Investing with AIR™ Recon DL leads to immediate and sustained ROI

Based on a webinar with Randall Stenoien, MD, Houston Medical Imaging

Applying AI and deep-learning algorithms to MR image reconstruction is an exciting realization of technology that is enabling improvements in MR that haven't been possible using conventional reconstruction methods. Healthcare providers are using this technology to produce high-quality images with shorter scan times, overcoming the historical trade-offs in MR between scan time and image quality.

GE Healthcare's recent webinar featured a panel of clinicians discussing the impact of AI solutions on MR cases, from a clincial standpoint. They've seen improvements in productivity and return on investment (ROI) that impact their overall imaging operations and workflow.

Randall Stenoien, MD, owner and CEO of Houston Medical Imaging, offered a perspective from a private practice of radiologists. Dr. Stenoien commented that investing in new technology, especially expensive technology, needs to be very thoughtful. It's a business decision.

"I found that in my practice," explained Dr. Stenoien, "the secret to my financial survival has been the fact that we're able to do more complex exams. There is more reimbursement there. The downside is that these exams are substantially more time-intensive and the scheduling slots need to be much longer."

Dr. Stenoien made the decision to invest in opening a new imaging center in October 2019 with a twelve-month timeline to profitability based on revenue projections. Unfortunately, because of the COVID-19 pandemic, he was forced to close the center in March 2020, with his plans for

profitability dashed. When Dr. Stenoien heard about the potential of deep-learning reconstruction in MRI with AIR™ Recon DL‡ to accelerate image acquisition, he didn't need much more convincing, but then he saw the image quality.

"The image quality was fantastic immediately," he explained. "And we were seeing dramatic reduction in scan times. One of our first patients was a pituitary scan; 30 minutes 40 seconds. In January on the same scanner, the scan was 14 minutes and 42 seconds, a 52 percent reduction. And when I sent those images to my neuroradiologist, I immediately got a phone call to ask what in the world had happened. It was the prettiest pituitary scan she'd ever seen." (Fig.1)

Dr. Stenoien commented that the learning curve to adopt AIR™ Recon DL was so rapid that his team was able to immediately adopt their protocols and increase their patient load by 50 percent and he spoke about the financial impact of his investment, especially considering the global pandemic.

> **… Prior to going live, we were doing on average 10-12 patients a day. With AIR™ Recon DL, we were able to add four time slots a day on average. … As we come out of COVID and increase volumes further, we're going to have a really tremendous opportunity to be profitable. It's been a wonderful experience.**

Randall Stenoien, MD
Houston Medical Imaging

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‡ Not yet CE marked on 1.5T. Not available for sale in all regions.
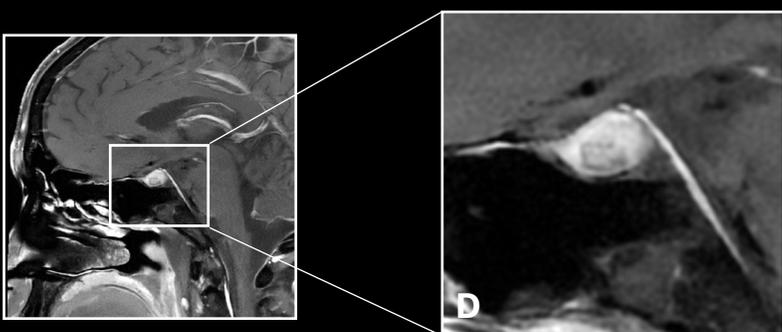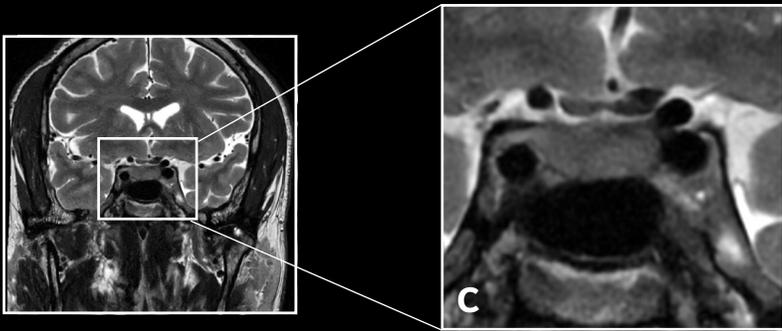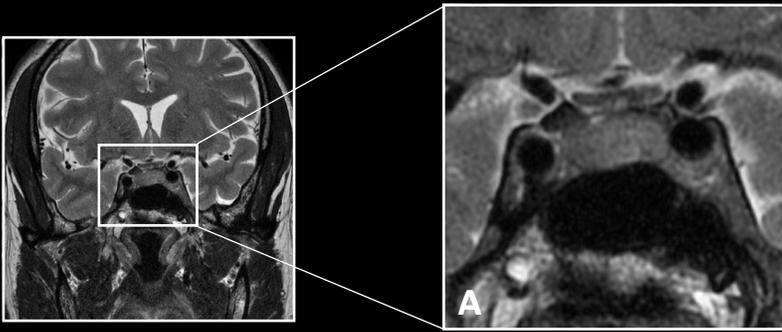
Figure 1. AIR™ Recon DL increases SNR, makes images sharper and allows for reduced scan time. (A, B) Conventional reconstruction. (A) Coronal T2, 0.5 x 0.5 x 2.0 mm, 3:08 min. (B) Sagittal T1 post contrast, 0.5 x 0.7 x 2.0 mm, 3:18 min. (C, D) With AIR™ Recon DL. (C) Coronal T2, 0.5 x 0.5 x 2.0 mm, 1:14 min. (D) Sagittal T1 post contrast, 0.5 x 0.6 x 2.0 mm, 1:48 min.

Exam	Pre-AIR™ Recon DL exam time *(minute)*	Post-AIR™ Recon DL *(minute)*	Exam time saving *(minute)*	% Exam time reduction
Hand	31:26	12:23	19:03	61%
Wrist	20:42	11:21	09:21	45%
Pituitary W/WO	30:42	14:42	16:00	52%
Knee	13:23	10:33	02:50	21%
Head/C-spine/T-spine W/WO	1:12:23	51:05	21:18	29%
Prostate	27:36	15:57	11:39	42%
IAC	43:25	16:54	26:31	61%
Orbits	48:33	31:02	17:31	36%
Bilateral hip	59:04	18:00	41:04	70%
Lumber W/O	27:10	09:43	17:27	64%
Breast silicone	31:40	22:26	09:14	29%
Shoulder	20:14	09:01	11:13	55%
Overall	7:06:18	3:43:07	3:23:11	48%

Table 1. Houston Medical Imaging exam time comparisons pre- and post- AIR™ Recon DL.

	Standard 3.0T system	SIGNA™ Pioneer with AIR™ Recon DL	Estimated net increase with AIR™ Recon DL (35% decrease in scan time)	Estimated net increase with AIR™ Recon DL (50% decrease in scan time)
Average patients/day	12	16	4 more patients per day	6 more patients per day
Average reimbursement/patient	$450	$450	$450	$450
Revenue/day	$5,400	$7,200	$1,800	$2,700
Revenue/month	$113,400	$151,200	$37,800	$56,700
Revenue/year	$1,360,800	$1,814,400	$453,600	$680,400

Table 2. Estimated increase in revenue with AIR™ Recon DL. If AIR™ Recon DL decreases scan time by 35%, additional estimated yearly revenue is $453,600. If AIR™ Recon DL decreases scan time by 50%, additional estimated yearly revenue is $680,400. An example from Houston Medical, results may vary.

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