ADULT HOSPITAL BOOT CAMP 2022

SURGICAL PEARLS FOR THE ACUTE CARE SURGICAL PATIENT

ATX ROBOTIC SURGERY

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4 MOST COMMON SURGICAL DIAGNOSIS IN PATIENTS

- Appendicitis
- Cholecystitis
- Diverticulitis
- Small bowel Obstructions

APPENDICITIS

- Different Types of presentation
 - Acute Appendicitis
 - Suppurative appendicitis
 - Subacute appendicitis with phlegmon and abscess
 - Perforated appendicitis
 - Locally perforated with abscess
 - Free perforation with peritonitis

- 19 yo Male UT student with 8 hours of acute onset epigastric pain Presents to ER and pain is now in RLQ.
- Otherwise healthy
- WBC 12.5K
- - Pulse normal 1 fever of 100.8
- Tenderness localized to RLQ
- Working diagnosis --> Appendicitis
 - Confirmed on CT with Mildly dilated appendix to 0.9CM, peri-appendiceal stranding, no free fluid, no free air, surrounding bowel normal.
 - MOST IMPORTANT FIRST STEP IN TREATMENT?

- - SURGEON CALLED AT 930AM
- TAKEN TO OR FOR ROBOTIC APPENDECTOMY @ NOON OPERATIVE TIME 15MIN
- OPERATIVE REPORT -> APPENDICITIS WITHOUT ANY PURULENCE OR PERFORATION, BOWEL NORMAL
- DC PLAN?
 - DOES THE PATIENT NEED POSTOP ABX?
 - CAN SHE BE DISCHARGED THE SAME DAY?

- 24 YEAR OLD FEMALE WITH EPIGASTRIC/RLQ PAIN FOR 24 HOURS
- PRESENTS TO ER WITH HR100, TMAX 101
- TENDER IN RLQ LOCALLY
- WBC 19K
- WORKING DX APPENDICITIS
- CT DILATED APPENDIX TO 1.2 CM, SMALL AMT OF PERI-APPENDICEAL FLUID, + PERI APPENDICEAL STRANDING AND INFLAMMATION

- SURGEON CALLED 6PM
- TAKEN TO OR AT 11PM
- OPERATIVE REPORT SUPPURATIVE APPENDICITIS ? WHAT IS THIS
- NO PERFORATION, SMALL AMOUNT OF CLOUDY FLUID, NO ABSCESS, MILD INFLAMMATION OF CECUM BOWEL NORMAL
- POSTOP PLAN, DC PLAN?

- 51 YEAR OLD MALE WITH 3 DAYS OF ABDOMINAL DISCOMFORT PERSISTENT IN EPIGASTRUM AND RLQ. + NAUSEA/+ VOMITING, + Fever. Thought he had a 'stomach bug" did not seek medical care. Today presents to ER due to worsening pain/distention, anorexia and fever
- WBC 11K, Fever 101, Pulse 110
- CR 1.5
- CT Severe inflammatory changes of appendix and cecum/ileum consistent with phlegmon
 - What is phlegmon?
 - No abscess
 - No free fluid or perforation
 - Small bowel dilated

- SURGEON CALLED --> ASKED BY PA WHAT TIME IS THE PATIENT GOING TO HAVE SURGERY?
- WHAT IS THE DIAGNOSIS (s)?
- BEST MANAGEMENT AND WHY?

- SUBACUTE APPENDICITIS WITH PHLEGMON
- ILEUS
- HYPOVOLEMIA

- BEST TREATMENT IS IVF/IV ABX/BOWEL REST
- IF RESPONDS TO THIS THEN PROCEED WITH INTERVAL APPENDECTOMY IN 4-6WEEKS
 - WHY?
 - INCREASED RISK FOR BOWEL INJURY/NEEDING TO CONVERT TO OPEN OPERATION AND NEEDING BOWEL RESECTION

- 48 YEAR OLD FEMALE WITH DM2. INITIALLY WITH ABDOMINAL DISCOMFORT IN RLQ WHICH THEN IMPROVED. OVER NEXT 3 DAYS, FEVER, DISTENTION, ANOREXIA, INCREASING GLUCOSE
- WBC 21K, PULSE 105, HD STABLE, FEVER 102
- TENDER IN RLQ AND SUPRAPUBIC REGION
- CT DILATED APPENDIX WITH FLUID COLLECTION PERI-APPENDICEAL/CECAL APPROX 5CM LOCALIZED AND WALLED OFF. MILD INFLAMMATION OF BOWEL AND CECUM

- MANAGEMENT?
 - IR DRAIN
 - IVF
 - IV ABX
 - GLUCOSE CONTROL
 - IF IMPROVES INTERVAL APPENDECTOMY

- 38 YEAR OLD MALE OTHERWISE HEALTHY WITH 24 HOURS OF WORSENING ABDOMINAL PAIN.
- NOW PAIN IS SEVERE AND WORST HE HAS EVER HAD.
- WBC 24K, PULSE 120-130, SBP 90-100, TACHYPENIEC, MM VERY DRY.
- CT INFLAMMATION OF RLQ WITH AIR NEXT TO THE APPENDIX, FREE FLUID IN PELVIS, FREE FLUID PERI-HEPATIC, INFLAMMATION OF BOWEL DIFFUSELY WITH DILATATION, CECUM INFLAMED.

- SURGEON CALLED WHAT IS IMPORTANT QUESTION AND DATA POINT THAT WAS LEFT OFF PREVIOUS SLIDE?
 - PHYSICAL EXAM--> DIFFUSE REBOUND AND GUARDING CONSISTENT WITH PERITONITIS.
 - MANAGEMENT?
 - IVF RESUSCITATION
 - IV ABX
 - SURGICAL EMERGENCY.

- OPERATIVE REPORT. GANGRENOUS APPENDIX/PERFORATED WITH PURULENT FLUID DIFFUSELY IN PERITONEAL CAVITY. BOWEL DILATED, DRAIN LEFT
- PT HD SOFT IN OR --> TAKEN TO ICU POSTOP FOR ONGOING RESUSCITATION
- POSTOP MANAGEMENT
 - IV ABX
 - NGT
 - BOWEL REST
 - DRAIN MANAGEMENT
 - MAY NEED REPEAT CT DAY 5-7

SURGICAL PEARLS FOR APPENDICITIS

- - APPENDICITIS COMES IN MANY DIFFERENT VARIETIES.
 - STRAIGHTFORWARD EARLY ACUTE APPENDICITIS --> 1 DOSE OF ABX/OR AN DC HOME
 - SUPPURATIVE APPENDICITIS 24 HOURS ABX AND SEND HOME WITH PO ABX
 - IR FOR DRAINING ABCESSES
 - PAY ATTENTION TO HX --> IE SOMEONE WITH 3DAYS OF SYMPTOMS HAS SUBACUTE APPENDICITIS NOT ACUTE -
 - CT SCANS VERY USEFUL

APPENDICITIS VIDEOS

- <u>ROBO APPY</u>
- <u>ROBO PREGNANT APPY WITH ABSCESS</u>

- CHRONIC CHOLECYSTITIS
- ACUTE CHOLECYSTITS
- SUBACUTE CHOLECYSTITIS
- CHOLEDOCOLITHIASIS/CHOLANGITIS

- HOW TO DIFFERENTIATE BETWEEN CHRONIC CHOLECYSTITIS (BILIAY COLIC) AND ACUTE CHOLECYSTITIS
 - TIMING OF PAIN --> LASTS >8-12 HOURS. PERSISTS DESPITE TREATMENT WITH PAIN MEDICATION
 - PHYSICAL EXAM!! --> + TENDERNESS IN RUQ AND/OR MURPHYS IS PATHOGNOMIC FOR CHOLECYSTITIS
 - PITFALL --> "SONOGRAPHIC MURPHYS" --> VERY INACCURATE DON'T USE
 - WBC IS NOT AS SPECIFIC. NORMAL WBC CAN STILL BE PRESENT WITH THE BEGINNING OF AN EARLY ACUTE CHOLECYSTITIS
 - THICKENING OF GB IS ALSO NOT VERY SENSITIVE --> PERI-CHOLECYSTIC FLUID MORE SPECIFIC
 - STONE IN THE NECK OF THE GB?
 - MALES?

- LFTS --> TBILI SENSITIVE. IF ELEVATED AND CBD NORMAL CONSIDER ACUTE CHOLECYSTITIS
- WHY IMPROTANT TO DIFFERENTIATE BETWEEN CHRONIC AND ACUTE?
 - ACUTE START IV ABX SHOULD BE ADMITTED AND UNDERGO EARLY CHOLECYSTECYOMY
 - CHRONIC NO ABX NEEDED CAN HAVE SURGERY AS OUTPATIENT
 - SOCIAL CONSIDERATIONS. PATIENT RETRUNING TO ER, ? CONVERAGE STATUS?
 - OR TIME FOR SURGEON, RESOURCES AVAILABLE?

- CHOLEDOCOLITHIAIS --> DEFINITION? ANATOMY?
- DILATATION OF CBD TBILI
- MRCP
- ERCP WHY ERCP BEFORE CHOLE?

CHOLANGITIS

- CLINICAL DIAGNOSIS!
- FEVER/ELEVATED TBILI, DILATED CBD, SEPSIS PICTURE
- OLDER PATIENTS/CO-MORBIDITIES
- CALL GI EARLY AND FIRST SURGEON IS SECONDARY

- 23 YEAR OLD FEMALE BMI30. + SEVERE/SHARP PAIN IN RUQ RADIATING TO RIGHT SHOULDER
- STARTED AT MIDNIGHT PERSISTED TO 8AM Ate Enchiladas for dinner
- Pain now better in ER
- WBC Normal/LFTs Normal
- Non tender one exam
- US -> Stones, wall mildly thickened. NO PERICHOLECYSTIC FLUID
- MANAGEMENT
 - ?

- 30 YEAR OLD FEMALE 2nd visit to ER for RUQ PAIN LASTING 12 HOURS
- GETS PAIN AFTER EATING MORE FREQUENTLY IN THE PAST FEW WEEKS
- NORMAL WBC, NON-TENDER
- US STONES WITH LARGE STONE LODGED IN NECK, + THICKENING, NO FLUID
- NO PCP OR FOLLOWUP
- MANAGEMENT?

- 42 YO MALE OBESE WITH SEVERE EPIGASTRIC PAIN, REFLUX, PAIN INTO CHEST, N/V
- THINKS HE IS HAVING A HEART ATTACK.
- WBC12K
- POOR PHYSICAL EXAM IN ER
- ER/CARDS WORKUP NORMAL
- IM PA QUESTIONS ABOUT PAIN AFTER EATING AND DIET AND FOUND TO BE TENDER IN RUQ
- US -> THICKENED/DILATED GB, + PERICHOLECYSTIC FLUID, MULTIPLE STONES
- SURGEON CALLED
- OPERATIVE FINDINGS --> GANGRENOUS GB

- 32 YEAR OLD FEMALE WITH EPIGASTRIC PAIN, REFLUX, PAIN AFTER EATING, DM2
- PAIN BETTER AFTER IV PAIN MEDICATION ADMITTED TO MONITOR FOR PAIN CONTROL
- WBC 13K, NON-TENDER, TBILI 1.1
- US --> STONES WITHOUT INFLAMMATION OR THICKENING OR FLUID
- SURGEON CONCERNED FOR CHOLECYSTITIS GIVEN WBC AND TBILI
- PATIENT HAS KIDS AND WANTS TO GO HOME...
- TEST TO ORDER NEXT WHEN DIAGNOSIS IS EQUIVICOL?

- 77 YEAR OLD MALE ON EILIQUIS FOR AFIB WITH DM2 AND CAD. RECENTLY DIAGNOSED WITH CHF AND EF 30-40%. PAIN ONGOING FOR 4 DAYS
- CHEST PAIN/EPIGASTRIC PAIN, FOOD INTOLERANCE, N/V
- WBC 22K, TBILI 1.5, FEVER, + MURPHYS
- CARDIOLOGIST EVAL --> MILD CHF
- US --> CONCERNING FOR CHOLECYSTITIS

-CT – SEVERE INFLAMMATORY CHANGES AROUND GB AND DUODENUM, DILATED GB WITH FLUID

- MANGEMENT?

- 55 YEAR OLD FEMALE WITH KNOWN STONES DID NOT FOLLOW UP WITH SURGEON TO HAVE SURGERY
- ONGOING PAIN AFTER EATING.
- TODAY WORSE EPIGASTRIC PAIN RADIATING TO BACK. COLICKY COMES AND GOES EVERY FEW HOURS
- FEVER, NON-TENDER
- MENTATING WELL APPEARS COMFORTABLE
- WORKED UP US STIONES/ CBD 1CM, TBILI 2.5, LFTS ELEVATED
- OPTIONS FOR TREATMENT
 - ROBOTIC CHOLE WITH CHOLANGIOGRAM
 - GI EVAL

- GI EVAL AND THINKS STONE PASSED BECAUSE TBILI 1.5 FOLLOWING DAY
- DW SURGEON REQUEST CHOANGIOGRAM
- CHOLANGIOGRAM + 1CM STONE IN CBD
- ERCP CANNOT REMOVE STONE
- ENDS UP NEEDING REPEAT OPERATIVE EXPLORATION TO REMOVE STONE LOS 6 DAYS

- SURGEON ORDERS MRCP --> + FOR STONE
- PATIENT UNDERGOES ERCP STONE CANNOT BE REMOVED
- PATIENT UNDERGOES ONE STAGE STRAIGHTFORWARD ROBOTIC CHOLE WITH CBD EXPLORATION AND REMOVAL OF STONE --> DC HOME FOLLOWING DAY – LOS 3 DAYS

CHOLECYSTITIS PEARLS

- TRICKY SOMETIMES TO DX BETWEEN ACUTE CHOLE AND CHRONIC CHOLE
- PHYSICAL EXAM! HX IMPORTANT
- RECURRENT SYMPTOMS FOLLOWUP?
- STONE IN THE NECK OF THE GB --> LIKELY GOING TO GET CHOLECYSTITIS SOON OR ALREADY DEVELOPING
- HIDA SCAN WITHOUT CCK!
 - CCK ONLY FOR OUTPATIENT STUDIES
- EARLY GI EVAL
- MRCP

CHOLECYSTITIS VIDEO

• ROBO CHOLE WITH FIREFLY

SMALL BOWEL OBSTRUCTION

- DON'T LET THE SUN SET OR RISE ON AN SBO"
 - OLD SCHOOL TEACHING BEFORE ROUTINE USE OF CT



- WHY DOES PATIENT HAVE AN SBO !?
 - PATIENTS WITHOUT PRIOR SURGERY VERY LOW INCIDENCE OF SBO
 - CLINICAL DIAGNOSIS WITH GOOD HX AND PHYSICAL

SBO - MOST COMMON CAUSES

- - PREVIOUS SURGERY IS #1 NOT MINIMALLY INVASIVE SURGERY
 - OPEN SURGERY ADHESIONS 75-85% RESPOND WITH CONSERVATIVE MANAGEMENT

SBO – MOST COMMON CAUSES

• HERNIA

- REDUCIBLE MUST TRY TO REDUCE
 - CONSCIOUS SEDATION NOT JUST " I TRIED TO PUSH ON IT"
- TUMOR
- INFLAMMATION/INFECTION

SBO – CASE PRESENTATIONS

- 66 YEAR OLD FEMALE WITH PRIOR HYSTERECTOMY AND APPENDECTOMY. 3 DAYS OF MILD CRAMPY ABDOMINAL PAIN. + NAUSEA/VOMITING MULTIPLE TIMES. STATES URINE OUTPUT IS LOWER AND FEELS BLOATED.
- FURTHER QUESTIONING ON HPI?
- WBC 13K, PULSE 105
- CR 1.8
- PHYSICAL EXAM --> DISTENDED, NON-TENDER,
 - WHAT IS ANOTHER IMPORTANT THING TO IDENTIFY ON PE?
 - INITIAL WORK UP? WHY CT?

SBO – CASE PRESENTATION

- CT --> DILATED SMALL BOWEL TO LEVEL OF PROXIMAL ILEUM WITH A TRANSITION POINT.
 - NO FLUID, NO BOWEL WALL THICKENING, NO FREE AIR, NO MASSES, NO INFLAMMATION, NO HERNIA

SBO – CASE PRESENTATION

- MANAGEMENT?
- NGT MOST IMPORTANT!! WILL KEEP PATIENTS OUT OF OR!
- IVF
- BOWLE REST STRICT
- ABX NOT NEEDED!

SBO - CASES

- SURGEON CALLED --> WHAT QUESTIONS WILL I ASK?
- PATIENT ADMITTED WITH NGT.
 - SMALL BOWEL SERIES ORDERED ON HOD#2
 - + FLATUS AND BM ON DAY#3
 - DC HOME ON DAY 4 ON REGULAR DIET

SBO - CASE

- 33 YEAR OLD MALE WITH 1 DAY HISTORY OF ABDOMINAL BLOATING, MILD CRAMPS
- + NAUSEA/VOMITING
- FURTHER QUESTIONS ON HPI?
- WBC 15K, PULSE NORMAL
- CR NORMAL GOOD NORMAL UOP
- ABD DISTENDED, NON-TENDER,
 - INCISIONS?

- NEXT STEP? KUB? CT?
- SURGEON CALLED ----? WHY DOES SURGEON THINK THIS PATIENT DOES NOT HAVE AN SBO
- DX?
 - ILEUS/ENTERITIS

- 58 YEAR OLD MALE WITH ABDOMINAL PAIN DIFFUSE X 2 DAYS NOW WORSE AND PERSISTENT.
- + NAUSEA AND VOMITING MULTIPLE TIMES. HX OF LAPAROTOMY FOR TRAUMA WITH BOWEL RESECTIONA ND SPLENECTOMY 10 YEARS AGO.
- WBC 9K, PULSE NORMAL, TEMP NORMAL
- ABDOMINAL EXAM --> DISTENDED, TENDER DIFFUSELY, NO REBOUND, BUT GUARDING PER ER DOC
- WORKING DX --> ???
- NEXT STEP--?

- CT ORDERED BY PA --> SEVERE DILATATION OF SMALL BOWEL TO LEVEL OF JEJUNUM. PROXIMAL BOWEL AND STOMACH DILATED AND FLUID FILLED. DISTAL BOWEL DECOMPRESSED, THICKENING OF SEGMENT OF SMALL BOWEL AND SOME DECREASE ATTENUATION OF BOWEL WALL. NO FREE AIR, SOME NON-SPECIFIC FREE FLUID IN THE PELVIS.
- SURGOEN CALLED --> REQUESTED IVF SEVERAL LITERS, NGT PLACEMENT
- SURGEON @BEDSIDE IN 90MINUTES --> PE -> + REBOUND ON EXAM
- TAKEN FOR EMERGENT EX LAP
- DENSE AHDESIONS --> 3 HOUR OPERATION, LOOP OF BOWEL ISCHEMIC AND COMPROMISED
- BOWEL RESECTION COMPLETED WITH PRIMARY ANASTOMOSIS
- POSTOP MANAGEMENT?
 - TPN?

- 35 YO FEMALE MORBIDLY OBESE PERIUMBILICAL PAIN WITH VOMITING FOR 2 DAYS.
- NO FLATUS OR BM FOR 2 DAYS. + ANOREXIA
- WBC NORMAL, PULSE NORMAL
- PE PER ER --> MILD DISTENTION, NON-TENDER, NO INCISIONS
- CT -> UMBILICAL HERNIA CONTAINING LOOP OF BOWEL CAUSING AN SBO
- SURGEON CALLED -> DID YOU REDUCE? "YES I CANNOT REDUCE IT?
 - QUESTIONS?
 - HOW TO REDUCE?

- SURGEON AT BEDSIDE
 - GIVEN 100MCS OF FENTANYL **5MGS VERSED.**
 - TRENDELENBERG –SLIGHT
 - GENTLY CONSTANT PRESSURE EASILY REDUCED
 - PATIENT DISCHARGED FROM ER AFTER IVF AND IMPROVEMENT IN SYMPTOMS OVER 6 HOURS
 - FU WITH SURGEON AND HAD 45 MIN ELECTIVE ROBOTIC HERNIA REPAIR

SBO - PEARLS

- HIGHLY UNLIKEY TO HAVE AN SBO WITH CT SHOWING DILATED BOWEL AND NO PREVIOUS SURGERY
 - MANY PATIENTS GETTING SURGICAL CONSULTS AND ADMISSIONS DUE TO MISDIAGNOSIS
- NGT!! VERY IMPORTANT IN SBO KEEPS PATIENTS OUT OF OR FOR ADHESIVE SBO
- SURGEONS WILL ASK ABOUT INCISIONS/PREVIOUS SURGERY, HERNIA REDUCTION
- CT USED TO RULE OUT OR IN SURGICAL EMERGENCIES NOT DX ADHESIVE SBO
- HPI VERY IMPORTANT
 - GOOD DETAILED QUESTIONS ABOUT PREVIOUS SURGERY AND INCISIONS
 - EXAMINE AND TOUCH YOUR PATIENT

- Diverticulitis like Appendicitis comes in many different presentations
- VERY COMMON IN US
- COMMON REASON TO PRESENT TO ER

- GOAL AS SURGEON IS TO AVOID DOING A HARTMANN OPERATION
 - ? WHAT IS HARTMANN
 - WHY DO WE WANT TO AVOID THIS?

- REASONS TO ADMIT
 - PERFORATION
 - ABSCESS
 - OBSTRUCTION

- ABSCESS --> DRAIN
- OBSTRUCTION --> NGT AWAIT IMPROVEMENT
- PERFORATION
 - SEALED --> GET BETTER WITH NON-OP MANAGEMENT PLAN ELECTIVE OPERATION
 - FREE --> EMERGENT SURGERY (PERITONITIS)
 - LOCALIZED -- > MAY NEED SURGERY TRY TO WAIT IT OUT

DIVERTICULITIS - CASES

54 YO MALE WITH ACUTE ONSET LLQ ABDOMINAL PAIN X 24 HOURS.

WORSENING OVER PAST 12 HOURS. + DISTENTION, + CONSTIPATION. NEVER HAD ANYTHING LIKE THIS BEFORE.

WBC 20K, TACHYCARDIC TO 110, RR20, SBP 100-110

PE PER ER/IM --> + TENDERNESS DIFFUSELY, NO GUARDING/REBOUND

CT SCAN -> INFLAMMATION AROUND THE SIGMOID COLON WITH FREE FLUID IN THE PELVIS, FREE AIR IN THE UPPER ABDOMEN

DIVERTICULITIS CASE

- SURGEON CALLED --> GIVEN INFORMATION, QUESTIONED ABOUT PHYSICAL EXAM.
- SURGEON ARRIVES AT BEDSIDE TO EXAMINE PATIENT --> + REBOUND AND GUARDING
- TAKEN TO OR FOR EMERGENT EX LAP
- FECULENT PERITONITIS
- COLECTOMY WITH COLOSTOMY
- - ICU CARE
- HOSPITALIZED FOR 2 WEEKS

DIVERTICULITIS CASE

- 55 YO MALE WITH ACUTE ONSET LLQ ABDOMINAL PAIN X 48 HOURS.
- WORSENING OVER PAST 24 HOURS. + DISTENTION, + CONSTIPATION. NEVER HAD ANYTHING LIKE THIS BEFORE.
- WBC 25K, TACHYCARDIC TO 105, RR20, SBP 110
- PE PER ER/IM --> PERITONITIS WITH REBOUND AND GUARDING
- CT SCAN -> INFLAMMATION AROUND THE SIGMOID COLON WITH FREE AIR AROUND THE SIGMOID AND IN UPPER ABDOMEN, MILD AMOUNT OF FREE FLUID.

DIVERTICULITIS CASE

- SURGEON CALLED --> ASKED ABOUT PHYSICAL EXAM
- SURGEON AT BEDSIDE --> LOCALIZED PERITONITIS TO LLQ ONLY
- GIVEN IVF AND HR RESPONSED
- FOLLOWING DAY WBC IMPROVING/PAIN IMPROVING
- PATIENT DISCHARGED ON HOD#4 WITH PO ABX AND PLANNED FOR ELECTIVE SIGMOID RESECTION

SURGICAL PEARLS DIVERTICULITIS

- GOAL IS TO KEEP PATIENTS FROM HAVING AN EX LAP/END COLOSTOMY
- IR TO DRAIN ABSCESS
- NGT/IVF/IVF ABX WORK WELL
- PHYSICAL EXAM IS KEY --> DIFFUSE PERITONITIS
 VERSUS LOCAL PERITONITIS
 - DIFFUSE --> EMERGENT OR
 - LOCALIZED --> WAIT IT OUT

ATX SURGERY

ROBOTIC

THANK YOU!

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