

## RETROGRADE CHOLANGIOPANCREATOGRAPHY

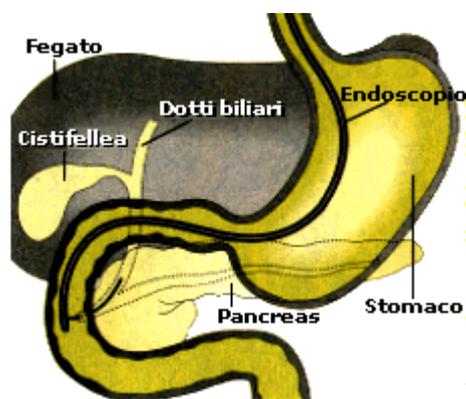
### 1. PURPOSE

Endoscopic retrograde cholangiopancreatography (or ERCP) is a procedure used in the diagnosis and treatment of particular diseases of the bile ducts, gallbladder and pancreas (the bile ducts are small channels that deliver bile and pancreatic secretion to the intestine for the digestive processes).

### 2. PROCEDURE

The method consists in introducing a tube (endoscope) of slightly more than a centimetre in diameter through the mouth, the oesophagus and the stomach into the intestine (duodenum), where the ducts that carry the secretions from the liver and the pancreas lead (Fig. 1).

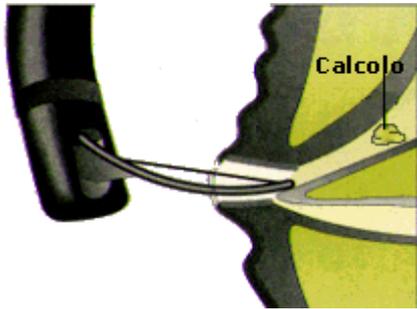
In order to avoid the discomfort and the urge to vomit that may result from the passage of the endoscope through the throat, an anaesthetic may be sprayed into the throat prior to the examination, or an anaesthetic tablet may be administered. A sedative or an anaesthetic may also be administered to improve tolerance of the procedure.



**Fig. 1**

A contrast medium is injected through the opening of the bile and pancreatic ducts in the duodenum (known as ampulla of Vater) to enable the visualisation of the bile ducts and the pancreas. X-rays are taken of the ducts, and the examination is considered over when the images are of sufficient quality. If stones are detected in the x-rays, the doctor may, without any discomfort or pain, expand the aperture of the bile duct in the duodenum by using a special electric scalpel (Fig. 2). The stones are then extracted by means of a special basket or balloon (Fig. 3). The stones will be eliminated from the intestine spontaneously without any further discomfort. Sometimes it may be necessary to leave a small probe inside the bile ducts, which is then extracted through the nose, for use in cleansing the bile ducts or carrying out radiological tests, also without any further discomfort to the patient. In the event that the x-ray shows that the patient's discomfort is caused by a narrowing of the ducts, a small plastic or metal tube (endoprosthesis) can be left inside the bile ducts enabling a continuous flow of bile into the intestine (Fig. 4).

In some cases, this small tube may need to be removed or replaced after a few months.



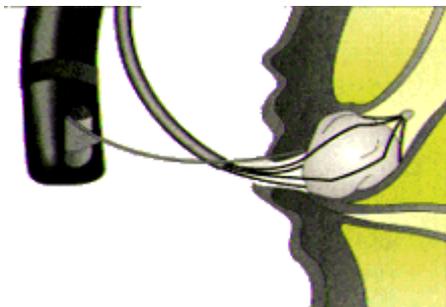
**Fig. 2**

### 2.1 Indications

ERCP is one of the most accurate procedures for studying diseases affecting the bile and pancreatic ducts, because it allows direct visualisation by means of a contrast medium injected into the ampulla of Vater (duct aperture in the intestine). X-ray images are better in terms of overall quality and detail than those obtained with other methods.

With ERCP it is possible to diagnose and identify the causes of jaundice (the yellow colouring of the skin and eyes), showing obstructions in the bile and pancreatic ducts which may require a different kind of treatment (e.g. surgery), as opposed to other conditions, such as hepatitis, which may be treated with drugs.

ERCP can also be used for patients not affected by jaundice but whose symptoms or laboratory and x-ray examinations suggest pathologies affecting the bile and pancreatic ducts.



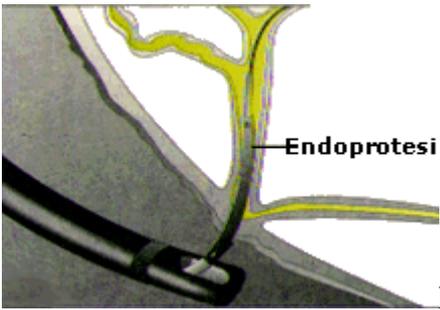
**Fig. 3**

### 2.3 Complications

ERCP is generally a well-tolerated procedure, but like all procedures it may present limitations and complications. In 5-15% of cases, the examination can fail due to anatomical conditions that do not allow the endoscope to reach the duodenum and/or to visualise the bile and pancreatic ducts.

The most frequent complications are pancreatitis, bile duct infection, bleeding and perforation of the ampulla. They are rare (less than 1%) when the procedure is performed only for the purposes of diagnosis; slightly more so when the aim is also therapeutic (involving the cutting of the ampulla with the extraction of stones, dilatation of a narrowing with possible insertion of an endoprosthesis). There is also a potential, if slight, risk of adverse reactions to the sedatives. Obviously such risks are weighed against the expected benefits of the procedure, and are generally lower for ERCP when used for therapy than for surgery.

Most of these complications do not require surgery, which is used only rarely.



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Fig. 4