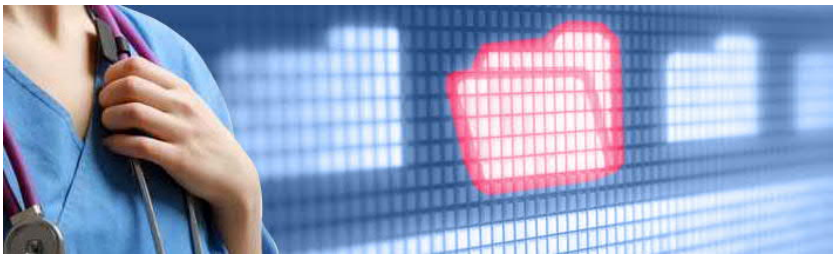
Italian
Perioperative
Program



ERAS Protocol: Pancreatic Surgery

PANCREATICODUODENECTOMY

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Before admission

- From 4 to 2 weeks before surgery all patients will receive an information booklet edited by the ERAS team (anesthesiologist, surgeon and nurse) including events and expectations during the perioperative period. Oral information will be provided to each patient by the ERAS team during the the preadmission evaluation / counseling.
- Preoperative nutritional status (MUST score) of the patient will be assessed. In the event of a malnourished patient immunonutrition oral supplements (750 ml per day), should be taken for at least 7 days before surgery. For the other patients immunonutrition oral supplements (750 ml per day), should be taken for 5 days before surgery.
- If the preadmission evaluation is not possible the patient will receive the above information on the day of admission.
- In the event of jaundiced patients, preoperative biliary drainage should not be performed routinely. Exceptions may be made for severe jaundice (bilirubin levels over 15 mg/dL), in cases of cholangitis or pending neoadjuvant therapy.

Day before surgery(in hospital)

- No mechanical bowel preparation. In case of lacked canalization in the previous days rectal washing may be performed (optional).
- Full dinner.
- Intake of 800 mL of a clear maltodextrine-rich beverage the evening before surgery.
- No hair removal.

Day of surgery

Preoperative

- Preoperative fasting should be 6 hours for solid food and 2-3 hours for clear liquids
- intake of 400 mL of a clear maltodextrine -rich beverage 2-3 hours before induction of anaesthesia.
- Pharmacological premedication not routinely given. Will be given only in specific cases such as elevated anxiety level or allergy (according to local protocol).

Operative theatre

- Single shot antibiotic prophylaxis (suggested 1st generation cephalosporin) 30 min before surgery.
- Placement of epidural catheter (except in case of coagulopathy or neurological dysfunction) at the midthoracic level (T 7/8) with suggested infusion at 4 to 6 mL/ hour of naropine 0.2 % plus sufentanil 0,5 mcg/mL. For such infusion a portable electronic pump should be used.
- Placement of central venous catheter (optional) and transurethral bladder catheter
- In patients undergoing open surgery transverse incision should be preferred

- Placement of naso-gastric tube that will be removed at the end of surgical procedure
- Maintain appropriate body temperature (> 36°C) with utilization of the Bair Hugger air blanket warming system and warming set for intravenous fluids
- Basal fluid infusion at 5 mL/kg/hour (plasma expanders will be allowed in the ratio of 2-3:1 with crystalloids). In selected patients monitoring of blood volume by oesophageal Doppler or Stroke Volume Variation is encouraged.
- In case of hypotension not hypovolemia-related, use of etilefrine if not contraindicated (bolus 1 mg, up to 10 mg) or use of dopamine 5 mcg/kg/min
- In patients with Apfel score ≥ 3 PONV prophylaxis with ondansetron 4 mg iv plus dexamethasone 4 mg iv.. 2 hrs before the end of surgery; to repeat ondansetron during the evening of the same day and 12 hrs later in the morning of postoperative day 1. (optional in patients with Apfel score = 2:)
- Avoid the use of long acting opioids as analgesic during operation.
- Positioning of 1 abdominal surgical drain in proximity of the hepaticojejunal anastomosis
- Positioning of 1 or 2 abdominal surgical drains (at first operator discretion) behind and eventually in front of the pancreaticojejunal anastomosis
- At the end of surgical procedure administration of 30 mg of ketorolac, or paracetamol 1 gr in alternative or association

On ward

- Antithrombotic prophylaxis with LMWH starting the evening of the procedure (at least 6 hours after the end of surgery). Eventually, use of elastic stockings
- Assumption of ranitidine 50 mg 3 times a day or daily single administration of protonic pump inhibitor if history of gastropathy
- Continue fluid infusion with balanced salt solution at 1-2 mL/kg/h
- In case of hypotension not hypovolemia-related, use of etilefrine if not contraindicated (bolus 1 mg, up to 10 mg) or use of dopamine 5 mcg/kg/min
- Paracetamol iv 1g every 6 hours.

Postoperative Day 1

- free oral assumption of clear liquids, approximately 250 mL/day
- Daily intravenous infusion of electrolytic solution of 20 mL/Kg
- Avoid routine use of diuretic therapy unless patient's chronic daily use or on specific medical indication; urinary output target should be 0.5 mL/kg/hr
- In case of hypotension not hypovolemia-related, use of etilefrine if not contraindicated (bolus 1mg, up to 10 mg) or use of dopamine 5 mcg/kg/min
- Glycemic control targeted to maintain glycaemia between 120 and 160 mg/dL
- Mobilization: 4 hours seated out of bed during the day to be divided in 2 or more times and execution of specific exercises in bed.

- Pain management : suggested epidural infusion at 4 to 6 mL/ hour of naropine 0.2 % plus sufentanil 0,5 mcg/mL.
- Rescue pain relief: if epidural is working give an extra dose of 3-5 mL lidocaine 1%. If malfunctioning of the epidural catheter, proceed to reposition if feasible, otherwise assumption of 100mg tramadol + 30mg ketorolac (attack dose) followed by infusion of 300mg tramadol + 60mg ketorolac in 24 hours
- Paracetamol iv 4g / day
- Ketorolac 30mg if needed (maximum TID)
- Prophylaxis with octreotide 0,2 ml TID is suggested only in “high risk” pancreatic anastomosis

Postoperative Day 2

- Continue iv infusions indicatively at 15-20 mL/kg/day
- Prosecution of epidural analgesia
- Solid food (deprived of fat and bulk) and liquids at will (target 500 ml of clear liquids /day)
- Mobilization program: personal care in bathroom, deambulation in room, seated out of bed for at least 4 hours.
- Paracetamol iv 4g / day
- Ketorolac 30mg if needed (maximum TID)
- Removal of the hepatic surgical drain is suggested

Postoperative Day 3

- Continue iv infusions indicatively at 10 mL/kg/day
- Dosage of amylase on drain
- In case of “low risk” pancreatic anastomosis, non-sinister fluid in the drain and amylase value < 3 times the serum limit, removal of the pancreatic surgical drain is suggested
- Solid food (target 600 Kcal / day) and liquids at will (target 800 ml of clear liquids /day)
- Begin pancreatic enzyme assumption
- Prosecution of epidural analgesia
- Paracetamol iv 4g / day
- Ketorolac 30mg if needed (maximum TID)
- Free deambulation
- Bladder catheter removal

Postoperative Day 4

- Solid food and liquids at will

- Suspension of iv fluids if not clinically contraindicated, (patient should reach daily oral intake of 1200 Kcal and 1000 ml of clear liquids)
- Prosecution of epidural analgesia
- Assumption of paracetamol 1 gram TID
- Removal central venous catheter

Postoperative Day 5

- Solid food and liquids at will
- Epidural suspension test, after 6 hours of observation removal of the catheter if technically feasible
- Assumption of paracetamol 1 gram TID

Postoperative Day 6

- Oral assumption of RDA
- No therapy
- No device

CRITERIA " FIT FOR DISCHARGE " (DAILY ASSESSMENT)

- Adequate oral feeding
- Recovery of bowel function
- Pain control with oral analgesics
- Ability to mobilize and self-care
- No clinical or laboratory evidence of postoperative complications or untreated medical problems
- Patient's compliance