

ARTIFICIAL INTELLIGENCE FOR COMPREHENSIVE PANCREATIC LESION PROFILING: MULTICENTER VALIDATION OF SOLID/CYSTIC LESION DETECTION/ CHARACTERIZATION AND IPMN GRADING

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Presentation

Digestive Oncology

Pancreas

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Multicenter transatlantic AI study developed CNNs achieving 89.8% accuracy in stratifying IPMNs into high-grade dysplasia/carcinoma versus low-grade dysplasia, the first model to provide real-time detection, differentiation, and prognostic stratification of both solid and cystic pancreatic lesions.

KEY POINTS

- The IPMN stratification model distinguished high-grade dysplasia/carcinoma from low-grade dysplasia with 97.5% sensitivity, 94.3% specificity, 89.8% accuracy, and AUC 0.988 in 30 histologically confirmed patients
- For solid lesions, the CNN differentiated PDAC from PNETs with 91.8% accuracy, sensitivities of 96.2% and 97.8% respectively, using 49034 images from 95 patients across 12 centers in Spain, Brazil, the United Kingdom, and the United States
- The cystic lesion model detected mucinous cystic lesions with 97.5% sensitivity and 89.7% overall accuracy using 79395 images from 82 patients
- This is the first integrative model to stratify IPMNs by dysplasia grade using EUS video analysis, potentially reducing unnecessary surgeries for low-risk lesions and ensuring timely intervention for high-risk patients
- All diagnoses were confirmed by histology as the gold standard, with datasets split into training (70%), validation (20%), and testing (10%) subsets to avoid overfitting
- The presenter emphasized that prospective validation studies are ongoing and cost-effectiveness analysis is needed before clinical implementation

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