



# A Novel Approach to Obtaining Tissue in a Difficult to Access Indeterminate Biliary Stricture: Percutaneous Cholangioscopy and Biopsy

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### Introduction:

- The treatment of benign etiologies of biliary strictures, such as chronic pancreatitis, primary sclerosing cholangitis and choledocholithiasis, differ greatly from the treatment of malignant strictures, which often require surgical intervention.
- The first line tissue acquisition technique from biliary strictures with ERCP with brushings has suffered from low sensitivity and poor negative predictive value, estimated to be 41.6% and 58%, respectively<sup>1</sup>.
- Furthermore, tortuous or narrowed duodenal or biliary anatomy, often seen in patients with carcinoma, can also present obstacles.
- We present a case of percutaneous transhepatic cholangioscopy (PTCS) using the Spyglass (SG) DS cholangioscope, resulting in a definitive diagnosis of a cholangiocarcinoma after previous failed attempts by several standard methods.

### Case Description:

- A 59 year old female presented with one week of epigastric pain, jaundice and pruritus. Alkaline phosphatase, direct bilirubin and CA 19 9 were elevated.
- Magnetic resonance imaging (MRI) showed intrahepatic biliary ductal dilation with cutoff near the hepatic hilum, concerning for cholangiocarcinoma (Fig. A).

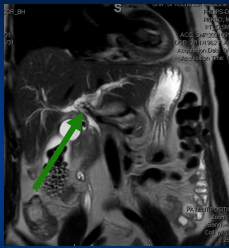


Figure (A) MRI showing intrahepatic ductal dilation with cutoff at the hilum and prominent perihilar soft tissue.

### Case Description Continued:

- Endoscopic retrograde cholangiopancreatography (ERCP) showed luminal narrowing in the duodenal sweep with edema and ulcerations, and biopsies from the duodenal stricture showed small bowel inflammation (Fig. B).
- Interventional radiology (IR) performed direct biliary duct biopsy that showed atypical epithelial cells.
- Endoscopic ultrasound (EUS) with fine needle aspiration (FNA) of a hypochoic soft tissue area in the gallbladder neck showed acute inflammation (Fig. C).
- To ultimately reach a diagnosis, percutaneous access was obtained by interventional radiology, and a SG cholangioscope was advanced through the IR catheter sheath across the common hepatic duct to obtain targeted biopsies, which were positive for adenocarcinoma (Fig. D). The patient was then started on chemotherapy.

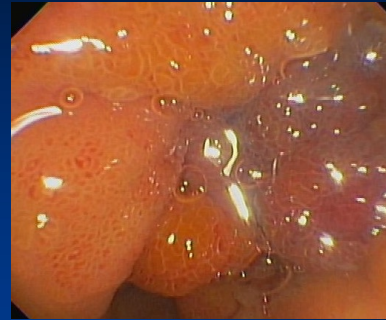


Figure (B) Fixed luminal narrowing in the duodenal sweep due to mucosal nodularity, edema, friable mucosa and ulcerations.



Figure (C) EUS demonstrating luminal narrowing in duodenal sweep, hypochoic soft tissue area in gallbladder neck with drains traversing area.



Figure (D) Spyglass cholangioscope advancing through PTC to obtain biopsies.

### Conclusions:

- Here, we present a successful biopsy of mild to poorly differentiated adenocarcinoma of the bile duct using Spyglass through a percutaneous approach.
- The success rate of PTCS assisted biopsy reported in the literature has been 100%, though with extremely limited data<sup>2,3,4</sup>.
- Traditionally, PTCS has been the answer for biopsies unable to be obtained with the modalities like ERCP and EUS. PTCS unfortunately requires large tract dilation and days of sinus tract maturation to allow for a scope passage.
- SG assisted PTCS has been reported to have a smaller dilation requirement and less adverse events when compared to traditional PCTS. However, reports of SG with a transcutaneous approach are extremely limited<sup>5,6</sup>.
- Our case highlights a multi disciplinary approach with SG assisted PTCS in diagnosing malignancy when standard methods were unsuccessful.
- With the need for a safe, effective, and painless method to biopsy biliary strictures and treat biliary stones in patients where ERCP and EUS/FNA are not achievable, we believe SG assisted percutaneous cholangioscopy is positioned to be a potential answer.

### References:

- Bu ne A S T Ga ve and R Chokh (2013). Sens v y o endoscopic etrog ade cho ang opatic ea ography s andard cy o agy 10 y ev ew of the stricture [doi:10.1186/1745-2974-13-304](#) 311.
- Ch H C 2016. [doi:10.1186/s12944-016-0208-2](#) Cholangioscopy in Bi oom e c Anas omos s r c u e. C n Endosc 49(6): 530-532.
- Huang M H C C Tsa L R Mo C T Yang Y H Yeh M P You and S K Yieh 1993. Pe cu aneous cho endoscopi c bi a y ac s one emova agge wite n H S G Gansow wipje em s. Eur. Rad i o 2(3): 254-259.
- Pandion T G Ginn R M dhe L Heo Y R Mo Y D Bada and P. Vi et e 1996. Methods, nd cal ons, and isu s o percu aneous cho endoscopy. A ser es o 161 procedu es- Jema s o. su g y 223 1. 26-36.
- La emon W K, Ye ans W Van Steenbe gers O Cass mel F, Revers S, Van der Merwe and C Ve s ype (2017). Use u ness o he sing e opera or cho ang oscopy s y em SpyG lass in biliary disease a single cen e prospect ve echo sudy and agg ege ed ev ew. Su g Endosc 31(5): 2223-2232.
- W. Z. 2021. [doi:10.1186/s12944-021-0208-2](#) Spyglass-assisted percutaneous cholangioscopy in the diagnosis and treatment of percutaneous biliary strictures. [doi:10.1186/s12944-021-0208-2](#) 2395-2399.