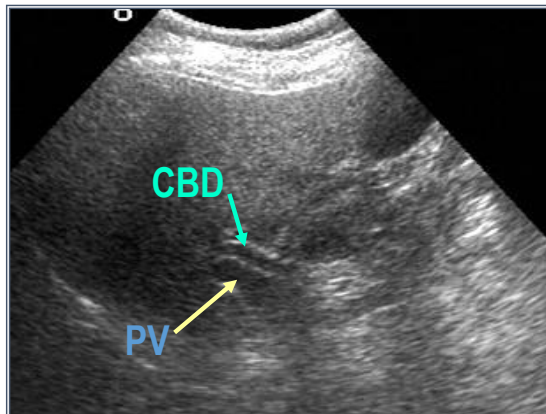
### SCAN PROTOCOL-LIVER Longitudinal Scan

■ 肝臟左葉  
IVC



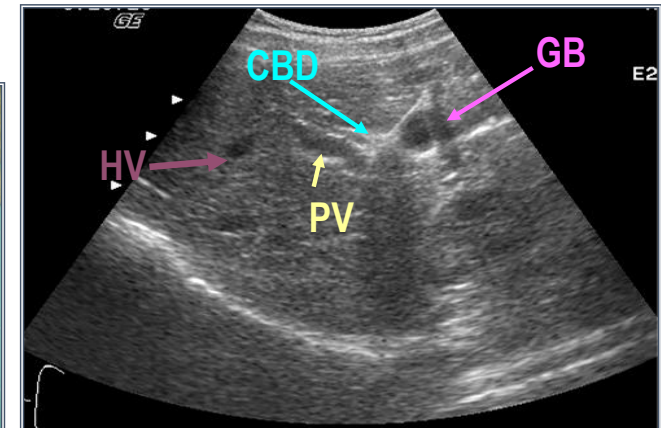
### SCAN PROTOCOL-LIVER Longitudinal Scan

■ 肝臟右葉  
PV



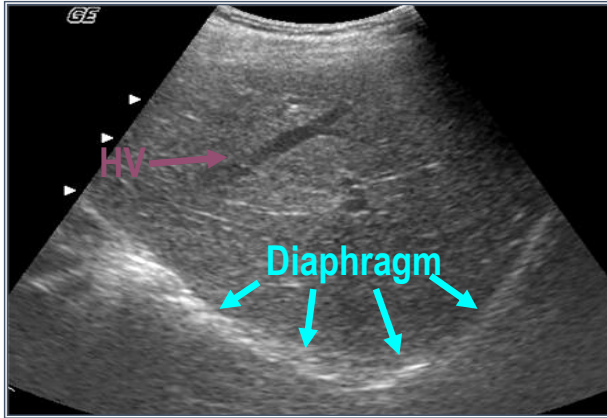
### SCAN PROTOCOL-LIVER Longitudinal Scan

■ 肝臟右葉  
GB



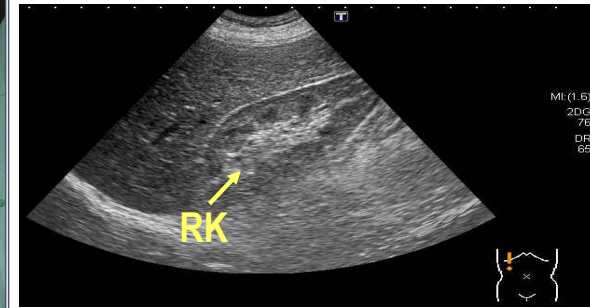
SCAN PROTOCOL-LIVER Longitudinal Scan

■ 肝臟右葉  
Diaphragm



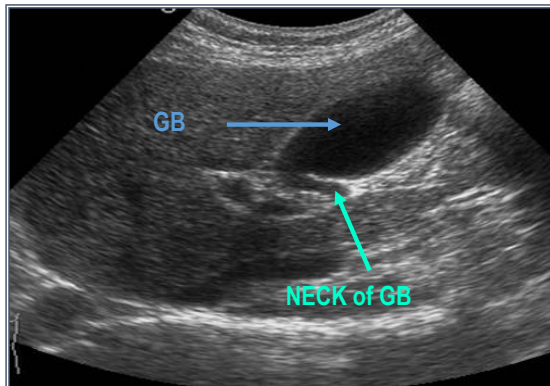
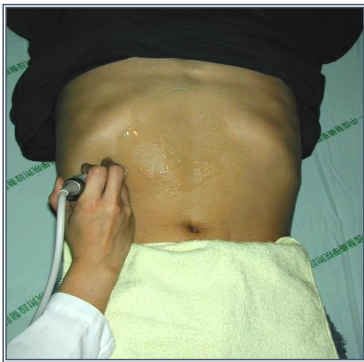
SCAN PROTOCOL-LIVER Longitudinal Scan

■ 肝臟右葉  
RK



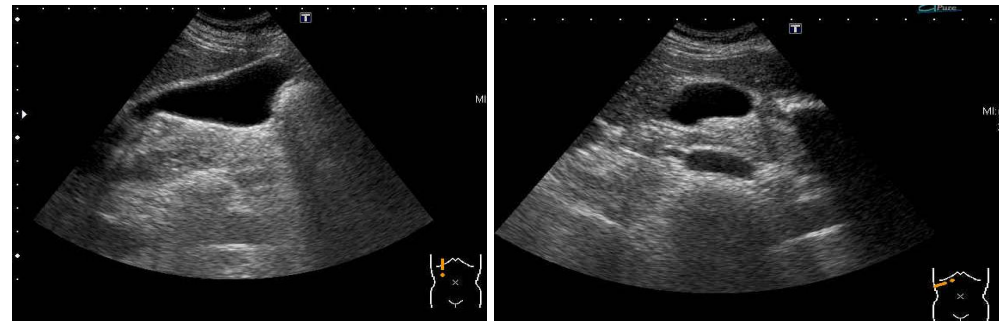
SCAN PROTOCOL-GALLBLADDER

■ GALLBLADDER



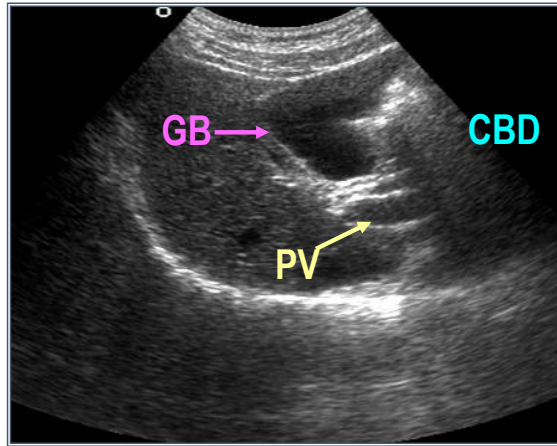
SCAN PROTOCOL-GALLBLADDER

■ GALLBLADDER



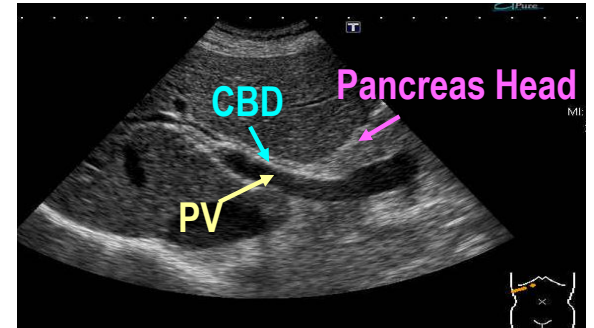
SCAN PROTOCOL- SKILL-Common Bile Duct

■CBD



SCAN PROTOCOL- SKILL-Common Bile Duct

■CBD



Part 04

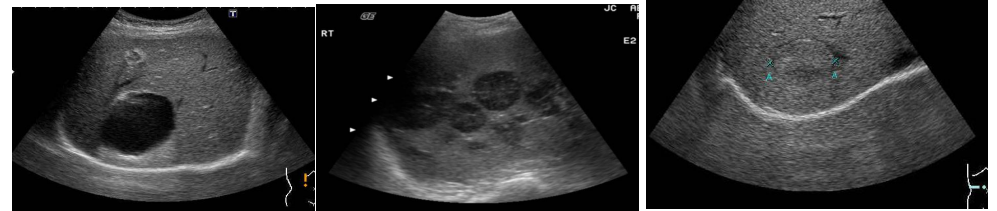
常見疾病

**SONO  
SCAN**

THE COMMON DISEASE

■ECHO TYPE

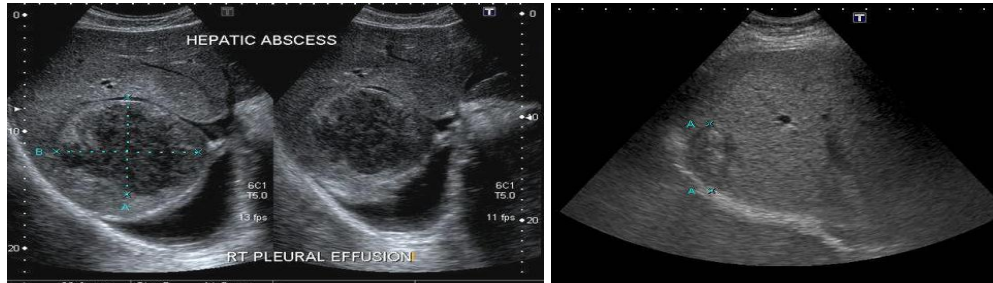
無回音型 Anechoic	低回音型 Hypoechoic	同回音型 Isoechoic	高回音型 Hyperechoic



## THE COMMON DISEASE

### ■ ECHO TYPE

➤ Heterogeneous



## THE COMMON DISEASE

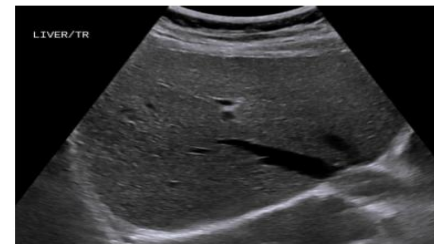
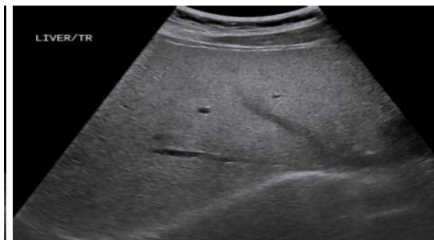
### ■ LIVER

- Fatty liver
- Liver cyst
- Liver Calcification
- Liver hemangioma

## THE COMMON DISEASE-LIVER

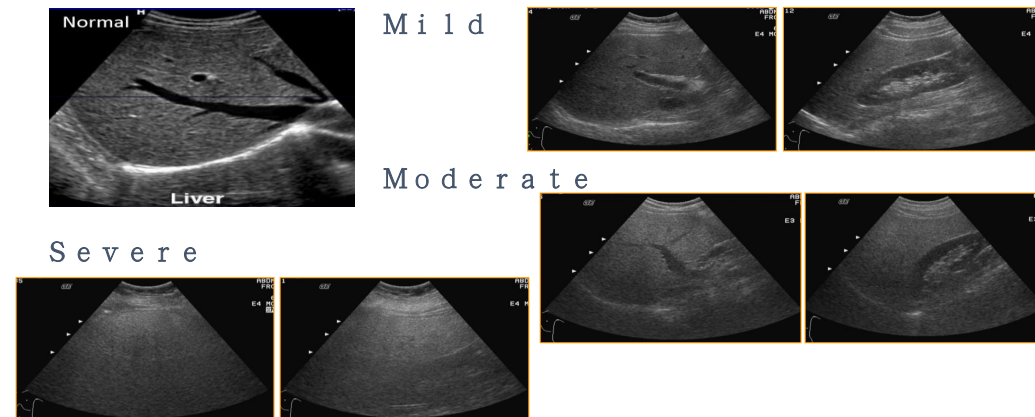
### ■ Fatty liver

- 局部或廣泛性
- 較正常肝回音高
- 與濫用酒精, 肥胖, 糖尿病, 肝臟代謝疾病有關
- 常合併肝腫大



## THE COMMON DISEASE-LIVER

### ■ Fatty liver





## THE COMMON DISEASE-LIVER

### ■Focal fatty sparing

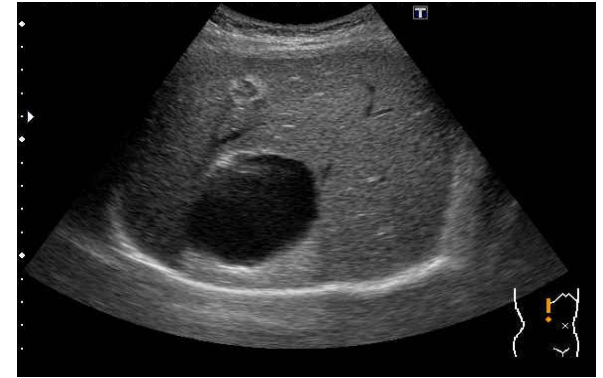
- 未受脂肪浸潤的正常區塊
- 形狀多變可多處
- 沒有腫瘤效應
- 血管走向正常



## THE COMMON DISEASE-LIVER

### ■Liver cyst

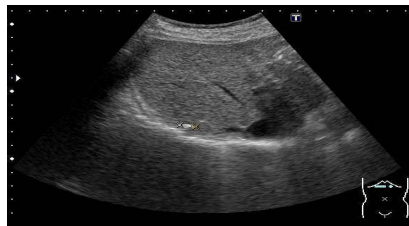
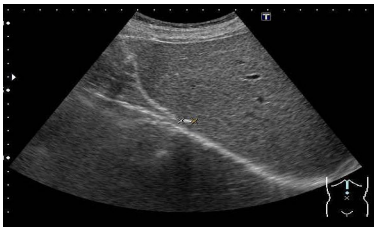
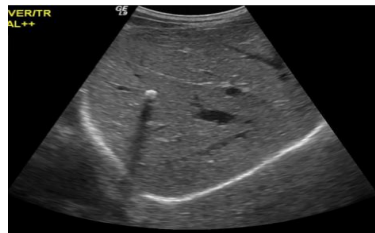
- 內無回音
- 清楚的包囊
- 後方回音增強



## THE COMMON DISEASE-LIVER

### ■Liver Calcification

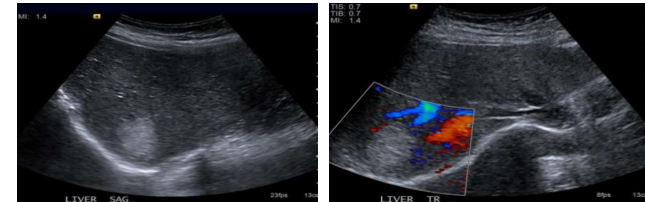
- 高回音(hyper echo)
- 後方有陰影



## THE COMMON DISEASE-LIVER

### ■Liver hemangioma

- 影像表現多變
- 輕度的後方回音增強



• 2013 6/24



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## THE COMMON DISEASE

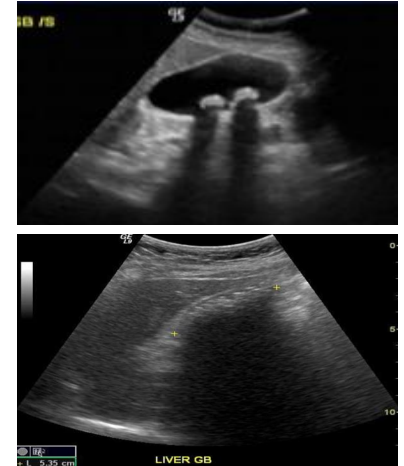
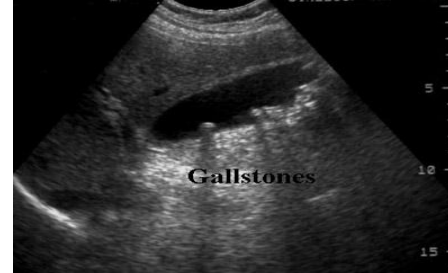
### ■GB&CBD

- GB stone
- GB polyp
- GB sludge
- CBD stone
- CBD dilatation

## THE COMMON DISEASE-GALLBLADDER

### ■GALLBLADDER

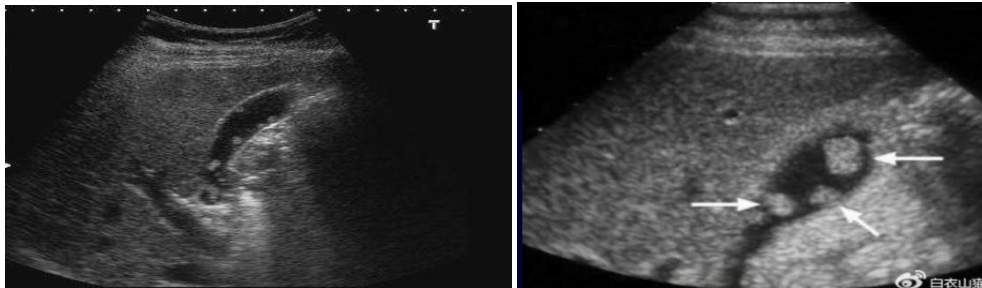
- 高回音(hyper echo)
- 後方有陰影(shadow)
- 可隨姿勢改變而移動



## THE COMMON DISEASE-GALLBLADDER

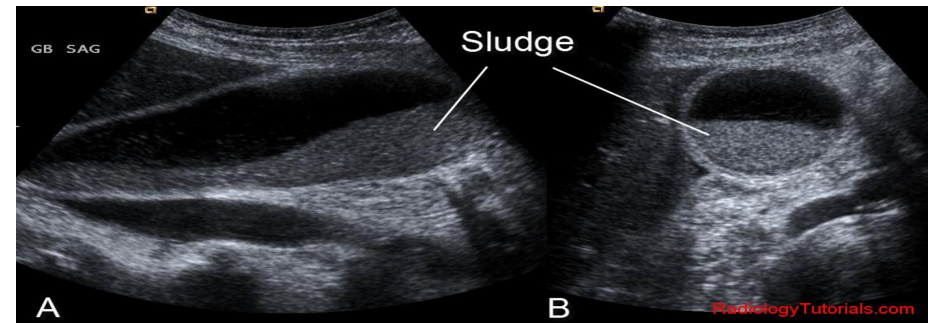
### ■GB polyp

- 高回音(hyper echo)後方無陰影
- 不會移動(除非有一根常常的莖可輕微的移動)
- 大於1cm 建議切除



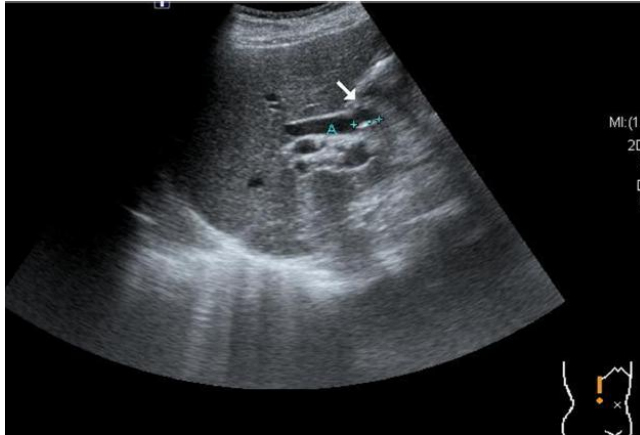
## THE COMMON DISEASE-GALLBLADDER

### ■GB sludge



THE COMMON DISEASE-Common Bile Duct

■ CBD stone

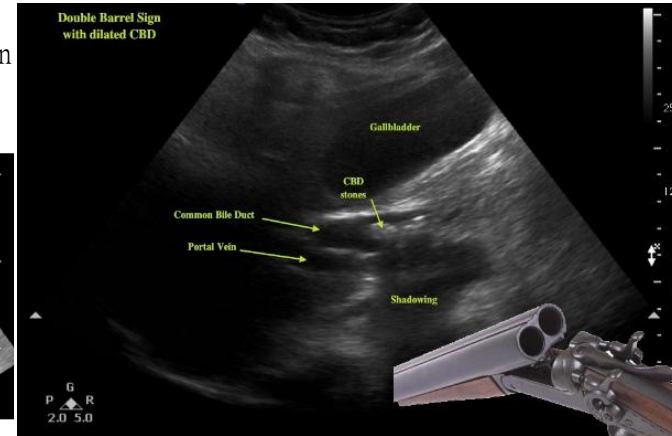


THE COMMON DISEASE-Common Bile Duct

■ CBD dilatation

➤ Double barrel shotgun

>7mm



THANK. YOU