# MRCP without Contrast

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**Standard uses:** Biliary stones, (Choledocholithiasis)

**Patient prep:** Should be NPO for >4 hours prior to study if possible.

**Oral contrast:** None.

**Coil:** Body Coil.

**Coverage:** Position the coil such that there is good coverage and signal from the pancreas.

**Intravenous contrast:** None

**Anti-peristaltic agent:** None

## SUMMARY:

1. Localizer BH
   Localizer Free Breathing
2. Cor HASTE
3. Ax HASTE
4. Ax HASTE FS
5. Ax In-Out of Phase
6. Cor Radial HASTE
7. Sag HASTE
8. Ax Diff
9. Cor Space

## SEQUENCES:

**1. Localizer**

a. Breath hold
b. Free Breathing

**2. Coronal T2 Ultra fast SE (HASTE, SSFSE, FASE)**

a. Multi-breath hold as needed
b. Complete front to back coverage, A → P, skin to skin.

c. Goal parameters
    i. 3 mm thickness, (ACR Slice thickness ≤ 7.0 mm, Gap ≤ 1.5 mm, Pixel area ≤ 7.2 $mm^2$)
    ii. 33% gap (0.9 mm)

**3. Axial T2 Ultra fast SE (HASTE, SSFSE, FASE) thin slice withOUT fat suppression**

a. Multi-breath holds as needed
b. Slices should include coverage of the intrahepatic biliary tree, extrahepatic biliary tree and pancreatic duct.
c. Goal parameters
    i. 3 mm thickness, (ACR Slice thickness ≤ 7.0 mm, Gap ≤ 1.5 mm, Pixel area ≤ 7.2 $mm^2$)
    ii. 33% gap (0.9 mm)

**4. Axial T2 Ultra fast SE (HASTE, SSFSE, FASE) thin slice WITH fat suppression**

a. Multi-breath holds as needed
b. Slices should include coverage of the intrahepatic biliary tree, extrahepatic biliary tree and pancreatic duct.
c. Goal parameters
    i. 3 mm thickness, (ACR Slice thickness ≤ 7.0 mm, Gap ≤ 1.5 mm, Pixel area ≤ 7.2 $mm^2$)
    ii. 33% gap (0.9 mm)

**5. Axial in and out of phase T1 GRE**

a. Multi-breath holds as needed
b. Slices should include coverage of the intrahepatic biliary tree, extrahepatic biliary tree and pancreatic duct.
c. Goal parameters
    i. 3 mm thickness, (ACR Slice thickness ≤ 7.0 mm, Gap ≤ 1.5 mm, Pixel area ≤ 7.2 $mm^2$)
    ii. 33% gap (0.9 mm)

**6. Coronal Radial T2 Ultra fast SE (HASTE, SSFSE, FASE) thick slab**

a. Three thick slab slice groups
    i. angled to the head of pancreas
    ii. angled to body of pancreas
    iii. angled to the tail of pancreas.
b. Goal Parameters
    i. 2D Thick Slab:
    ii. Slice thickness 40 mm, (ACR >40, < 60 mm Pixel area ≤ 1.0 $mm^2$)

7. **Sagittal T2 Ultra fast SE (HASTE, SSFSE, FASE) thin slice withOUT fat suppression**
    a. Multi-breath holds as needed
    b. Slices should include pancreas in its entirety, head → tail, left → right.
    c. Goal parameters
        i. 3 mm thickness, (ACR Slice thickness ≤ 7.0 mm, Gap ≤ 1.5 mm, Pixel area ≤ 7.2 $mm^2$)
        ii. 33% gap (0.9 mm)

8. **Axial DWI with ADC map**
    a. Free breathing
    b. Slices extend from dome of liver to inferior aspects of liver and pancreas to include all intrahepatic biliary tree, extrahepatic biliary tree and pancreatic duct.
    c. Goal parameters
        i. B-values of 0, 600, 800, 1000
        ii. 3 mm thickness
        iii. 33% gap (0.9 mm)

9. **Coronal 3D T2 TSE (SPACE, CUBE, VISTA)**
    a. First choice if available, preferred “MRCP” sequence
    b. Respiratory navigated
    c. Must cover the central biliary tree including the second order branches. Must cover the entire pancreas. Bile ducts and pancreatic ducts must be well defined
    d. 3D MIP recons with 2 plane rotation, (ACR Requires one)
    e. Goal Parameters
        i. 1 mm slice thickness, (ACR Slice thickness ≤ 2.0 mm, Voxel volume ≤ 5.2 $mm^2$)