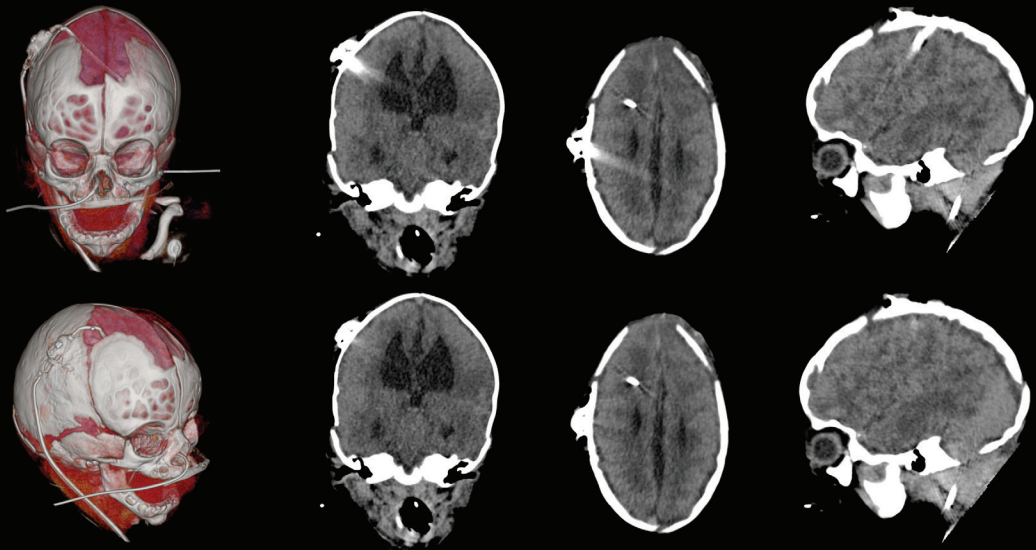


Pediatric Volume Head CT

VP Shunt with SEMAR



HISTORY

3-week-old term infant with large Myelomeningocele (MMC). Status post repair and ventriculoperitoneal (VP) shunt placement. A head CT was requested to evaluate the shunt positioning and function.

TECHNOLOGY

A 0.5 second, one rotation volume acquisition was performed on the AquilionONE™ 640 featuring 16 cm of wide area volumetric coverage. SEMAR™ (Single Energy Metal Artifact Reduction) and AIDR 3D (Adaptive Iterative Dose Reduction) were embedded into the protocol and automatically applied to the scan. SEMAR reduces the metal artifact projected from the VP shunt. AIDR 3D reduces image noise and improves image quality while lowering radiation dose.

FINDINGS

New right frontoparietal approach ventriculostomy catheter without associated hemorrhage. Lateral ventricles are mildly to moderately increased in size. Subtle decreased attenuation in the anterior left frontal lobe.

CONCLUSION

AquilionONE technology, SEMAR improves the visualization of the soft tissue and bone structures surrounding metallic implants allowing improved diagnostic evaluation. Volumetric scan and radiation dose reduction tools improve patient safety during a CT scan experience for pediatric patients.

| Scan Mode | kVp | mA | Scan Range | Dose Reduction | Metal Artifact Reduction | CTDIvol |
|-----------|-----|-----|------------|---|--------------------------|----------|
| Volume | 100 | 200 | 140 mm |  AIDR 3D | SEMAR | 19.2 mGy |

"SEMAR markedly reduces streak artifact associated with metallic hardware allowing assessment of previously obscured anatomy."

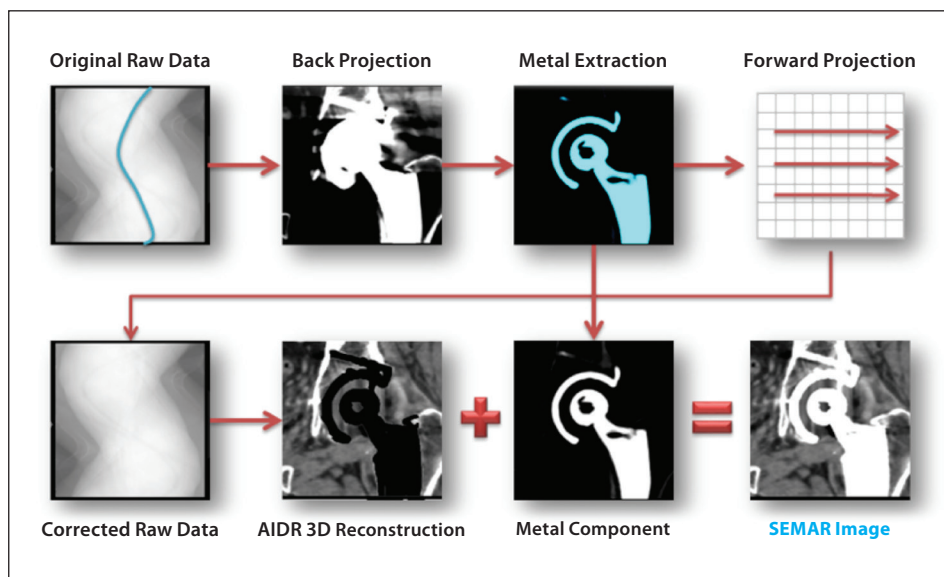
—Andrew T. Trout, MD, Cincinnati Children's Hospital Medical Center, USA

TECHNOLOGY AND SAFETY

SEMAR Algorithm

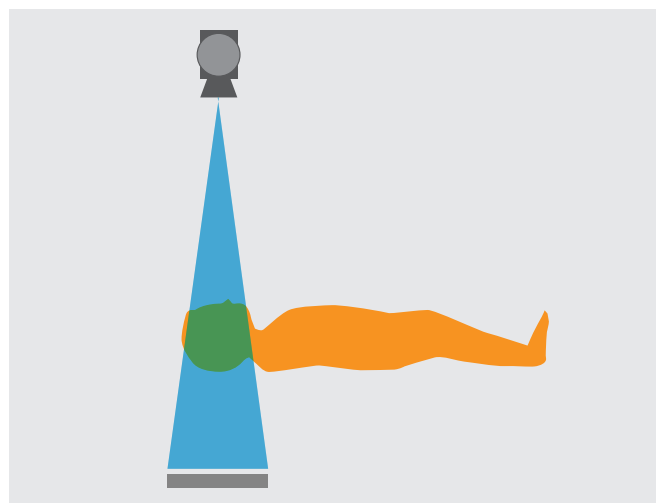
SEMAR is a raw-data based reconstruction process that can be applied to any routine scan or retrospectively in raw data. Streak artifacts from metallic implants are reduced, resulting in improved visualization.

SEMAR can be set in the scan protocol so the reconstructions are fully automatic, requiring no additional dose or operator input.



Volume Acquisition

AquilionONE takes advantage of its high resolution 0.5 mm wide detector technology that can cover up to 16 cm of anatomy in a single rotation. For pediatric patients this means that the majority of exams can be performed in just one rotation as fast as 0.275 seconds with no table movement, reducing the risk of image degradation due to patient motion. Therefore, the use of sedation can be reduced or even eliminated completely in appropriate clinical situations.



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