



Fig. 504 Emphysematous cholecystitis: hydropic gallbladder (GB) with stones and acoustic shadowing (S). Reverberations (W) arise from echogenic air bubbles on the anterior wall (arrows)

## 14.4 Intraluminal Changes

### Overview (Table 59):

Table 59 · Intraluminal changes in the gallbladder

| Nonshadowing               | Shadowing                  | Complex echo pattern                        |
|----------------------------|----------------------------|---|
| Sludge (p. 346)            | Gravel (p. 348)            | Gallbladder carcinoma with a stone (p. 349) |
| Empyema, hydrops (p. 347)  | Stones (p. 348)            | Empyema with a stone (p. 349)               |
| Cholesterol polyp (p. 347) | Stony gallbladder (p. 349) | Phlegmon (p. 350)                           |
| Adenoma (p. 347)           | Pneumobilia (p. 349)       |   |
| Carcinoma (p. 348)         |                            |   |

### Intraluminal Changes without Acoustic Shadowing

- ▶ **Sludge** (Fig. 505): formation of bilirubin and cholesterol crystals (floating, polypoid, or tumor-like, depending on specific gravity), common in patients on parenteral nutrition. It results in stone formation.
  - Rounded, fungoid or flat layer of sediment that shows sluggish movement with position changes

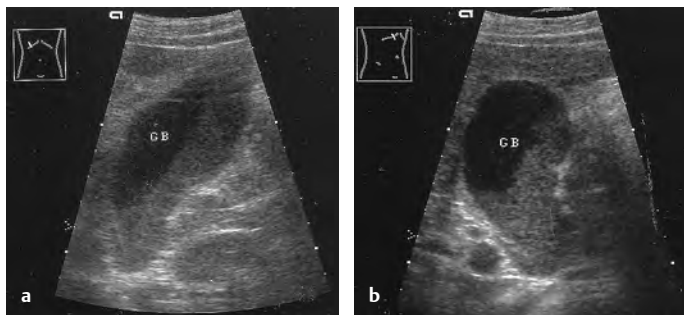


Fig. 505 a Sludge in the gallbladder (GB). b The echogenic sediment moves when the patient is repositioned

- *Individual crystal aggregates*: swirl on rapid rotation of the body
- *Sludge completely filling the lumen*: echogenic gallbladder
- ▶ **Empyema, hydrops** (see Fig. 493, p. 340, and Fig. 514, p. 350):
  - Enlarged gallbladder with slightly or markedly echogenic contents
  - Degree of enlargement: length > 80 mm, width > 40 mm
  - Local tenderness to palpation (Murphy's sign)
  - Gallstones usually present
- ▶ **Cholesterol polyp** (Fig. 506):
  - Round intraluminal mass adherent to the gallbladder wall
  - Size < 5 mm (size > 6 mm indicates a true neoplasm, and > 10 mm probably signifies the malignant transformation of gallbladder adenoma)
  - Usually echogenic with reverberations, sometimes hypoechoic

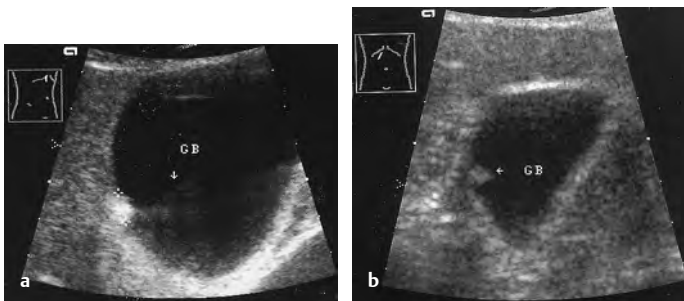


Fig. 506a, b Cholesterol pseudopolyps. **a** Echogenic, intraluminal protuberant mass on the gallbladder wall (cursors; arrow: side-lobe artifact). **b** Hypoechoic sessile polyp (arrow) on the gallbladder wall. Must be differentiated from adenoma

- ▶ **Gallbladder adenoma** (Fig. 507): tumor > 6 mm based on the gallbladder wall. Lesions  $\geq 10$  mm require close follow-up, and surgery may be considered. Lesions > 15 mm should always be extirpated as they often signify malignant change.

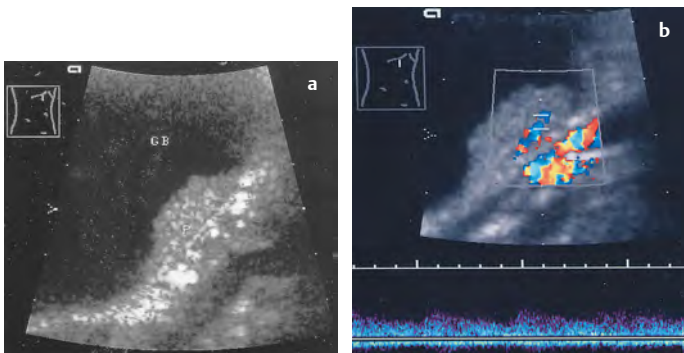


Fig. 507a, b Gallbladder adenoma. **a** Hyperechoic mass (P) in the gallbladder (GB). The tumor is broadly adherent to the gallbladder wall but does not infiltrate it. **b** CDS: Spectral analysis reveals an intratumoral vessel. Additional color flow signals: vena cava