Comparison of Stricture Dilation Before or After Multimodal Tissue-sampling, Including Brush Cytology, Intraductal Suction and Forceps Biopsy for the Diagnosis of Indeterminate Biliary Stricture: A Prospective Cohort Study

Cheng-Lin Hsieh[3], Yu-Ting Kuo[1], Ming-Lun Han[1], Chieh-Chang Chen[2], Wei-Chih Liao[2], Hsiu-Po Wang[2]

[1]Division of Endoscopy, Department of Integrated Diagnostics & Therapeutics, National Taiwan University Hospital, Taipei, Taiwan,
[2]Departments of Internal Medicine, National Taiwan University Hospital, National Taiwan University College of Medicine, Taipei, Taiwan,
[3]Department of Internal Medicine, Hsin-chu Branch, National Taiwan University Hospital, Hsinchu, Taiwan

Disclosure

- All authors declare that:
  - (i) no support, financial or otherwise, has been received from any organization that may have an interest in the submitted work; and
  - (ii) there are no other relationships or activities that could appear to have influenced the submitted work

Learning objectives and stated purpose

- To increase the accuracy of undetermined biliary stricture by tissue sampling

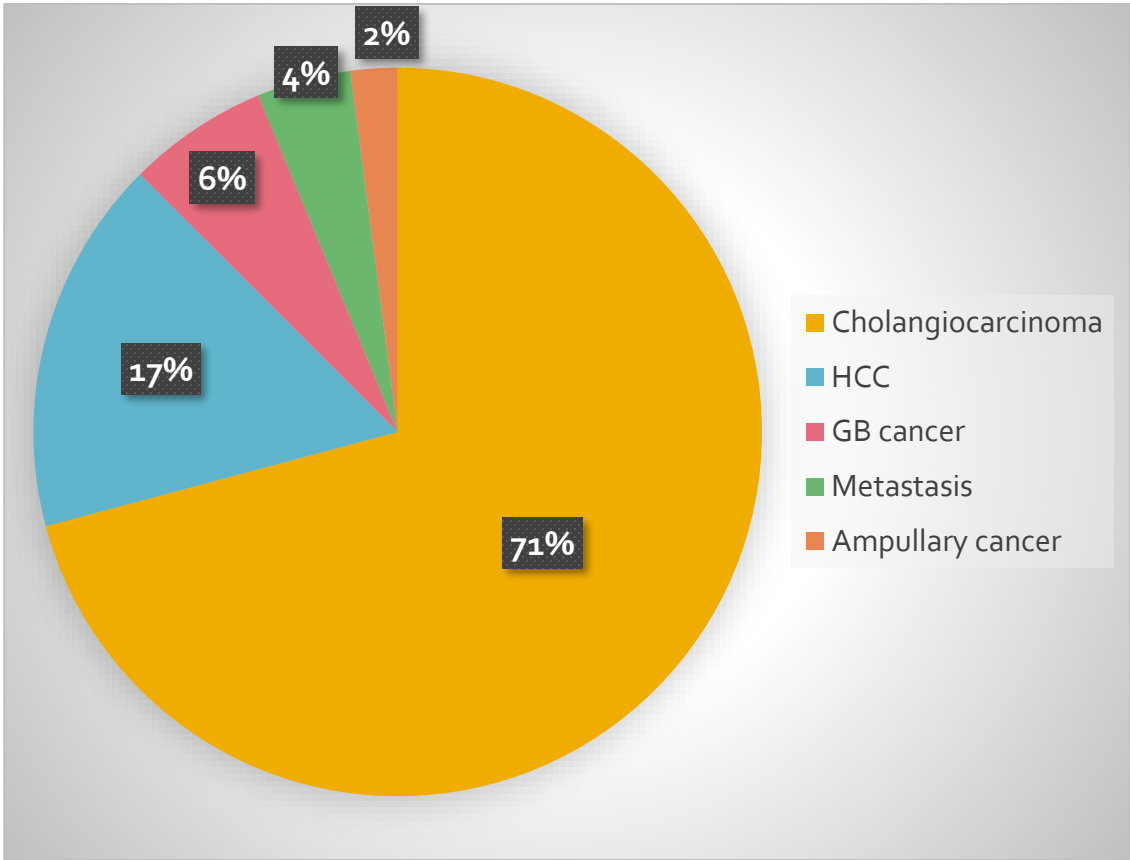
- Compare the diagnostic accuracy of triple tissue-sampling for indeterminate biliary stricture, including **intraductal suction**, **forceps biopsy** and **brush cytology** before or after dilation of biliary strictures.

Method

- This is a prospective study.
- Final diagnosis was based on all sampling methods plus surgery and clinically subsequence(such as progressive disease).
  - Tissue specimens were reported as normal, atypia, or malignant.

Result

- From Feb. 2016 to Oct. 2019.
- 60 patients with mean age of 66.9-year-old.
  - 48 malignant stricture
  - 12 benign stricture



Result

- The highest yield was seen in forceps biopsy
  - Whenever before or after biliary dilation

- The cumulative sensitivity of triple-tissue sampling in the cancer patients:
  - **If atypia was considered as malignancy(Table 1)**:
    - 77.1% (before dilation) and 79.2% (after dilation)
  - **If atypia was not deemed as malignant diagnosis(Table 2)**
    - 45.8% (before dilation) and 43.8% (after dilation)

Result (Table 1):

atypia equivalent to malignancy

	Sensitivity	Specificity	PPV	NPV	Diagnostic accuracy
Before biliary dilation					
Intraductal suction	22.9%	100%	100%	24.5%	38.3%
Forceps biopsy	70.8%	100%	100%	46.2%	76.7%
Brushing cytology	47.9%	100%	100%	32.4%	58.3%
Triple tissue-sampling	**77.1%**	100%	100%	52.2%	81.7%
After biliary dilation					
Intraductal suction	14.6%	100%	100%	22.6%	31.7%
Forceps biopsy	72.9%	100%	100%	48%	78.3%
Brushing cytology	47.9%	100%	100%	32.4%	58.3%
Triple tissue-sampling	**79.2%**	100%	100%	54.5%	83.3%

Result (Table 2):

atypia not enough to diagnose malignancy

	Sensitivity	Specificity	PPV	NPV	Diagnostic accuracy
Before biliary dilation					
Intraductal suction	8.3%	100%	100%	21.4%	26.7%
Forceps biopsy	33.3%	100%	100%	27.3%	46.7%
Brushing cytology	31.3%	100%	100%	26.7%	45%
Triple tissue-sampling	**45.8%**	100%	100%	31.6%	56.7%
After biliary dilation					
Intraductal suction	4.2%	100%	100%	20.7%	23.3%
Forceps biopsy	33.3%	100%	100%	27.3%	46.7%
Brushing cytology	25%	100%	100%	25%	40%
Triple tissue-sampling	**43.8%**	100%	100%	30.8%	55%

Conclusion

- Tissue sampling sensitivity varied according to the different modalities.
- Triple tissue-sampling increased sensitivity;
- Dilation of biliary stricture has no influence on the diagnosis rate of tissue sampling.