



## The AI We Actually Want – Effortless Liver Segmentation

A 41-year-old man, treated for sigmoid colon carcinoma, came in for a follow-up PET/CT. The scan showed a new FDG-avid lesion in the liver – almost certainly a metastasis. The question for the surgeon and oncologist was a simple one: which segment? Segment 4? Or segment 8? (Fig. 1)

That distinction matters. It changes the resection plan, the vascular approach, and sometimes the decision between resection and ablation.

Liver segmentation has, for decades, been a slow and slightly painful process. In the early years, we used to segment manually on the workstation. Workstations got better, specialised software arrived, then one-click solutions – but most of these still live on dedicated machines, away from where we actually read studies.

What we want is something different. We want the segmentation tool to live on the same workstation we already use to report, with one click, and at no extra cost in time or workflow. In my case, that workstation is Osirix MD running on a Mac Mini M4 with 24 GB RAM.

For this case, I ran the Liver Segmentation module of TotalSegmentator – an open-source AI tool – directly inside Osirix, and fused the segmented liver with the FDG-PET data (Fig. 2). The lesion sat squarely in segment 4 (Fig. 3). The segmentation can be reformatted in any plane, and a right-click on any segment gives its volume (Fig. 4) – useful when the surgeon asks how much liver will be left after resection. A second module on the same dataset adds portal and hepatic vein segmentation, again in a few minutes.

The whole process took 5–7 minutes. For this



Fig. 1– Axial PET/CT showing the FDG-avid liver lesion. Segment 4 or segment 8?

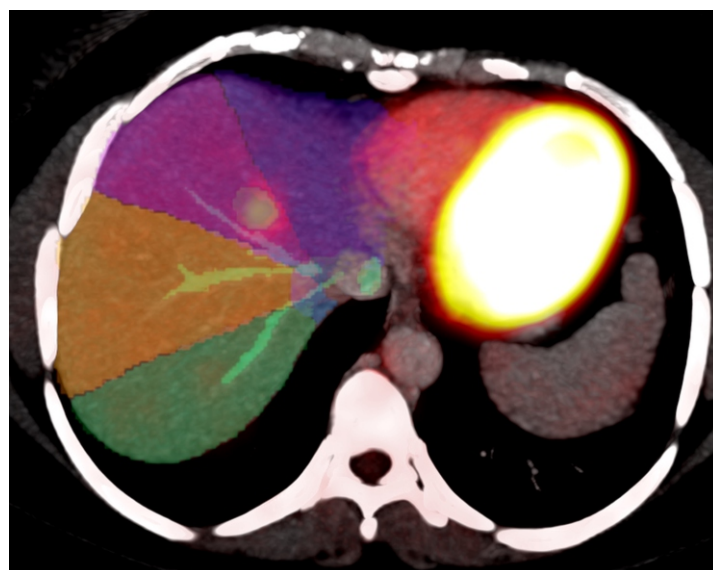
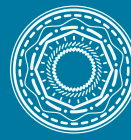


Fig. 2– Liver segmentation produced by TotalSegmentator inside Osirix, fused with the FDG-PET data.



**At a glance**

- ◆ AI tools that quietly improve existing radiology workflows – without changing the workstation, the software, or the report – are the ones that will actually be used.
- ◆ TotalSegmentator is an open-source AI tool that runs locally inside

- Osirix MD and produces full liver segmentations, with vessel maps and segment volumes, in 5–7 minutes.
- ◆ Precise sub-segmental localisation of liver lesions, with vessel maps and segment volumes, is now a one-click step rather than a separate workstation.

particular patient, much of that detail was more than the surgeon needed. But the principle is what matters.

This is the AI we want. Not a black box that replaces the radiologist, and not a separate cloud service that fragments the workflow. A quiet helper that lives on the same machine, runs on the same dataset, and makes the answer sharper.

For the referring physician, this means two things. First, when the report says “segment 4” rather than “segment 4 or possibly 8,” that confidence has been earned with anatomy, not a guess. Second, expect more of this – segmentation, volumetry, and vessel maps will increasingly appear as standard parts of the report, especially for oncology, hepatobiliary surgery, and pre-transplant workups, with no extra scan time and no extra cost to the patient.

The promise of AI in radiology was never about replacement. It was about removing friction from the parts of our work that should have been easier all along.

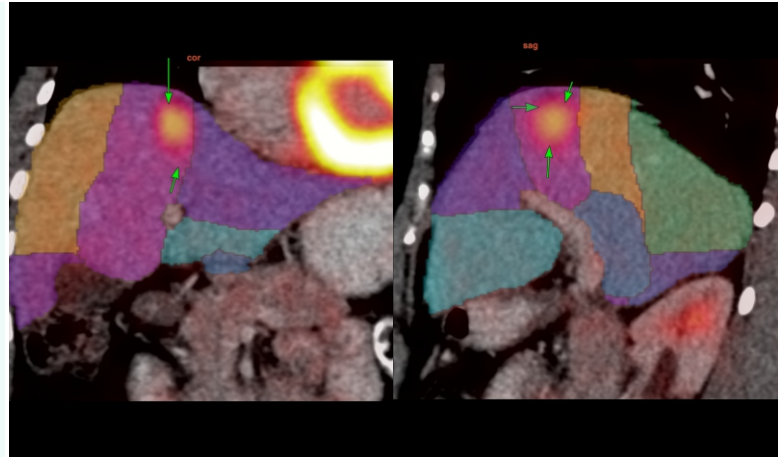


Fig. 3– Coronal and sagittal reformats showing the lesion within the segment 4 colour-coded volume

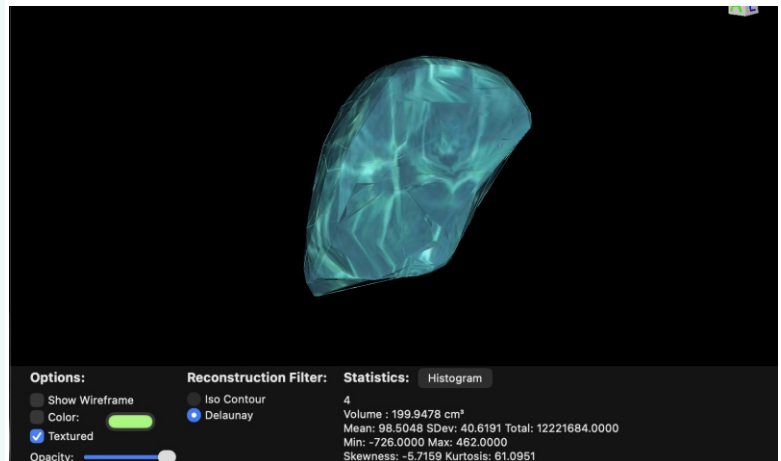


Fig. 4– Osirix screenshot showing the segmented volume with the read-out (199.9 cm<sup>3</sup>) in the side panel.

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