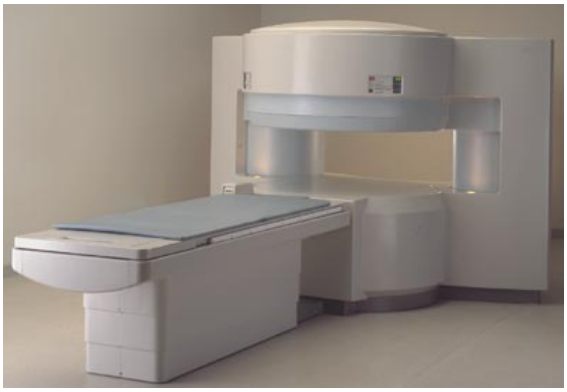
RadiologyInfo.org
For patients

# MRCP (MR Cholangiopancreatography)



Magnetic resonance cholangiopancreatography or MRCP uses a powerful magnetic field, radio waves and a computer to evaluate the liver, gallbladder, bile ducts, pancreas and pancreatic duct for disease. It is noninvasive and does not use ionizing radiation.

Tell your doctor about any health problems, recent surgeries or allergies and whether there's a possibility you are pregnant. The magnetic field is not harmful, but it may cause some medical devices to malfunction. Most orthopedic implants pose no risk, but you should always tell the technologist if you have any implanted devices or metal in your body. Guidelines about eating and drinking before your exam vary between facilities. Unless you are told otherwise, take your regular medications as usual. Leave jewelry at home and wear loose, comfortable clothing. You may be asked to wear a gown. If you have claustrophobia or anxiety, you may want to ask your doctor for a mild sedative prior to the exam.

## What is MRCP?

Magnetic resonance cholangiopancreatography (MRCP) is a special type of magnetic resonance imaging (MRI) exam that produces detailed images of the hepatobiliary (http://www.radiologyinfo.org) and pancreatic systems, including the liver, gallbladder, bile ducts, pancreas (http://www.radiologyinfo.org) and pancreatic duct (http://www.radiologyinfo.org) .

Magnetic resonance imaging (MRI) is a noninvasive test radiologists use to diagnose medical conditions.

MRI uses a powerful magnetic field, radiofrequency pulses, and a computer to produce detailed pictures of internal body structures. MRI does not use radiation (x-rays).

Detailed MR images allow radiologists to examine the body and detect disease.

## What are some common uses of the procedure?

Physicians use MRCP to:

- examine diseases of the liver, gallbladder, bile ducts, pancreas and pancreatic duct. These may include tumors, stones, inflammation or infection.
- evaluate patients with pancreatitis (http://www.radiologyinfo.org) to detect the underlying cause. In patients with pancreatitis, an MRCP may be performed using a medication called Secretin to assess for long term scarring and to determine the amount of healthy pancreatic function and secretions.
- help to diagnose unexplained abdominal pain.
- provide a noninvasive alternative to endoscopic retrograde cholangiopancreatography (ERCP). ERCP is a diagnostic procedure that combines endoscopy (http://www.radiologyinfo.org) , which uses an illuminated optical instrument to examine inside the body, with iodinated contrast injection and x-ray (http://www.radiologyinfo.org) images. ERCP is an invasive procedure that evaluates the bile ducts and/or the pancreatic duct.


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## Who interprets the results and how do I get them?

A radiologist, a doctor trained to supervise and interpret radiology exams, will analyze the images. The radiologist will send a signed report to your primary care or referring physician, who will share the results with you. Most imaging facilities use an electronic medical record. Frequently, there will be a website or mobile application to provide patient access to the electronic medical record and you may be able to access your imaging report digitally but usually not the images. You can ask the technologist if this is available at the imaging facility.

## What are the benefits vs. risks?

### Benefits

- MRI is a noninvasive imaging technique that does not involve exposure to radiation.
- MRI can provide detailed images of the soft-tissue structures of the body—such as the heart, liver, pancreas and many other organs. This detail makes MRI an invaluable tool in early diagnosis and evaluation of cancer.
- MRI has proven valuable in diagnosing a broad range of conditions, including heart and vascular disease, stroke, and joint and musculoskeletal disorders.
- MRI can help physicians evaluate both the structure of an organ and how it is working.
- MRI can detect abnormalities that might be obscured by bone with other imaging methods.
- The MRI gadolinium contrast material is less likely to cause an allergic reaction than the iodine-based contrast materials used for x-rays and CT scanning.
- MRCP can produce images comparable to those obtained by a more invasive exam called endoscopic retrograde cholangiopancreatography (ERCP) without its associated risks including pancreatitis, or inflammation of the pancreas, perforation of pancreatic and bile ducts and bowel, and the risks for intravenous sedation required for ERCP.

### Risks

- The MRI exam poses almost no risk to the average patient when appropriate safety guidelines are followed.
- If sedation is used, there is a risk of using too much. However, your vital signs will be monitored to minimize this risk.
- The strong magnetic field is not harmful to you. However, it may cause implanted medical devices to malfunction or distort the images.
- Nephrogenic systemic fibrosis is a recognized complication related to injection of gadolinium (http://www.radiologyinfo.org) contrast. It is exceptionally rare with the use of newer gadolinium contrast agents. It usually occurs in patients with serious kidney disease. Your doctor will carefully assess your kidney function before considering a contrast injection.
- There is a very slight risk of an allergic reaction if your exam uses contrast material. Such reactions are usually mild and controlled by medication. If you have an allergic reaction, a doctor will be available for immediate assistance.
- Although there are no known health effects, evidence has shown that very small amounts of gadolinium can remain in the body, particularly the brain, after multiple MRI exams. This is most likely to occur in patients receiving multiple MRI exams over their lifetime for monitoring chronic or high-risk health conditions. The contrast agent is mostly eliminated from the body through the kidneys. If you are a patient in this category, consult with your doctor about the possibility of gadolinium retention, as this effect varies from patient to patient.
- Reaction to the oral contrast given at some institutions for MRCP is very rare. Also, the oral contrast used at some institutions may have an unpleasant taste and cause temporary fullness, but most patients tolerate it well.
- IV contrast manufacturers indicate mothers should not breastfeed their babies for 24-48 hours after contrast material is given. However, the most recent American College of Radiology (ACR) Manual on Contrast Media reports that studies show the amount of contrast absorbed by the infant during breastfeeding is extremely low. Guidelines for diagnostic imaging during pregnancy and lactation from the American College of Obstetricians and Gynecologists (https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2017/10/guidelines-for-


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diagnostic-imaging-during-pregnancy-and-lactation#s1) advise that breastfeeding should not be interrupted after gadolinium administration. *For further information please consult the ACR Manual on Contrast Media (https://www.acr.org/Clinical-Resources/Contrast-Manual) and its references.*

## What are the limitations of MRCP?

High-quality images depend on your ability to remain perfectly still and follow breath-holding instructions while the images are being recorded. If you are anxious, confused or in severe pain, you may find it difficult to lie still during imaging.

A person who is very large may not fit into certain types of MRI machines. There are weight limits on the scanners.

Implants and other metallic objects can make it difficult to obtain clear images. Patient movement can have the same effect.

A very irregular heartbeat may affect the quality of images. This is because some techniques time the imaging based on the electrical activity of the heart.

MRI is generally not recommended for seriously injured patients. However, this decision is based on clinical judgment. This is because traction devices and life support equipment may distort the MR images. As a result, they must be kept away from the area to be imaged. Some trauma patients, however, may need MRI.

Present data show no convincing evidence that non contrast MRI harms the fetus of a pregnant woman. However, if the need for the exam is not time sensitive your doctor may delay the exam until after delivery. MRI gadolinium contrast agents are generally avoided during pregnancy except in very specific circumstances. Your doctor will discuss the benefits and risks of any MRI procedure with you. Doctors may perform MRI after the first trimester to assess the fetus for findings that are not fully evaluated by ultrasound.

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