The “funitel” technique for endoscopic target biopsy at a biliary bifurcation

Endoscopic retrograde cholangiopancreatography (ERCP) with biopsy is a gold-standard procedure for pathological assessment of spreading of cholangiocarcinoma [1,2]. Tumor existence at landmark biliary bifurcations should be assessed to consider the indication and extent of surgical resection. However, technical difficulties in pushing biopsy forceps against a biliary bifurcation may inhibit precise target biopsy. Here, we present a simple modification of widely used biopsy forceps for highly selective biopsy at the bifurcation of bile ducts at segments II and III (B2 and B3) (**Video 1**).

An 80-year-old woman with suspected hilar cholangiocarcinoma was referred to our centre for hepatopancreatoduodenectomy (**Fig. 1**). We conducted ERCP and obtained tissue specimens from hilar and distal bile ducts, all of which revealed adenocarcinoma. Tumor absence at the bifurcation of B2 and B3 was a prerequi-
site for curative resection. During the following session, no obvious cancerous epithelium at the bifurcation could be visualized using digital cholangioscopy (SpyGlass DS; Boston Scientific, Marlborough, Massachusetts, USA), although the visualization was not good. Cholangioscopy-guided biopsy for pathological confirmation acquired only a small amount of tissue. Therefore, we added a looped nylon thread to each cup of the standard biopsy forceps (Radial Jaw 4 pediatric; Boston Scientific) and inserted the forceps with loops over 0.025-inch guidewires (VisiGlide 2; Olympus, Tokyo, Japan) positioned in B2 and B3 (Fig. 2). The forceps were successfully pushed against the bifurcation, and enough tissue was obtained (Fig. 3). Based on positive pathological findings, the disease was considered unresectable, and chemotherapy was administered. High costs and the limited amount of tissue obtained via mini biopsy forceps have been drawbacks of peroral cholangioscopy with biliary biopsy [3–5]. The “funitel” technique presented here would help to target lesions at biliary bifurcations at minimal additional cost. Biopsy forceps with holes in the cups and smooth guidewires may facilitate this technique.

Competing interests

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