

EUS AND ERCP IN PANCREATICOBILIARY TUBERCULOSIS



DDW2026
Digestive Disease Week®

MAY 2-5, 2026 | CHICAGO, IL
EXHIBIT DATES: MAY 3-5, 2026

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SPEAKER DISCLOSURE

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Conflict of interest : Nil



INTRODUCTION

- About 12.5% of all patients with tuberculosis (TB) have extrapulmonary disease
- Abdominal TB accounts for 11% -16% of patients with extrapulmonary TB
- Involvement of hepato-pancreato-biliary (HPB) system is uncommon in abdominal TB
- Autopsy series of TB patients, % of pancreatic involvement were 2.1% - 4.7%
- There are very few published case series of PB TB
- Isolated pancreatic TBs is extremely rare; anti-mycobacterial properties of enzymes
- Recent increase in the number of reports on pancreatic tuberculosis
 - Availability of better imaging modalities
 - Ability to obtain specimens from the pancreas

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Amarapurkar D et al. Indian J Pathol Microbiol 2008; 51(2): 175-81.

Franco-Paredes C et al. Am J Med Sci 2002; 323(1): 54-8.

Rao RN, Rai P et al. J Cytol 2013; 30: 130-5

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PANCREATIC TB: DEMOGRAPHY AND CLINICAL FEATURES

Age (years)	41.61 ± 13.95	Symptoms	
Age range (years)	16–82	Fever	74 (46.5%)
Sex		Pain	119 (74.8%)
Male	103 (62.1%)	Weight loss	82 (51.6%)
Female	63 (38.0%)	Jaundice	31 (20.0%)
Origin		Diarrhoea	5 (3.1%)
North America, Australia and New Zealand	38 (22.8%)	Clinical presentation	
Europe	34 (20.5%)	Pancreatic mass	132 (79.5%)
Asia	83 (50.0%)	Pancreatic head mass	98 (59.0%)
Africa	7 (4.2%)	Pancreatic neck mass	3 (1.8%)
South America	4 (2.4%)	Pancreatic body mass	30 (18.2%)
Risk factors		Pancreatic tail mass	22 (13.4%)
Drugs	7 (8.1%)	Acute pancreatitis	10 (6.0%)
Alcohol	9 (10.4%)	Chronic pancreatitis	11 (6.6%)
Smoking	6 (6.9%)	Pancreatic abscess	20 (12.1%)
HIV-positive	22 (22.3%)	Pseudocyst	3 (1.8%)
Previous tuberculosis	7 (7.3%)		

PANCREATIC TB: EXTRAPANCREATIC INVOLVEMENT

Extrapancreatic involvement

Peripancreatic lymph nodes	69 (47.3%)
Pulmonary	9 (6.3%)
Intestine	12 (8.2%)
Liver	10 (6.9%)
Spleen	12 (8.3%)

DIAGNOSTICS IN 166 PATIENTS DIAGNOSED WITH PANCREATIC TB

Imaging

Abdominal ultrasonography	91 (55.2%)
Computed tomography	149 (89.8%)
Computed tomography FNA	13 (7.8%)
Magnetic resonance	5 (3.0%)
Magnetic resonance cholangiopancreatography	6 (3.6%)
Endoscopic retrograde cholangiopancreatography	40 (24.2%)
Endoscopic ultrasound	46 (27.7%)
Endoscopic ultrasound FNA	35 (21.1%)
Laparotomy	91 (55.2%)

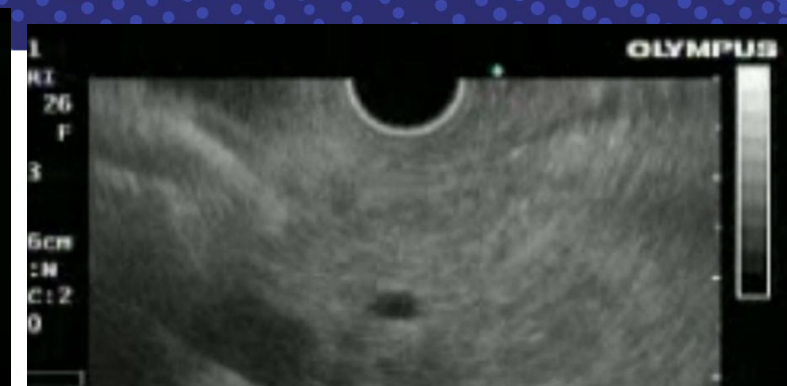
EUS IN PANCREATIC TB

- EUS valuable modality for pancreatic TB
- EUS: lesion size, ductal dilatation, calcifications, lymphadenopathy, vascular invasion
- EUS showed a well-defined hypoechoic lesion
- Smaller (<3 cm) lesions: homogenous while larger lesions were heterogeneous
- Vascular invasion could occur in pancreatic TB
- Calcifications can also be demonstrated in some patients
- No differences in the EUS appearances between pancreatic TB and pancreatic CA
- EUS is superior to CT or US in sampling particularly small lesions of the pancreas

EUS IN PANCREATIC TB



Hypoechoic Mass



PV Invasion

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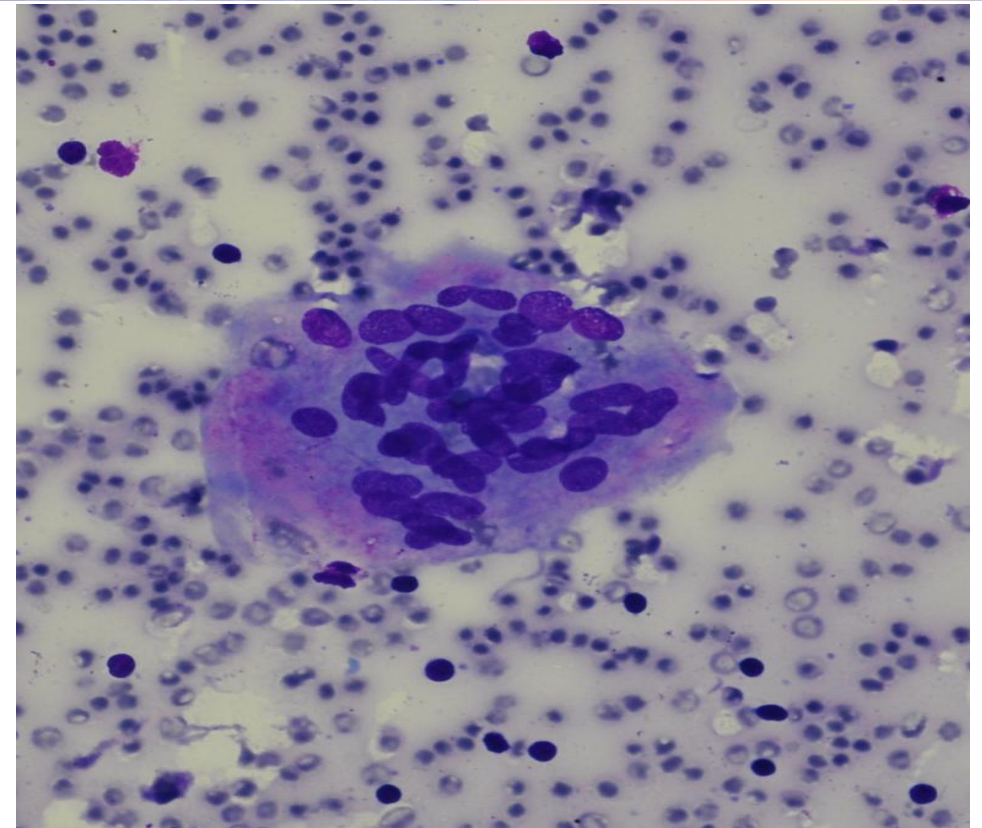
PANCREATIC TB VS MALIGNANCY

Row Labels	Pancreaticobiliary TB	HPB Malignancy
Demographics	Younger, typically 40-50 yrs, endemic regions	Older, typically >60 yrs
Clinical Presentation	Pain out of proportion to mass, fever, profound weight loss	Painless jaundice is classical
Tumour Markers	CA 19-9 normal or mildly elevated	CA 19-9 significantly elevated
Imaging Findings	Multicystic/hypoechoic, peripancreatic nodes with central necrosis, calcifications	Solid, hard mass, abrupt ductal cut-off
Vascular Invasion	Both can display vascular encasement, making standard CT unreliable for differentiation.	

EUS FNA IN PANCREATIC TB

- The diagnostic accuracy of EUS-FNAC is high for 76% to 95% for pancreatic cancer and 46% for focal inflammation
- Because of the rarity of pancreatic TB, the diagnostic accuracy is difficult to determine
- Before the advent of EUS:
 - Pancreatic TB was diagnosed occasionally by percutaneous US/CT-guided FNAC, which has a success rate of 50%
 - Diagnosis was made at exploratory laparotomy

EUS FNA FOR DIAGNOSIS



Diagnosis of isolated pancreatic tuberculosis: the role of EUS-guided FNA cytology

GASTROINTESTINAL ENDOSCOPY Volume 75, No. 4 : 2012

Rajesh Puri, MBBS, MD, DNB,¹ Ragesh B. Thandassery, MBBS, MD, DM,¹
Mohammed A. Eloubeidi, MD, MHS, FASGE,² Randhir Sud, MBBS, MD, DM¹

217 patients who underwent EUS FNAC of pancreatic mass between September 2008 and August 2011 (36 mo).

TABLE 1. Baseline characteristics

No. of patients	19
Men:women, no.	11:8
Age, mean (SD), y	36.2 ± 8.8
Symptoms, no (%)	
Abdominal pain and discomfort	19 (100)
Fever	12 (63.1)
Weight loss	12 (63.1)
Anorexia	6 (31.5)
Jaundice	4 (21.0)
Night sweats	1 (5.2)
Fatigue	1 (5.2)

TABLE 2. Radiologic and cytomorphologic features

Contrast-enhanced CT appearance of lesion	
Head, no. (%)	15 (71.4)
Body and tail, no. (%)	4 (28.6)
Solid, no.	13
Mixed solid and cystic, no.	6
Diameter of lesion, mean (SD) mm	25.6 ± 13.5
Complications of EUS-guided FNA cytology, no. (%)	0 (0)
Cytomorphology	
Granulomatous inflammation, no. (%)	19 (100)
Ziehl-Neelsen staining, no. (%)	9 (47.3)
Culture for <i>Mycobacterium tuberculosis</i> , no. (%)	8 (42.1)
Definite for tuberculosis, no.	9
Presumptive of tuberculosis, no.	10

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TABLE 3. EUS-guided FNA cytology diagnosis of isolated pancreatic lesions (n = 217), no. (%)

Tuberculosis	19 (8.7)
Adenocarcinoma	167 (76.9)
Inflammatory*	16 (7.4)
Autoimmune pancreatitis	6 (2.7)
Neuroendocrine tumor	7 (3.2)
Lymphoma	2 (9.2)

*Inflammatory lesion in association with acute or chronic pancreatitis.

Conclusion:

EUS appearance of solid or mixed/solid cystic lesions in pancreas, with hypoechoic anechoic echotexture and no vascular invasion, should suggest the possibility of TB

EUS-FNAC is a safe and effective for diagnosing pancreatic TB

Pancreatic and peripancreatic tuberculosis presenting as hypoechoic mass and malignancy diagnosed by ultrasound-guided fine-needle aspiration cytology

- 14 cases : 2006-2010
- EUS FNA: 2; USG FNA : 12
- EUS FNA: Granuloma seen in both and AFB positive in one

EUS FNA FOR CYTOLOGICAL AND MICROBIOLOGICAL EVALUATION

Year Author	2003 Xia <i>et al.</i> ¹⁸	2009 Nagar <i>et al.</i> ²¹	2009 Song <i>et al.</i> ²²	2011 Ibrahim <i>et al.</i> ²⁶	2012 Puri <i>et al.</i> ²³	2013 Rao <i>et al.</i> ⁸	2014 Kim <i>et al.</i> ⁴
Number of patients	16	32	21	14	19	14	42
	China	India	South Korea	Saudi Arabia	India	India	South Korea
AFB+	1 (6.25%)	NA	4 (26.6%)	6 (42.3%)	9 (47.4%)	9 (64.2%)	2/20 (10%)
Granuloma	12 (75%)	9/9 (100%)	13 (61.9%)	11 (78.6)	19 (100%)	8 (57.1%)	33/41 (80.5%)
Caseation	6 (37.5%)	NA	NA	—	19 (100%)	—	—
Culture positivity	4/9 (44.4%)	NA	3 (37.5%)	7 (50%)	8/19(42.1%)	—	18/38 (47.4%)
PCR	NA	NA	10 (66.7%)	—	Not done	8 (80%)	12/28 (42.8%)
IGRA	NA	NA	NA	—	NA	NA	8/9 (88.9%)

Aspiration of caseous material on EUS FNA points to diagnosis of pancreatic TB

Presence of granulomas is the most common finding on histology/cytology

EUS FNA avoids peritoneal seeding in possibly resectable cases

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Mandys V, *et al.* . *Case Rep Pathol* 2014; 2014: 615426

Sturmer J *et al.* *Virchows Arch. A Pathol. Anat. Histopathol.*1987; 410: 327–38

ERCP IN PANCREATIC TB

- ERCP is not usually warranted in patients with pancreatic TB but may delineate the ductal anatomy when it is done to relieve biliary obstruction

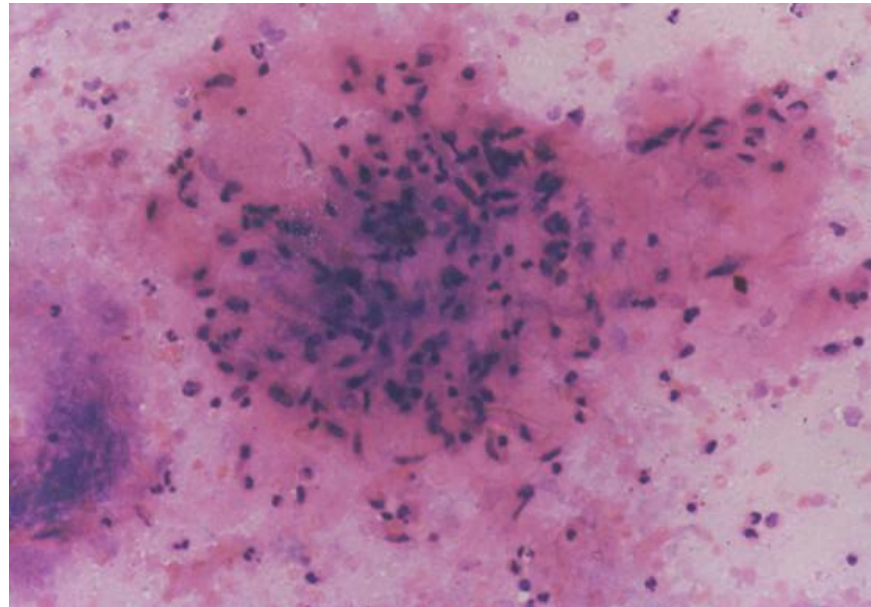
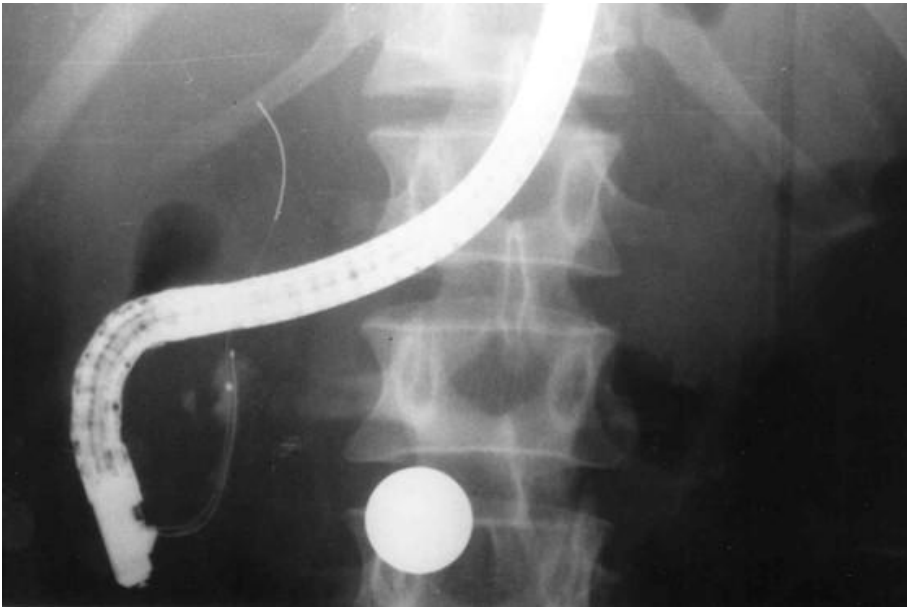
ERCP IN PANCREATIC TB

- Occasional complications like pancreatobiliary fistula may be detected on ERCP



ERCP IN PANCREATIC TB: BILIARY BRUSHINGS

- A 35, M: Pain in the upper abdomen of 2 mo, with significant weight loss
- Investigation; Increased elevated alkaline phosphatase.
- Imaging studies revealed a mass in HOP with dilated intra-hepatic biliary



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Sachdev A et al. JOP 2006; 7: 665–9.

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Clinical suspicion of Pancreatic TB

- Abd pain, Fever, Constitutional symptoms
- Jaundice, deranged LFT
- Immunocompromised state, Endemic region, Past h/o treatment for TB

Abdominal Imaging

- USG, CT, MRI
- Other Investigations: Mantoux, HIV, Xray chest

Pancreatic mass with extrapancreatic lesion

- Obtain tissue from extrapancreatic lesion:
Sputum for AFB, Pleural fluid

Diagnosis established:

- Start ATT
- FU with history, LFT, Imaging: Regression
- Biliary intervention if cholangitis/ worsening jaundice

Lack of response:

- Drug resistance, reconsider diagnosis

Isolated pancreatic lesion

Unresectable: USG/CT guided FNA

Resectable: EUS FNA



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BILIARY TUBERCULOSIS

- Biliary TB: 0.1% of all TB infections with 50–75% of have concomitant organ involvement
- Biliary tuberculosis is thought to occur via three routes:
 - (i) Most commonly: descending infection from portal tracts into bile ducts
 - (ii) From tuberculous periportal lymphadenitis
 - (iii) From ascending infection through the ampulla of Vater
- CBD is the most frequently affected followed by CHD. Multiple site involvement: 33.3%
- Clinical manifestations: due multi-level of biliary stricture and/or biliary stone diseases
- Symptoms: progressive obstructive jaundice, abdominal pain, and hepatomegaly eventually leading to chronic liver disease

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V. H. Chong et al. Singapore Medical Journal 51, no. 9 (2010): 744–751.

BILIARY TUBERCULOSIS

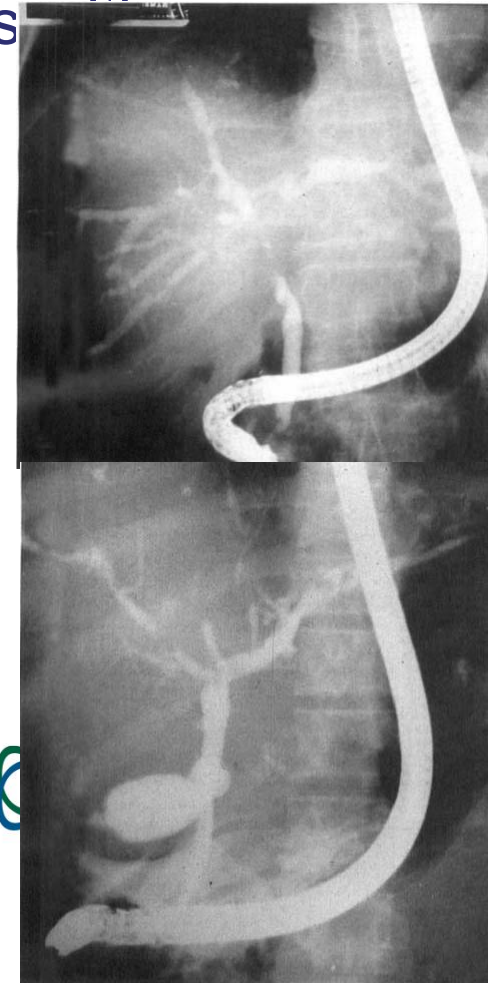
- Diagnosis is challenging and frequently occurs postoperatively
- A high degree of clinical suspicion is necessary for a preoperative diagnosis
- Accurate identification allows for conservative treatment without the need for invasive surgical Interventions
- Imaging findings: bile duct thickening, biliary dilatation, and strictures, leading to obstructive biliopathy in severe cases
- Both small and large bile ducts can be affected, often resulting in ductal stricture
- The clinical and cholangiographic features of tuberculous biliary stricture are usually not distinctive in differentiating TB from other causes cholangiocarcinoma or PSC

ROLE OF ERCP IN BILIARY TUBERCULOSIS

- Alvarez et al. also described the ERCP findings in 26 patients hepatobiliary TB who had obstructive jaundice symptoms.

- The most common finding was:

- | | |
|---|--------|
| • CHD stenosis at the level of hepatic hilum: | 61.5 % |
| • Beaded CBD & areas of dilatation/stricture: | 19.2 % |
| • Intrahepatic biliary dilatation: | 26.9 % |
| • Segmental dilatation and stricture: | 23.0 % |



BILIARY TB: LITERATURE REVIEW

- Till 2012: 17 published cases of biliary TB
- All cases presented with obstructive jaundice while (58%) had lethargy and anorexia
- Diagnosis: combination of imaging, endoscopy, PCD, blood tests, microscopy and DNA testing
- Complications due to biliary obstruction: stasis >> sepsis >> choledocholithiasis.
- Outcome:
 - 8/17 (48%) recovered favorably with anti-TB therapy and stent insertion
 - 1 mortality preceded by fulminant sepsis
 - 5 cases underwent major surgery such as hepaticojejunostomy

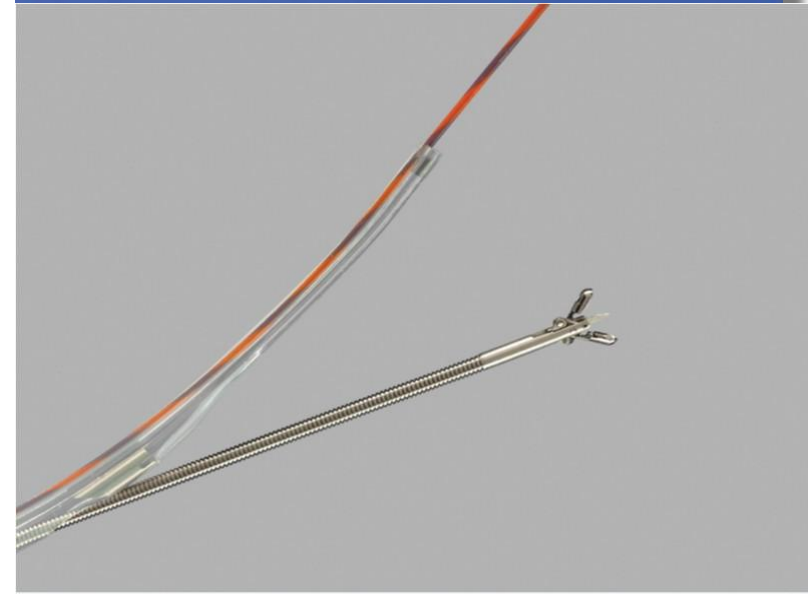
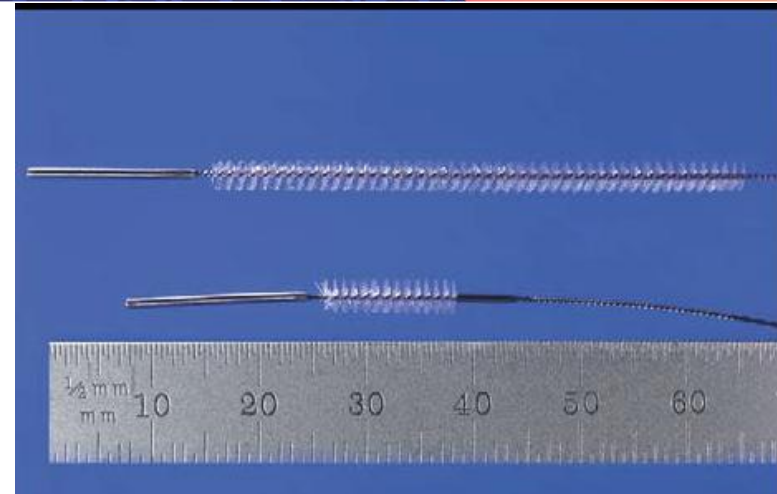
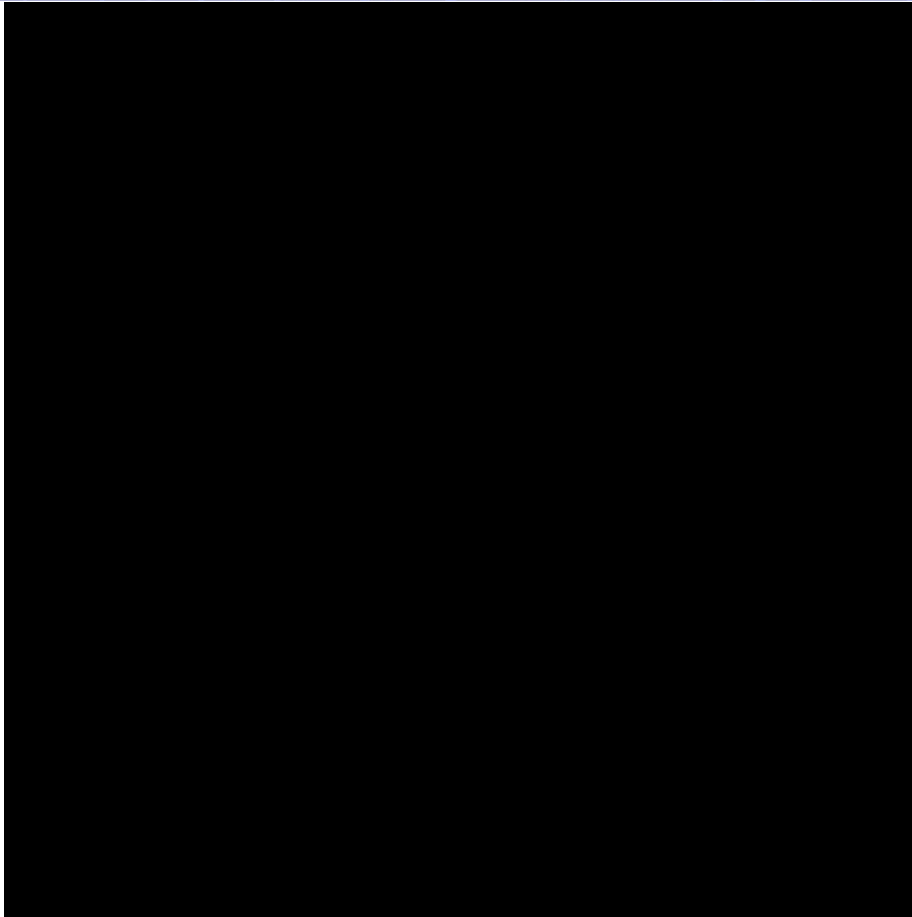
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Lee et al. Clin J Gastroenterol (2012) 5:53–58

BILIARY TUBERCULOSIS: ROLE OF ERCP

- Biliary brushing during ERCP plays a pivotal role in diagnosing BTB
- ERCP allows for the collection of biliary aspirates:
 - AFB staining or culture
 - PCR for TB DNA
- With the development of these strategies tissue diagnosis can be established negating the need for a laparotomy for diagnosis of TB

ERCP: BRUSHING AND BIOPSY

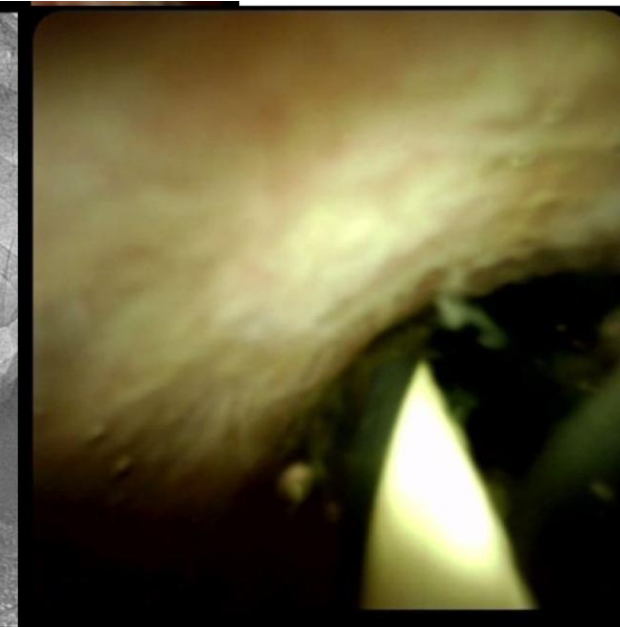
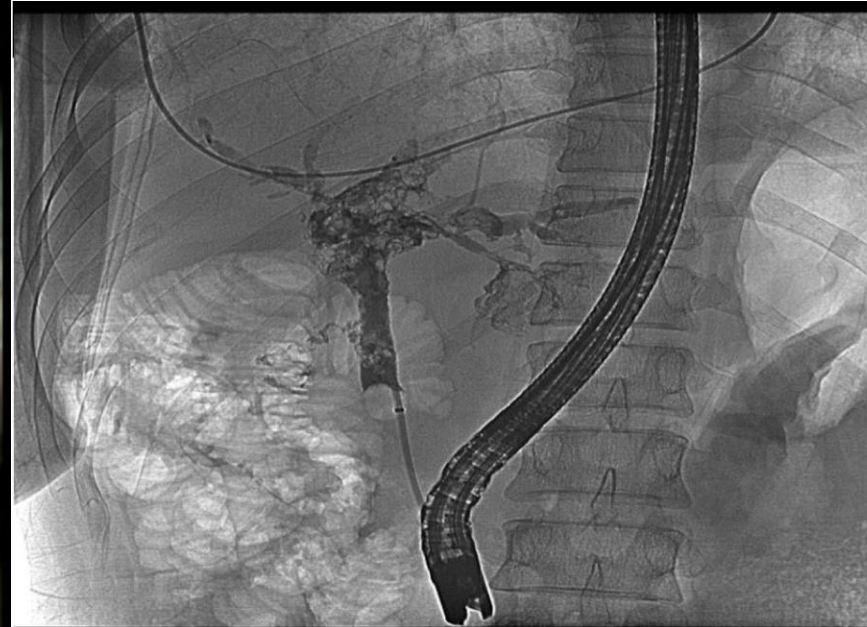
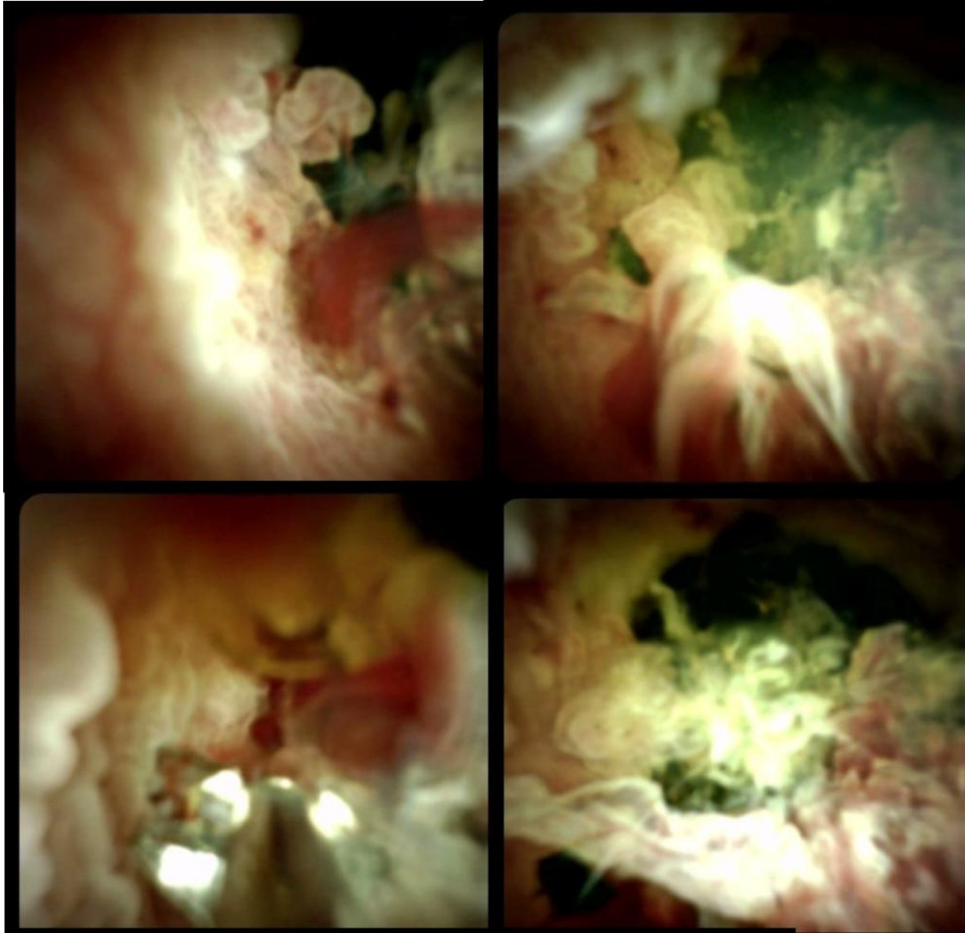


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ERCP WITH CHOLANGIOSCOPY

- Cholangioscopy provides directly visualize the bile duct, assess the extent



Stricture with papillary projection epithelial pattern at CHD just below to pigmented stone

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Aniwat Saleepol et al. JGH, 2025; 40:351–354

ROLE OF EUS AND ERCP IN PANCREATICOBLIARY TB





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