**Argon Plasma Coagulation for Adenomatosis of the Biliary Bifurcation**

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**Abstract**

Adenomatosis of the biliary duct is a rare finding with an extremely high risk of degenerating into a malignancy. The author describes the case of an 82-year-old man with massive jaundice owing to an extensive villous adenomatosis at the biliary bifurcation, extending into the left and right hepatic ducts. A direct transnasal cholangioscopy for diagnosis and palliative argon plasma coagulation of the lesion was performed. This article is part of an expert video encyclopedia.

**Keywords**

Adenomatosis; Argon plasma coagulation; Cholangioscopy; Direct cholangioscopy; Neoplasia; Perforation; Villous histology; Video.

**Video Related to this Article**

Video available to view or download at doi:10.1016/S2212-0971(13)70191-2

**Technique**

Direct transnasal cholangioscopy.

**Materials**

- Ultraslim gastroscope: EG-530NP, Fujifilm, Tokyo, Japan.
- APC probe: ERBE, Tübingen, Germany.
- Generator: ERBE VIO generator, Tübingen, Germany.

**Background and Endoscopic Procedure**

Benign mucosal tumors of the bile ducts are extremely uncommon, as most neoplasias in this area represent advanced neoplasias, most commonly cholangiocarcinomas. However, these tumors have a very high likelihood of turning into a carcinoma. In fact, the false-negative rate of histology at forceps biopsy is high and in a substantial percentage of lesions with low or high-grade neoplasia, there is already invasive carcinoma identified within the resection specimen.

The author presents the case of an 82-year-old man with massive jaundice due to an extensive intraductal lesion at the level of the bifurcation. An endoscopic retrograde cholangiogram revealed a filling defect at the level of the bifurcation involving both hepatic ducts. To clarify the etiology of this suspicious finding, a cholangioscopy with an ultraslim gastroscope was performed. As described in previous reports, with an outer diameter of 4.8 mm was advanced into the duodenum. With the endoscope in a J-position, the common bile duct was cannulated free-hand. The endoscope was then advanced into the distal common bile duct through the incised and dilated papilla in a way similar to the cecal intubation technique during colonoscopy.

At the level of the bifurcation, a massive adenomatous mass was visualized that obstructed the left and right hepatic ducts. The surface of the neoplasia did not reveal features of malignancy and produced significant amounts of mucus. Biopsies were sampled under direct vision and histological workup revealed low-grade villous adenomatosis of the bile ducts.

The lesion was considered unresectable and the patient refused photodynamic therapy because the patient was concerned about the side effects and restrictions that come along with the therapy. However, the patient was willing to undergo repeated cholangioscopy with local ablation of the adenoma as a palliative treatment, as reported previously. Argon plasma coagulation (APC) (VIO-300D; ERBE, Tübingen, Germany) with a power setting of 30 W APC was applied for subtotal ablation of the lesion in two endoscopy sessions.

There were no procedure-related complications such as bile leaks, perforation, or bleeding. Immediately after the procedure, the patient’s condition improved and jaundice resolved. However, he needed repeated ablation after 5 months for recurrent jaundice.

**Key Learning Points/Tips and Tricks**

- Cholangioscopy with APC may be an effective treatment in selected cases with intraductal obstructing neoplasia.
- Based on theoretical considerations, cases with intrahepatic lesions might be more suitable for this treatment because the risk of free perforation might be lower.
- This alternative management requires strict safety measures such as a generous sphincterotomy and careful limitation of the APC power setting to limit the penetration depth and avoid perforation.

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Complications and Risk Factors

The use of APC for lesions within the bile ducts implies the risk of perforation. There are only very few reports on the safety and efficiency of APC treatment within the biliary tree. However, the technique may be feasible because the depth of APC-mediated tissue destruction is automatically limited by a thin, electrically insulating layer, which develops because of desiccation of the superficial tissue layer. In any case, crucial preventive measures have to be implemented: during APC, critical amounts of gas and smoke are generated. One has to make sure that there is a decent sphincterotomy that allows easy passage and release of the gas into the duodenum during cholangioscopy. Otherwise, there is a potential risk of rupture within the biliary tree and consecutive gas embolism.

Alternatives

It might be argued that placement of metal stents into the right and left hepatic duct would have been the appropriate treatment of this condition. Certainly this option is a valuable alternative. However, as the adenomatous neoplasia extended far into both hepatic ducts, stenting of the lesion might have excluded several side branches from drainage. This was considered a problem because the patient had severe cholangitis at the time of admission.

Scripted voiceover

We present the case of an 82-year old man with massive jaundice due to an extensive intraductal mass at the level of the bifurcation, indicated by the black arrow. The lesion was considered unresectable and the patient agreed to undergo palliative local ablation with cholangioscopic argon plasma coagulation. Here we perform cholangioscopy with an ultra-slim gastroscope. The endoscope is advanced into the distal common bile duct through the incised papilla and here we see the cystic duct branching off the common bile duct. At the level of the bifurcation we find this massive adenomatous lesion that produces large amounts of mucus. Upon suctioning there is also pus pouring out of the proximal biliary tree. Have a close look at the surface of the neoplasia: it looks like a villous adenoma and does not reveal characteristic features of malignancy. Here we see significant obstruction of the left and right hepatic duct at the confluence. In a next step we perform APC with a VIO ERBE system for destruction of the neoplasia. Doing so we have to implement strict safety measures to minimize the risk of perforation in this palliative setting: first we have to limit our energy delivery. In this caser we choose 30 W. However, you see that this setting still allows effective ablation of the neoplasia with the APC probe. Here we already advanced the endoscope into the right hepatic duct proximal of the neoplasia. You can see that chronic obstruction lead to formation of these small black stones. We slowly withdraw the endoscope and here we find the proximal edge of the lesion. You can see that APC allows well controlled ablation of the villous neoplasia. Keep in mind that during APC critical amounts of gas and smoke are generated. We have to make sure that this gas is suctioned away in between APC applications.

This is already a nice result with subtotal ablation of the lesion. Look: we successfully reopened both ducts for optimal drainage of the biliary tree. There were no procedure-related complications. Immediately after the procedure the patients condition improved and jaundice resolved. Biopsy specimen confirmed low-grade villous adenomatosis of the bile ducts without malignancy.

References