

Strategy changing; before and after of single operator cholangioscopy system

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Peroral cholangioscopy is traditionally only conducted using a mother-baby scope system and procedures using this system are cumbersome, labor intensive, and time consuming. A small-caliber baby scope is easily broken, expensive, and difficult to handle with limited irrigation and suction, and effective performance of procedures is difficult owing to the small working channel. The mother-baby scope system is operated by 2 skilled endoscopists using 2 endoscopic systems. Therefore, routine clinical application of the mother-baby scope system has been restricted. Thus, limited cholangioscopy is available at only a few referral centers.

The recent development of new types of peroral cholangioscopes has led to renewed interest in endoscopic visualization of the biliary tree. The single-operator cholangioscopy technique was introduced recently as the SpyGlass Direct Visualization System. The instrumentation part of the disposable 10F catheter is attached close to the working channel of a therapeutic duodenoscope. More recently, single-operator direct peroral cholangioscopy using a conventional ultraslim upper endoscope has been proposed. The advantage of this system is the use of a standard one endoscopy equipment and set-up, high-quality endoscopic imaging with image-enhanced cholangioscopy of the biliary tree, and performance of more procedures using a relatively larger working channel.

Cholangioscopy with the SpyGlass system has a reported success rate >90%. However, the image quality of the current system is inferior to that of a conventional endoscope, and enhanced endoscopy is not possible. The small working channel has limitation in terms of use with various diagnostic or therapeutic accessories for bile duct lesions. Thus, broadening the clinical applications of the SpyGlass system is limited by both these problems and the high cost.

Ultraslim upper endoscopes were originally designed for use in pediatric patients and transnasal applications. Ultraslim endoscopes can be used only after a large previous endoscopic sphincterotomy.

The duodenoscope is completely removed under fluoroscopic and endoscopic control, and the ultraslim endoscope is then advanced over the guidewire.

Cholangioscopy provides advantages over ERCP for the diagnosis of bile duct lesions in terms of direct visualization of the biliary tree. Cholangioscopy also allows endoscopic targeted biopsy. Optically targeting the intraductal lesions may increase diagnostic yields. NBI cholangioscopy detects minute lesions or superficial elevated lesions.²⁰ However, the current video cholangioscope and ultraslim scopes lack a magnification function for an accurate evaluation on NBI.

The major therapeutic role of cholangioscopy is noninvasive management of difficult-to-treat bile duct stones. Intracorporeal lithotripsy, such as electrohydraulic lithotripsy or laser lithotripsy, must be conducted under direct visual control to ensure safety and precise targeting during fragmentation.

There is no doubt that diagnostic and the therapeutic procedures under direct visualization can be broadened using new types of cholangioscopy.

In conclusion, cholangioscopy has evolved from a complicated, expensive, 2-operator system to a single-operator system. High resolution endoscopic evaluation with NBI and cholangioscopy-guided target biopsy will improve the diagnostic capability for indeterminate intraductal lesions. Therapeutic applications for biliary lesions using cholangioscopy will expand owing to continuing advances in specialized endoscopes and available accessories.