The New Generation SpyGlass System

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The SpyGlass Direct Visualization System (Boston Scientific Corp, Natick, MA, USA) was introduced in 2007 for single-operator examination of bile duct and pancreatic duct. This system has several advantages. It allows for single-operator control of both duodenoscope and Spyscope. This system uses 4-way tip deflection which allows for controlled examination and targeted biopsy. Irrigation channel is separate from the working channel, which allows for continuous saline irrigation. Direct visual examination may provide additional information about the intraductal lesions. Furthermore, the ability to guide instruments in the ducts under direct visual guidance provides significant advantages.

It can be used for both diagnostic and therapeutic purposes. Common diagnostic indications are the evaluation of indeterminate biliary strictures and intraductal lesions, longitudinal extent of tumor prior to resection. Because Spyglass visual assessment shows better sensitivity but worse specificity than Spybite biopsy, combined approach with cholangioscopic features and targeted biopsy are important to increase the overall accuracy for the diagnosis of malignancy. Therapeutic applications are fragmentation of difficult stones with EHL or laser lithotripsy and selective cannulation of strictures in which conventional trials fail under the guidance of fluoroscopy. The latter indications could be the traverse of guidewire in post-living donor liver transplantation biliary stricture and Spyglass-assisted transpapillary gallbladder drainage.

As compared with other type of peroral cholangioscopy, Spyglass is easy to be inserted through the ducts and provides stable scope positioning, and the smaller outer diameter allows utility in normal bile duct and somewhat dilated pancreatic duct. However, original version of Spyglass system has several limitations; poor image quality, small working channel, and cumbersome set-up.

Recently new generation of Spyglass system (SpyGlass DS; Digital + Simple) has been developed. The main improvement areas are ease of set-up and use, improved imaging quality. SpyGlass DS eliminated probe and has integrated design which reduces preparation time and is ready to use at any time during ERCP procedures. It provides enhanced control with consistent tip deflection (X-shape articulation) and consistent accessory exit point at 6 o’clock direction which enable the operator to expect the direction. Accessory passability is improved so that Spybite and EHL probe can be introduced with lower resistance, but small working channel still restricts various accessories. The imaging quality is much improved due to digital sensor, wider field of view, automatic light control and focusing. In addition to the irrigation system, separate intraductal aspiration system facilitates
cleaning the duct and prevents increased ductal pressure. SpyGlass DS is much improved compared with previous original version so that will be more prevalent for widespread use.

References