DUKE ENHANCED RECOVERY

Liver Resection- Open and Laparoscopic

PREOPERATIVE PHASE

EDUCATION in SURGICAL CLINIC

1. DEFINE EXPECTATIONS-Preoperative Counseling and Training
    a. Exercise- Daily until surgery
    b. Quit drinking alcohol
    c. Healthy Diet and Nutritional supplements- as recommended
2. LABEL the patient-"ERAS Protocol" in procedure description of the Case Request
3. PROVIDE instructions for individual care pathway and expected hospital stay
4. DEFINE DISCHARGE criteria
    a. Medical criteria that the MD and team will monitor daily
    b. Tolerating liquids enough to stay hydrated and eating solid foods
    c. Pain control with oral analgesia- multimodal

CONFIRMATION of OPTIMIZATION and READINESS-Pre Anesthesia Testing (PAT)

1. IDENTIFY the ERAS patient
2. SCREEN for anesthetic risk and OPTIMIZING opportunities
3. DISTRIBUTE carbohydrate drink (Clearfast-12oz) and instructions
4. DISTRIBUTE CHG sponges and instructions
5. PROVIDE written reinforcement of fasting guidelines- No food after midnight prior to surgery, Clear liquids until 1 hour before arrival to hospital and CHO drink prior to arriving at hospital

DAY of SURGERY, PREOP HOLDING

1. IDENTIFY ERAS patient and initiate protocol
2. DOCUMENT CHO drink was taken and document time
3. ADMINISTER and DOCUMENT multimodal drugs
    a. Gabapentin 600 mg PO
    b. Naproxen 500 mg PO
    c. Scopolamine patch for high risk PONV patients
    d. Thoracic Epidural (T7-9) unless contraindicated
    e. Heparin 5000 units SC immediately after epidural placement

TEAM STEPPS with discussion of ERAS preop and intraop elements

INTRAOPERATIVE PHASE

1. PLACE Arterial Line and 2 Large Bore peripheral IVs- No A line needed for small resections
2. VT PROPHYLAXIS
    a. SCD's in place
3. ADMINISTER ANTIBIOTIC PROPHYLAXIS
    a. First line-Cefazolin 2 Gm IV(3Gm for >120kg)- Redose in 4hrs

        OR

        Cefazolin and Flagyl 500mg IV if biliary involvement. No Flagyl redose.
    b. PCN Allergy: Ciprofloxacin 400 mg IV (No redose) + Clindamycin 600 mg IV (Redose 6 hrs)
4. ADMINISTER MULTIMODAL PAIN MGT during surgery-Per Anesthesia Protocol
5. PREVENT PONV- Dexamethasone 4mg IV at start of case, Zofran 4 mg IV at end of case
6. OPTIMIZE intraoperative fluids with GOAL DIRECTED FLUID THERAPY-Per Anesthesia protocol
7. MAINTAIN normothermia (Temp >36)
8. MINIMIZE tubes, lines, and drains
    a. JP drain(s) as indicated
    b. Remove OG at end of surgery
    c. Foley- remove if no epidural in place

POSTOPERATIVE PHASE

1. IDENTIFY patient as ERAS protocol
2. ENFORCE continuous SCD usage from PACU arrival until discharge
3. CONTINUE epidural use from intraop through PACU to ward
4. CONTINUE PONV medications
    a. Ondansetron 4 mg IV q8h prn
    b. Phenergan 6.25 mg IV q6h prn
5. ALLOW Clear Liquids on POD 0, with no carbonation
6. ALLOW Post-Surgical Bland diet on POD1
7. ENCOURAGE gum chewing at least 3 times per day
8. HOB elevated at 30 degrees at all times
9. SIT on side of bed or in chair on day of surgery at least one time
10. OUT of BED for all meals and at least 6 hours daily in addition to walks beginning POD1
11. AMBULATE 4 times daily until discharge beginning POD1
12. MAINTAIN Optimal fluid status
    a. Maintenance IVF at 50ml/hr until POD1 at 0600
13. REMOVE Foley on POD 1 at 0600. Keep Foley if high risk for urinary retention.
14. REMOVE JP drain if JP bili is less than or equal to 3 times serum bili- POD3
15. INITIATE VT prophylaxis POD 1 (am)
    a. Heparin SC if Epidural in place
    b. Lovenox SC when epidural removed

16. ENFORCE multimodal, non-narcotic pain management as first line
    a. Naproxen 500 mg PO BID scheduled
    b. Tylenol 650 mg PO Q 6h scheduled – Not for Major Resections per surgeon ** Not automatically checked**
    c. Continue Gabapentin 100 mg PO q8h scheduled
17. TRANSITION from epidural/block to oral narcotics once diet is tolerated
    a. Tramadol 25-50 mg PO q6h prn
18. MONITOR Lab work:
    a. Hgb/Hct, LFT, CMP – POD 1
    b. Hgb/Hct, LFT - POD 2,3
    ~~c. JP Bilirubin POD3~~
19. MAINTAIN euglycemia. Blood sugar monitoring q6H X 24h, with intervention and on-going surveillance if >150
20. CONSULT to Endocrine if blood glucose>180 X 2
21. ENCOURAGE Incentive Spirometry every hour X10 while awake
22. CONTINUE laxative until first BM
    a. Senna-S 2 Tabs BID beginning POD1
    b. Miralax qd
23. ENFORCE defined discharge criteria
    a. Discuss from POD 0 with patient, family, resident team, and nurse staff
    b. Reinforce expectations and discuss regularly with PATIENT, RN staff, PRM, and family
    c. Anticipate discharge needs
        i. Lovenox for VT prophylaxis X14 days post discharge
        ii. Senna-S BID while taking narcotics
        iii. Miralax qd if no BM the previous day
        iv. Naproxen BID scheduled
        v. Tramadol prn
        vi. Follow-up appointments, staple removal, oncology- 2-3 weeks