

High-resolution MR Sialography of the parotid gland: comparison of microscopy coil and conventional small surface coil.

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PURPOSE: We compared MR imaging and MR sialography using a microscopy coil with those using a conventional small surface coil.

MATERIALS AND METHODS: We performed high resolution MR imaging and MR sialography in ten parotid glands of five healthy volunteers on a 1.5T MR unit. Prior to each MR sialography, MR sialographical imaging was performed with 3D balanced TFE sequence using the water excitation method with the following parameters; TR:9.6,TE:4.8,FA:50,NEX:2, FOV:80x80mm,slice thickness/gap:1.2mm/0.6mm, matrix: 598x455, spatial resolution in slice:0.13x0.18mm. MR sialography was performed in a plane with oblique sagittal orientation parallel to the parotid gland duct with a conventional surface coil (C4 coil; 80mm in diameter) and 47-mm microscopy surface coil. On MR sialography, a single shot TSE sequence was adapted to both surface coils with the same parameters as following; TR:10000,TE:1200, FA:90, NEX:5, FOV:80x80mm, slice thickness:20mm, matrix 413x460. Total imaging time of each MR sialography was same; 50 seconds. To enhance visualization of the ductal structures, we stimulated salivation by intraoral application of lemon juice. All MR images were reviewed and interpreted by two radiologists for the visualization of ductal branches and inner structure of parotid glands.

RESULTS: There was no significant difference between the two surface coils in depicting the main ductal system and first- and second-order branches, whereas the microscopy coil depicted third-order branches and accessory parotid gland (Figure 1). In all cases, a microscopy coil was superior to the conventional surface coil for depicting peripheral branches of intraglandular ducts. On both MR sialographic images with 3D balanced TFE sequence, intraglandular ductal branches were recognized as luminal construction including high signal saliva in the parotid glands. Facial nerve branches traveling between deep and superficial lobes of the parotid gland were identifiable on 3D images in all cases. The microscopy coil provided higher spatial resolution and contrast noise ratio than the conventional surface coil for visualization of these structures.

CONCLUSION: The microscopy coil offers improved spatial and contrast resolution to MR sialography. The spatial resolution of high-resolution MR sialography is now close to that of conventional sialography. High resolution MR sialography is likely to replace invasive procedures such as conventional sialography and CT sialography.

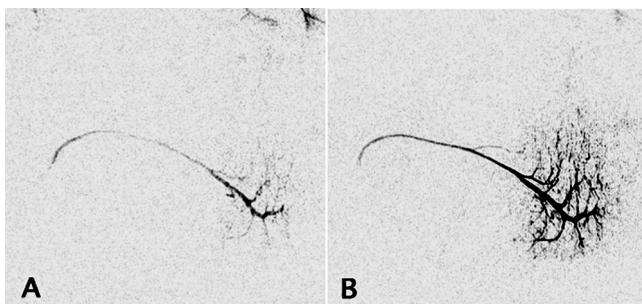


Figure: 31-year-old female healthy volunteer.

Lateral MR sialogram (reversed image) of the normal parotid gland ducts using conventional surface coil (A) and microscopy coil (B). Microscopy coil allows clearer depiction of the peripheral intraglandular ductal branches and accessory parotid gland duct.