

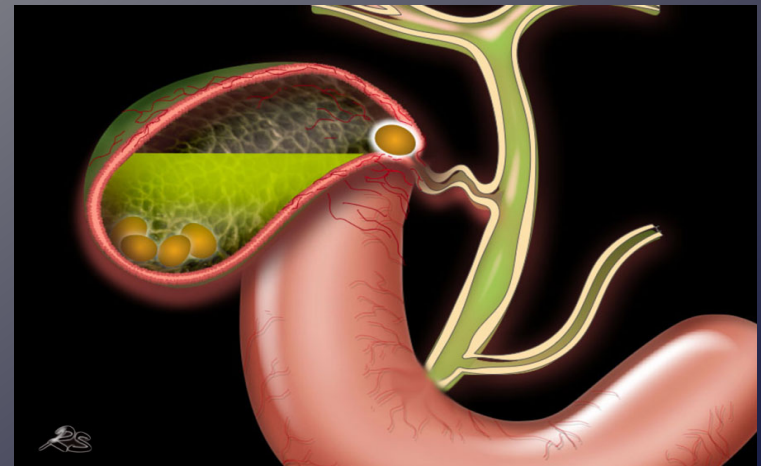


# Nasjonalt Senter for Gastroenterologisk Ultrasonografi

National Centre for Ultrasound in Gastroenterology  
Haukeland University Hospital, Bergen, Norway

## Ultralyd av Galleveier

th





# Ultrasound and the Biliary Tract

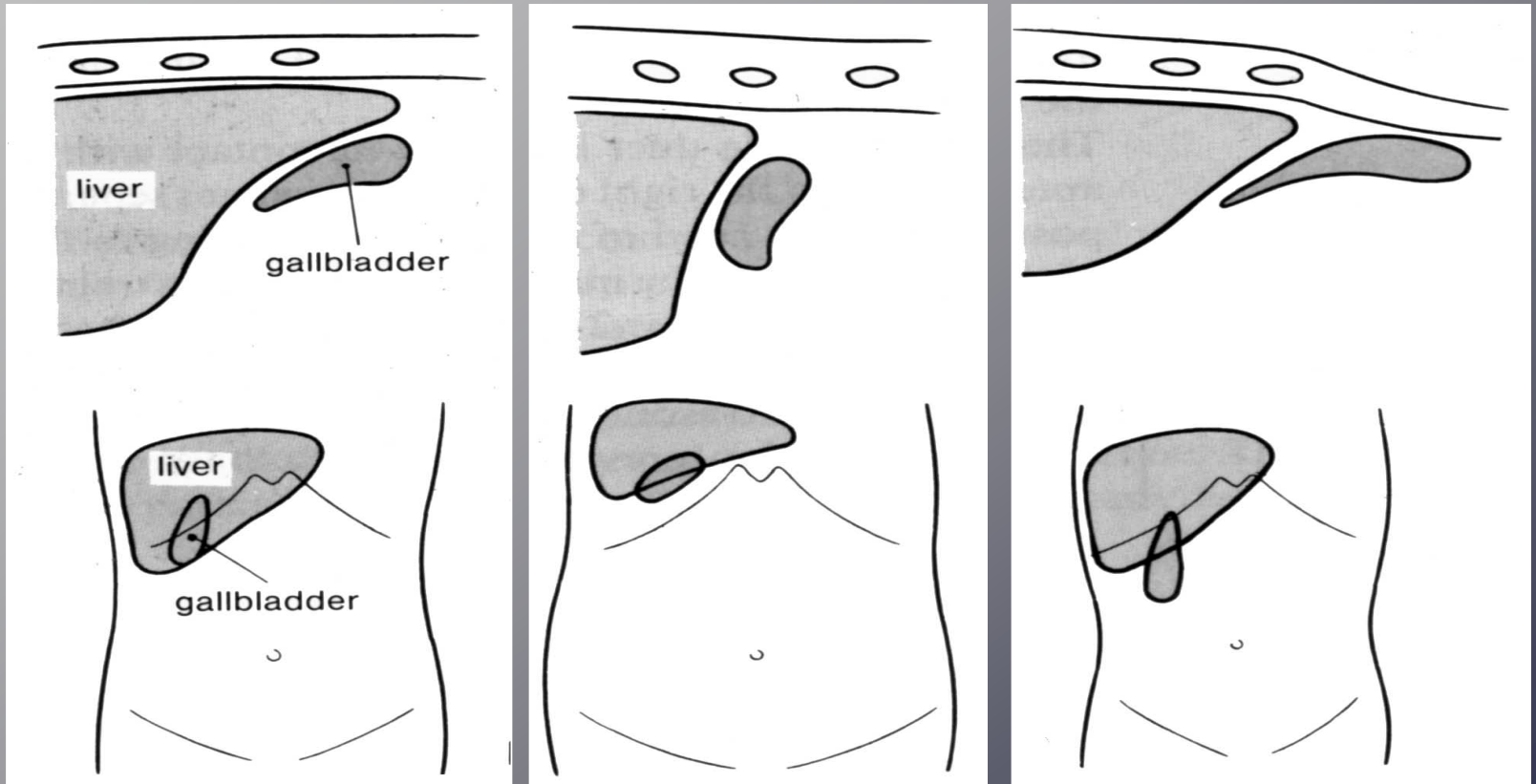
- Gallbladder:
  - Stones
  - Polyps
  - **Cholecystitis**
  - Tumours
- Biliary Ducts:
  - Intrahepatic dilatation
  - Ekstrahepatic dilatation
  - Cholangitis
  - Cysts (Carolis syndrom)
  - Cholangiocarcinoma

Ultrasound is the method of choice





# Gallbladder - Variable Position



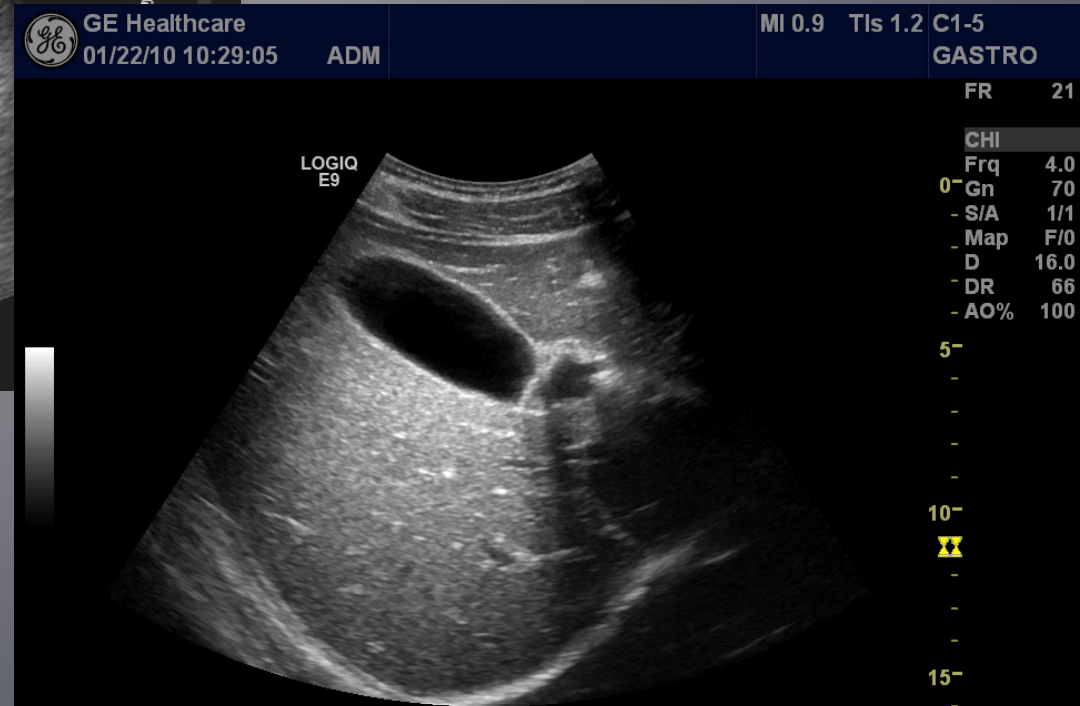


# Examination Technique



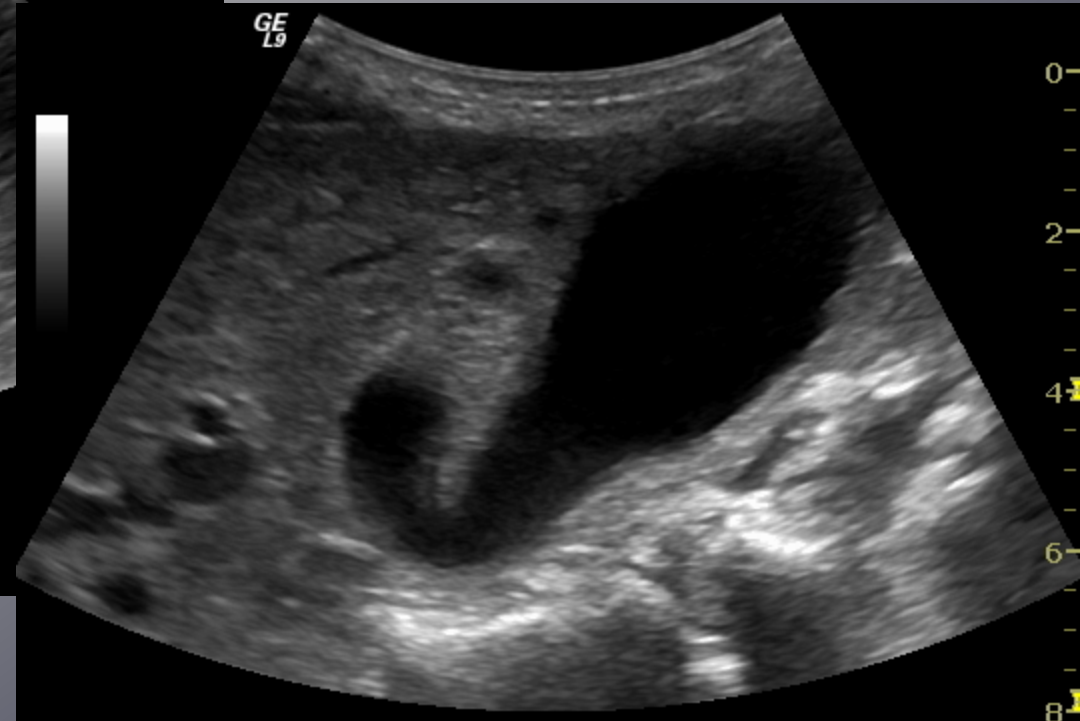
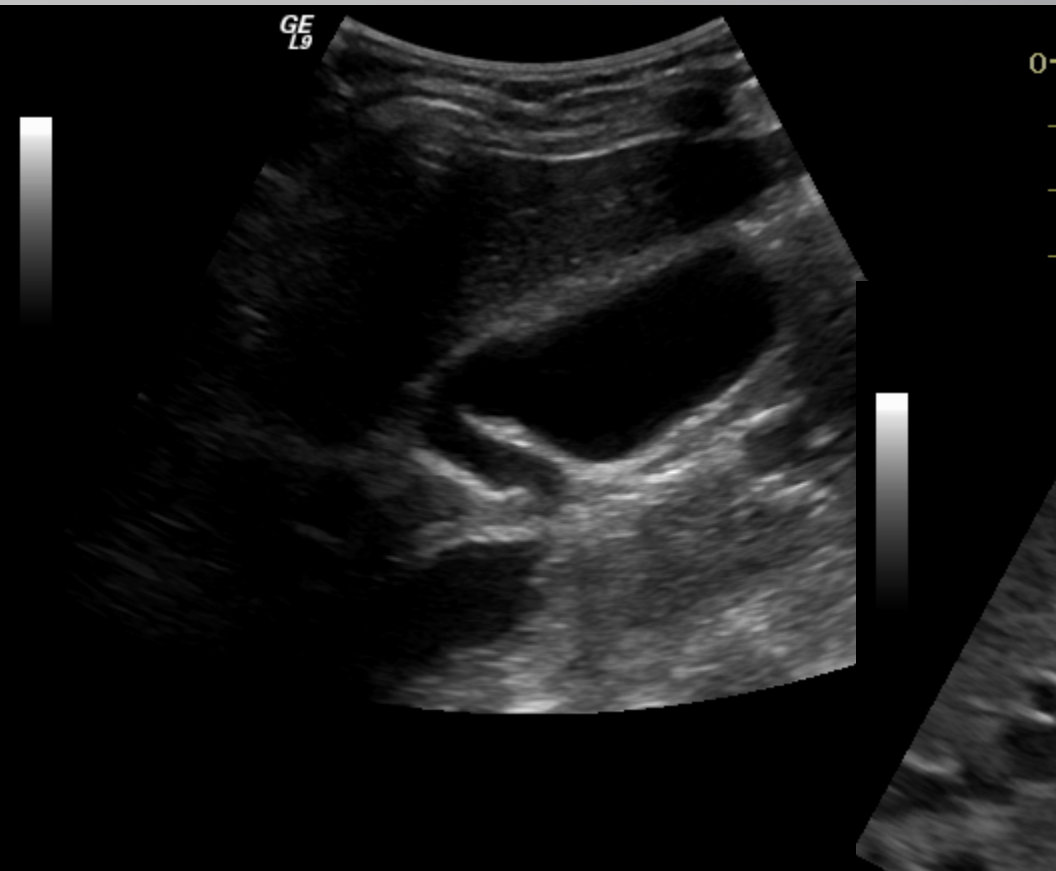


# Normal Wall Thickness



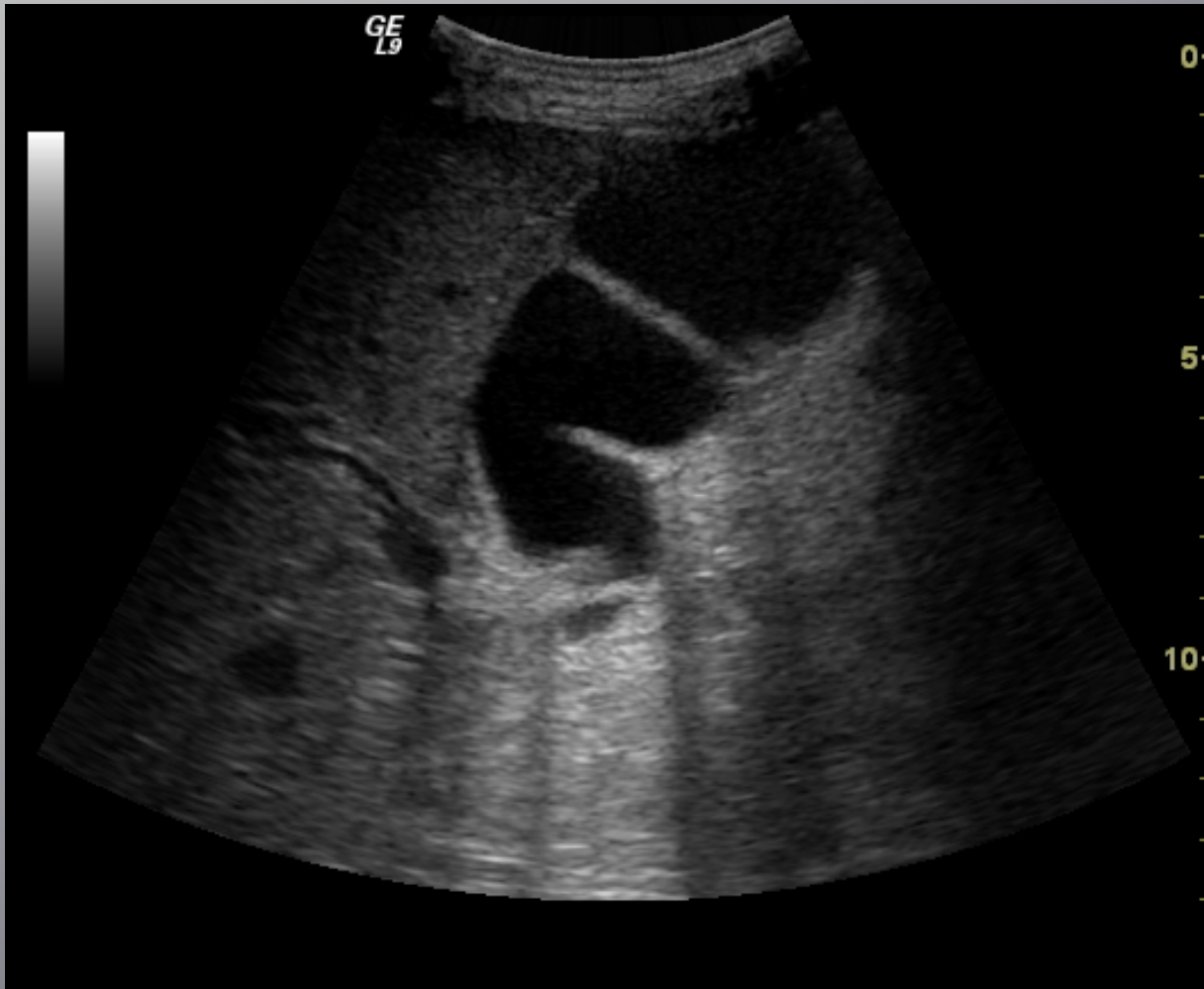


# The Gallbladder neck



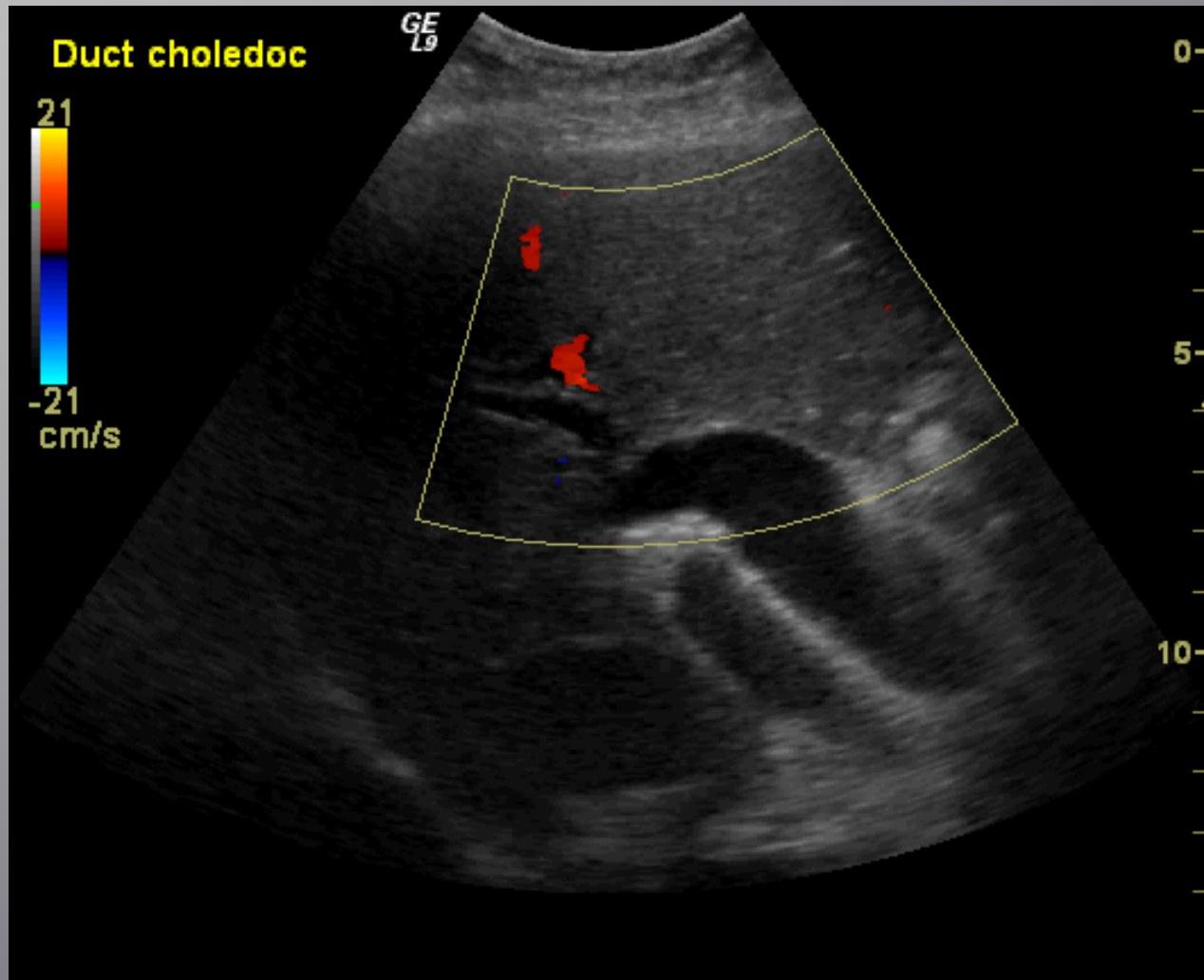


# Folded Gallbladder





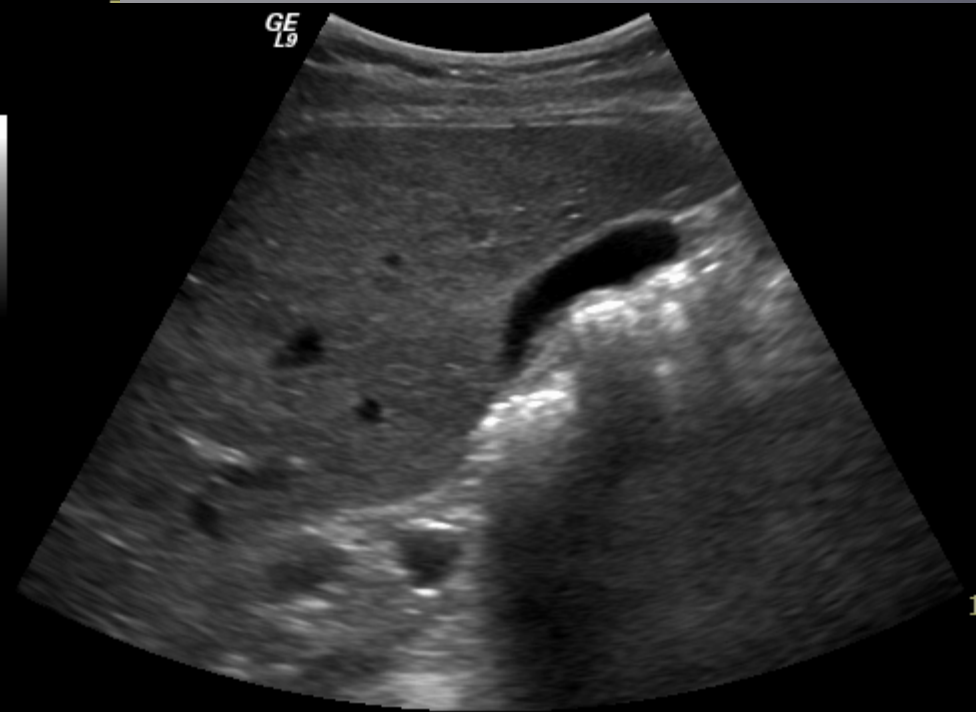
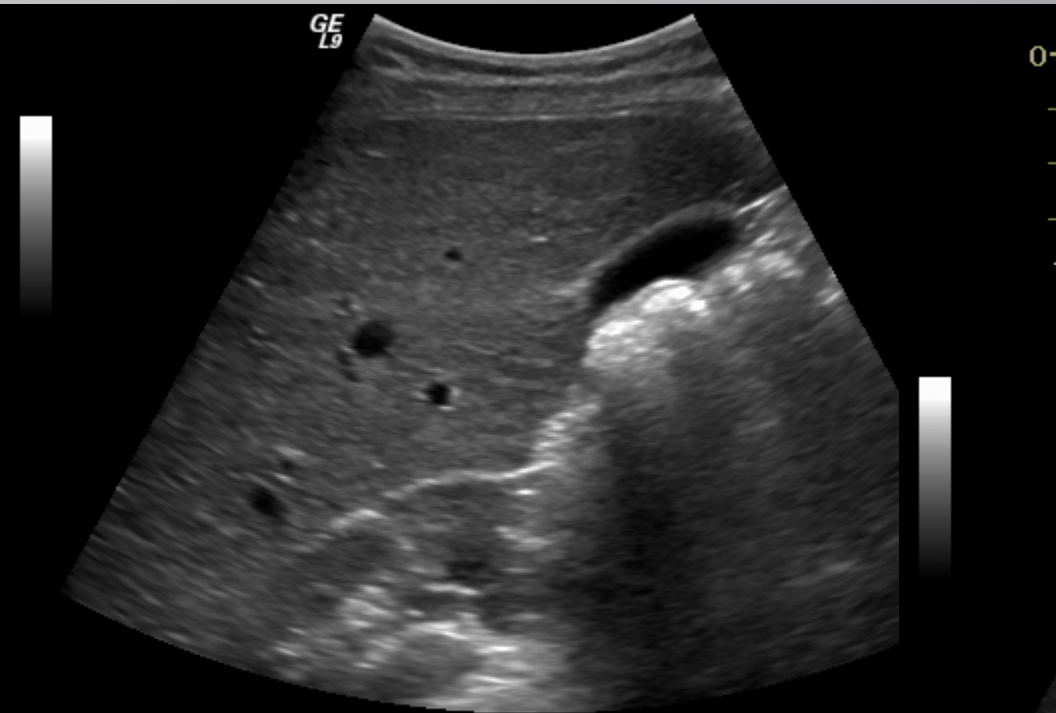
# Biliary Tract – Use color Doppler!







# Air in the Duodenum





# Normal Measures for the Gallbladder

- Wall thickness 2-3 mm
  - Cut-off pathology: 4 mm
- Length 8-10 cm
- Diameter 4 cm

Wall thickening is an unspecific sign



# Sludge

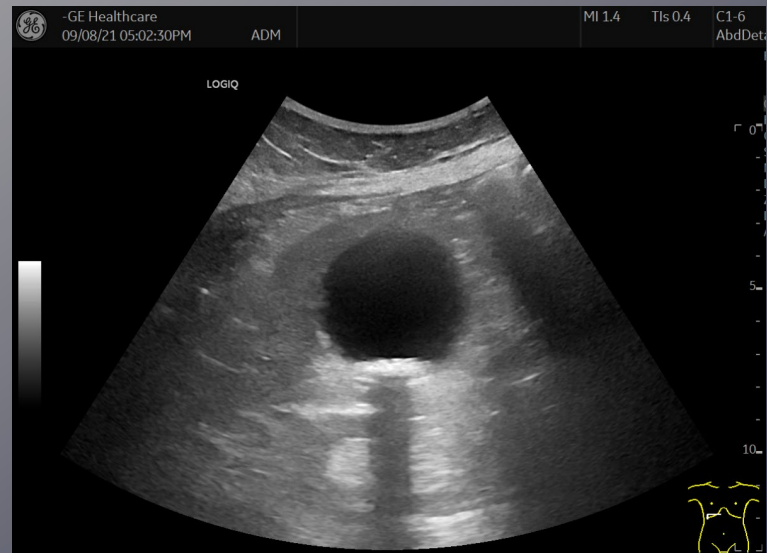
**Top Left Panel:** Haukeland US, 03/27/10 12:29:14, ADM. MI 1.0 TIs 1.7 C1-5. GASTI. LOGIQ E9. CHI Frq 0-Gn S/A -Map D -DR -AO%. Scale: 5".

**Top Right Panel:** Haukeland US, 03/27/10 12:33:22, ADM. MI 1.0 TIs 1.7 C1-5. GASTRO. LOGIQ E9. CHI Frq 4.0 -Gn 73 S/A 1/1 -Map F/1 D 12.0 -DR 66 -AO% 100. Scale: 5".

**Bottom Panel:** Haukeland US, 08/06/10 11:40:47, ADM. MI 0.5 TIs 0.5 9L. GASTRO. LOGIQ E9. CHI Frq 8.4 -Gn 4.1 S/A 3/1 -Map F/1 D 10.0 -DR 63 -AO% 100. Scale: 10".



radiologyassistant.nl



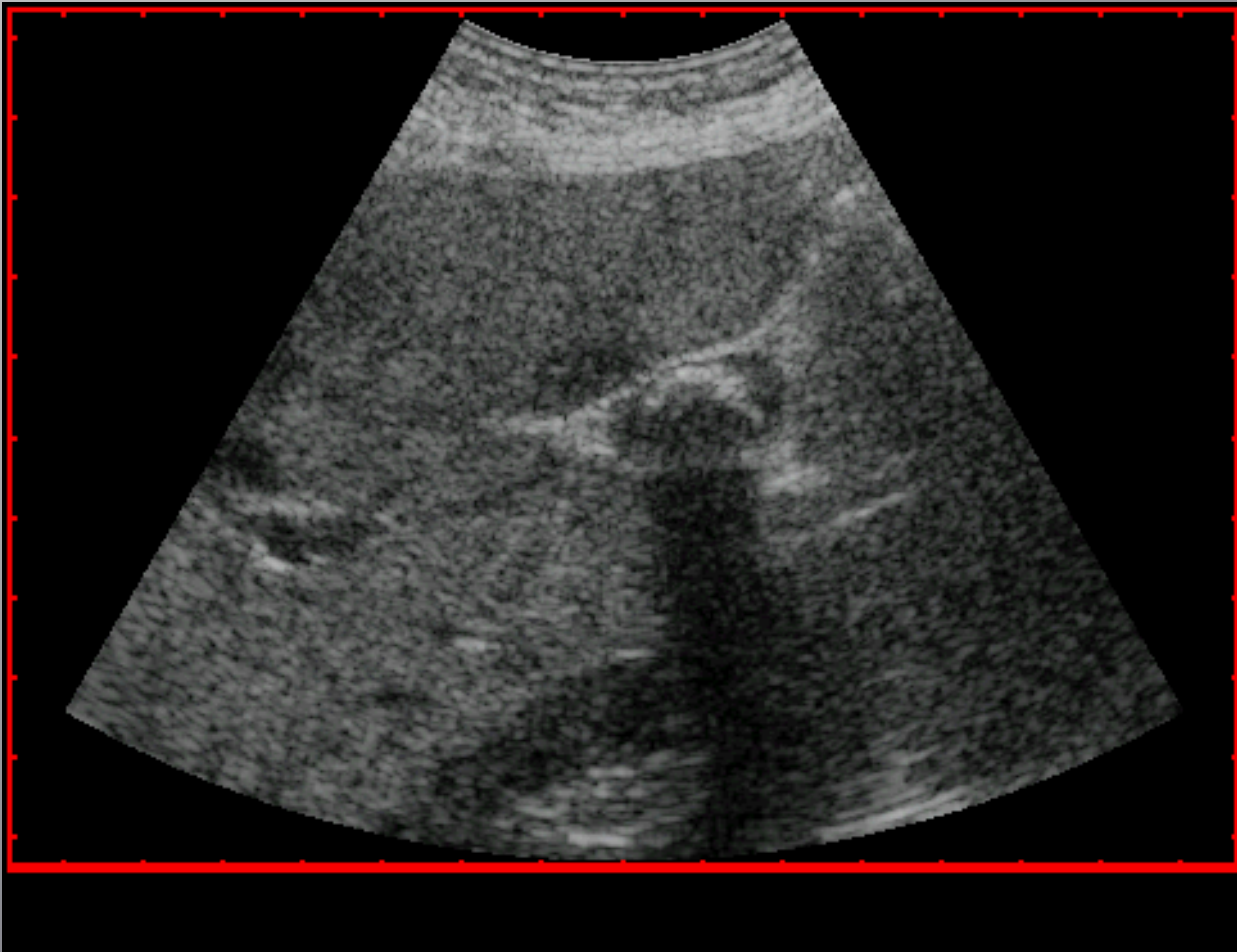
## Gallestein

- Velavgrenset
- Hyperekkoisk
- Kaster skygge
- Mobil
- Twinkling artefakt? fi



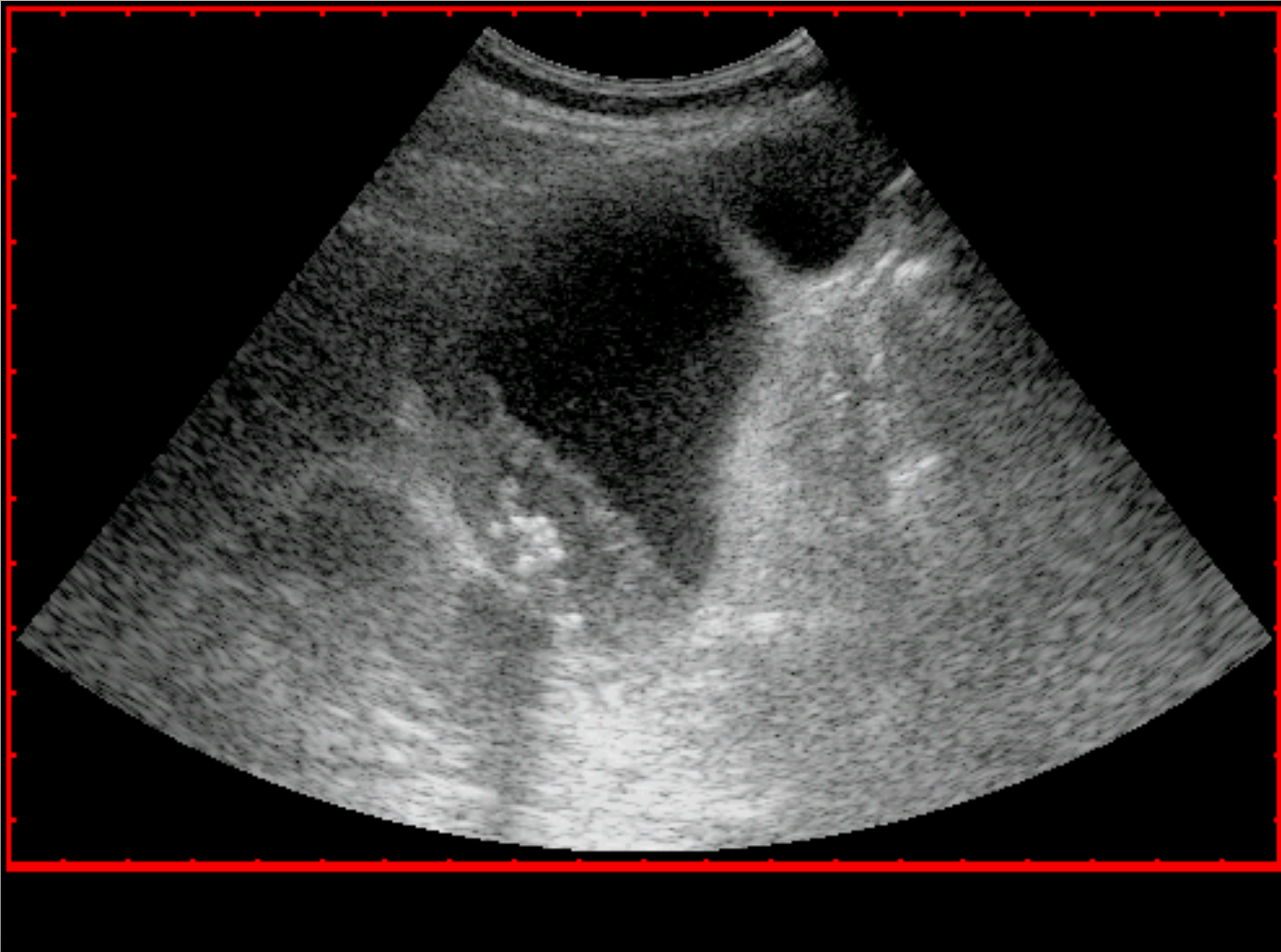


# Liten Galleblære – stor Stein



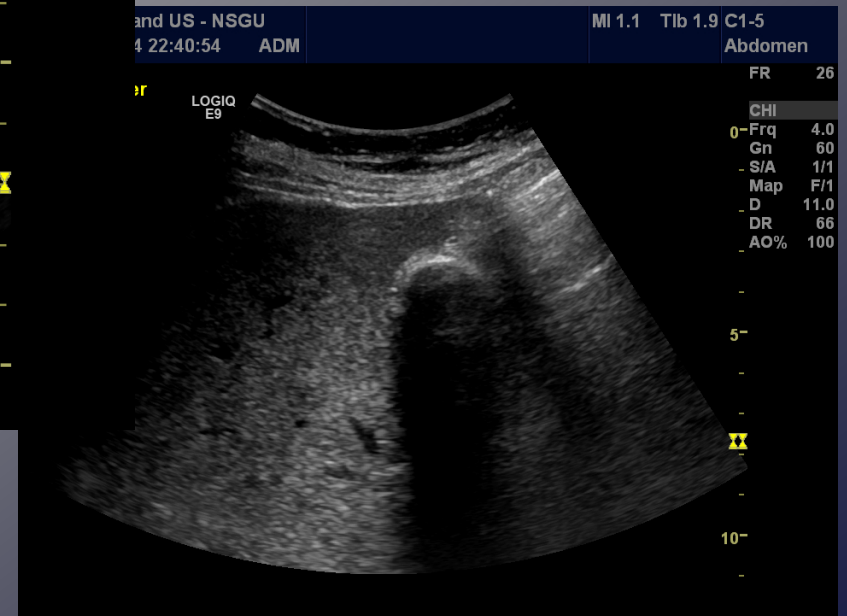
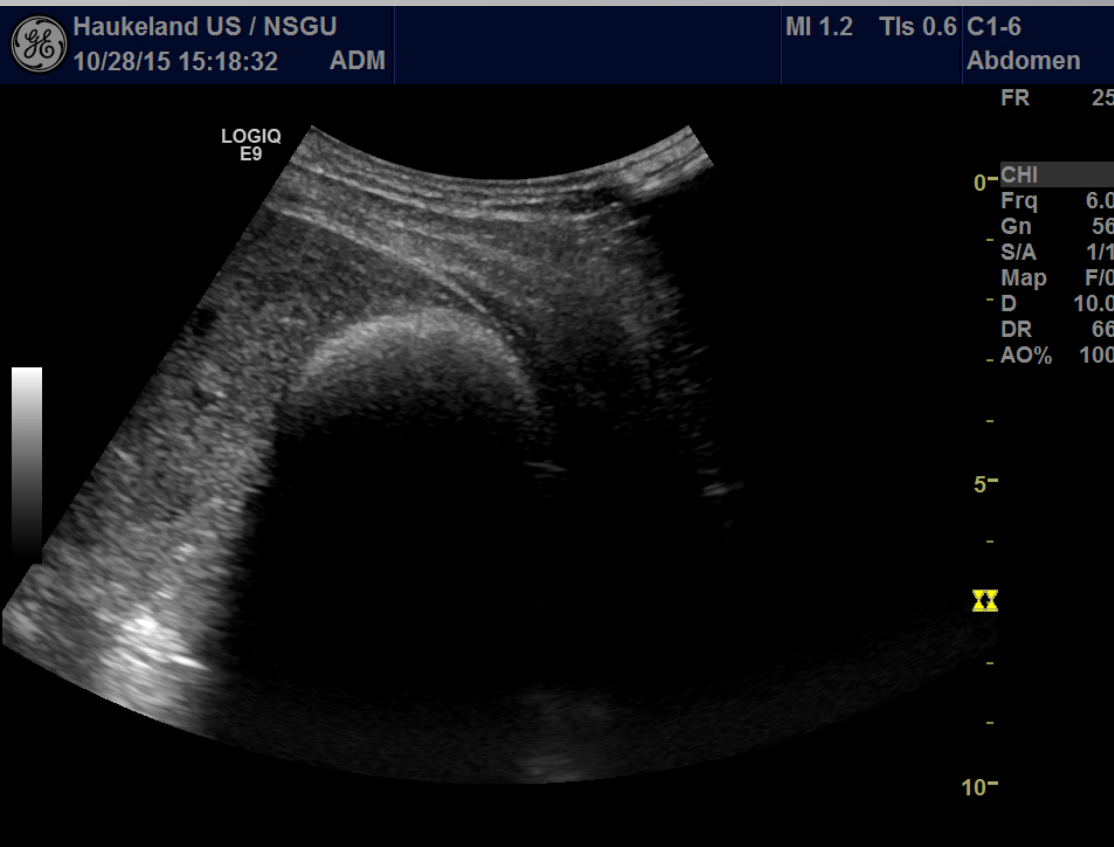


# Galleblæresteiner og Grus





# Porcelain Gallbladder







# POLYPPER

- Liten, ekkogen struktur fiksert til galleblæreveggen. Kan være stilket
- Ingen skygge
- Små vanligvis - pseudopolypper
- Kontroller for oppfølging





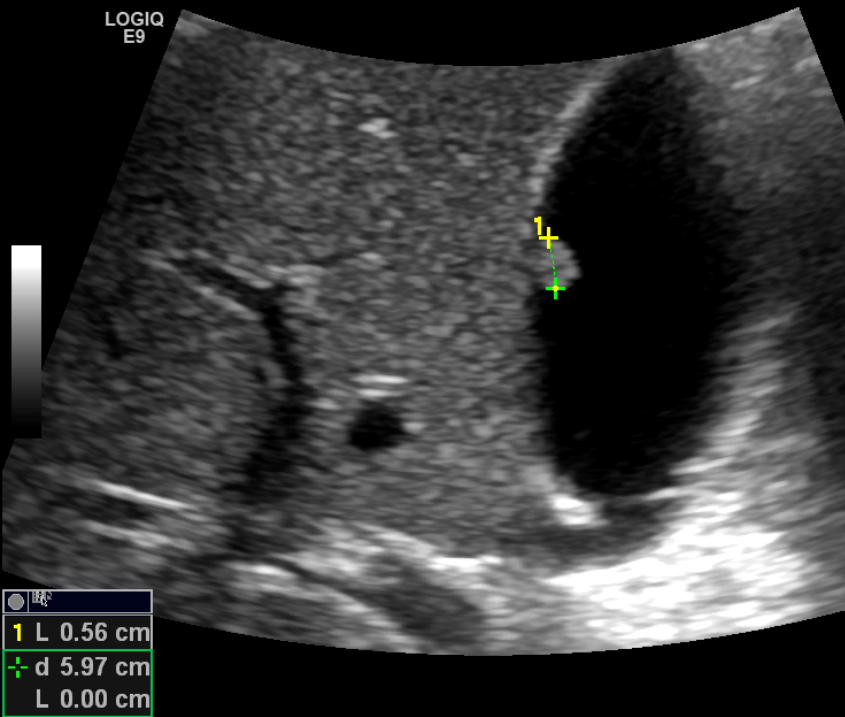
# Gallbladder Polyps

Haukeland US 09/29/10 10:45:48 ADM MI 1.2 TIs 1.9 C1-5 GASTRO

FR 26

CHI

Frq 4.0



1 L 0.56 cm  
+ d 5.97 cm  
L 0.00 cm

Haukeland US 09/29/10 10:46:27 ADM MI 1.2 TIs 1.5 C1-5 GASTRO

FR 15

CHI

Frq 4.0

Gn 64

4-D 10.0

AO% 100

CF

Frq 3.6

Gn 20.0

L/A 0/7

6-PRF 1.9

WF 140

S/P 5/12

AO% 100

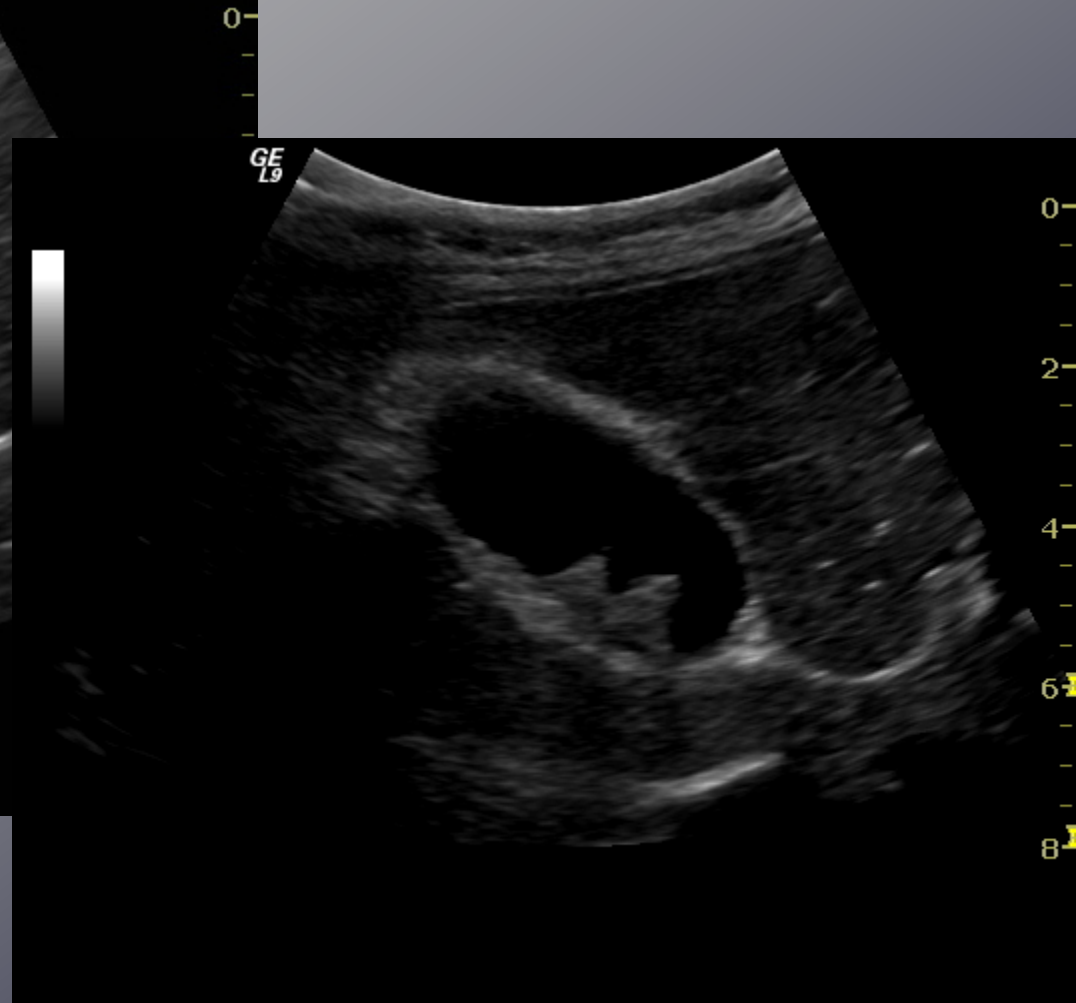
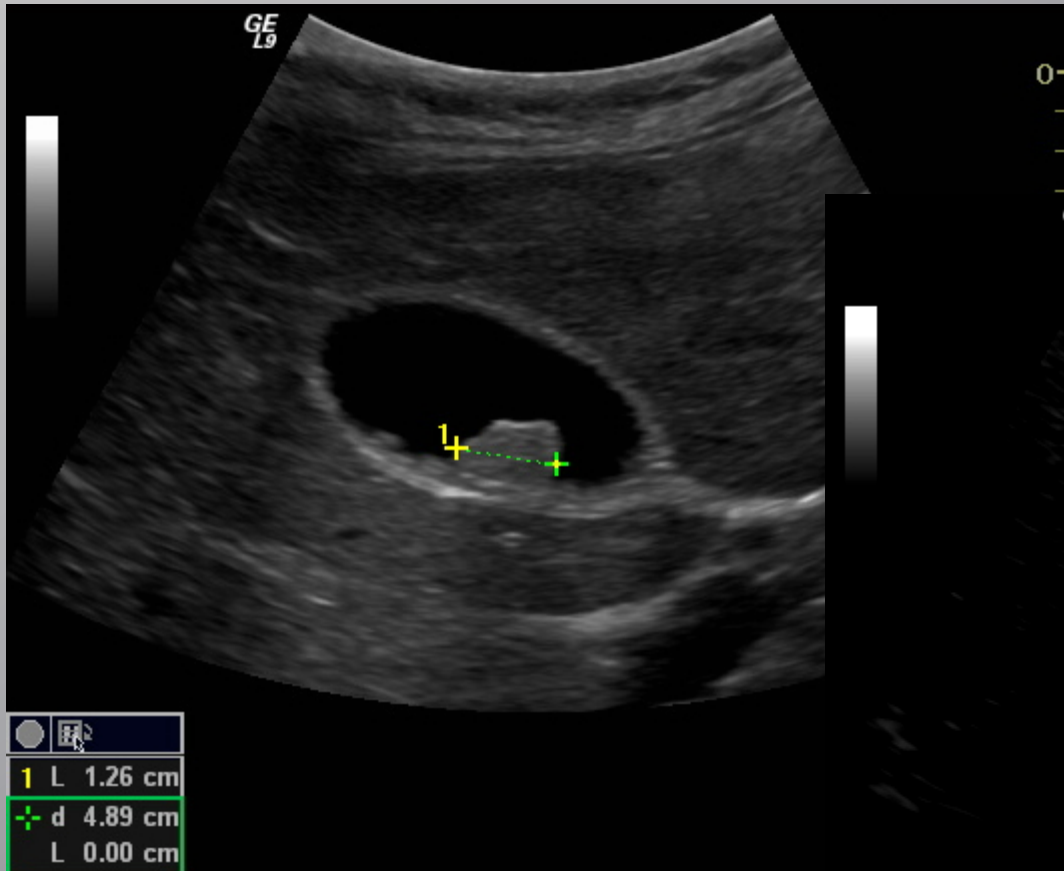


# Small Polyp



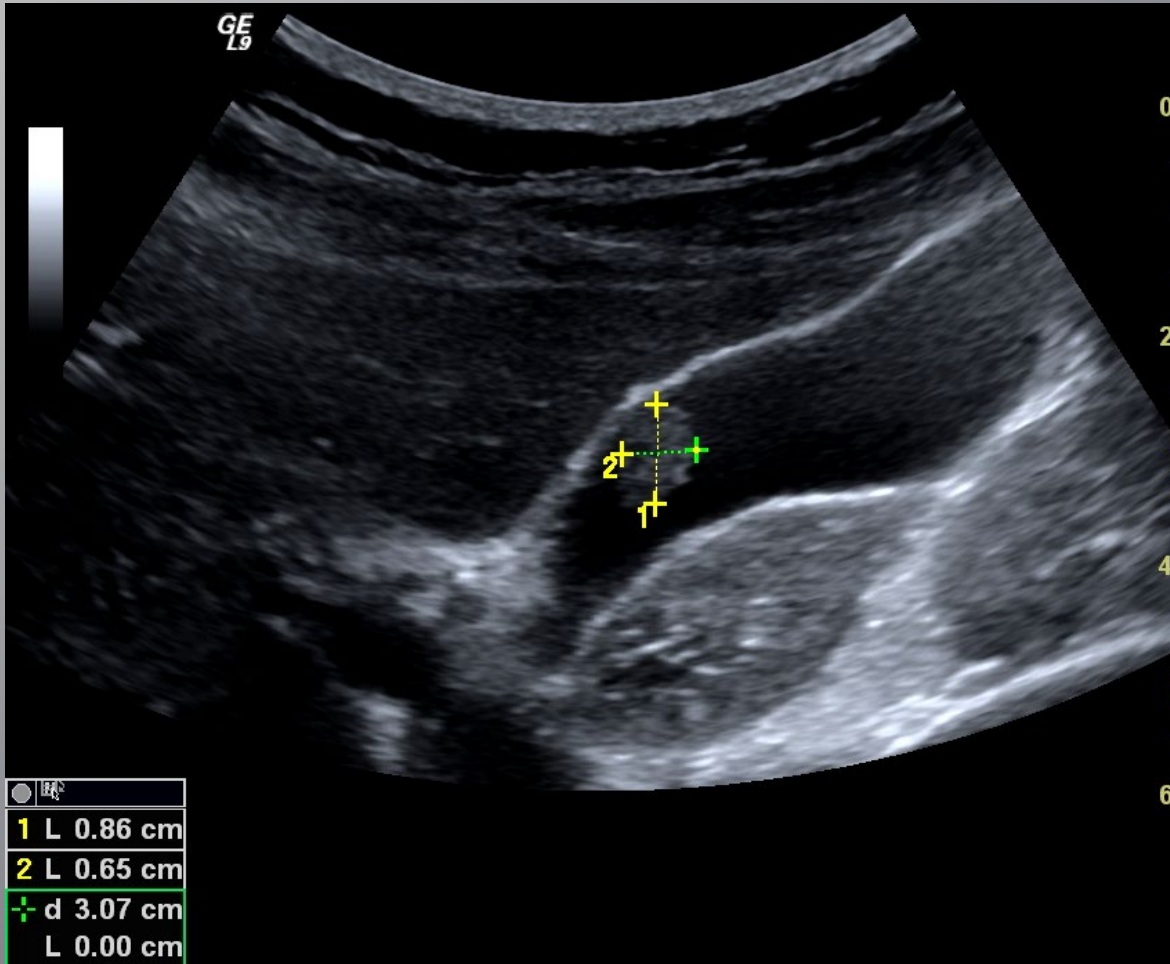


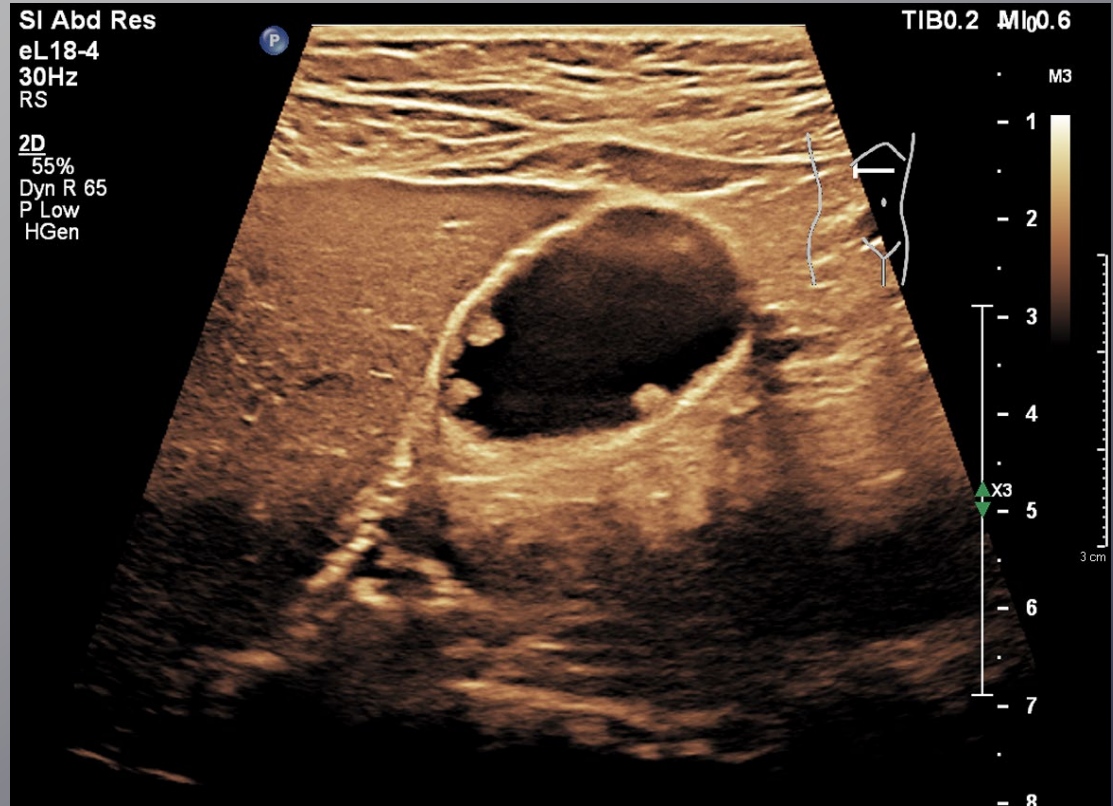
# Gallbladder tumor





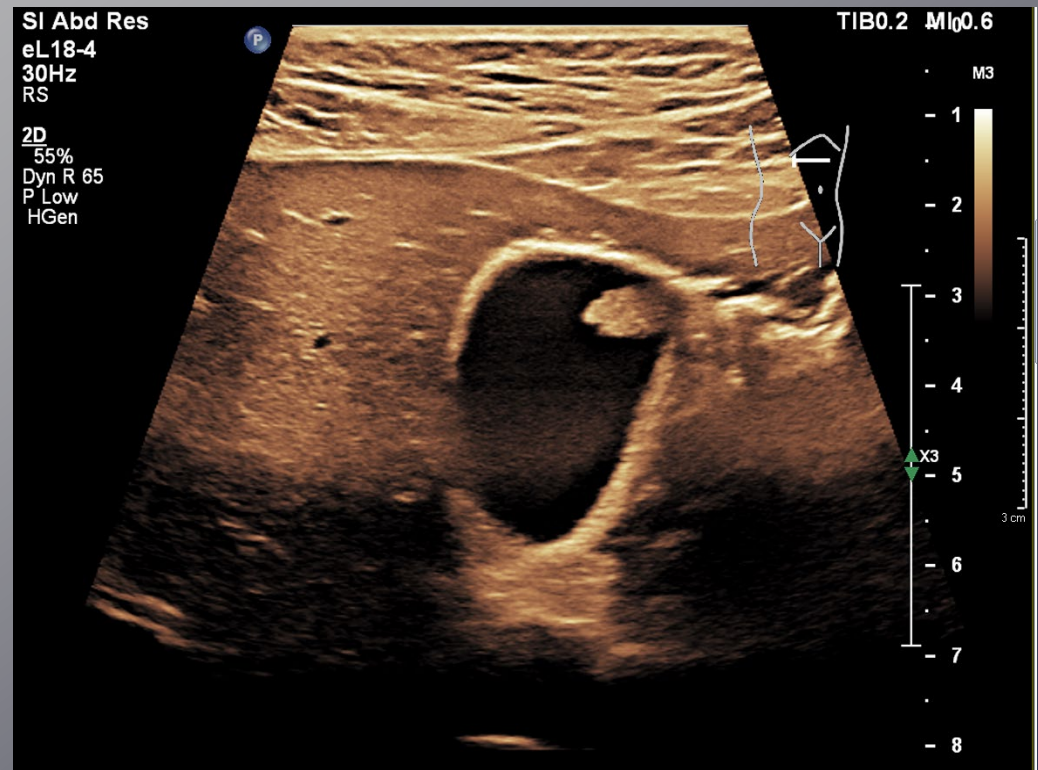
# Gallbladder tumor





## Polypper

- Tilfeldig funn
- Prevalens ca. 9%
- 95 % benign
- Viktigste indikator for malignitet: størrelse



## Polypper

- Cholesterolpolypper (50 %)

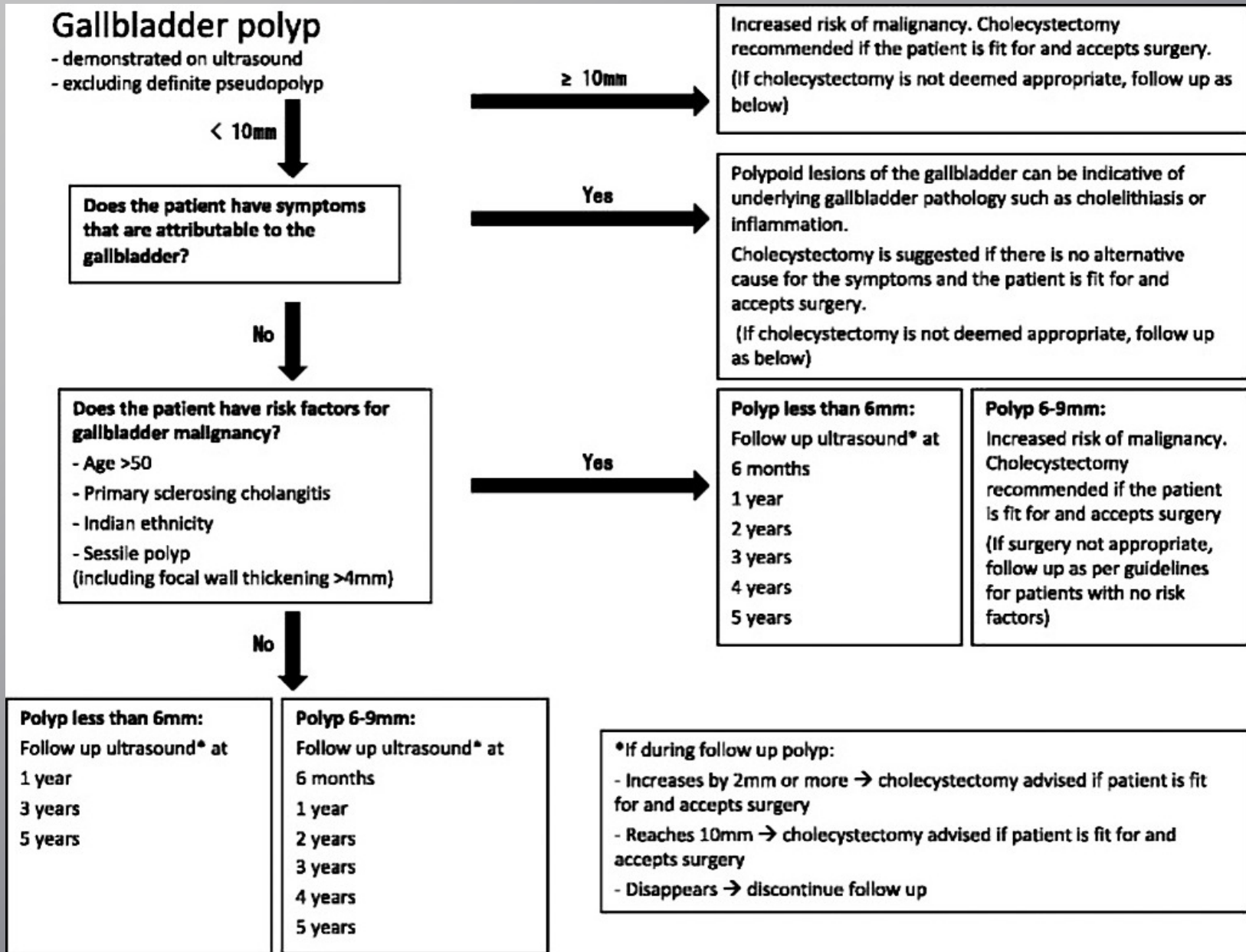
- Små (oftest < 5 mm)
- Veggfast
- Hyperekkkoisk
- Ikke skyggekastende

- Komethaleartefakt





# European guidelines (2017) (ESGAR/EAES/EFISDS/ESGE)





# Gallestein vs polypp

## Gallestein

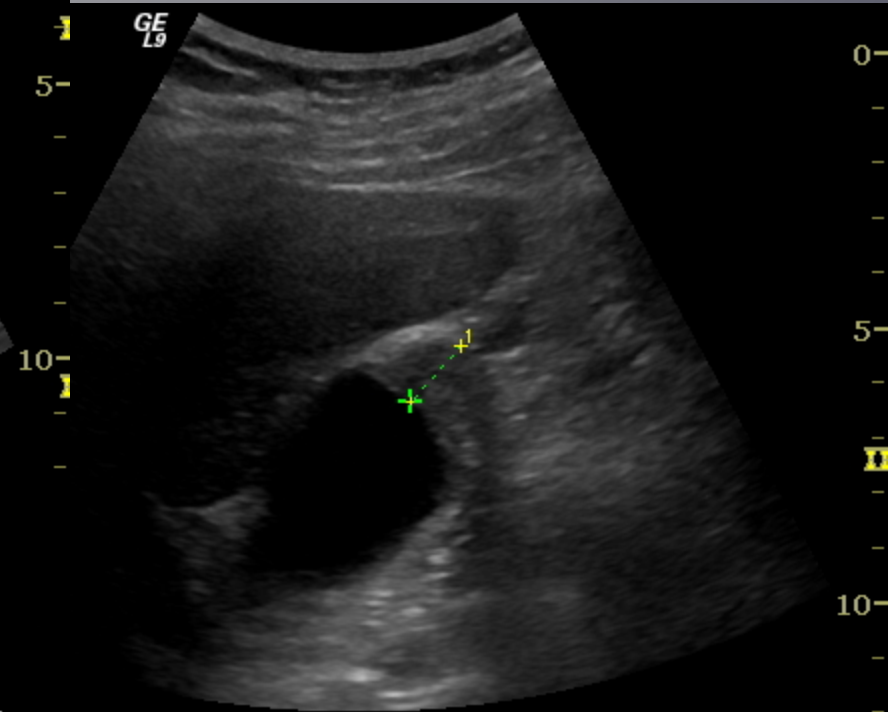
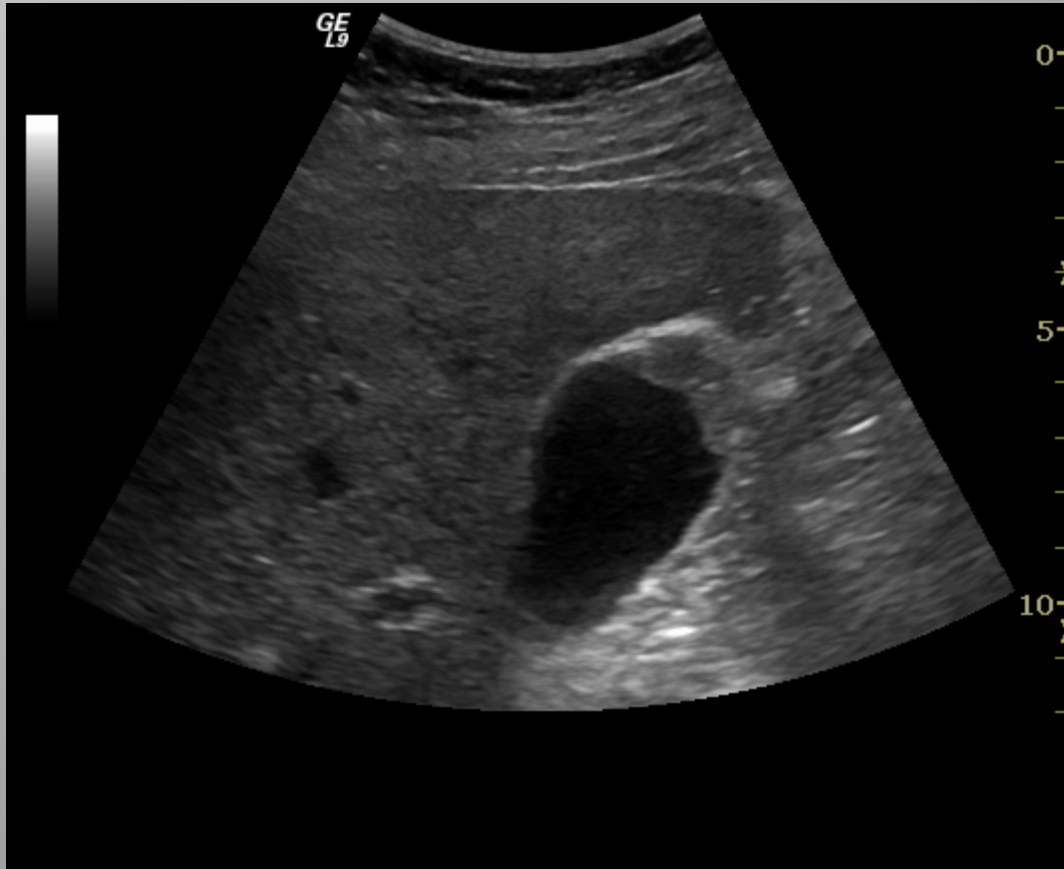
- Hyperekkoisk
- Kaster skygge  
(som regel)
- Mobil
  - Snu pasienten!
- Twinkling

## Polypp

- Lik som vegg
- Veggfast
- vaskularitet med doppler
- Ved tvil: CEUS



# Tumor of the Gallbladder



●	■
1	L 1.36 cm
+	d 6.38 cm
	L 0.00 cm

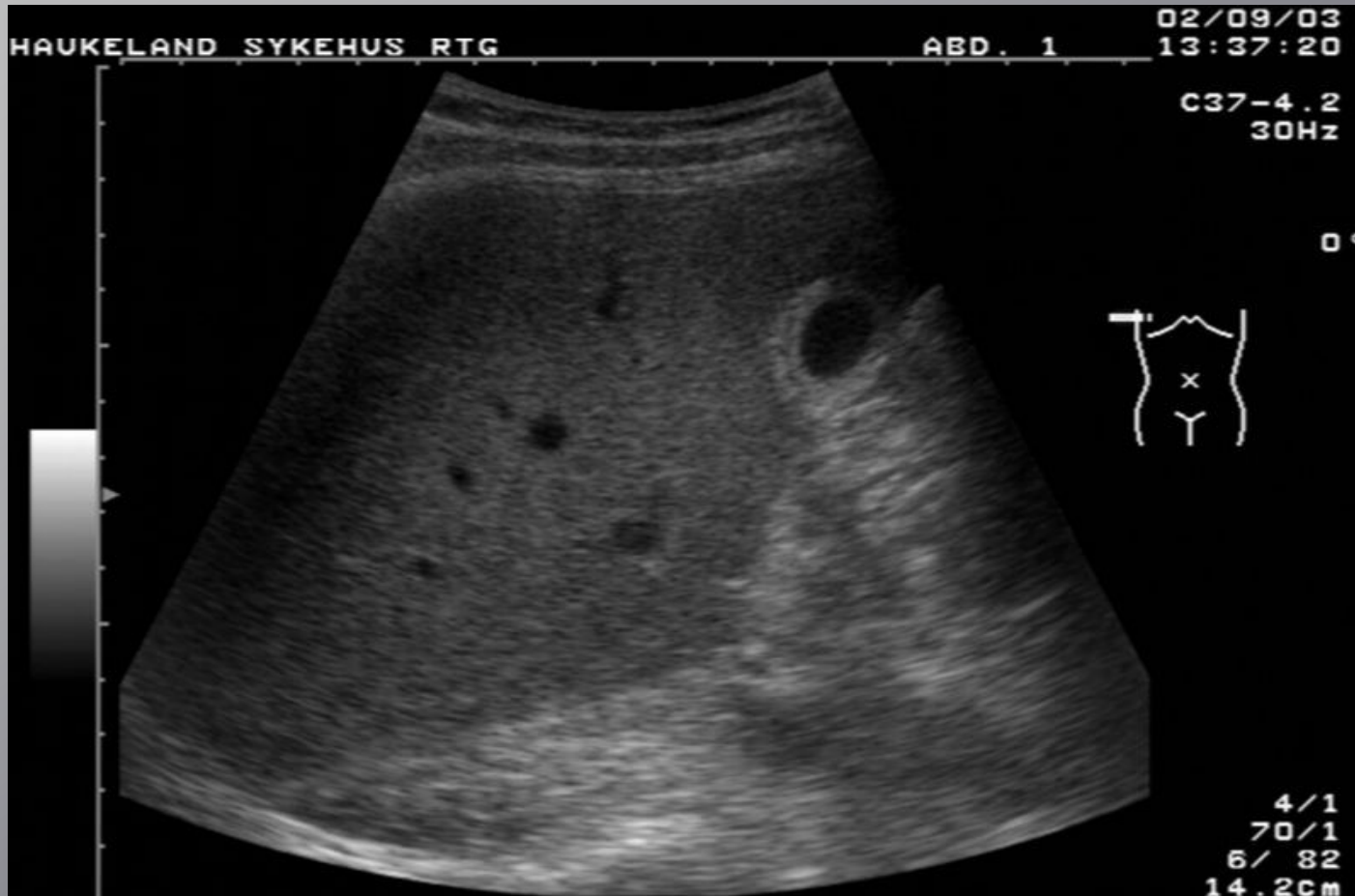


# Wall Thickening of Biliary System

- Gallbladder:
  - Postprandial contraction
  - Ascites
  - Cirrhosis / Portal hypertension
  - Heart failure / Kidney failure
  - Hypoalbuminemia
  - Hepatitis
  - Cholecystitis
  - Focal thickening in Polyps / neoplasia
- Biliary Ducts:
  - Primary Sclerosing Cholangitis
  - Cholangiocarcinoma

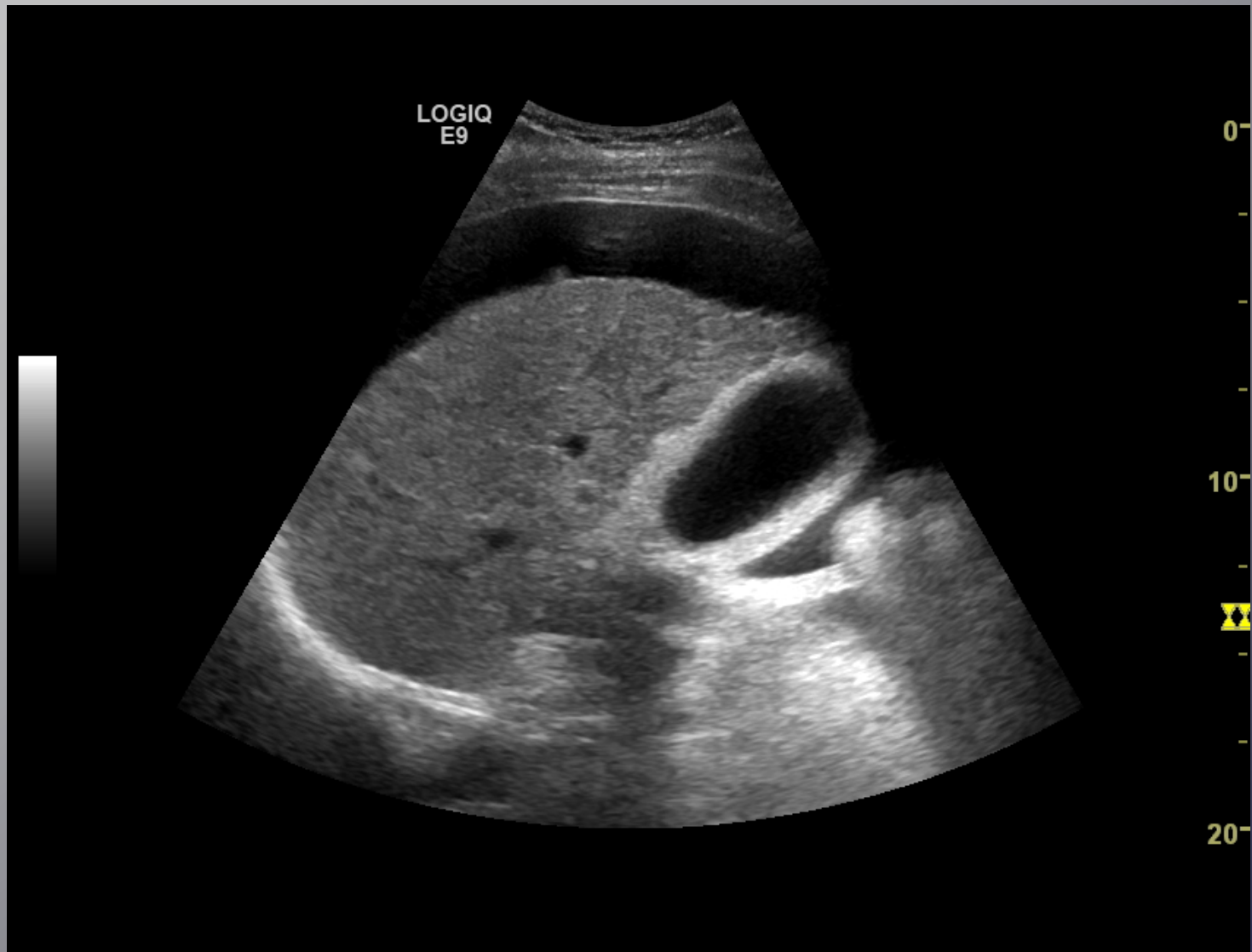


# Fasting Gallbladder



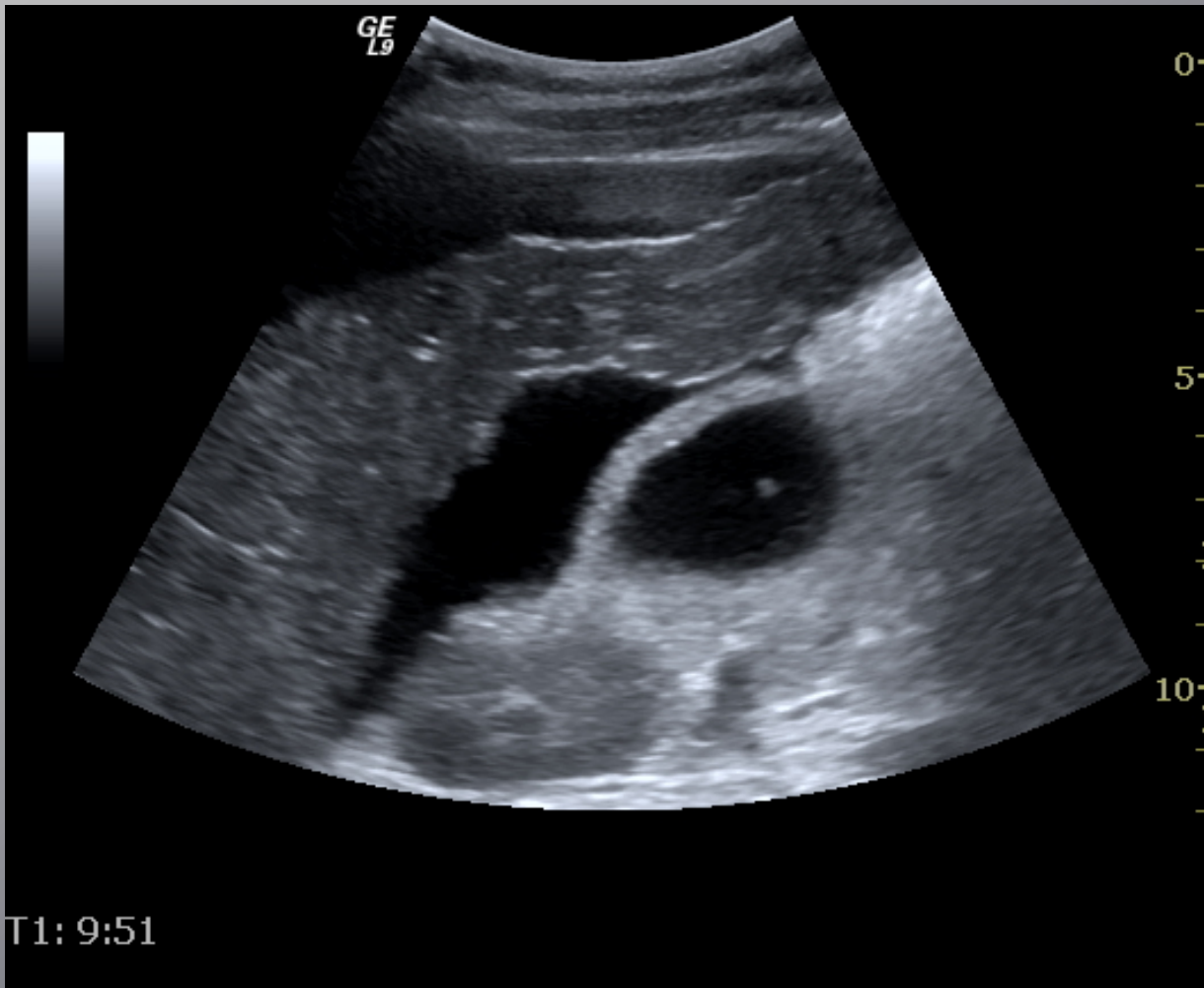


# Thickened wall in ascites



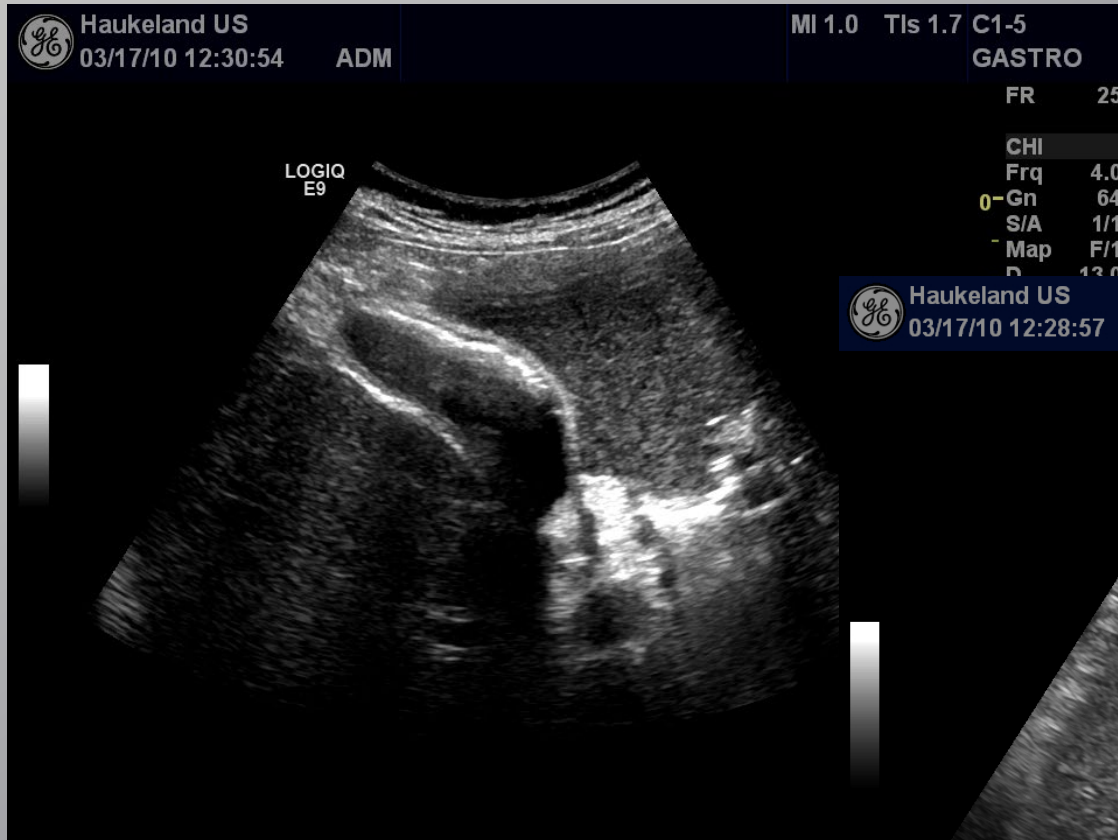


# Cirrhosis





# What is inside the Gallbladder?



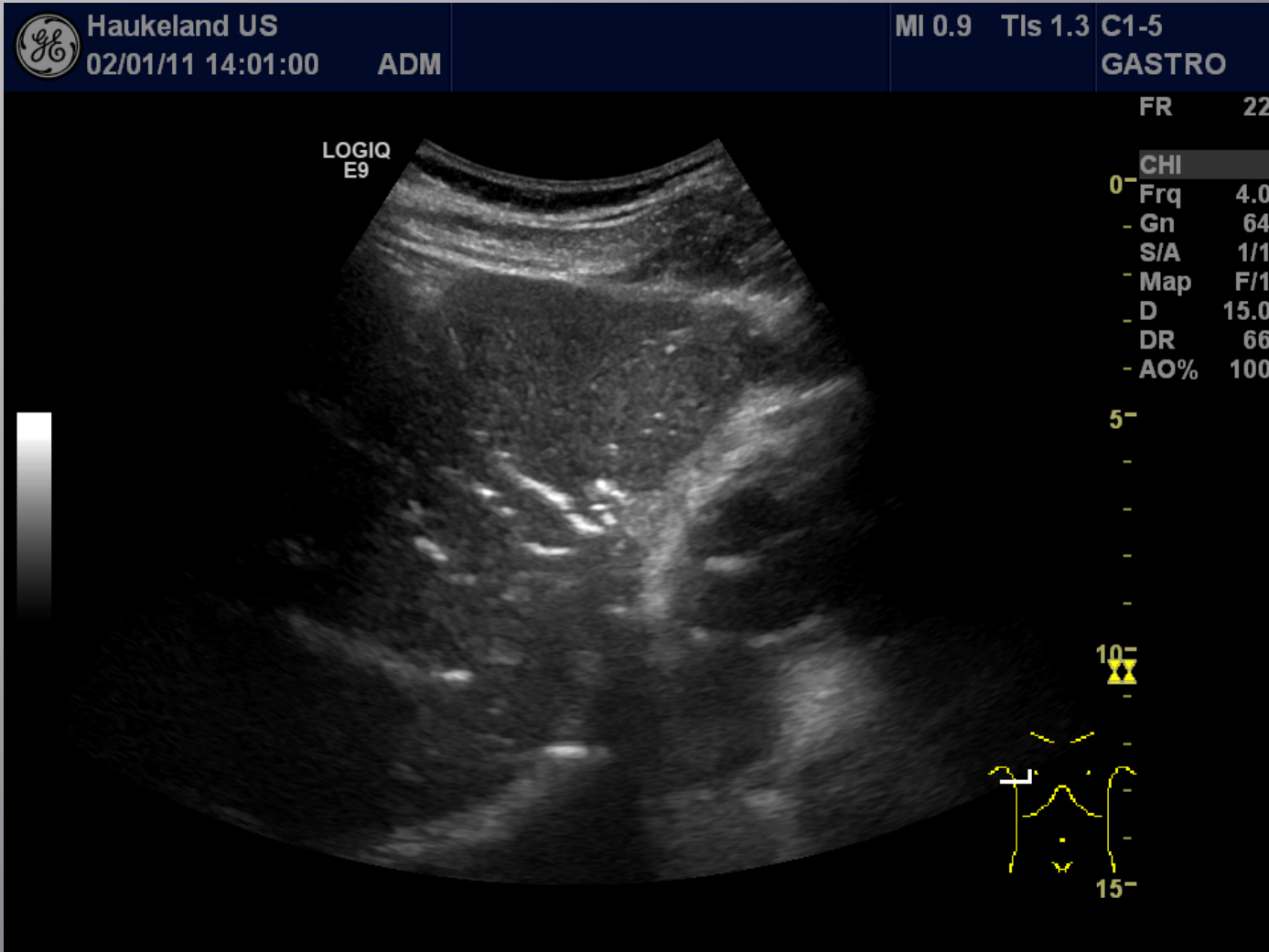
Aerobilia







# Aerobili



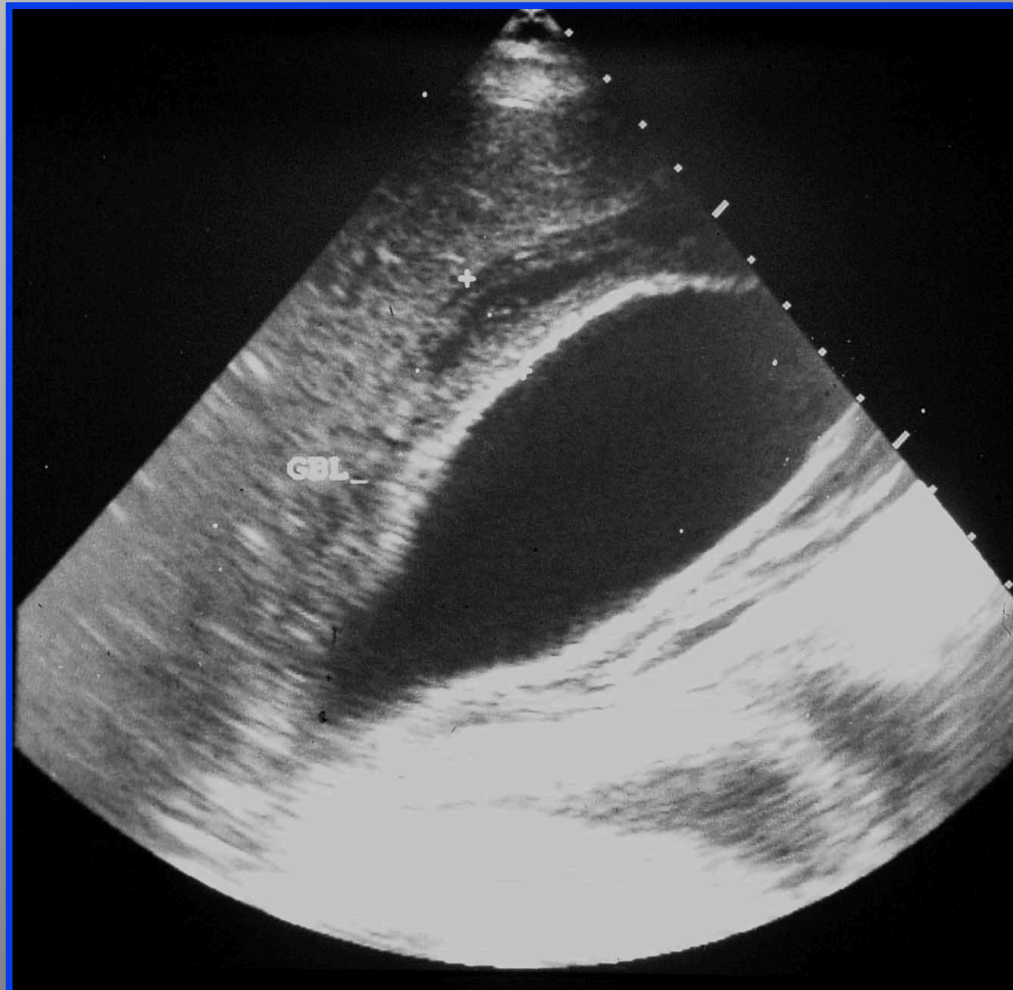


# CHOLECYSTITT

- Ømhet ved "transducer-palpasjon"
- Fortykket vegg: 5 mm eller mer
- Cholecystolithiasis
- Dilatert galleblære: tverrsnitt 4 cm eller mer
- Ekkofattig skikt i galleblæreveggen



# Cholecystitt





# Chronic Cholecystitis

Haukeland US 09/08/10 10:50:18 ADM MI 1.2 TIs 1.6 C1-5 GASTRO

LOGIQ E9

1

2

FR	26
CHI	
Frq	4.0
Gn	64
S/A	1/1
Map	F/1
D	9.0

Haukeland US 09/08/10 10:57:38 ADM MI 1.2 TIs 0.8 9L GASTRO

LOGIQ E9

FR	34
CHI	
Frq	9.0
Gn	53
S/A	3/1
Map	F/1
D	4.5
DR	63
AO%	100

1	L	0.60	cm
2	L	0.20	cm
d		4.18	cm
L		0.00	cm



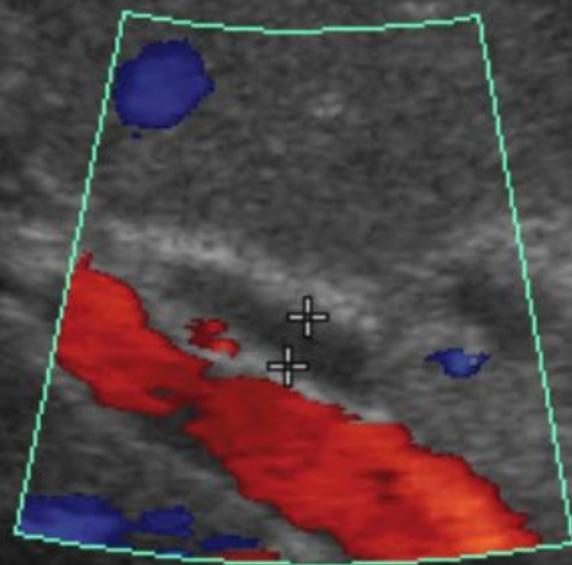
# GALLEGANGENES KALIBER

- Intrahepatiske galleganger skal ikke være over 1-2 m.m.normalt
- Ductus hepatis communis og ductus choledocus kan måle opptil 4-5 mm
- 5-6 mm er usikkert patologisk
- > 6 mm indikerer obstruksjon
- Ductus bør måles proximalt, ekstrahepatisk.
- Økende diameter med alder
- Økende diameter etter periodar med dilatasjon(akutt/kronisk),postcholecystectomi

ATL

d  
en  
lap 5

Hz  
Med V



56cm

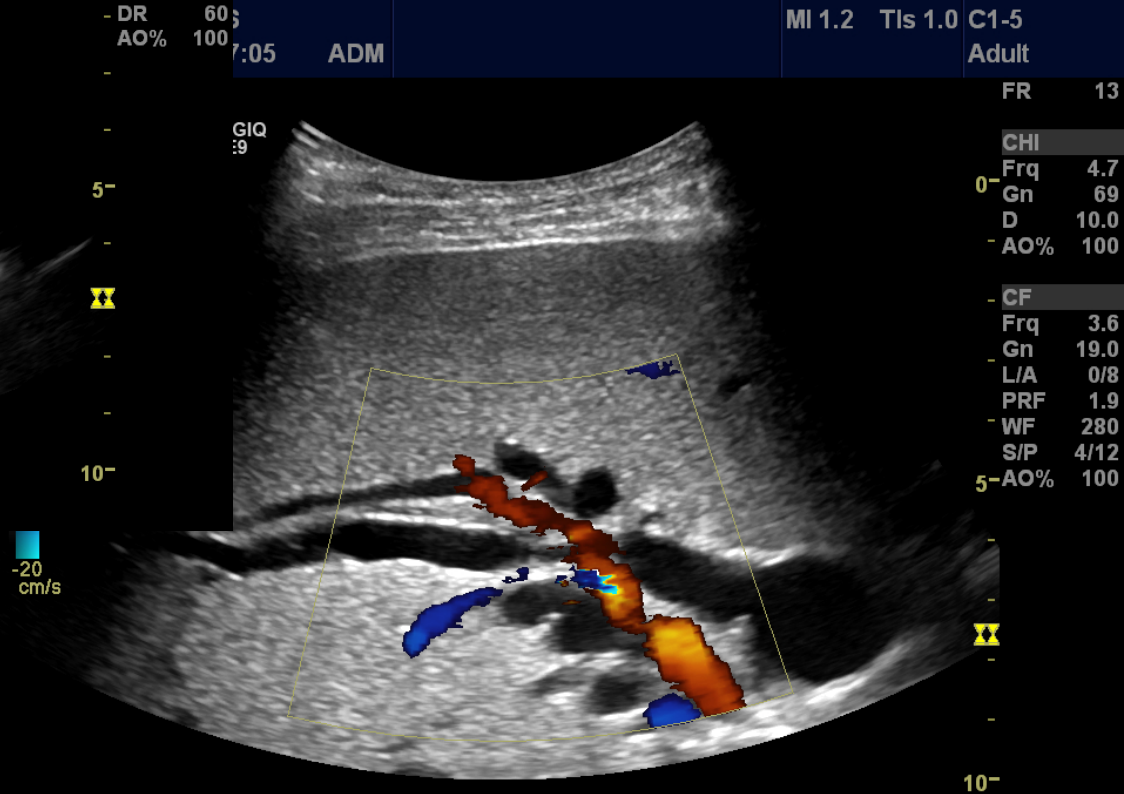


# ÅRSAKER TIL INTRAHEPATISK DILATASJON

- Konkrement
- Neoplasme
  - hepatocellulært carcinom
  - cholangiocarcinom
  - metastaser
- Lymfadenopati i hilus
- Skleroserende cholangitt



# Intrahepatic Bile Duct Dilatation



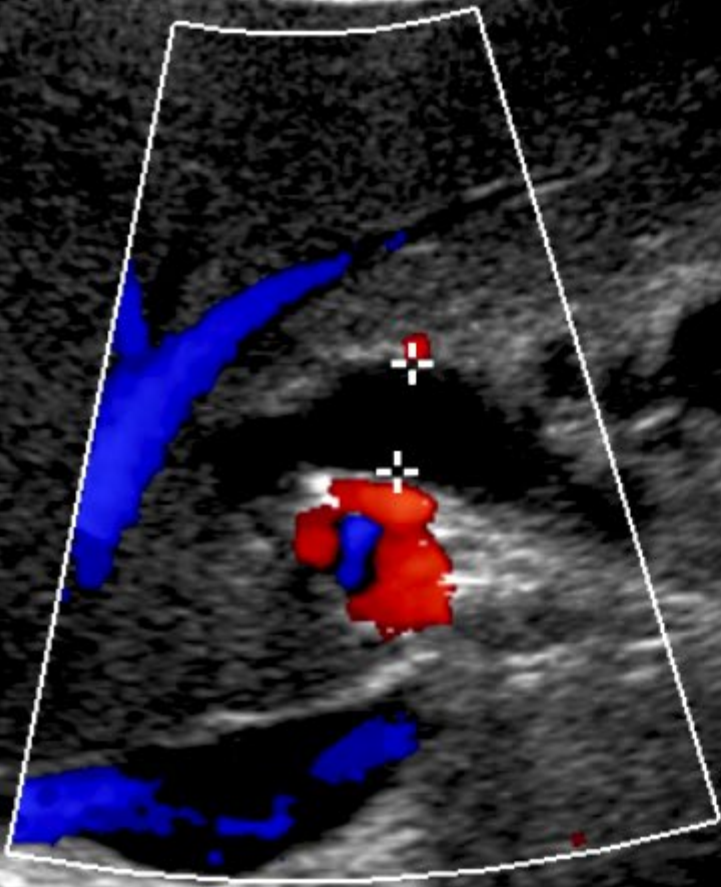




# ÅRSAKER TIL EKSTRAHEPATSISK DILATASJON

- Konkrement
- Neoplasme – cholangiocarcinom
  - - pancreascancer
  - - papillecancer
- Lymfadenopati
- Inflammasjon
- Choledocuscyste
- Skleroserende cholangit

P





2.40cm



Abd

C60

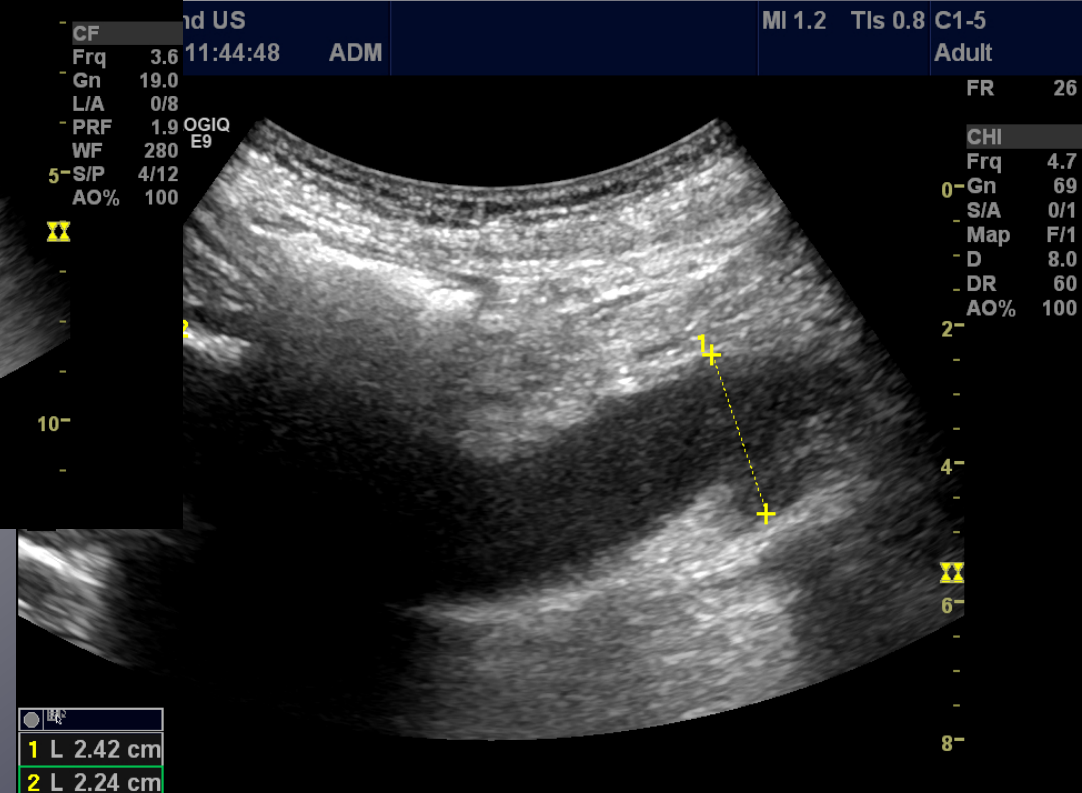
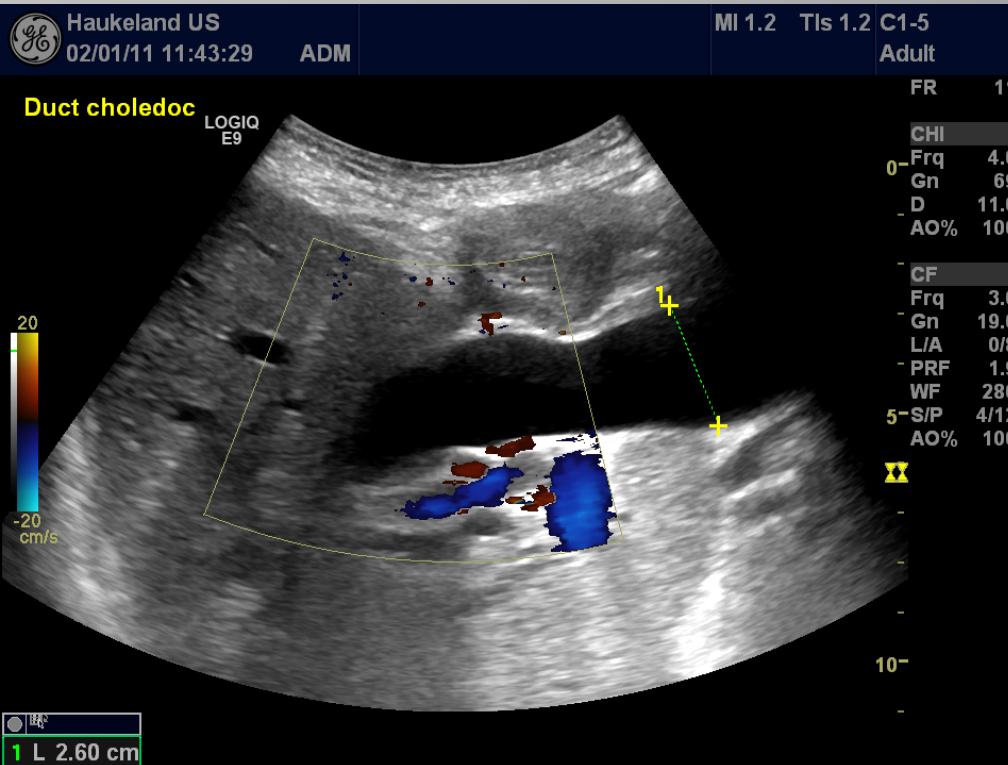


9.

2001Jan10 10:02

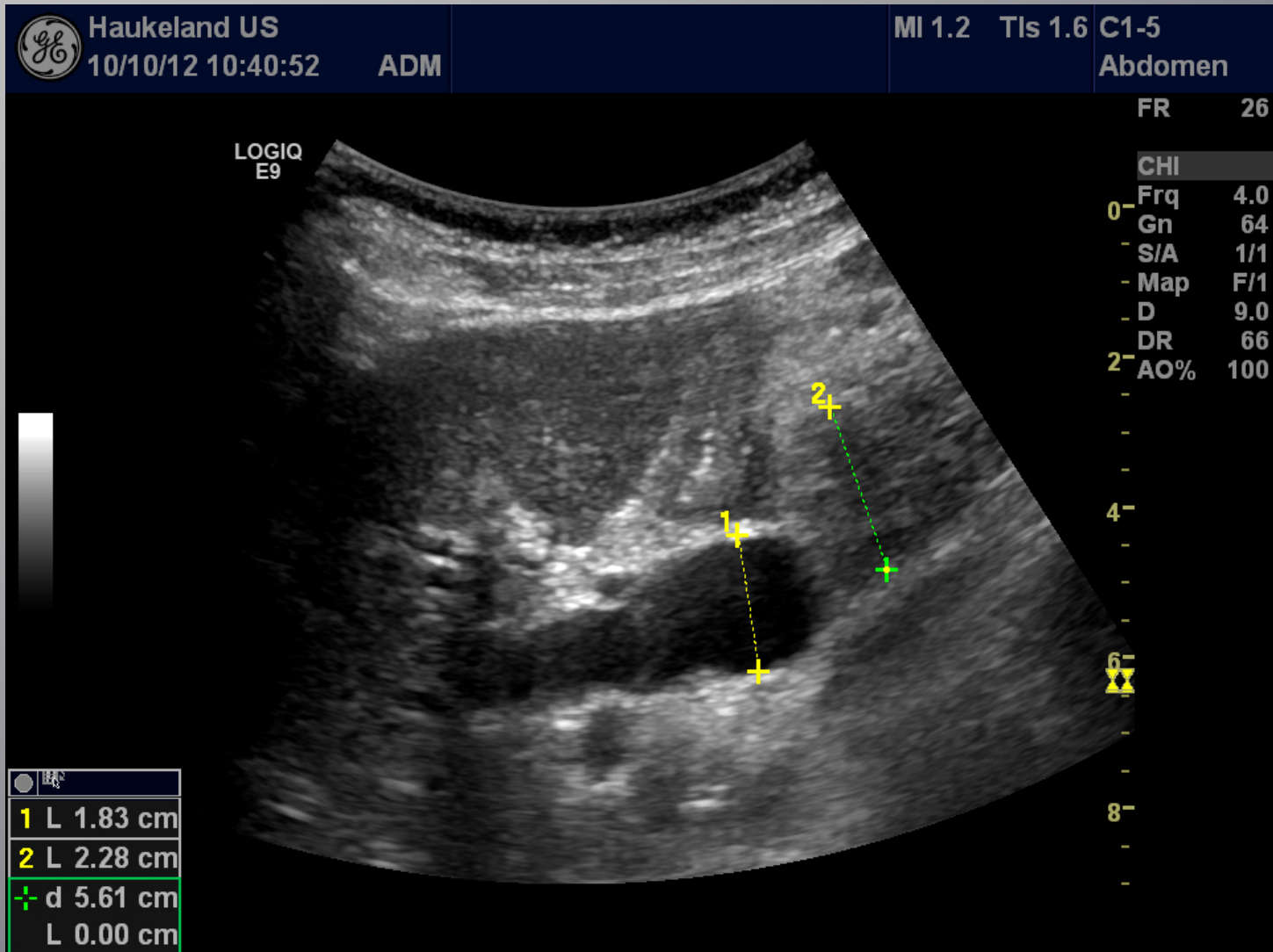


# Dilated Common Bile Duct





# Extrahepatisk Bile Duct Dilatation





# Konklusjon

Ultralyd er et meget nyttig verktøy for klinikeren til å vurdere pasienter med sykdom i gallesystemet

- Gastroenterologen eller gastro-kirurgen som lærer seg ultralyd har muligheten til å gjøre effektive kliniske beslutninger
  - ...og får en mer spennende hverdag...



# An image....



# ... says more than a thousand words