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Can Metabolic Dysfunction-Associated Steatotic Liver Disease (MASLD) be Well Classified by a Visual Assessment During Bariatric and Metabolic Surgery?

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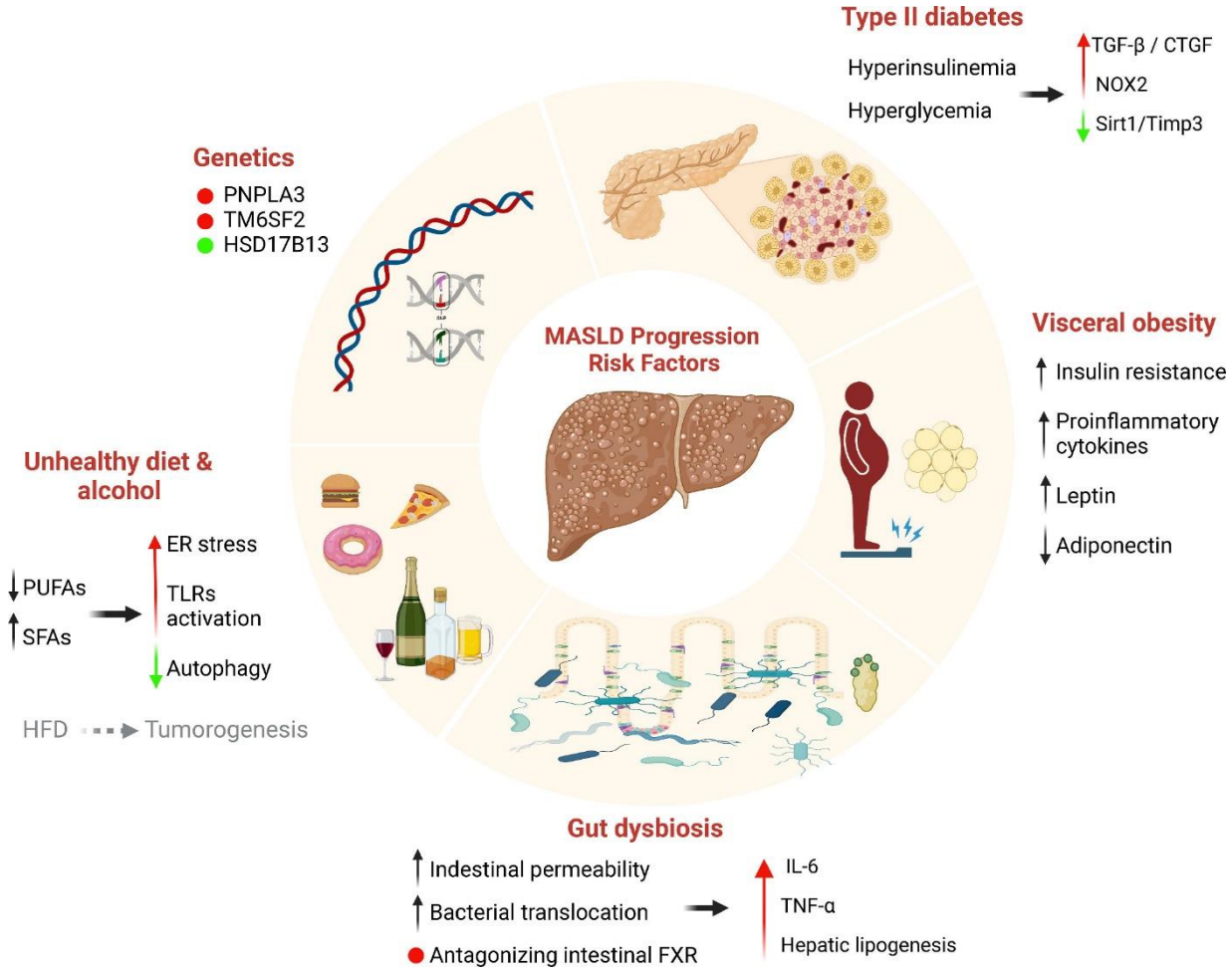
Disclosures

	No, nothing to disclose

Metabolic dysfunction-associated steatotic liver disease



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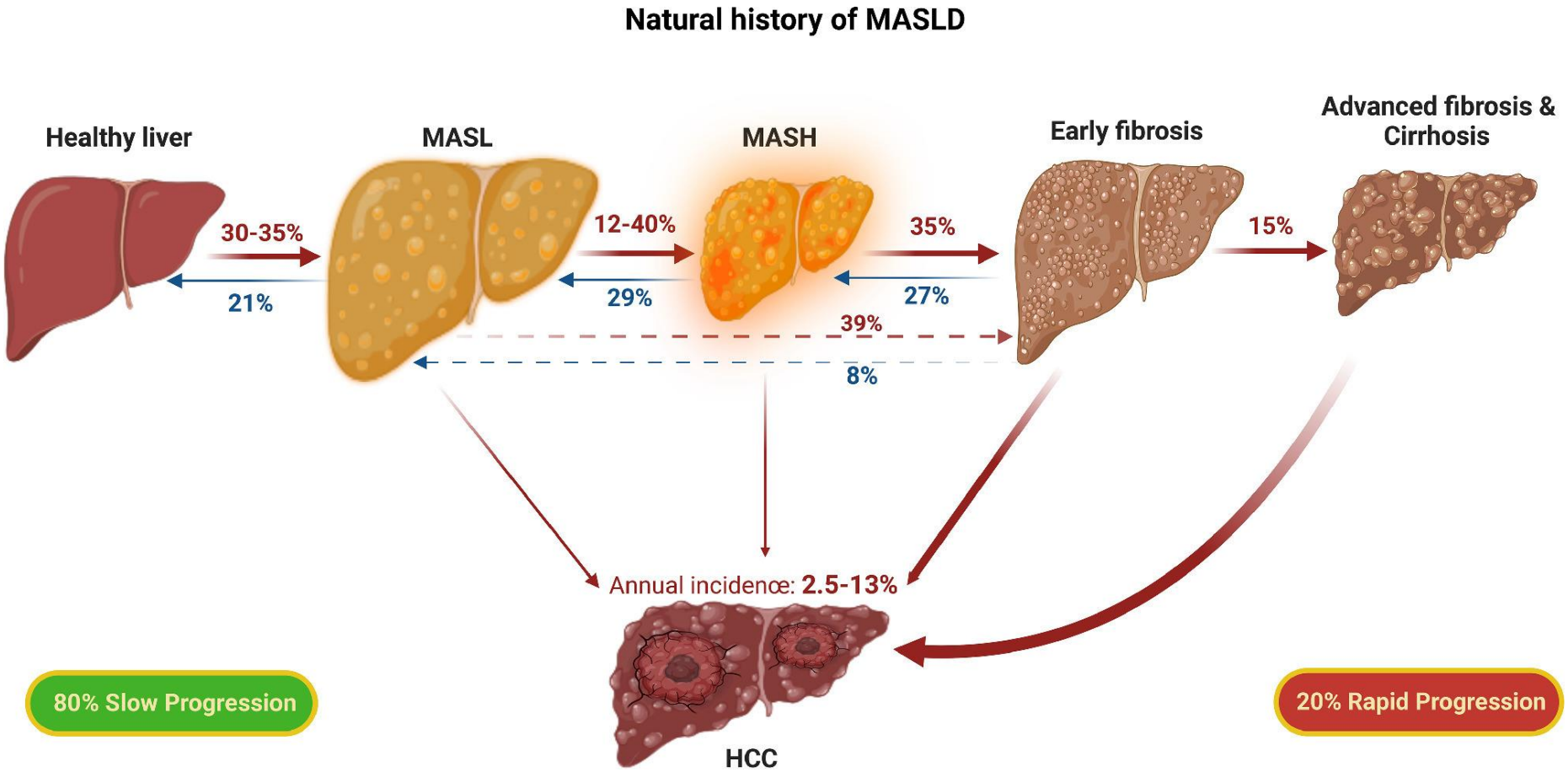
Metabolic dysfunction-associated steatotic liver disease



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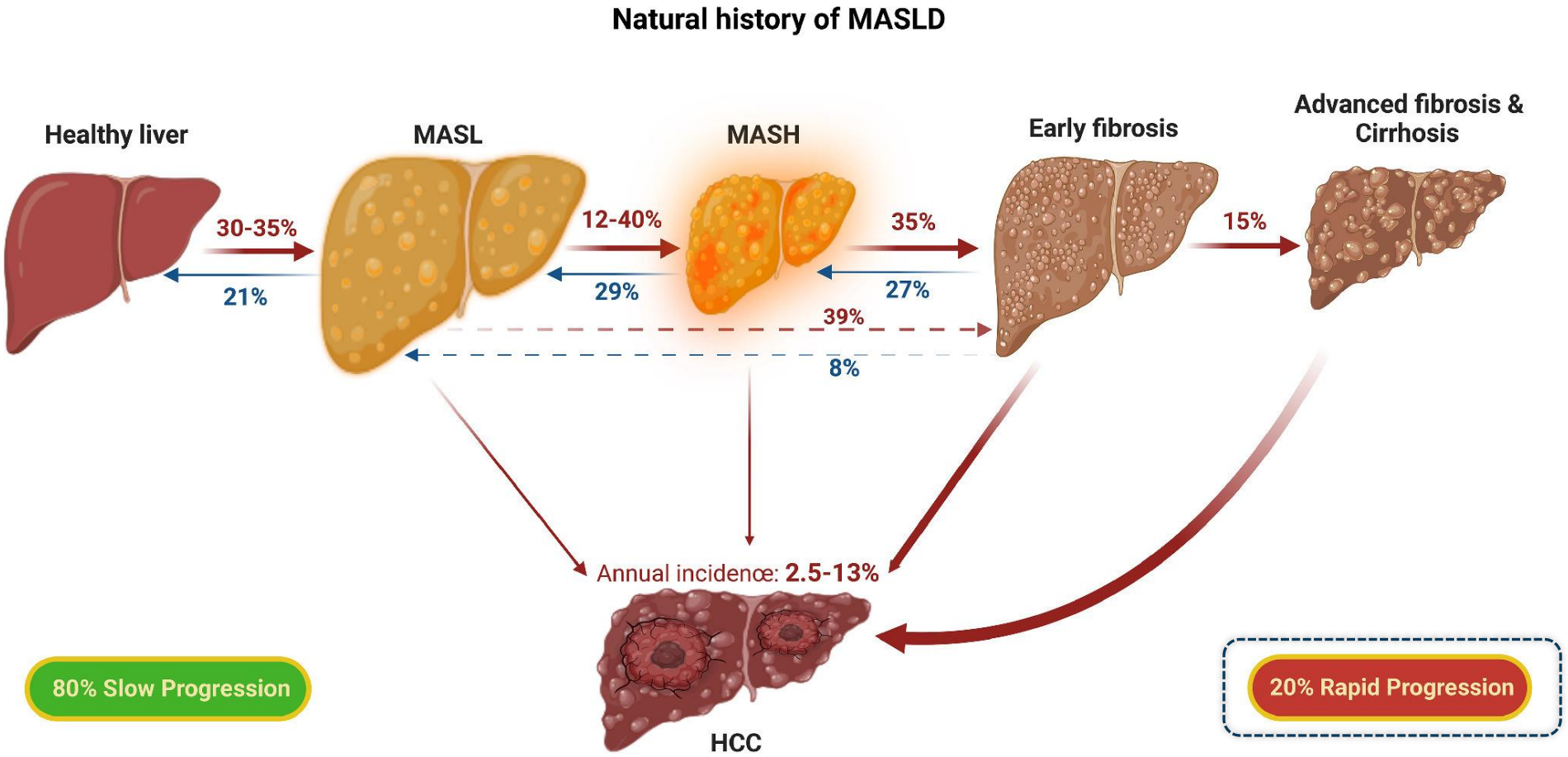

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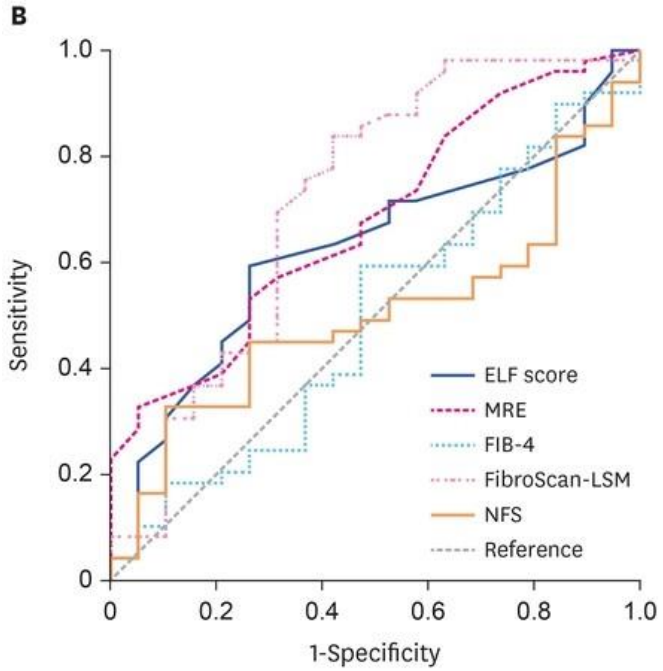
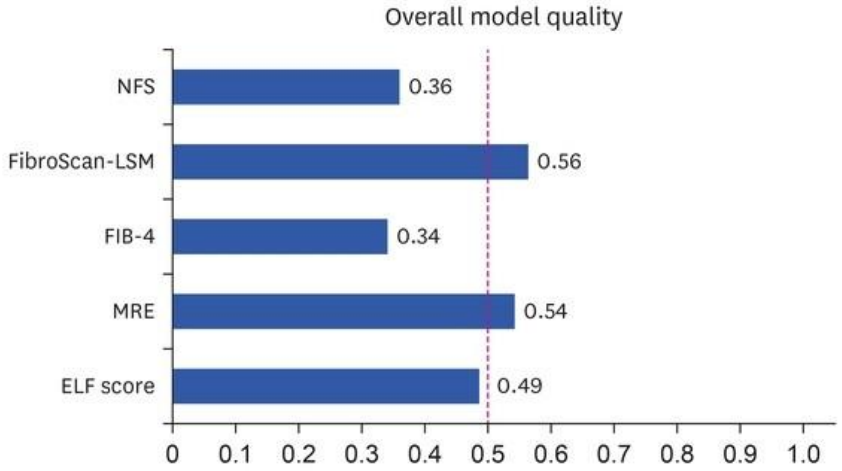
Non-invasive tools

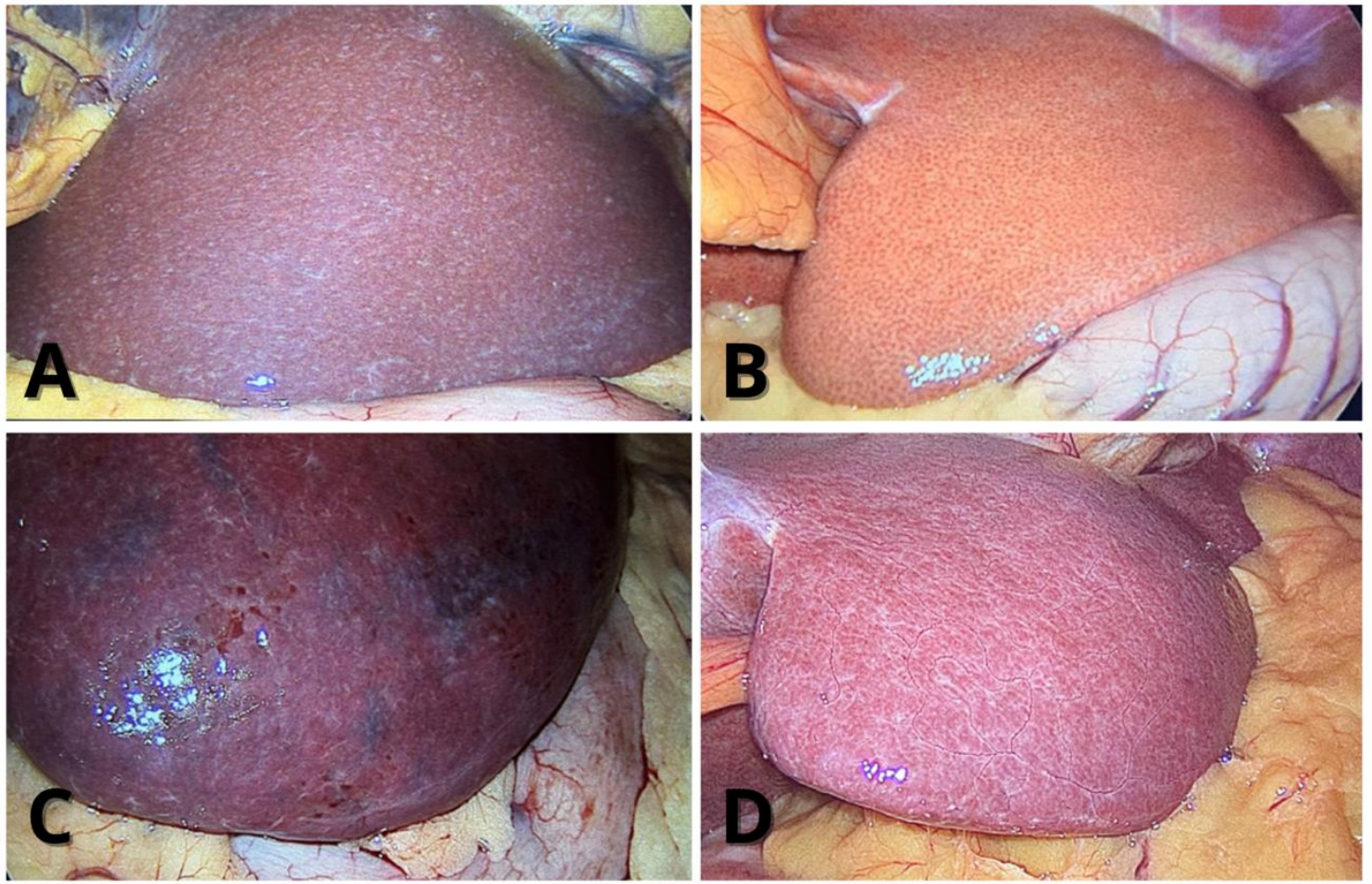




Diagnosis methods for liver fibrosis	AUROC (95% CI)	Cut-off (Youden' J)	Sensitivity (95% CI)	Specificity (95% CI)	PPV (95% CI)	NPV (95% CI)	Accuracy
ELF score	0.625	8.25	59.18	73.68	85.29	41.18	63.24
NFS	0.501	−1.88	32.65	89.47	88.89	34.00	48.26
FIB-4	0.494	0.46	57.14	52.63	75.68	32.26	55.88
FibroScan-LSM (kPa)	0.714	4.85	83.67	57.89	83.67	57.90	76.47
MRE	0.677	3.55	32.65	94.74	94.12	35.29	50.00

Park, J.-H., Kim, S.M. and Lee, D.H. (2025). Comparison of Non-invasive Methods for Diagnosis of Non-alcoholic Fatty Liver Disease Before Bariatric Surgery and Postoperative Follow-up in Obese Patients. *Journal of Metabolic and Bariatric Surgery*

Visual Assessment of Hepatic Fibrosis



A – Visual: F0S0. Biopsy: F0S1.
B – Visual: F0S3. Biopsy : F1S1.
C – Visual: F3S2. Biopsy : F0S1.
D – Visual: F3S2. Biopsy : F4S1.

Objectives

- Compare visual liver assessment with liver biopsy
- Evaluate correlation with CAP, FIB4 and VCTE

Study Design and Population

- Type: Cross-sectional study
- Visual assessment: single expert surgeon (>5,000 BMS)
- Biopsy: left-lobe edge sample, Kleiner classification (gold standard)
- Additional analysis: correlation with CAP, FIB-4, VCTE
- Population: 310 consecutive patients (May–Nov 2024)
  - Inclusion: age 18–65, BMI ≥35 kg/m², both sexes
  - Exclusion: other liver diseases, previous liver surgery

Visual vs Biopsy in Steatosis

Metric	Value	Value (%)
Sensitivity	0.964	96.4%
Specificity	0.131	13.1%
PPV	0.819	81.9%
NPV	0.471	47.1%

Visual vs Biopsy in Steatosis

Steatosis	Visual scale	Biopsy				
			Healthy	Mild	Moderate	Severe
		Healthy	08	**50**	03	00
		Mild	03	77	08	03
		Moderate	05	69	20	06
		Severe	01	23	23	11

Visual vs Biopsy in Fibrosis

Metric	Value	Value (%)
Sensitivity	0.451	45.1%
Specificity	0.779	77.9%
PPV	0.695	69.5%
NPV	0.559	55.9%

Visual vs Biopsy in Fibrosis

Fibrosis	Visual scale	Biopsy				
			Healthy	Mild	Moderate	Severe
		Healthy	113	28	03	01
		Mild	54	26	00	02
		Moderate	**30**	**28**	03	02
		Severe	5	10	02	**00**

Visual vs Biopsy in Fibrosis

- **Any fibrosis (F ≥ 1):**
  - Visual ≈ VCTE (p = 0.694)
  - Visual ≈ FIB-4 (p = 0.530)
- **Mild (F1–F2) vs. Advanced (F3–F4):**
  - Visual outperformed VCTE (p = 0.001)
  - Visual outperformed FIB-4 (p = 0.004)
- **VCTE, FIB-4 and Biopsy:**
  - VCTE significantly associated with histology (p < 0.001)
  - FIB-4 also associated (p = 0.030)

Conclusions

- Visual inspection detects steatosis, but is not reliable for staging.
- Fibrosis is often misclassified visually, with risk of both under- and overestimation.
- Non-invasive tests (CAP, VCTE, FIB-4) show better correlation with histology, but remain limited in patients with obesity.
- Liver biopsy remains essential, and its indication should be defined preoperatively, not based on intraoperative appearance.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