THE DIGESTIVE SYSTEM-PART 4

And to finish up here with the Digestive System we need to say a few words about the:

**PANCREAS**
**SMALL INTESTINE**
**LARGE INTESTINE**

Now having said this, from what I recall, we had left off at the **DUODENUM**. The **duodenum** is a part of the small intestine. It is where the small intestine starts. It is a loop of intestine in close contact with the head of the pancreas and where the **pancreatic duct (orange)** and **common bile duct (green)** come together at a nipple-like structure called the **ampulla** (see image below) and through which the bile and pancreatic juice pour into the duodenum to help break down and absorb **FAT, PROTEINS** and **CARBOHYDRATES**.

![Digestive System Diagram](image)

- **Foods rich in Proteins** like: Meats (beef, chicken fish, shrimp), eggs, dairy, nuts, beans
- **Foods low in Fat**: fruits, vegetables, grains, white fish, turkey, chicken, rice
- **Foods rich in Fiber**: berries, almonds, lentils, fruits, vegetables and whole grains

The pancreatic juice is made in the **PANCREAS**, a gland located deep in the back of the abdomen. The pancreas is a hard worker as it has 2 jobs:

1) To aid in **DIGESTION** (pancreatic juice) and to also
2) Regulate **BLOOD SUGAR** (through the **insulin** it makes)

**Here we will only cover the digestive aspects of the pancreas. Its role as an endocrine gland (insulin)** will be covered in the presentation on the Endocrine System. Now having said this, let...
me ask you a question: the principal organ of digestion is......?? The stomach!! Right?? NO, NO, NO. Actually it is the pancreas!! The pancreas secretes digestive juices which contain digestive enzymes like lipase and trypsin. The pancreatic enzymes further break down the chyme preparing it for absorption.

**SOME SIGNS OF DISEASE (DUODENUM/PANCREAS)**

1) **ABDOMINAL PAIN**
2) **JAUNDICE**: for example pancreatic cancer pressing on common bile duct obstructing the flow of bile which backs/builds up (cholestasis) and bilirubin levels increase in blood.
3) **BLEEDING**: in the digestive tract causing dark tarry stools of digested blood (MELENA)

**SOME DISEASES**

1) **DUODENAL ULCER**: associated with H. PYLORI infection. H. Pylori is a bacteria. Peptic ulcers can appear in both the stomach and the duodenum.

2) **PANCREATIC CANCER**: It has a bad prognosis and is generally inoperable, having “spread” to other organs when detected.

3) **ACUTE PANCREATITIS**: inflammation of the pancreas. Can be caused by alcoholism, gallstones, other-

**SOME DIAGNOSTIC PROCEDURES**

1) **UPPER GI SERRIES aka BARIUM MEAL**- For this study the patient swallows a solution that contains barium and then X-rays are taken. This way the if there is an ulcer it gets coated with barium solution making it visible on the X-ray.

2) **UPPER ENDOSCOPY**: permits direct visualization of the duodenum and stomach, etc.

3) **ABDOMINAL CT SCAN**: useful to detect pancreatic tumors

4) **FLUOROSCOPY**: is a “real time x-ray” seen on a monitor screen. A patient swallows a barium impregnated solution and the radiologist can observe the resulting moving images in real time as opposed to the “still” images obtained by a standard X-ray.

**SOME TREATMENTS**

1) **STOMACH PROTECTORS**: for ulcers like omeprazole, ranitidine.

2) **SURGERY**: a type of surgery known as :
   - **VAGOTOMY**: done to treat duodenal ulcers. The nerves that stimulate acid secretion to the stomach are cut (reduces acid secretion in the stomach).
3) **ENDOSCOPIC RETROGRADE CHOLANGIO-PANCREATOGRAHY**: endoscopic procedure to **visualize and clear out the ampulla** (i.e. **remove gallstones or thick bile called: BILIARY SLUDGE**) in **acute pancreatitis**. So difficult to pronounce that it's commonly referred to as **ERCP**.

The **SMALL INTESTINE** sits in the bottom half of the abdomen. It's divided into the following segments

1) **DUODENUM**: We've already talked about the duodenum and its relations with the pancreas and the gallbladder.
2) **JEJUNUM**: Is **where most of the absorption takes place** and is followed by the
3) **ILEUM** which is the last part of the small intestine where absorption continues.

The absorption of the nutrients into the bloodstream is done through millions of tiny hair-like structures found in the lining of the bowels called “**villi**”.

The **LARGE INTESTINE** is divided into:

1) **CECUM**: The cecum is the first part of the large intestine and has the **form of a pouch**. The **APPENDIX** is connected to the cecum and it looks like a pig's tail.

2) The **COLON**: It has **4 parts** named based on the colon's **trajectory** inside the abdomen. (see image below)
   - **ASCENDING Colon**: which **goes up** until it turns to the left
   - **TRANSVERSE Colon**: **crosses the upper abdomen** from side to side and then turns down
   - **DESCENDING Colon**: **this part of the colon continues downward** until it enters the pelvis where it becomes the sigmoid colon.
   - **SIGMOID Colon**: called that way because it is shaped like an “s”. The sigmoid colon **ends at the rectum**.
By the way! Remember the chyme? It continued to be digested and now it is no longer called bolus or chyme. At this point (in the colon) it's basically loose FECAL MATTER. In the cecum and first parts of the colon is where most of the water is absorbed. By the time what's left of our meal reaches the last parts of the colon it is now semisolid fecal matter. The fecal matter then reaches the last part of the large intestine:

3) The RECTUM: As the rectum fills you feel the “urge” to go. Thanks to the ANAL SPHINXTER-you can “hold it” until you find a restroom. A sphincter is a circular band of muscle which, in this case, keeps the rectum closed. When the rectum contracts, the sphincter relaxes and DEFECATION occurs. The ANUS is the opening through which the feces are eliminated from the body.

SOME SIGNS OF DISEASE (SMALL/LARGE BOWELS)

1) ABDOMINAL PAIN
2) BLOATING – belly feels full.
3) DIARRHEA
4) CONSTIPATION
5) ITCH: anal disease
6) G-I BLEEDING: losing blood can cause FATIGUE which is a symptom of anemia.
7) FECAL INCONTINENCE: this is the patient that needs to use diapers.

SOME DISEASES

1) CELIAC DISEASE: intestinal villi is damaged in this disease, patient needs a special diet due to MALABSORPTION. Diet must exclude GLUTEN which is a protein found in grains like: WHEAT, OAT, BARLEY, RYE

2) GASTROENTERITIS: painful intestinal inflammation caused by food poisoning. Also known as the “STOMACH FLU”.

3) BOWEL OBSTRUCTION: means that the transit through intestine is blocked (“a blockage”). Can be due to internal scars (aka adhesions) that develop after abdominal surgery or strangulated hernia (death of the intestine may occur making this a reason to go to the ER urgently)!

4) ILEUS: is lack of intestinal peristalsis. Can be caused for example by general anesthesia and that's why the doctors won't let a patient go home until he swears he has passed gas!

5) IRRITABLE BOWEL SYNDROME (IBS): is a peristalsis disorder of the intestines. It’s the nutcracker esophagus of the bowels!. The intestines don't seem to coordinate well. It's like several people rowing in a boat that are all paddling in different directions at different times. Seems to be stress-related with symptoms like diarrhea and constipation.
6) **INFLAMMATORY BOWEL DISEASE (IBD):** under this heading we have **ULCERATIVE COLITIS** and **CROHN'S DISEASE** which are diseases that cause inflammation, ulcers and scarring of the intestinal walls with bloody, watery diarrhea.

7) **DIARRHEA:** has many causes:
   - **GERMS (E.COLI)**
   - **MALABSORPTION**
   - **LACTOSE INTOLERANCE** (allergy to milk/dairy products)
   - **IBS or IBD**

8) **POLYPOSIS:** are growths in the colon. A **polyp has the form of a stalk** with a clump of cells. Some are benign other times cancer (see image #1 below).

9) **DIVERTICULOSIS:** presence of these little **pouches in the intestinal wall**, found typically in the sigmoid colon. Diverticulosis becomes **DIVERTICULITIS** when one of these pouches gets inflamed.

10) **COLON AND RECTAL CANCER:** 4 stages of colon cancer (CANCER STAGES) the tumor grows as we see in the image until the last stage:

    **STAGE 4 = METASTASIS**

    Metastasis means the cancer has **reached lymph nodes and spread**.
11) **HEMORRHOIDS**: is the presence of **DILATED RECTAL VEINS**. Hemorrhoids can be: - **INTERNAL** (can't be seen by looking at the anus) - **EXTERNAL** and are the protruding ones they operate.

12) **ANAL ABSCESS and FISTULA**: It all starts when one of the anal glands gets blocked and infected forming a localized collection of pus called an **ABSCESS**. That abscess is sort of like a deep pimple. It can grow and wind up opening and draining to the skin around the anus. That **open pathway from the gland out to the skin is called a FISTULA.**

13) **ANAL FISSURE**: is an ulcer that appears on the anus, looks like a “paper cut”. Makes defecating very painful.

**SOME DIAGNOSTIC PROCEDURES**

1) **RECTAL EXAM**: Also known as **digital exam**. As you can imagine consists in the introduction of a finger into the rectum. Done to examine rectum and prostate gland.

2) **COLONOSCOPY**: done with a **flexible tube** inserted through the anus while the patient is sedated. Permits **direct visualization** of the colon. Samples of tissues (**BIOPSY**) can also be taken during this procedure.

3) **CT OF ABDOMEN aka COMPUTERIZED TOMOGRAPHY**. Another way of saying it is: **CAT SCAN**.

   **CAT = COMPUTERIZED AXIAL TOMOGRAPHY.**

4) **STOOL FOR OCCULT BLOOD**: done by collecting **samples of feces** and testing it for blood (screening test for Colon Cancer)

5) **AXR**: means **abdominal X-ray**

6) **ABDOMINAL ULTRASOUND**: to view pancreas, common bile duct and gallbladder.

7) **BARIUM ENEMA aka LOWER GI SERIES**: a radiopaque contrast is **administered through the rectum** and images are obtained through **fluoroscopy**. Radiopaque means it will look white on an X-ray. Used to view the **rectum and sigmoid colon**.

**SOME TREATMENTS**

1) **MEDICATION**:
   - **ANTIDIARRHEALS**: like **LOPERAMIDE**
   - **LAXATIVES** (**aka STOOL SOFTENERS**): reduce constipation.
   - **ANTI-INFLAMMATORY MEDICATION**: like **MESALAMINE** for ulcerative colitis
2) **NASOGASTRIC SUCTION**: a tube inserted through the **nose down to stomach or small bowel (called an NG Tube)** to suck up gases and liquids (decompress GI tract) when there is an **obstruction**. NG Tubes are also used to **feed** patients when they can’t eat.

3) **SURGERY**: for cancer, complete bowel obstruction or lesions that don't stop bleeding,
   - **APPENDECTOMY** to treat appendicitis.
   - **HEMORRHOIDECTOMY** for external hemorrhoids.

4) **COLOSTOMY**: when a part of the colon is removed (colectomy) what's left may be too short to reattach to the rectum and so an **opening** (called a **stoma**) is **created in the wall of the abdomen** and the **colon is sutured in place** there. A bag is placed to collect the feces which will be expelled. At other times the colon can't be stitched back together immediately so a temporary colostomy is done. In other words a colostomy can be **temporary or permanent**.

5) **SUPPOSITORIES/ SITZ BATHS**: to treat hemorrhoids.

6) **CHEMOTHERAPY** and **RADIATION THERAPY**: for colon cancer, etc.

7) **DIET**: special diets rich in **fiber** (see before) for patients with **diverticulosis**

   **DIVERTICULOSIS = HIGH FIBER**

   or **devoid of gluten** for patients with **celiac disease**.

   **CELIAC DISEASE = NO GLUTEN**

8) **ENEMA**: is the **introduction of liquids** into the rectum and colon **through the anus**. Can be done to **treat constipation**.

The specialists who treat these diseases are **GASTROENTEROLOGISTS** and **GENERAL SURGEONS**.

The specialty that deals with the diseases of the digestive system is **GASTROENTEROLOGY**.

Just to be clear **Gastroenterologists don't operate**. So, for example, if a gastroenterologist diagnoses you with gallstones or appendicitis he will refer you to a general surgeon to get your gallbladder or appendix removed.

**TERMINOLOGY REVIEW**

1) **PANCREAS**: páncreas
2) **LIPIDS**: lípidos
3) **SMALL INTESTINE**: intestino delgado
4) **LARGE INTESTINE**: intestino grueso
5) **DUODENUM**: duodeno
6) **BILIARY SLUDGE**: barro biliar
7) DUODENAL ULCER: úlcera duodenal
8) PANCREATIC CANCER: cáncer de páncreas
9) ACUTE PANCREATITIS: pancreatitis aguda
10) ABDOMINAL CT SCAN: tomografía abdominal
11) FLUOROSCOPY: fluoroscopia, radioscopia
12) ENDOSCOPIC RETROGRADE CHOLANGIOPANCREATOGRAPHY (ERCP): (CPRE) colangiopancreatografía retrógrada endoscópica
13) JEJUNUM: yeyuno
14) ILEUM: íleon
15) CECUM: ciego
16) APPENDIX: apéndice
17) COLON: colon
18) SIGMOID COLON: colon sigmoideo
19) FECAL MATTER: materia fecal
20) RECTUM: recto
21) ANAL SPHINCTER: esfínter del ano
22) DEFECATE: defecar
23) ANUS: ano
24) BLOATING: distensión abdominal, meteorismo
25) DIARRHEA: diarrea
26) CONSTIPATION: estreñimiento, (constipación: Argentina, Colombia, Puerto Rico)
27) FATIGUE: cansancio, fatiga
28) FECAL INCONTINENCE: incontinencia fecal
29) CELIAC DISEASE: enfermedad celiaca
30) WHEAT: trigo
31) OAT: avena
32) BARLEY: cebada
33) RYE: centeno
34) GLUTEN: gluten
35) STOMACH FLU: gastroenteritis viral
36) BOWEL OBSTRUCTION: obstrucción intestinal
37) ILEUS: íleo
38) IRRITABLE BOWEL SYNDROME (IBS): colon irritable, síndrome de intestino irritable
39) INFLAMMATORY BOWEL DISEASE: enfermedad intestinal inflamatoria
40) ULCERATIVE COLITIS: colitis ulcerosa
41) CROHN'S DISEASE: enfermedad de Crohn
42) E.COLI: escherichia coli
43) MALABSORPTION: malabsorción
44) POLYPOSIS: poliposis
45) DIVERTICULOSIS: diverticulosis
46) DIVERTICULITIS: diverticulitis
47) FIBER: fibra
48) COLORECTAL CANCER: cáncer colorrectal, cáncer de colon y recto
49) CANCER STAGES: estadíos del cáncer
50) METASTASIS: metástasis
51) HEMORRHOIDS: hemorroides
52) ANAL ABSCESS: absceso anal
53) FISTULA: fístula
54) ANAL FISSURE: fisura anal
55) RECTAL EXAM: tacto rectal
56) COLONOSCOPY / LOWER ENDOSCOPY: colonoscopia / endoscopía baja
57) STOOL FOR OCCULT BLOOD / GUAIAC TEST: prueba de sangre oculta en materia fecal
58) BIOPSY: biopsia
59) BARIUM ENEMA: enema opaco, enema de bario
60) ANTIDIARRHEAL: antidiarreico
61) LAXATIVE / STOOL SOFTENER: laxante, purgante
62) NASOGASTRIC TUBE: sonda nasogástrica
63) APPENDECTOMY: apendicectomía
64) HEMORRHOIDECTOMY: hemorroidectomía
65) COLOSTOMY: colostomía
66) SUPPOSITORIES: supositorios
67) SITZ BATH: baño de asiento
68) DIET: dieta
69) GASTROENTEROLOGIST: gastroenterólogo
70) GASTROENTEROLOGY: gastroenterología

Thank you for choosing InterpreterPrep.com