

The Use of Choledochoscope in Common Bile Duct Stones

Essay

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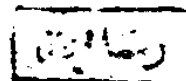
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TO MY PARENTS

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Introduction

Introduction

Choledochoscopy has introduced an important new parameter into biliary surgery , especially in the mangement of common bile duct stones, in assessment and biopsy of tumours of the bile ducts and in allawing choledochoscopic approaches not only intraoperatively but also in the postoperative period (Berci , 1988)

The first choledochoscope was described by Bakes in 1923, and there are now two types of instruments available : the flexible fibroptic choledochoscope and the rigid right angled instrument which utilizes a rod lens system. Both can be used in a normal sized duct.

It allows manipulation within the common bile duct under direct vision. However, the advantages of choledochoscopy in definition of unsuspected lesions of the biliary tract, its use in the post operative period and through a percutaneous transhepatic drainage have been less fully appreciated .

The technique of choledochoscopy can be learnt by training in the operating room under supervision particularly if televi-

sion choledochoscopy is practised .

On the other hand, animal models and plastic biliary system phantom have been designed and found of value in acquiring experience and allowing the surgeon familiarity with the difficulties .

Although the accuracy of post - exploratory choledochoscopy was 87 percent, the technique is dependent to a large extent upon the skill and experience of the surgeon in that particular field (Bolton and Le-Quesne, 1981)

This concludes that the general surgeon should become familiar with the use of the choledochoscope. This familiarity and experience with choledochoscopic techniques would reduce the incidence of retained common bile duct stones very considerably and improve the diagnosis of bile duct tumours (Berci, 1988) .

Description of the instrument

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There are two types of choledochoscope available, the rigid and the flexible one. During recent years, vast improvements have been made in instrument design (Ashby, 1985).

The rigid choledochoscope :

The instrument consists of an eyepiece, a shaft and an angulated limb.

The eyepiece may be supplied by a sterile disc to safeguard sterility (Berci et al., 1978).

The shaft carries two ports, one for fluid irrigation and one for a standard fiberoptic lead connected to a cold-light source outside the sterile field.

The angulated limb is introduced into the common bile duct, the angle between it and the shaft differs in different designs. It is 120 degrees in the Wolfe choledochoscope while the right angle instrument was invented by Hopkins-storz.

It measures 4-6 cm in length.

The optical system affords a depth of field from immediately in front of the lens to the length of the visual field, with a fixed focus and wide viewing angle of 90 degrees. This provides an excellent endoscopic image.

Choledochoscopic illumination is provided by a standard external light source with a fiberoptic cord interposed between the light source and instrument for light transmission.

The examination is performed with a fluid medium of sterile, normal saline solution (Berci, 1985).

The choledochoscope incorporates irrigating, lighting, and image transmission systems all within a 5 by 3 mm diameter.

Choledochoscopes of different lengths are available.

The shorter one has a working horizontal limb of 40 mm while the longer 60 mm instrument is used in unusually long ducts (Berci et al., 1978 and Berci et al., 1985).

The flexible choledochoscope :

The flexible choledochoscope is 50 cm long and has an ex-

ternal diameter of 6 mm. It contains an optical, lighting, and irrigating system housed within a single latex and vinyl copolymer plastic sheath.

The objective lens has an angle of view of 40 degrees as well as a great depth of field, capable of producing an image when in contact with the object. The image is life-size when the object is 1cm away and magnified twice when in contact with it.

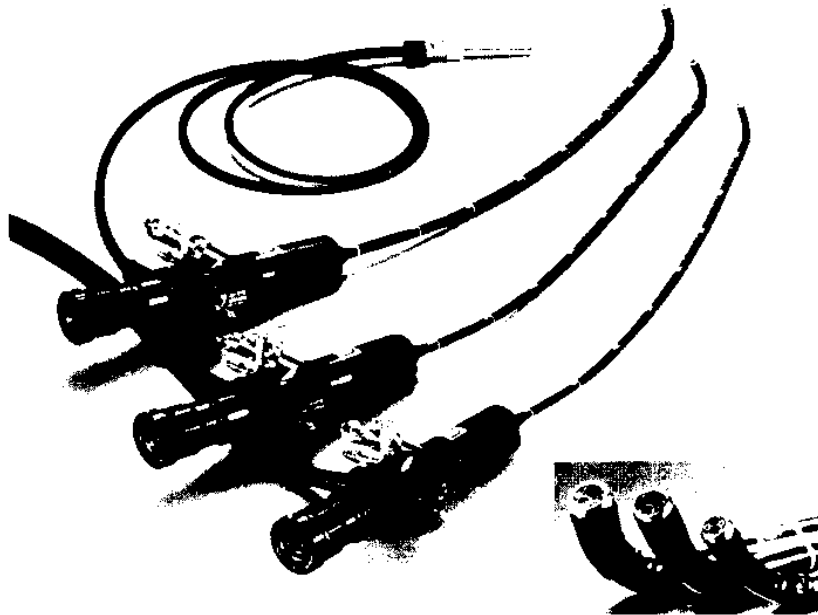
Light is conveyed by a separate fiberoptic light carrying bundle. The light source is a fiberoptic power supply unit, to which is attached a 6 feet fiberoptic cord.

The angle of the tip can be controlled through 120 degrees in one plane, but the whole instrument may be easily rotated so that the angulation can be effected in any plane .

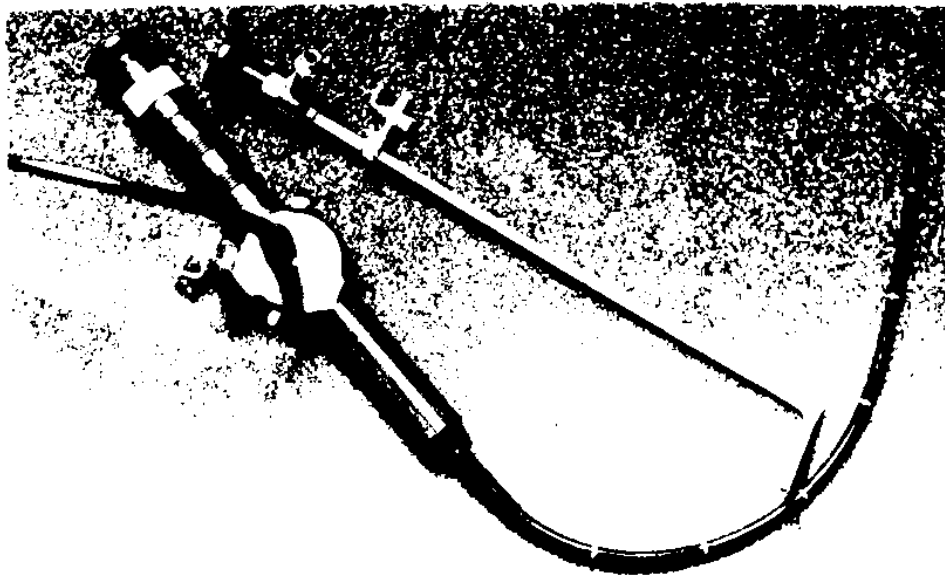
The objective lens provides an angle of 62 degrees and the depth of focus is from 3 to 50 mm in water.

There is a 2 mm diameter channel for fluid irrigation or for the insertion of biopsy forceps or a stone retrieval basket. The choledochoscope fits a standard light source and photographic equipment.

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Flexible choledochoscopes of various diameters (SIVAK, 1987)



Rigid and Flexible Choledochoscopes (SIVAK, 1987)

Accessories

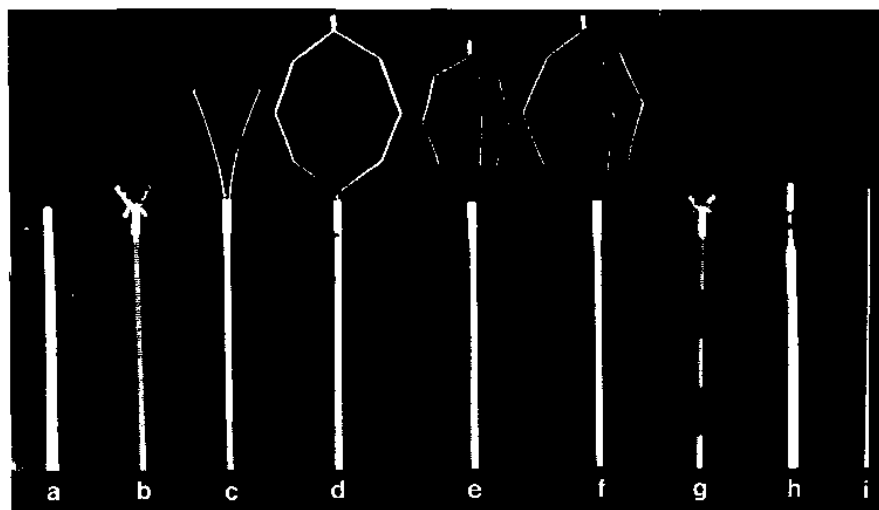
The accessory instruments are of great importance.

A variety of accessory instruments are available for stone manipulation under endoscopic control. These are necessary when calculi are visualized and cannot be removed by standard techniques (Berci, 1985).

These instruments can be introduced through an instrument guide channel attached to the choledochoscope.

The most useful of these are the flexible alligator stone forceps, the Fogarty biliary catheter, and the Dormia stone basket (Berci et al., 1978).

The attachable instrument carrier allows introduction of biopsy forceps alongside the choledochoscope.



Optional accessories

- a. Flushing tube
 - b. alligator forceps
 - c. three - armed forceps
 - d. Loop - type stone crushing forceps
 - e. and F. basket type stone crushing forceps
 - g. biopsy forceps with needle
 - h. Cutting knife
 - i. guide wire
- (SIVAK, 1987).