HBP SURGERY WEEK 2021 VIRTUAL &ONSITE
& The 54th Annual Congress of the Korean Association of HBP Surgery
MARCH 25-27, 2021 GRAND WALKERHILL HOTEL, SEOUL, KOREA
www.khbps.org
The Korean Association of Hepato-Biliary-Pancreatic Surgery

BP SY 1-3

Multifocal lesions in IPMNs; Intraoperative pancreatic juice cytology

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Lecture : On radiological study, 25 to 41% of the patients with intraductal papillary mucinous neoplasms (IPMNs) of the pancreas have multifocal lesions. On the other hand, in pathological assessment, most of these patients had lots of micro premalignant lesions such as small IPMNs and PanINs in the background pancreas, indicating that all the pancreas having IPMNs hve a potential to develop multifocal lesions. There are 3 possible types of multifocal lesions in patients with IPMNs, namely multiple branch duct IPMNs (BD-IPMNs) by multicentric development, multiple main duct or mixed type IPMNs (MD- or Mix-IPMNs) by the mechanism of intraductal dissemination of the neoplastic cells [Tamura T, Ohtsuka T, et al. Ann Surg 2014; Date T, Ohtsuka T, et al. Ann Surg 2017], and the development of pancreatic ductal adenocarcinoma (PDAC) concomitant with IPMNs [Ideno N, Ohtsuka T, et al. Ann Surg 2013; Gotoh Y, Ohtsuka T, et al. Surgery 2020]. Pancreatic juice cytology under endoscopic retrograde pancreatography (ERP) is reported to leads early detection of concomitant PDAC during assessment of IPMNs [Ohtsuka T, et al. JHBPS 2014], while it is often difficult to determine the location of malignant lesions when pancreatography and other imaging modalities cannot provide any significant abnormalities. Therefore, the role of intraoperative pancreatic juice cytology is to determine whether such lesions which are not detected by preoperative assessment might left in the remnant pancreas during partial pancreatectomy for IPMN. Previous report [Mori Y, 1Ohtsuka T, et al. Surgery 2014.] demonstrated that in consecutive 48 patients who underwent intraoperative irrigation cytology in the remnant pancreas during partial pancreatectomy for IPMN, 5 patients had positive results and subsequently underwent additional resection of the pancreas. High-risk lesions including 4 PanIN-3 lesions and one invasive carcinoma were detected in all 5 additionally resected specimens. On the other hand, there might be possible patients who might have false negative result of intraoperative irrigation cytology [Tamura K, Ohtsuka T, et al. JOP 2013.] or peritoneal dissemination because of leakage of irrigation solution containing cells from high-risk lesions. In this presentation, roles and limitations of intraoperative pancreatic juice cytology will be discussed.