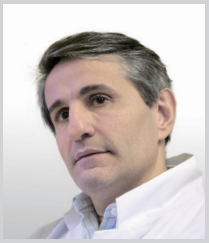
Case Study

Pulmonary CTA enhanced with blood flow maps. Where there is smoke there is fire.

"SURE Subtraction Lung enhances routine pulmonary CTA studies with color iodine maps for the evaluation of pulmonary perfusion. Overall diagnostic confidence is greatly improved particularly to identify perfusion deficit in the case of small or occult pulmonary emboli."



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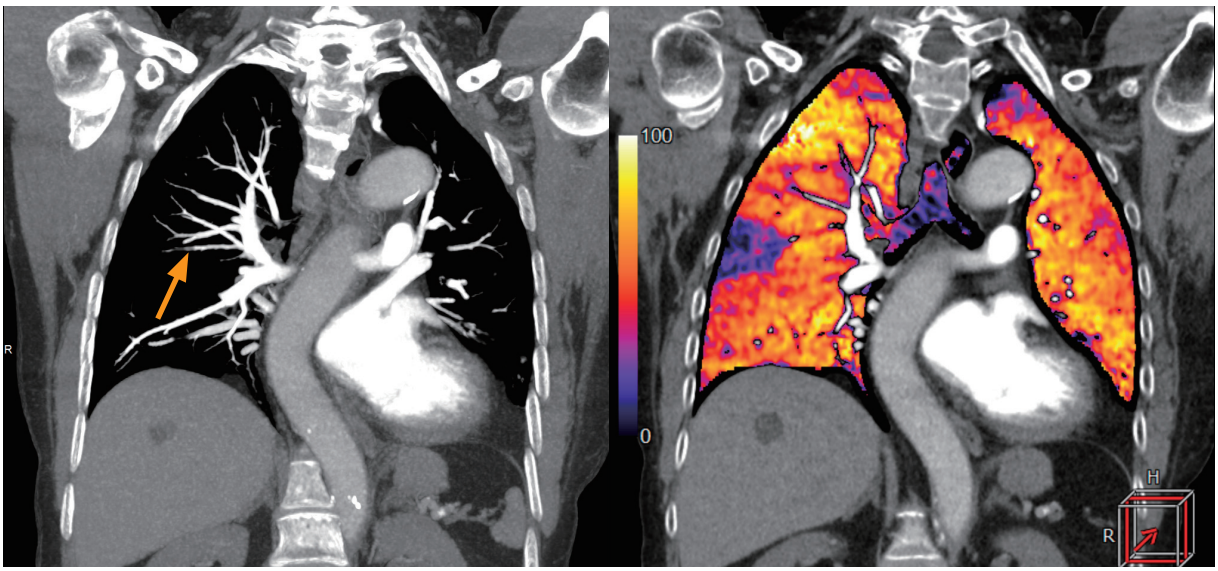
Patient history

A 63-year-old female presented for suspected Pulmonary Embolism. The scan was performed with 35 ml of contrast and iodine maps were created automatically.

Results

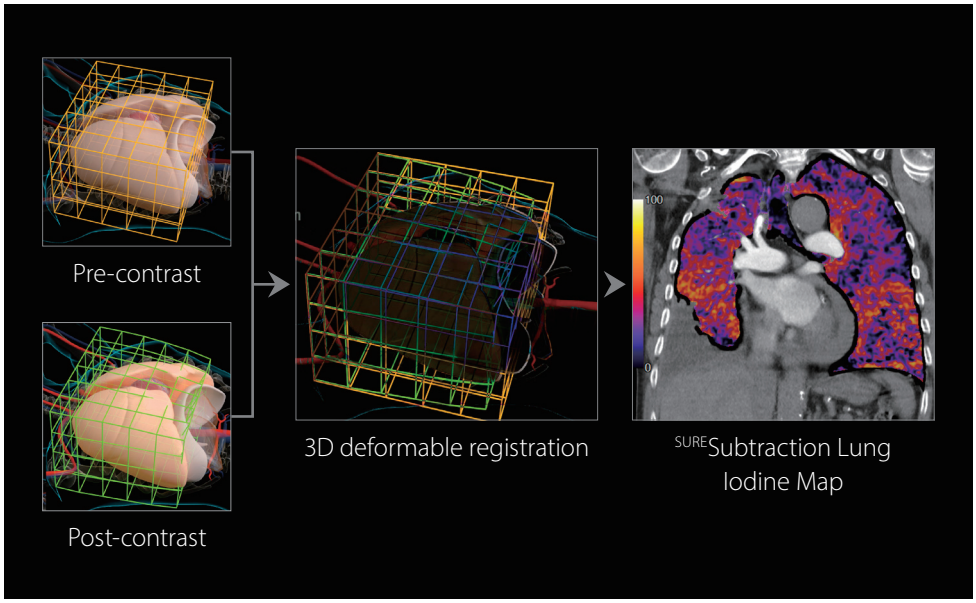


The color iodine maps show a large wedge-shaped perfusion defect in the middle lobe of the right lung. Further inspection revealed an embolic occlusion of a distal branch of the right pulmonary artery.

Technology

Utilizing a pre- and post-contrast scan, the SURESubtraction Lung application isolates the iodine signal and displays the result as a color overlay. A dedicated scan mode synchronizes the pre- and post-contrast scans and automatically outputs iodine maps directly to the reading station with no need for additional user interaction.

The key to obtaining accurate results lies with an anatomically aware 3D deformable registration algorithm that compensates for patient motion that may occur between two scans.



Conclusion

The addition of iodine maps to pulmonary CTA enables the assessment of the distribution of contrast media in the pulmonary parenchyma. Subtraction CT of the lungs can automatically provide iodine maps in every routine pulmonary CTA examination. Similar results were reported by Grob et al.*

* Grob, D., Oostveen, L.J., Prokop, M. et al. Imaging of pulmonary perfusion using subtraction CT angiography is feasible in clinical practice. Eur Radiol (2018). https://doi.org/10.1007/s00330-018-5740-4

Acquisition

Scanner Model:
Aquilion ONE / GENESIS Edition

Scan Mode:	Ultra Helical
Collimation:	0.5 mm × 80
Exposure:	100 kV SUREExposure
Rotation Time:	0.275 second
Dose Reduction:	AIDR*1 3D Enhanced
CTDI:	0.7 mGy pre-contrast/ 3.3 mGy post-contrast
DLP:	Total 155.1 mGy·cm
Effective Dose:	2.17 mSv
k-factor:	0.014*2
Application:	SURESubtraction Lung*3

*1 Adaptive Iterative Dose Reduction
*2 American Association of Physicists in Medicine (AAPM) Report 96, 2008.
*3 Option

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