NOTRE DAME DES SECOURS
CENTRE HOSPITALIER UNIVERSITAIRE

USEK
HOLY SPIRIT UNIVERSITY OF KASLIK

Trakling Resistant Benign Biliary Strictures

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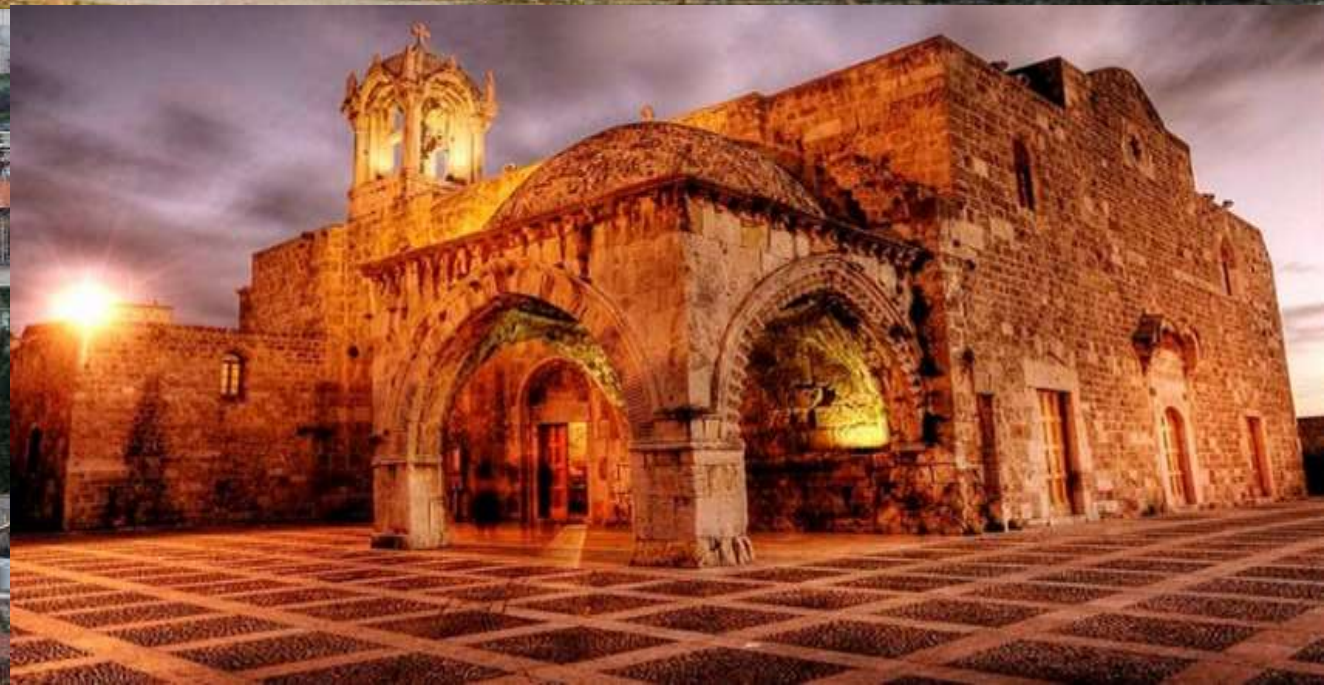
Lebanon

UHNDDS Byblos

Byblos / city of civilisations



Introduction

Abnormal narrowing of the commun bile duct.

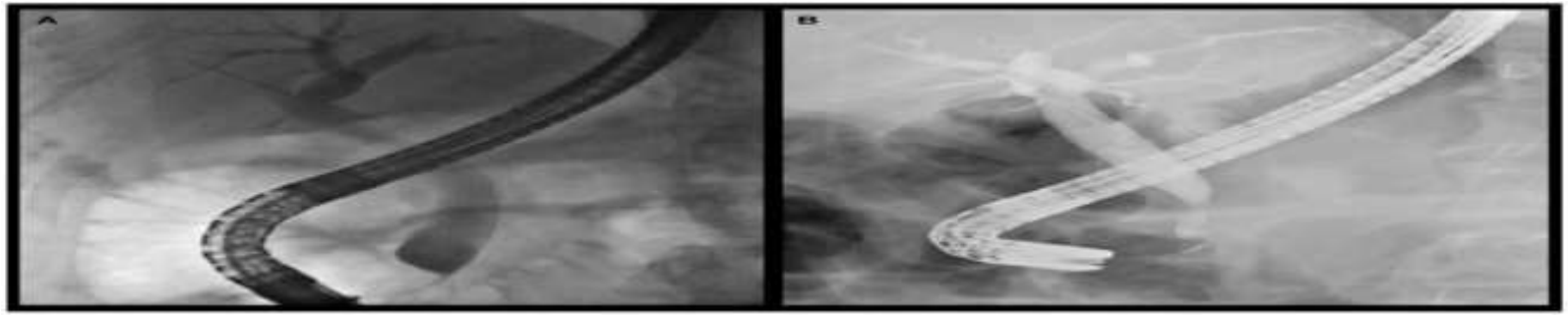
- Intra ductal Benign mass
- Injury from

Single acute event : surgery or trauma

Recurring condition, such as pancreatitis or bile duct stones

Chronic disease, such as primary sclerosing cholangitis

Inflammatory response



Collagen deposition, fibrosis, and narrowing of the bile duct lumen

Causes of benign biliary strictures

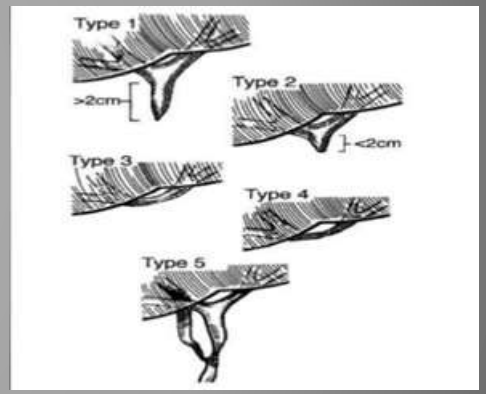
Common	Less common
Postsurgical	Bile-duct ischemia
Liver transplantation	Vasculitis: SLE- and ANCA-associated
Cholecystectomy	Radiation therapy
Bilioenteric anastomosis	Portal biliopathy
Inflammatory	Post–radiofrequency ablation
Chronic pancreatitis	Tuberculosis
Primary sclerosing	Postsphincterotomy
cholangitis	Trauma
IgG_4 cholangiopathy	Mirizzi syndrome
	Parasitic infection

Classifications

- Bismuth classification
  - Based on location of the biliary stricture
- Strasbergh's classification
  - Is applicable for acute laparoscopic injury
    - Bile leak/lateral or transaction injury
- Hannover classification
  - Is applicable for the vascular injury

Bismuth classification for BBS

Bismuth class	Location
I	>2 cm distal to hepatic confluence
II	<2 cm distal to hepatic confluence
III	At the level of the hepatic confluence
IV	Involves the right or left hepatic duct
V	Extends into the left or right hepatic branch ducts



Clinical presentation

The clinical presentation may be varied:

1/ Depending upon their etiology

2/ Location within the biliary tree

3/ Degree of ductal narrowing.

- Accordingly:
  - Patients may be
    - Asymptomatic
    - Have biochemical derangements in liver enzymes
  - Present
    - Biliary colic
    - with deep jaundice complicated by life-threatening cholangitis.

Diagnosis
(requires correlation)

1/ Clinical history

2/ Biology

3/ Radiologic finding

4/ Endoscopic findings.

5/ Histological assessment with cytology or histopathology to exclude malignancy

Lab studies

- ↑Bilirubin
- ↑APh ↑GGT
- ↑PT
- ↑Amylase lipase ↑ESR ↑LDH
  Anemia

Lab studies

↑Bilirubin

↑APh ↑GGT

↑PT

↑Amylase lipase ↑ESR ↑LDH

Anemia

Tumors markers : CA19-9 , CEA , AFP

Imaging studies

- **Ultrasound**
  - Detects intra and extra hepatic ductal dilation
  - Less accuracy in defining etiology

- **CT scan**
  - Highly sensitive (with contrast)
  - Detects site and cause of obstruction
  - CT is superior to US in visualizing the distal CBD area.

Imaging studies

- **MRCP**

- Visualises :
  - Biliary dilation 97- 100 % ,
  - Site of obstruction in 87 % of cases.
  - Detection & classification of Chronic pancreatitis
  - Multifocal strictures in case of PCS

Diagnosis /MRCP

- Regular
- Symmetrical
- and short- segment narrowing

Benign lesions

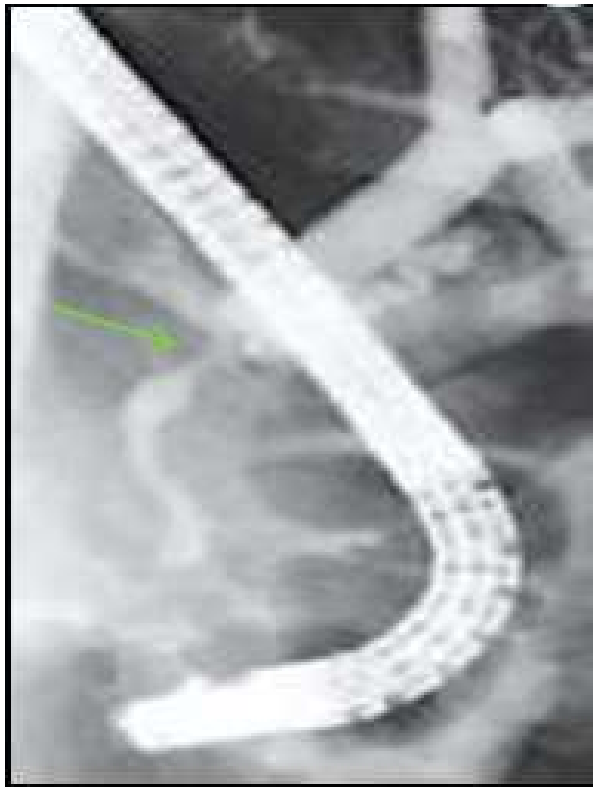
- Irregular
- Asymmetrical and of
- Longer length segment narrowing
  especially those ≥14 mm

Malignant lesions

Imaging studies

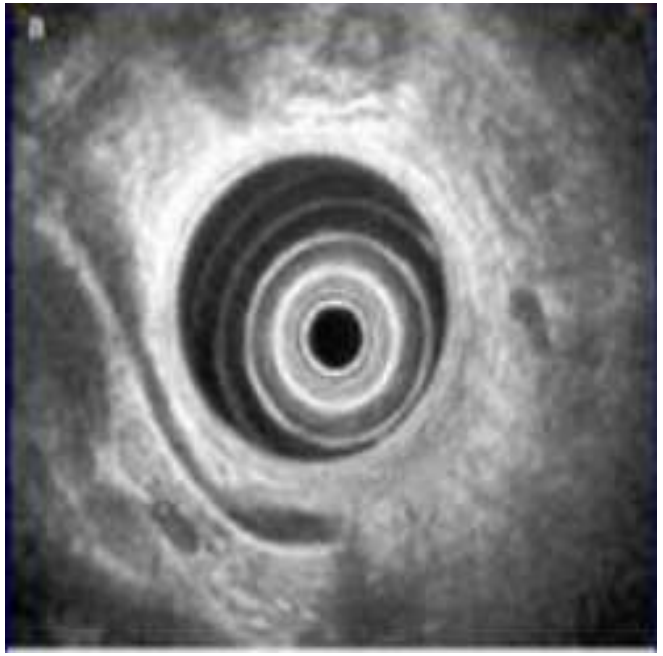
- **Cholangiography**

- Gold standard
  - ERCP / percutaneous
- Detect intra and extrahepatic biliary dilatation
- Stones
- The site of stricture with highest sensitivity and specificity 90- 100%
- Diagnostic procedure and allow therapeutic interventions



Imaging studies

- **Endoscopic ultrasound EUS**
  - EUS detect choledocholithiasis :
    - sensitivity of more than 95%
  - Visualises extra hepatic duct
  - FNA/FNB if needed



Diagnosis

- Some studies suggest the presence of malignancy with prior negative sampling results

ERCP tissu sampling techniques

Technics	sensitivity
Bile aspiration cytology	27%(6-32%)
Biliary stent cytology	32%(11-79%)
Brush cytology	42%(30-57%)
Foceps biopsies	56% (43-81%)
Foceps + Brushing	55%

Diagnosis: indeterminate strictures

To improve diagnostic yield

Adjunctive technologies are used such us

- Cholangioscopy with biopsy
- Intraductal ultrasound
- Intraductal confocal endomicroscopy
- FISH
- OCT
- DIA
- Spectroscopy

Diagnosis

Advantages of the Cholangioscopy

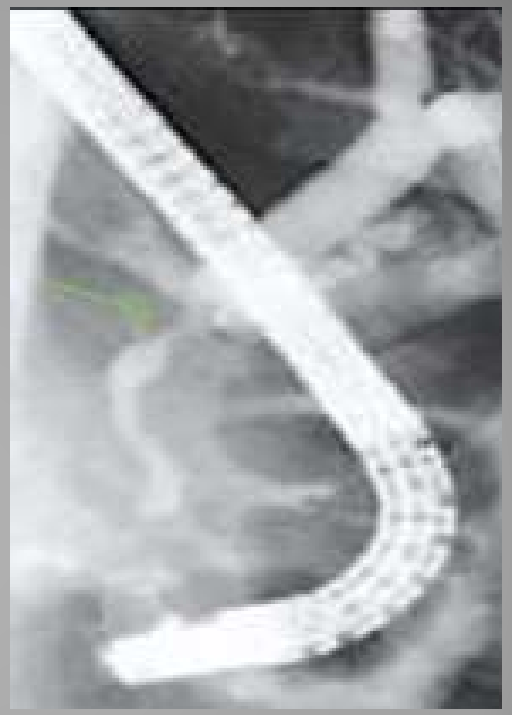
Visualization of the stenosis and direct biopsies

techniques

- Mather baby scop
  - Mild imaging quality
- Disposable fiber optic
  - Spy glass
- Direct choledocoscopy with a slim gastroscopes
  - Better imaging quality

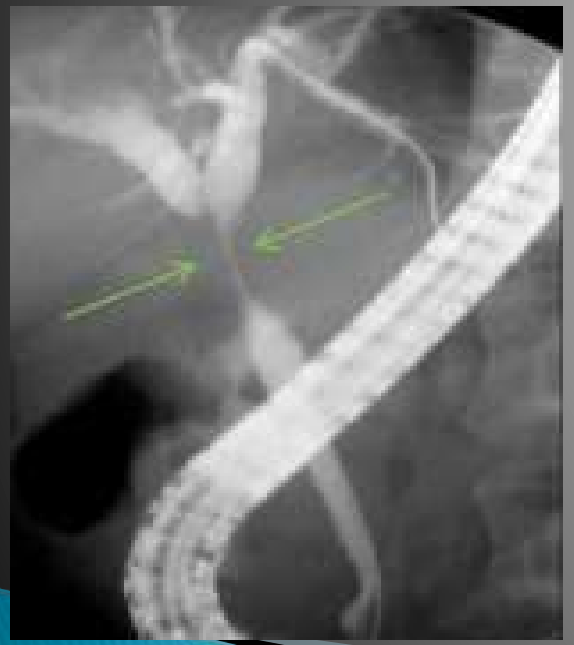
Diagnosis

- Cholangioscopy
  - 1-Biopsies



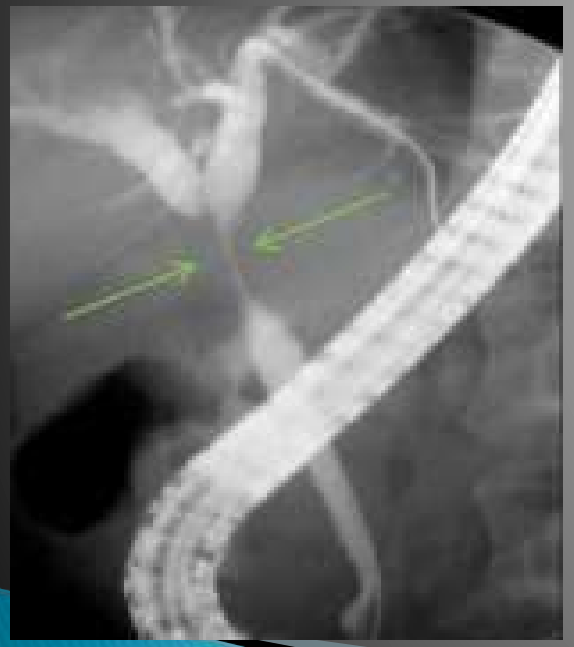
Diagnosis

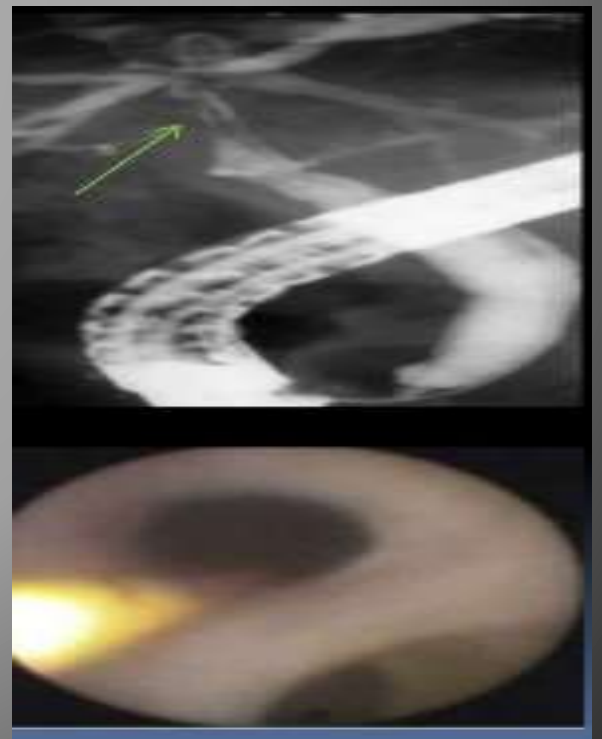
- Cholangioscopy



Diagnosis

- Cholangioscopy



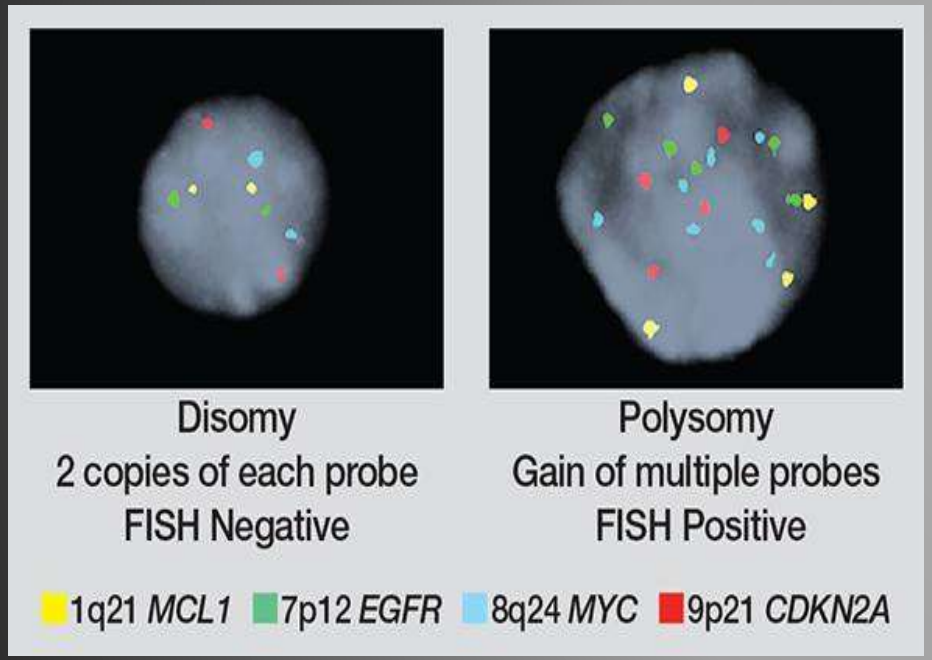


Technics

2-Intraductal ultrasound
With biopsies

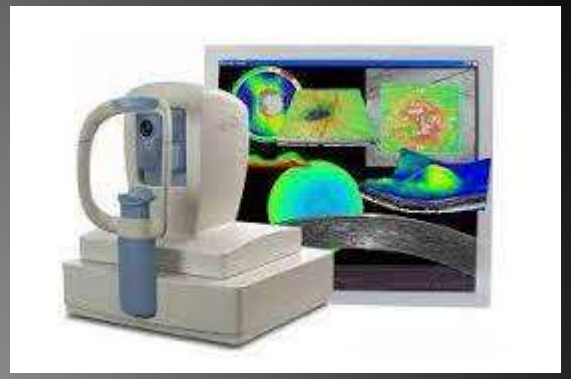
3-Intraductal confocal laser endomicroscopy

Others / FISH

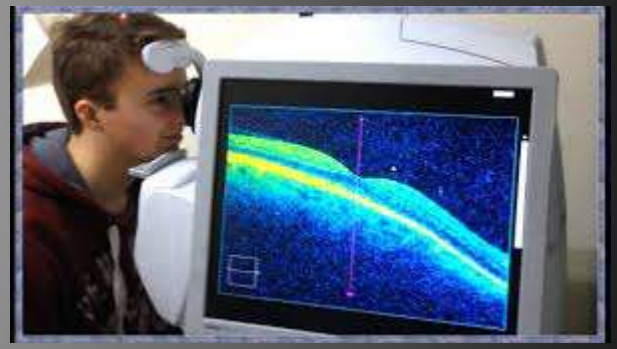


- **Fluorescence In Situ Hybridization**
  - Uses fluorescently labeled DNA probes to
    - Identify chromosomal aberrations in cells.
  - FISH Have been studied to improve tumor detection.

Others / OCT



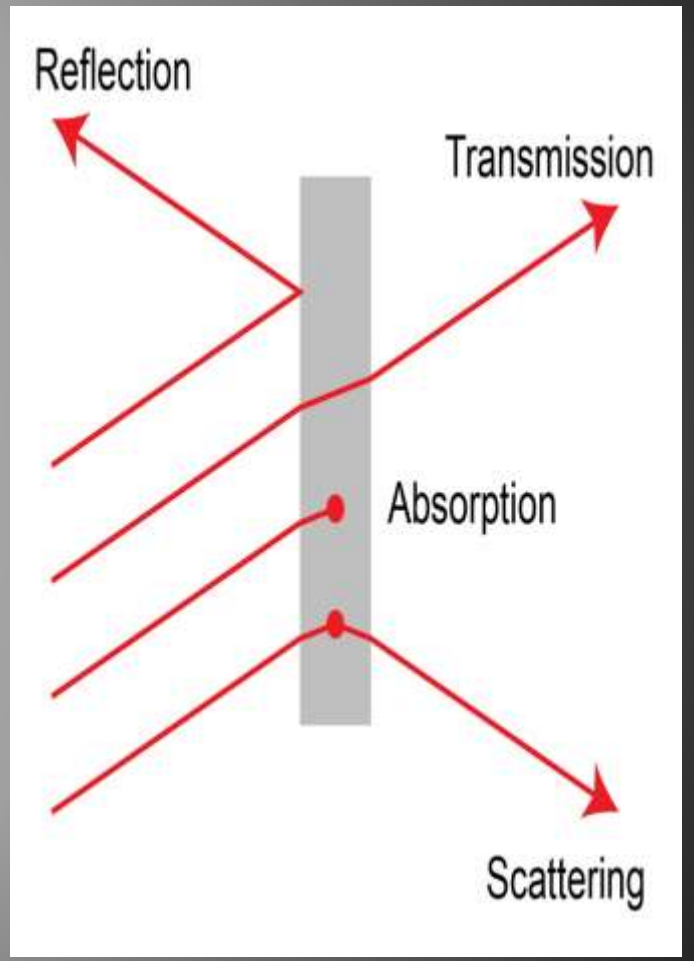
- Optical Coherence Tomography
  - Technique using infrared light →
  - The images are obtained real time by a miniprobe that is advanced through the working channel of the endoscope
  - After excitation → The reflected light is analyzed for its
    - delay and
    - intensity of reflection.



Others/ Spectroscopy

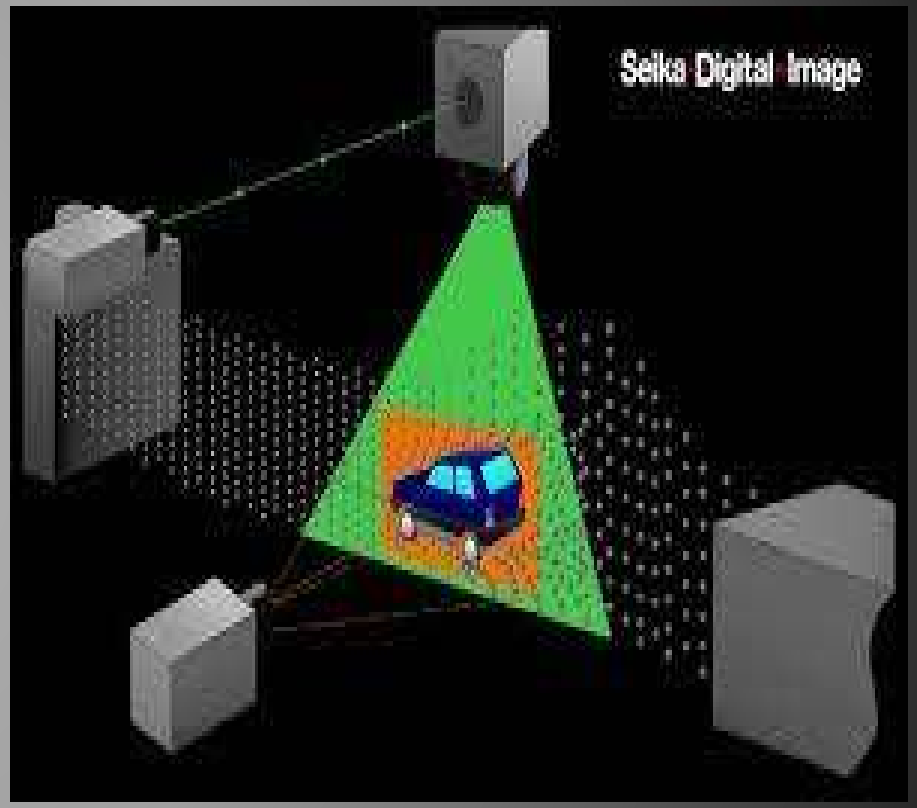
- Spectroscopy and Raman spectroscopy:

- Use subtle changes in wave length that
- Occur after the interaction of light photons with cellular structures and molecular vibrations, respectively



Others/ PIV/DIA

- Particle Image Velocimetry (PIV) coupled with
- Digital Image Analysis (DIA)
  - using dedicated high-temperature endoscopes for image recording and laser illumination.



Management

- Endoscopic ERCP or Percutaneous access
  - Dilatation
  - Stenting
    - Plastic stents
    - Metal stents
- 2/ Surgical

Therapeutic approach

- **Dilatation:**
  - Balloon /savary boogie
  - All dilators are passed over a guide wire
  - under fluoroscopy.
  - The size of the dilator is guided by the size of the bile duct dilatation up to the stricture.
  - Recommend are
    - dilatation of the stricture for 30–60 seconds, or
    - if using a balloon, until the stricture waist disappears on fluoroscopy

Biliary stenting/ plastic

- Stricture recurrence after dilatation may be reduced by placement of a biliary stent
- Extrahepatic BBS has traditionally been treated by placement of one/ multiple plastic stents .
- Long-term outcomes using may be
  - Equivalent or superior than surgical management, but
  - with lower morbidity.

Stenting/ One or multiple plastics Stents

- A systematic review compared placement of a single plastic stent to multiple
- 47 trials including
- 1,116 patients with extrahepatic BBS showed that
  - **Multiple plastic stents had higher clinical success (94.3% vs 59.6%) and**
  - **Fewer adverse events (20.3% vs 36.0%)**

Biliary stent- metal stents

- **In different prospective studies**
  - 100% successful
  - 100%regression of cholestasis and cholangitis
  - 90%long term success
  - 10% complications

Metalic stents / choice

- **Totally covert** are indicated for the treatment of BBS
  - Totaly covert stent is not indicated for
    - Hilar BBS, as a covered stent spanning the bifurcation may prevent biliary drainage from the opposite hepatic lobe.
    - in patients with an inpact gallbladder,
      - Cholecystitis is another potential complication of especially if the stent covers the cystic duct
- **Uncovered SEMSs** are unsuitable
  - because reactive tissue ingrowth into the bare-wire lattice prevents their later removal
  - A metalic stent-in-stent technique is a potential salvage method of retrieval

Recommended endoscopic treatments for causes of benign biliary strictures

Condition	Dilatation	≥1 plastic stents	FCSEMS
CP	–	Yes	Yes
PSC	Yes	Yes	–
Liver transplantation	–	Yes	Yes
Surgical injury	–	Yes	Yes
IgG_4 cholangiopathy	–	Yes	–
Bilioenteric anastomosis	Yes	Yes	–

Results / Biliary stents SEMS>> multiple stents

- A randomized trial comparing SEMSs and multiple plastic stents for the treatment of post-liver-transplantation BBS showed
  - **Higher stricture resolution (81%–92% vs 76% – 90%),**
  - **Shorter stent placement time (3.8 vs 10.1 months),**
  - **Fewer endoscopic procedures (median 2.0 vs 4.5),**
  - **Fewer adverse events (10% vs 50%), and**
  - **Less cost for the FCSEMS group.**

PTC

- PTC may facilitate rendez vous ERCP technique
- Can be used as a primary means of stricture management

- **Indications:**
  - In Cases of failed ERCP
  - Prior Surgery
    - Altered anatomy preventing access to the major papilla,
    - such as Roux-en-Y hepaticojejunostomy,
    - Bilroth II
  - Gastric-outlet obstruction from duodenal compression
  - Prior duodenal stent.

PTC Stent

- Initial success rate: 70-90%
- Post-liver-transplantation stricture resolution in 64%
- Long term results: 65-78%
- Less results in case of Sclerosing cholangitis

- Complications
  - Hemobilia
  - Cholangitis
  - Bleeding
  - Pleural injury
    - Pneumothorax
    - Bilio-pleural fistula

ERCP versus PTC

- Advantages of ERCP
  - Internal > external
  - Favorable fluid and electrolyte
  - Psychological acceptance
- Advantages of PTC
  - Easier
  - Better than ERCP in post op bile injury
  - Lower risk of sepsis

surgery

- In case of failure after 12 to 24 months of conservative treatment

New technics

- Novel techniques exist
  - Intraductal radiofrequency ablation, and
  - Biodegradable stents

New techniques
Intraductal radiofrequency ablation

Endobiliary appear to be safe and effective especially for refractory cases

1/In a small study of 9 patients with refractory BBS,

- intraductal bipolar radiofrequency ablation
- followed by balloon dilatation

Results

- Immediate stricture improvement in all patients.
- Four patients had no recurrence of stricture after mean follow-up of 12.6 months

2/ Other small study

ERFA seems also safe for benign hepato-jejunostomy refractory to endoscopic and surgery treatment

New techniques
Biodegradable stents

- 10 patients treated endoscopicaly
  - No stent was visible at 6-months

- 13 patients treated endoscopicaly
  - Stricture resolution was 83% at 21-month of follow up

  - NB : high risk of re stenosis

Conclusion

- BBSs may arise from a variety of etiologies.
- Symptomatic patients may present with jaundice and/or cholangitis, which are indications for treatment.
- Choledocoscopy for histology is very well recommended to exclude neoplasm priore to R)
- Endoscopic therapy by ERCP or Percutaneous cholangiography are the gold standard treatment
- Surgery In case of endoscopic treatment failure

SAVE THE DATE

31 Mayo & 01 jun 2014

14th BIDW