

Background

- Anabolic steroid use can lead to a spectrum of hepatic injuries from abnormal liver function panel to neoplasia.
- Adenoma and hepatocellular carcinoma typically develop after 5 years of use.

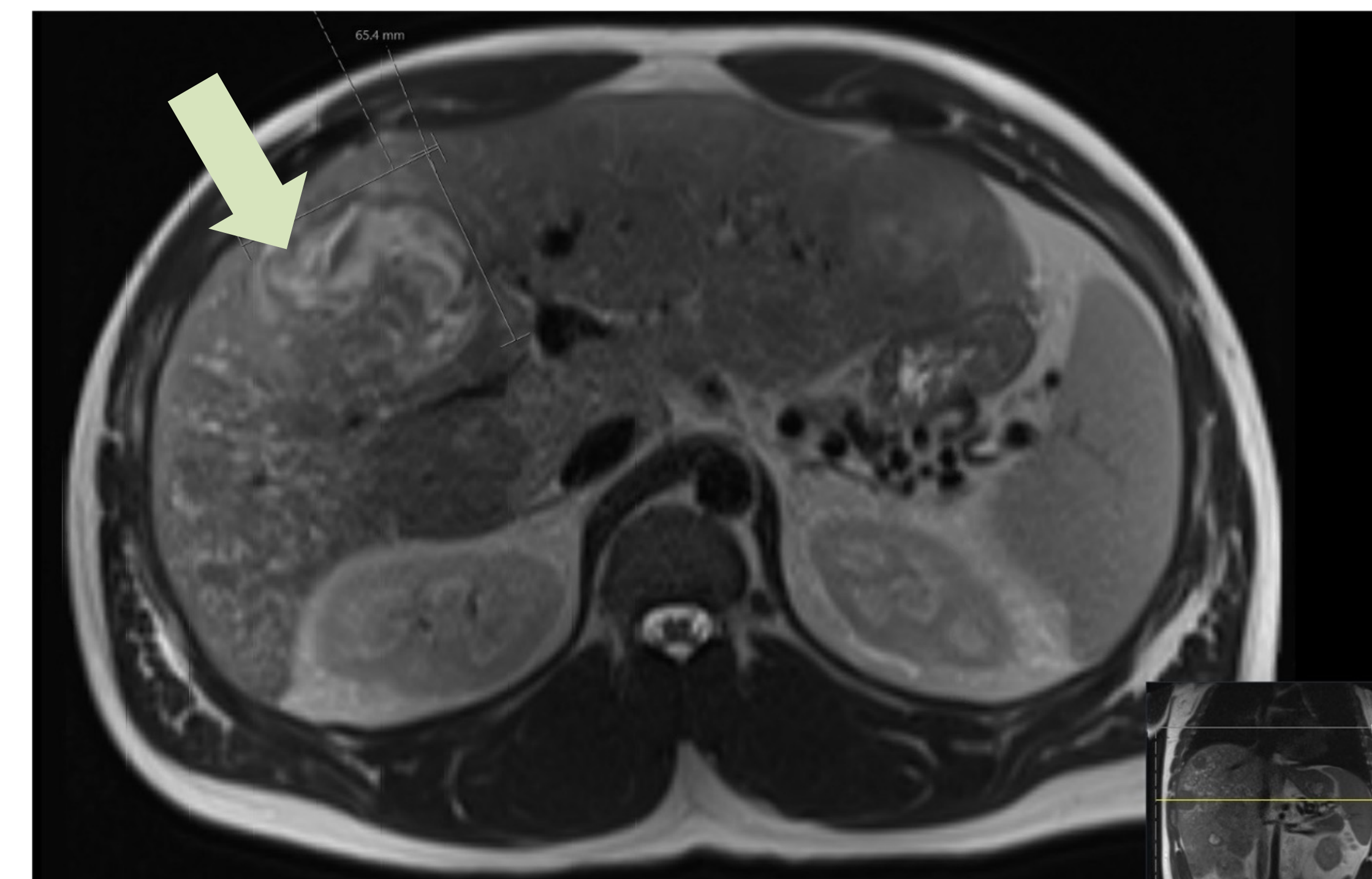
Learning Objectives

- To understand various patterns of liver injury from anabolic steroids.
- To emphasize the importance of multiple liver biopsies in such patients.
- To underscore the importance of resection in cases with high risk of malignancy.

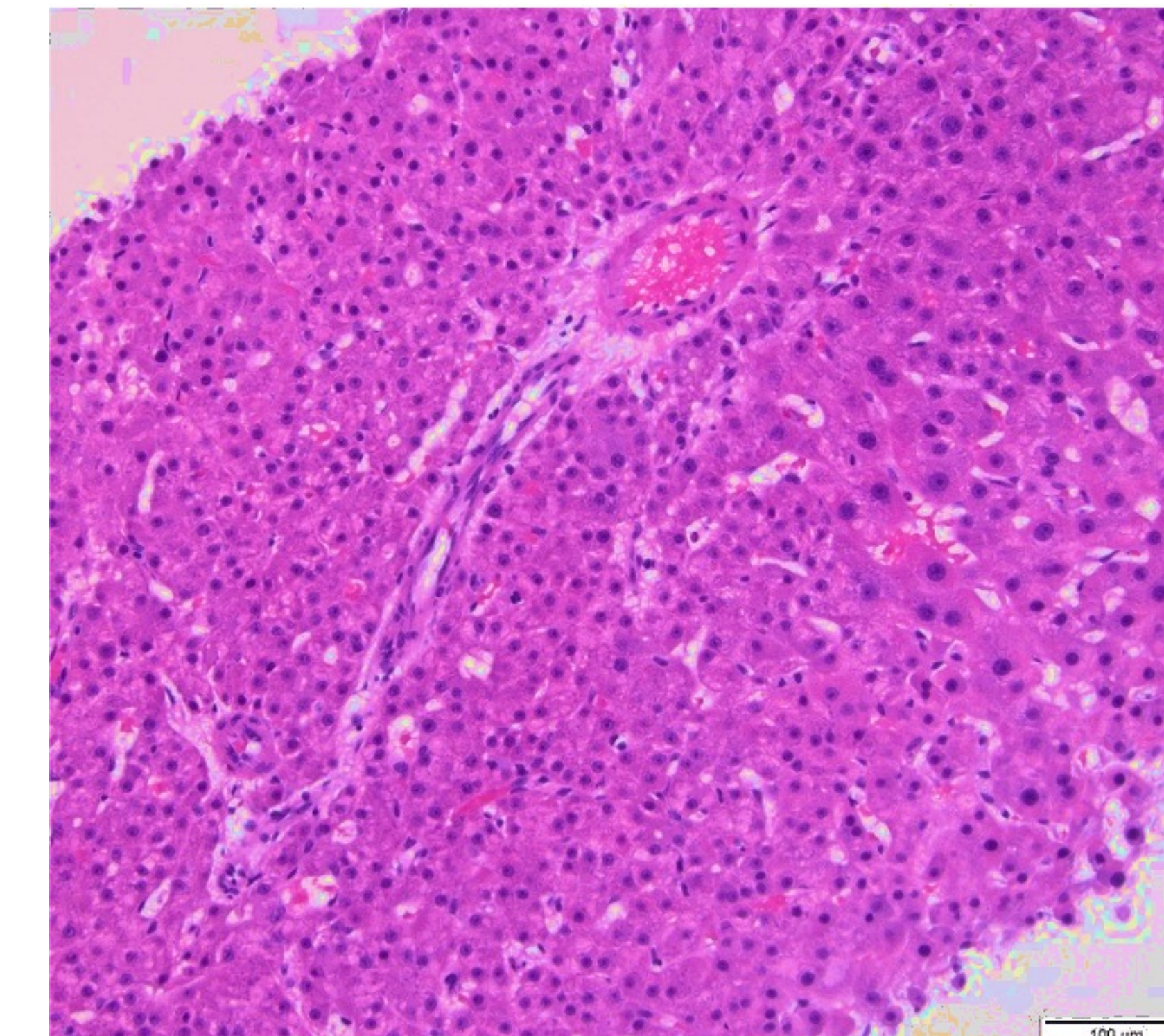
Case Presentation

- A 30-year-old healthy male presented with six days of fever, right upper quadrant abdominal pain and distension.
- Social history included 3 years of intravenous anabolic steroid use.
- On physical exam, the patient had non-tender hepatomegaly.
- Labs were remarkable for
 - ALT 541 U/L
 - AST 77 U/L
 - Elevated inflammatory markers
 - Alpha-fetoprotein < 4
- Infectious workup was negative.
- MRI liver:
 - Enlarged liver (27 cm)
 - Cavernous cystic changes
 - Multiple T2 hyperintense hemorrhagic lesions in the right lobe, the largest measuring 6.8x6.5x7.7 cm
 - Multiple other hypodense lesions.
- Random liver biopsy:
 - Areas of sinusoidal dilation, peliosis hepatis, pseudoglandular areas, pseudoportal tracts and nodular regenerative hyperplasia.
- Biopsies from hemorrhagic and solid liver masses revealed well-differentiated hepatocellular adenoma which was beta-catenin activated.
- Malignant transformation could not be excluded in the biopsied liver masses so surgical resection was recommended

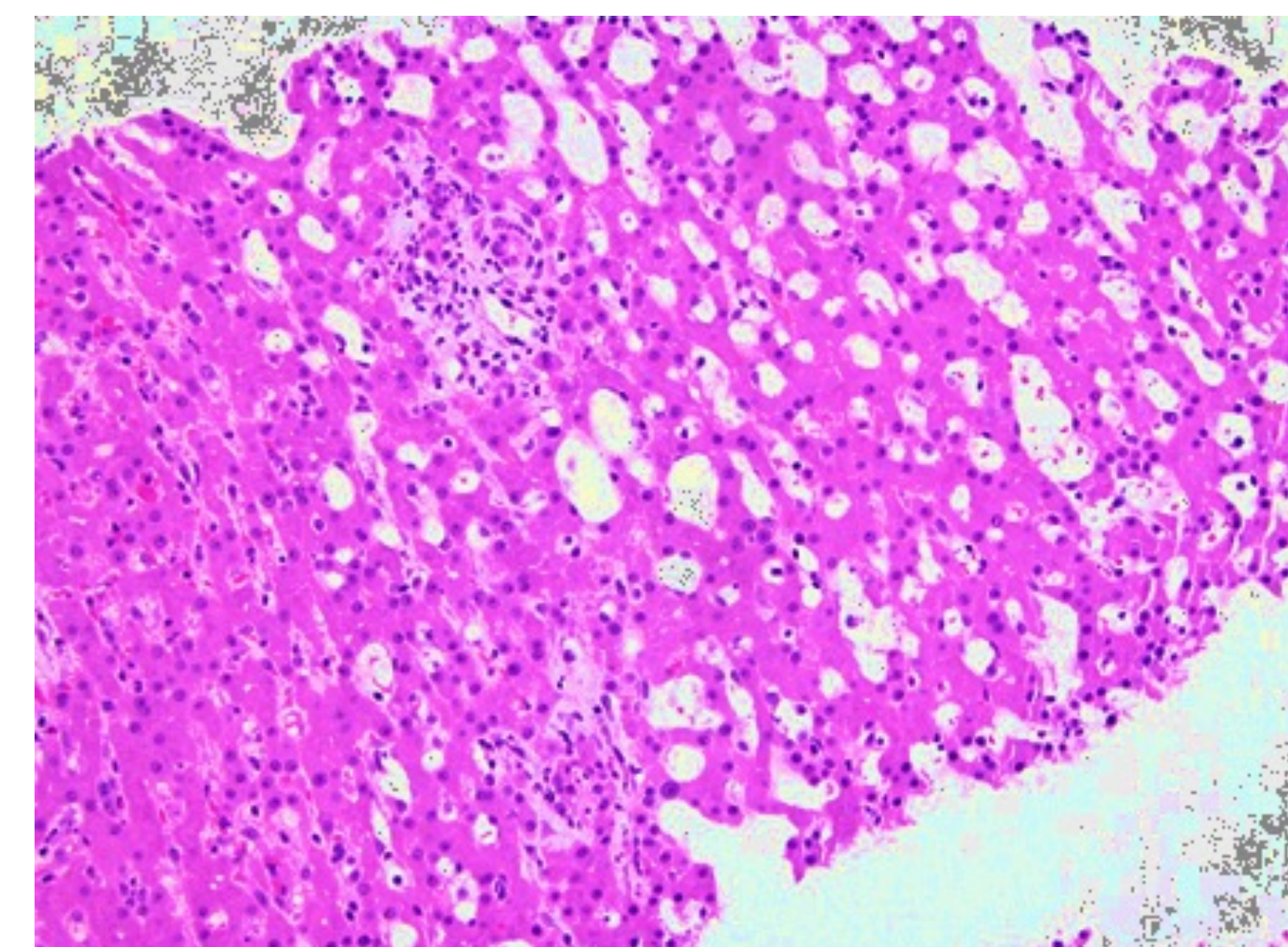
Clinical Images



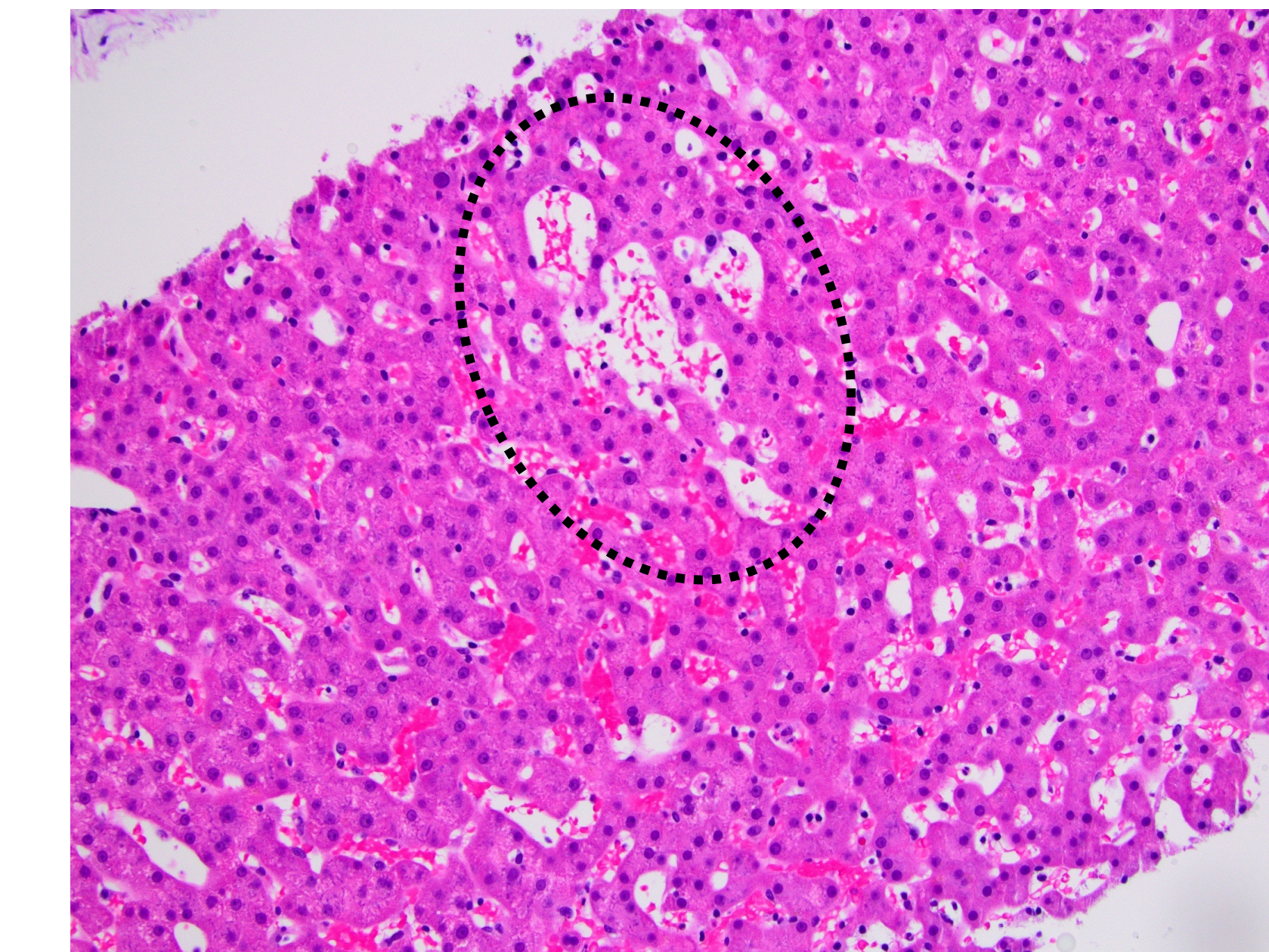
MRI liver with hemorrhagic mass and cavernous cystic changes in surrounding parenchyma



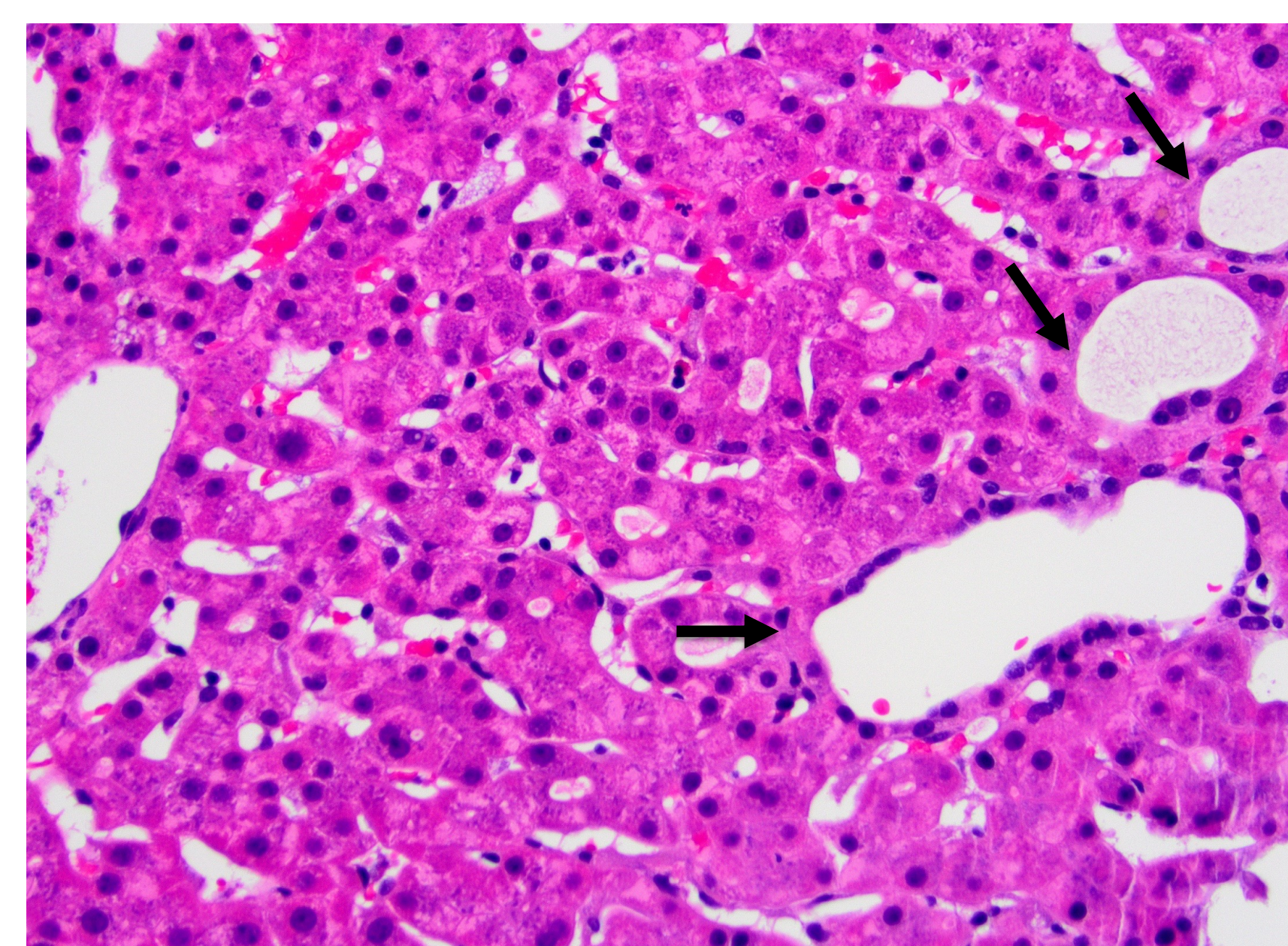
Pseudoportal tracts



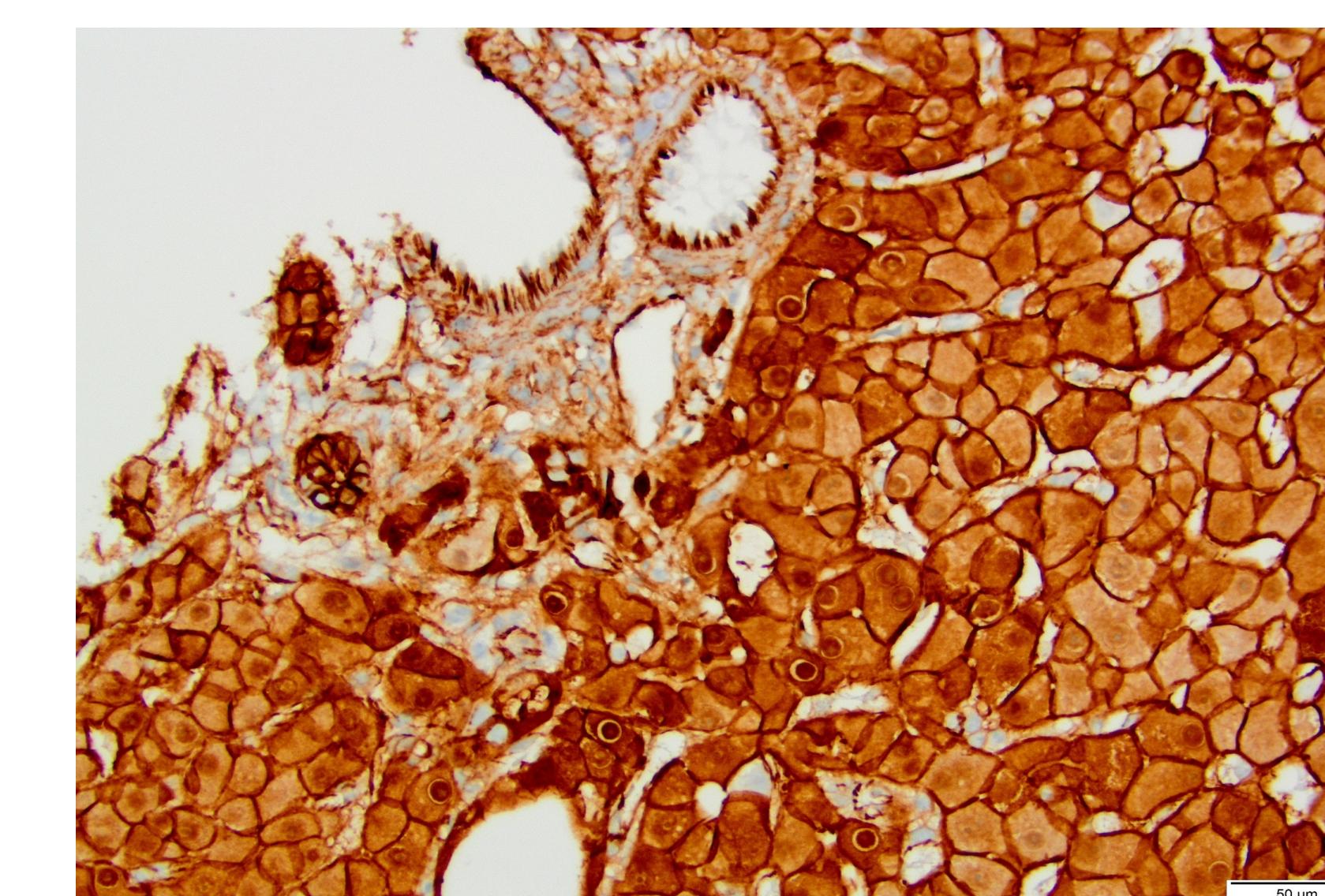
Sinusoidal dilatation



Peliosis hepatis



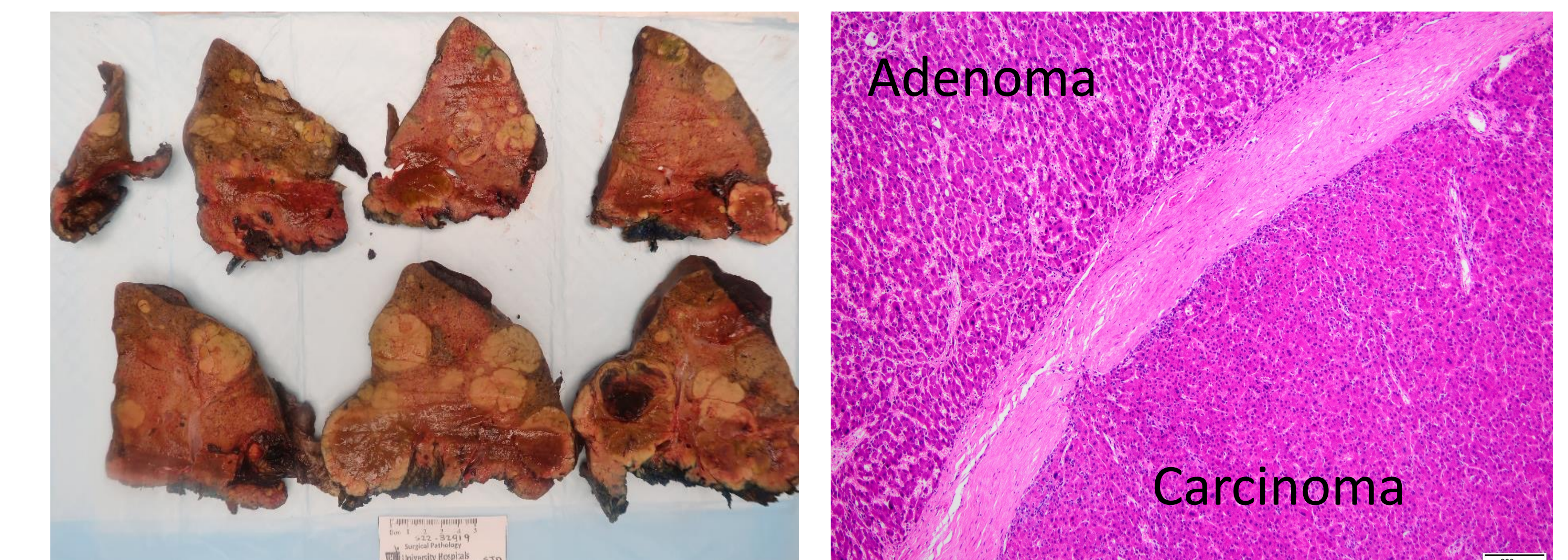
Pseudoglandular areas



Positive beta-catenin stain in hepatic adenoma

Follow-up Course

- Patient abstained from steroids however delayed surgery.
- Patient presented four months later with subcapsular hematoma and hemoperitoneum from ruptured adenoma.
- Exploratory laparotomy showed a ruptured hepatic capsule and a friable right hepatic lobe. Patient underwent right hepatectomy and resection of adenomas in a staged manner.
- Pathology was consistent with pT3 hepatocellular carcinoma.
- Systemic therapy with atezolizumab is being started



Right partial hepatectomy

Discussion

- Anabolic steroids can lead to a spectrum of histological diagnoses in the same patient.
- Multiple biopsies of liver with samples inclusive of masses as well as random tissue are crucial.
- Large adenomas (>5 cm) have a high risk of malignant transformation and rupture. The risk is higher when beta catenin stains positive.
- Pathology after resection is the only way to definitively diagnose or exclude hepatocellular carcinoma (HCC) harboring within adenoma.
- Compared to non-users, HCC from steroid users often carries a better prognosis, as it presents earlier in life in the absence of cirrhosis.
- However, HCC has a high mortality rate and can predispose to liver failure in the acute setting.
- Hence surgery should be considered in a time-sensitive manner.