Introduction to ERCP

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ERCP in a
Outline

1. What is ERCP and why do we perform it: “you’re putting a wire in what now??”
2. Preparation: “Oh god...there are two ERCP’s posted in my room...what do I do?”
3. Procedure: “The doc keeps asking for tension...I’m tense, what more does he want.”
4. Post procedure: “Now you want me to stick these pills where??”
What is ERCP

E: Endoscopic
R: Retrograde
C: Cholangio
P: Pancreatography
Endoscopic

- Also known as a “side viewer”
- Optics point 90deg from the tip of the scope
- Associated with nosocomial “superbug” infections
- Infection control issues...have a plan!!
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48 year old presents with abdominal pain and is found to have a stone on MRCP. The patient has been in the hospital since Tuesday morning, but since it’s friday at 4pm, they have decided to call you for an ERCP.

Your endoscopists gets into a duct and asks you to inject some contrast. You take the following image. He is convinced he is in the bile duct, and you all will be done in 5 minutes

A. He’s right...the doctor is always right
B. He’s wrong...you’ll be here for a while longer

PANCREATIC DUCT
Preparation for ERCP
Preparation (Clinical)

1. Is the patient safe to undergo this procedure
2. When did the patient last eat
3. When was the last dose of anticoagulants
4. When was the last dose of antibiotics
5. What are the patient's platelets and coagulation parameters
6. Basic examination (Abdomen distended/tender/etc.)
Preparation (Technical)

1. What tools are definitely needed for the case
   - Need to know what the case is
   - What the physician preference is

2. What tools do I need as a backup
   - Difficult cannulation
   - Advanced ERCP techniques

3. Do we have all the equipment that we need and does it work
Basic tools for biliary endoscopy

1. Cannulation device
2. Guidewire
3. Extraction device (balloon or basket)
4. Stents
5. Electrocautery
Tools for cannulation
Why don’t we use a straight cannula for biliary endoscopy
Guidewires

They come in different lengths and sizes
Length - 260cm, 450cm, 600cm
Sizes/diameter - 0.035, 0.025, 0.021, 0.018

Most have a hydrophilic floppy tip (slippery when wet)
Some are entirely hydrophilic (glidewire)
Guidewire and exchanging
Once a wire is placed in the bile duct as a “place holder”. the sphincterotome is removed so other devices can be placed.

Once the wire is in place, the device is removed (physician) while the wire is left in place (tech/nurse). (I pull, you push)
Standard exchange

Requires communication and focus on the guidewire

(Don’t just look at the wire...Look at the screen, the scope and the wire)

If you are not comfortable with exchange, say so and go slow
Guidewires and contrast

Contrast will make the wire sticky

Flush all wire ports with water

And after each exchange, wipe the wire with wet 4 x 4
Rapid exchange
Short wire vs Long wire

450 wire

260 wire
Things to remember with wires

1. If you are planning standard exchange equipment, you need to use a 450cm length wire
2. If you use a 260 short wire, all devices must be rapid exchange compatible (stents, brush, dilators etc.)
3. If you use a 450cm wire, you can use either rapid exchange or non rapid exchange devices
Guidewire tension
Wires

Remember the size of wire the devices can accommodate.

Remember whether you can use a long wire or short wire.

Practice exchanges and wire tension.

KEEP THE WIRE WET!
37 year old with diabetes and atrial fibrillation presents with abdominal pain after cholecystectomy. JP drain contains a significant amount of bile. U/S reveals a biloma in the gall bladder fossa.

*Bile Leak!!!!*
ERCP preparation (Nurse)

1. Is the patient on antibiotics. Do we need to give a dose of antibiotics
2. What is the patient's platelets and INR (Can we safely perform a sphincterotomy if needed)
3. What type of fluids do we need. Do we need rectal indomethacin
   - IV hydration with LR and rectal indomethacin decreases post ERCP pancreatitis
ERCP preparation (Tech)

1. Sphincterotome with a wire that fits
2. Electrical generator (ERBE)
3. Device to remove a stone
   - Extraction balloon
   - Basket
4. Stents (10fr biliary stent). Possibly a pancreatic stent
ERCP preparation (tech)

1. Balloons come in different sizes (9-12, 8.5-15, 12-15, 15-18)
2. The size of balloon depends on the size of the duct
3. Again, keep in mind whether you are using the rapid exchange system
Question 1

Your doctor has decided to use a non rapid exchange sphincterotomy containing a 0.021 wire. The cannulation is difficult and despite several attempts, the wire only goes into the pancreas duct and not into the bile duct. The physician decides to use “double wire technique” and requests a second wire.
What wire does he need?

A. Metro 260 0.035
B. Jag 450 0.035
C. Visiglide 450 0.035
D. Metro 450 0.021
E. Acrobat 260 0.025
“Double wire technique”
Precut needle knife

- Higher risk advanced ERCP technique
- Several different techniques
  1. Over previous placed PD stent
  2. Over in situ guidewire
  3. Freehand

Should be uncommon and performed by experienced endoscopist
Case 2

A 41 year old with abnormal liver enzymes and diabetes is being evaluated by her hepatologist. He orders a liver biopsy. Two days later, the patient develops RUQ pain and fever. Liver enzymes are increased and the patient becomes jaundiced. The gastroenterologist gets called and correctly diagnosis hemobilia (bleeding into the bile duct) and schedules ERCP.
Preparation (Clinical)

1. Antibiotics?
2. Coagulation parameters and platelets
3. Type and screen
4. Hemodynamics
Preparation (Technical)

1. Sphincterotome
2. Guidewire
3. Balloon catheter
4. Stent (biliary and pancreatic)
5. Electrosurgical unit
EUS Guided ERCP (Rendezvous)

Requires a very good team
More focus on guidewire manipulation
A very good tool for difficult ERCP
**EUS guided rendezvous pearls**

0.035/0.025 wire can go through a 19g needle only

0.018 wire can go through a 22g needle

Prefer to use a 0.025 angled guidewire with a rotating device to control guidewire manipulation

Once you puncture the duct, you are committed to complete the case

Be careful not to shear the wire during manipulation.
Case 3

48 year old with chronic pancreatitis develops jaundice. He has a bilirubin of 6. No fever. He has chronic pain. MRCP reveals a dilated bile duct. He is referred for ERCP. Initial cannulation attempts are unsuccessful. A wire is attempted to be manipulated in the pancreas for double wire, but inadvertently creates a false tract. The sphincterotome then is jammed in the papilla and high pressure contrast is injected created a submucosal bleb. The papilla starts to bleed. The endoscopist performs 3-4 ERCP’s per month and has been proctored on basic EUS, but attends several interventional endoscopy courses and is aware of several advanced techniques
What is the ideal strategy for this patient

A. Precut freehand
B. Transpancreatic septotomy
C. EUS guided rendezvous
D. EUS guided choledochodoudenostomy
E. None of the above
ERCP is the highest risk procedure in endoscopy

Complications are associated with lack of expertise

Advanced techniques should be reserved at centers with an experienced TEAM

There is no harm in stopping a case and finding an alternative (refer for PTC drainage, refer to an expert center, try another day)
Pancreatic ERCP

Higher risk than biliary ERCP

Greater chance to cause pancreatitis

Must be more aware with guidewire management and contrast injection

When injecting gradually “puff” contrast

Use only enough contrast to see where you are going
Pancreatic stents

Different than biliary stents.

Smaller diameter

Softer. May or may not have a guiding catheter.
Consider developing a dedicated interventional team and ERCP committee (device ordering, management, protocol)

Develop a training protocol. Trial by fire is not a good system

Advanced techniques are great...but know when to quit

Practice and make ERCP fun!