

UNVEILING THE IMPACT OF RIVERAIN'S VESSEL SUPPRESSION: BREAKTHROUGH OR BUST?

Chest Imaging Wednesday Afternoon Poster Discussions I | W5A-SPCH-1

Session Type: Scientific Poster Sessions

Wednesday, Dec 4 12:15 PM - 12:45 PM CST

Topic: Chest Imaging

AMA PRA Category 1 Credits™: 0.00

ARRT Category A+ Credits: 0

Agenda

Kevin Chorath, MD, Presenter

Kenneth Tharp, MD, MBA, Co-author

Charles Watt, Co-author

Brian W. Bresnahan, PhD, Co-author

Jonathan R. Medverd, MD, Co-author

Nathan M Cross, MD, MS, Co-author

Hamid Chalian, MD, Co-author

***Purpose:** The detection of pulmonary nodules on computed tomography (CT) chest scans is a critical yet time-consuming component of quality patient care, bearing significant clinical and medicolegal implications. ClearRead CT Vessel Suppression (Riverain Technologies, Miamisburg, Ohio), a novel computer-aided detection (CAD) software, aims to enhance nodule detection by highlighting nodules by suppressing vascular, bronchial, and fissural structures. While previous studies have demonstrated improvements in controlled settings, real-world radiology workflows and the software's impact on clinically significant nodules and reading times remain understudied.

***Methods and Materials:** This retrospective review assesses the impact of Vessel Suppression on reading speeds and detection of punctate (≤ 2 mm) pulmonary nodule by radiology residents at our institution over 14 months, both pre- and post-implementation. The study includes CT chest exams targeting nodule detection in patients with active, past, or heightened malignancy risk. Reading times were calculated from study opening to preliminary sign timestamps. Using a natural language processing (NLP) algorithm (Aldoc, Tel Aviv, Israel), final reports were analyzed for the largest nodule size and mentions of nodules ≤ 2 mm.

***Results:** In total, 4,429 unique CT chest scans were assessed (1,002 pre-implementation and 3,427 post-implementation). The average time from study opening to preliminary sign decreased significantly (19.1 minutes to 12.2 minutes; $p < 0.01$). Moreover, there was a notable increase in punctate nodule reporting post-implementation (13.0% of studies pre-implementation vs. 24.2% post-implementation; $p < 0.01$).

***Conclusions:** Vessel Suppression proves beneficial for improving CT chest reading speeds among radiology residents, especially for patients with cancer or elevated cancer risk. However, it also increases the detection of punctate pulmonary nodules, whose clinical significance remains uncertain and requires further research and QI evaluation.

***Clinical Relevance/Application:** Vessel Suppression increases radiology resident's reading speeds for CT chest and leads to heightened detection of punctate pulmonary nodules, which are of uncertain clinical significance.