

## Magnetic resonance cholangiopancreatography using parallel imaging technique

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### Purpose:

To assess image quality and acquisition time of magnetic resonance cholangiopancreatography (MRCP) using integrated parallel imaging technique (iPAT) in both respiratory triggered and breath-hold imaging. For T2w respiratory triggered liver imaging, iPAT has been found to not negatively influence image quality<sup>1</sup>, however, image quality of MRCP using iPAT has not been evaluated.

### Materials and Methods:

Prospective evaluation of 20 consecutive patients referred for MRCP. All patients were examined at 1.5 Tesla (Magnetom Avanto, Siemens Medical Systems) using the following sequences: T2w turbo spin-echo (TSE) sequence with respiratory navigator triggering (384 x 384 matrix, coronal slice orientation, TR 1910, TE 832, 40 slices, 1.5 mm thick) with and without iPAT (generalized autocalibrating partially parallel acquisition (GRAPPA) algorithm); breath-hold half-fourier single-shot TSE (192 x 256 matrix, coronal slice orientation, TR ∞, TE 88, 23 slices, 3 mm thick) with and without iPAT (GRAPPA algorithm). Two abdominal MRI experienced radiologists reviewed all images and compared image quality on a 5-point scale regarding depiction of ductal structures of the biliary and pancreatic ductal system. Frequency of artifacts and acquisition times were recorded.

### Results:

The application of iPAT significantly ( $p < .05$ ) reduced acquisition time of the respiratory triggered TSE sequence (7.1 without versus 3.4 minutes with iPAT) without significant change of image quality (figure 1 A and B). The image quality of the breath-hold half-fourier single-shot TSE sequence was significantly improved ( $p < .05$ ) using iPAT (figure 2 A and B). Frequency of artifacts was at the same level in all sequences.

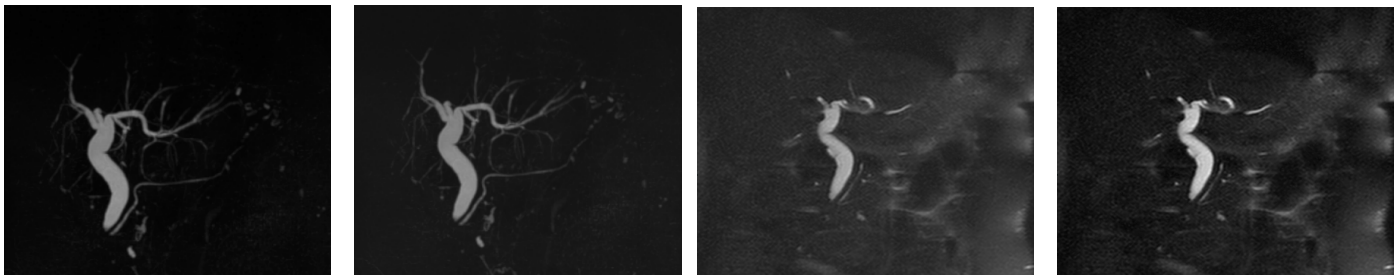


Figure 1 A

Figure 1 B

Figure 2 A

Figure 2 B

32 year old female patient after cholecystectomy. Figure 1. Respiratory triggered T2w TSE sequence (maximum intensity projection reconstruction) A without and B with iPAT. Figure 2. Breath-hold half-fourier single-shot TSE A without and B with iPAT.

### Conclusions:

Integrated parallel imaging technique improves MRCP by significantly reducing acquisition time of respiratory triggered T2w TSE sequences without loss of image quality and improves image quality of single-shot breath-hold imaging by canceling out late echos that contaminate image quality due to signal loss.

### References.

1. Zech CJ, Herrmann KA, Huber A, et.al. High-resolution MR-imaging of the liver with T2-weighted sequences using integrated parallel imaging: comparison of prospective motion correction and respiratory triggering. J Magn Reson Imaging 2004; 20:443-450