Please find below the results of your literature search request.

If you would like the full text of any of the abstracts included, or would like a further search completed on this topic, please let us know.

We’d appreciate feedback on your satisfaction with this literature search. Please visit http://www.hello.nhs.uk/literature_search_feedback.asp and complete the form.

Thank you

**Literature search results**

<table>
<thead>
<tr>
<th>Search completed for:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Search required by:</td>
<td>31&lt;sup&gt;st&lt;/sup&gt; October 2013</td>
</tr>
<tr>
<td>Search completed on:</td>
<td>18&lt;sup&gt;th&lt;/sup&gt; October 2013</td>
</tr>
<tr>
<td>Search completed by:</td>
<td>Richard Bridgen</td>
</tr>
</tbody>
</table>

**Current best practice for fasting times for patients prior to a planned procedure. From 2010.**

**Guidelines and Policy**

American Society of Anesthesiologists Committee on Standards and Practice Parameters

Practice guidelines for preoperative fasting and the use of pharmacologic agents to reduce
the risk of pulmonary aspiration: application to healthy patients undergoing elective procedures 2011

**Fasting Recommendations**

<table>
<thead>
<tr>
<th>Ingested Material</th>
<th>Minimum Fasting Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear liquids</td>
<td>2 hours</td>
</tr>
<tr>
<td>Breast milk</td>
<td>4 hours</td>
</tr>
<tr>
<td>Infant formula</td>
<td>6 hours</td>
</tr>
<tr>
<td>Nonhuman milk</td>
<td>6 hours</td>
</tr>
<tr>
<td>Light meal</td>
<td>6 hours</td>
</tr>
</tbody>
</table>

These recommendations apply to healthy patients who are undergoing elective procedures. They are not intended for women in labor. Following the Guidelines does not guarantee complete gastric emptying. The fasting periods noted above apply to patients of all ages.

**British Association for Parenteral and Enteral Nutrition (BAPEN)**

British consensus guideline on intravenous fluid therapy for adult surgical patients GIFTASUP 2011

1. **Recommendation 4**

In patients without disorders of gastric emptying undergoing elective surgery clear non-particulate oral fluids should not be withheld for more than two hours prior to the induction of anaesthesia.

2. **Recommendation 5**

In the absence of disorders of gastric emptying or diabetes, preoperative administration of carbohydrate rich beverages 2-3 h before induction of anaesthesia may improve patient well being and facilitate recovery from surgery. It should be considered in the routine preoperative preparation for elective surgery.

**Royal College of Anaesthetists**

Guidelines for the Provision of Anaesthetic Services (GPAS) 2013

1. Diabetes is the most common endocrine disease encountered before surgery. Fasting times, the surgical stress response and inactivity can all have a negative impact on blood sugar control.

2. Fasting times for patients with diabetes should be kept to a minimum; they should be first or early on the operating list if at all possible.

Pre-operative Assessment and Patient Preparation - The role of the Anaesthetist 2 2010

See appendix 1: Fasting guidelines for adults and children

**Evidence-based reviews**

Cochrane Database of Systematic Reviews

Preoperative fasting for adults to prevent perioperative complications 2010
There was no evidence to suggest a shortened fluid fast results in an increased risk of aspiration, regurgitation or related morbidity compared with the standard 'nil by mouth from midnight' fasting policy. Permitting patients to drink water preoperatively resulted in significantly lower gastric volumes. Clinicians should be encouraged to appraise this evidence for themselves and when necessary adjust any remaining standard fasting policies (nil-by-mouth from midnight) for patients that are not considered 'at-risk' during anaesthesia.

**Published research – Databases**

1. **Shrinking preoperative fast time with maltodextrin and protein hydrolysate in gastrointestinal resections due to cancer.**

   **Author(s)** Pexe-Machado, Paula Alves, Dario de Oliveira, Benedito, Dock-Nascimento, Diana Borges, de Aguilar-Nascimento, Jose Eduardo

   **Citation:** Nutrition, 01 July 2013, vol./is. 29/7/8(1054-1059), 08999007

   **Publication Date:** 01 July 2013

   **Abstract:** Objective: Prolonged preoperative fasting increases postoperative hospital length of stay and current evidence recommends patients drink a carbohydrate-based liquid drink 2 h before surgery. The aim of this study was to investigate whether the addition of hydrolized protein to a carbohydrate-based drink would reduce both the inflammatory response and hospital length of stay. Methods: We evaluated 22 patients of both sexes, undergoing gastrointestinal resection due to cancer. Patients were randomized into two groups: control group (n = 12; 6-8 h fast) and the intervention group (n = 10; fasted to solids for 6 h; and given a beverage containing 11% pea protein hydrolsate and 89% carbohydrates (79% maltodextrin and 21% sucrose), 400 mL the night before and 200 mL 3 h before surgery. Blood samples were collected the morning before surgery and on postoperative day 2. Results: Overall mortality was 4.5% (one case, control group). The duration of postoperative hospital stay was twofold longer in the control group (P = 0.04). A significant increase of serum C-reactive protein/albumin ratio was observed in controls compared with the intervention group (P = 0.04). Conclusion: The abbreviation of preoperative fasting time to 3 h using a solution containing carbohydrates and hydrolized pea proteins reduces the acute-phase inflammatory response and decreases the postoperative length of stay in patients undergoing major surgery for a malignancy.

   **Source:** CINAHL

2. **Clinical outcome before and after the implementation of the ACERTO protocol.**

   **Author(s)** da Costa HC, Santos RL, de Aguilar-Nascimento JE

   **Citation:** Revista do Colegio Brasileiro de Cirurgioes, May 2013, vol./is. 40/3(174-9), 0100-6991;1809-4546 (2013 May-Jun)

   **Publication Date:** May 2013

   **Abstract:** OBJECTIVE: To compare the postoperative clinical outcomes of patients undergoing cancer surgery in the Mato Grosso Cancer Hospital before and after implementation of the ACERTO protocol.METHODS: We prospectively observed 271 patients during two periods: the first between April and May 2010 (n = 101) comprised patients undergoing conventional conducts (Phase 1) and the second from September to October 2010 (n = 171) formed by patients undergoing a new protocol of perioperative established by ACERTO (Phase 2). The variables examined were length of preoperative fasting, reintroduction of diet in the postoperative period, hydration volume and length of stay.RESULTS: When comparing the two periods, in Phase 2 there was a decrease of approximately 50% in the time of preoperative fasting (14.7 [4-48] hours vs 7.2 [1-48] hours, p <0.001 ), a reduction of approximately 35% of the volume of intravenous fluids in the immediate postoperative period (p <0.001), 47% in the first postoperative day (p <0.001) and 28% at second PO (p = 0.04), with an overall reduction of 23% (p <0.001). There was no difference in length of postoperative hospital stay between the two phases (3.9 [0-51] vs. 3.2 [0-15] days, p = 0.52). However, in patients whose time of preoperative fasting was up to 5 hours, hospitalization time decreased by one day (3.8 [0-51] vs 2.5 [0-51]).
15] days, p = 0.03). CONCLUSION: The adoption of ACERTO measures is feasible and safe in cancer patients. After implementation of the ACERTO protocol, there was reduction of intravenous fluids volume and, when the preoperative fasting was reduced, hospitalization time was shorter.

Source: Medline

3. Proper preparation to reduce endoscopic reexamination due to food residue after distal gastrectomy for gastric cancer.


Citation: Surgical Endoscopy, March 2013, vol./is. 27/3(910-7), 0930-2794;1432-2218 (2013 Mar)

Publication Date: March 2013

Abstract: BACKGROUND: Reducing food residue by proper preparation methods before endoscopy after distal gastrectomy can increase the quality of examination and decrease patient discomfort. We evaluated the risk factors for food residue and proper methods of preparation for endoscopy after distal gastrectomy.

METHODS: Follow-up endoscopy with questionnaires was performed on 1,001 patients who underwent distal gastrectomy at Asan Medical Center between December 2010 and July 2011.

RESULTS: Endoscopic examination failed in 94 patients (9.4 %) as a result of large amounts of food residue. Rates of failure were significantly higher in patients who ate a regular diet rather than a soft diet at last dinner before examination (13.9 vs. 6.1 %, p = 0.050), and in those who ate lunch rather than not eating lunch on the day before examination (14.6 vs. 7.7 %, p = 0.020). Multivariate analysis showed that the rate of failed examination was lower in patients who had a history of abdominal surgery (p = 0.011), those who ate a soft (p < 0.001) or liquid (p = 0.003) diet as a last meal rather than a regular diet, those who underwent Billroth I rather than Billroth II reconstruction (p = 0.035), patients with longer fasting time (p = 0.009), and those with a longer gastrectomy-to-endoscopy time interval (p < 0.001).

CONCLUSIONS: Patients who undergo follow-up endoscopy after surgery should fast more than 18 h and ingest a soft or liquid diet on the day before examination.

Source: Medline


Author(s) Jones NL, Edmonds L, Ghosh S, Klein AA

Citation: Anaesthesia, February 2013, vol./is. 68/2(179-89), 0003-2409;1365-2044 (2013 Feb)

Publication Date: February 2013

Abstract: During the past decade, there has been a dramatic increase in the number of thoracic surgical procedures carried out in the UK. The current financial climate dictates that more efficient use of resources is necessary to meet escalating demands on healthcare. One potential means to achieve this is through the introduction of enhanced recovery protocols, designed to produce productivity savings by driving reduction in length of stay. These have been promoted by government bodies in a number of surgical specialties, including colorectal, gyneaeological and orthopaedic surgery. This review focuses on aspects of peri-operative care that might be incorporated into such a programme for thoracic anaesthesia, for which an enhanced recovery programme has not yet been introduced in the UK, and a review of the literature specific to this area of practice has not been published before. We performed a comprehensive search for published work relating to the peri-operative management and optimisation of patients undergoing thoracic surgery, and divided these into appropriate areas of practice. We have reviewed the specific interventions that may be included in an enhanced recovery programme, including: pre-optimisation; minimising fasting time; thrombo-embolic prophylaxis; choice of anaesthetic and analgesic technique and surgical approach; postoperative rehabilitation; and chest drain management. Using the currently available evidence, the design and implementation of an enhanced recovery programme based on this review in selected patients as a package of care may reduce morbidity and length of hospital stay, thus
maximising utilisation of available resources. Anaesthesia 2012 The Association of Anaesthetists of Great Britain and Ireland.

Source: Medline

5. Lesser time of preoperative fasting and early postoperative feeding are safe?.

Author(s) Ludwig RB, Paludo J, Fernandes D, Scherer F

Citation: ABCD, Arquivos Brasileiros de Cirurgia Digestiva, January 2013, vol./is. 26/1(54-8), 0102-6720;0102-6720 (2013 Jan-Mar)

Publication Date: January 2013

Abstract: INTRODUCTION: Fasting in the night before elective surgery has been established to prevent pulmonary complications, vomiting, regurgitation and aspiration of gastric contents. The year of 2005 was developed the project ACERTO. It consists in a multidisciplinary team that aims to recover the surgical patient by administering two our six hours before surgery, a carbohydrate-rich beverage (12.5% dextrinomaltose). The multidisciplinary team consists of anesthesiologists, surgeons, nutritionists, nurses and physiotherapists.METHODS: Literature review of preoperative fasting conducted during September and October of 2011 in Scielo and PubMed.CONCLUSION: Reducing the time of preoperative fasting with high carbohydrate solution until two hours before the operation as early feeding postoperatively, bring numerous benefits to the patient. The ACERTO project has shown good results and these new behaviors should be encouraged, thereby reducing the recovery time of the surgical patient.

Source: Medline


Author(s) Kim JW, Kim WS, Cheong JH, Hyung WJ, Choi SH, Noh SH

Citation: World Journal of Surgery, December 2012, vol./is. 36/12(2879-87), 0364-2313;1432-2323 (2012 Dec)

Publication Date: December 2012

Abstract: BACKGROUND: Fast-track surgery has been shown to enhance postoperative recovery in several surgical fields. This study aimed to evaluate the safety and efficacy of fast-track surgery in laparoscopic distal gastrectomy.METHODS: The present study was designed as a single-center, randomized, unblinded, parallel-group trial. Patients were eligible if they had gastric cancer for which laparoscopic distal gastrectomy was indicated. The fast-track surgery protocol included intensive preoperative education, a short duration of fasting, a preoperative carbohydrate load, early postoperative ambulation, early feeding, and sufficient pain control using local anesthetics perfused via a local anesthesia pump device, with limited use of opioids. The primary endpoint was the duration of possible and actual postoperative hospital stay.RESULTS: We randomized 47 patients into a fast-track group (n=22) and a conventional pathway group (n=22), with three patients withdrawn. The possible and actual postoperative hospital stays were shorter in the fast-track group than in the conventional group (4.68+/-0.65 vs. 7.05+/-0.65; P<0.001 and 5.36+/-1.46 vs. 7.95+/-1.98; P<0.001). The time to first flatus and pain intensity were not different between groups; however, a greater frequency of additional pain control was needed in the conventional group (3.64+/-3.66 vs. 1.64+/-1.33; P=0.023). The fast-track group was superior to the conventional group in several factors of the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire, including: fatigue, appetite loss, financial problems, and anxiety. The complication and readmission rates were similar between groups.CONCLUSIONS: Fast-track surgery could enhance postoperative recovery, improve immediate postoperative quality of life, and be safely applied in laparoscopic distal gastrectomy.

Source: Medline

7. Pre-procedural fasting for diagnostic and interventional coronary procedures—is it
Abstract: Background: Patients are traditionally kept fasted (Nil-By-Mouth) pre-procedure for diagnostic and interventional coronary procedures. There exists little evidence and no clear guidelines about the benefits of this practise in patients undergoing cardiac procedures under conscious sedation and local anaesthesia. Fasting patients are at risk of dehydration, contrast induced nephropathy and hypoglycaemia. These risks are magnified in the elderly. Methods: The data source is a retrospective registry of consecutive patients who underwent diagnostic coronary angiography and percutaneous coronary interventions (PCI) for acute coronary syndrome (ACS) and stable angina at two district general hospitals with no on-site cardiac surgery. Patients with cardiogenic shock or already intubated were excluded from the study. Results: A total of 4224 coronary procedures were performed over 36 month period including 2900 angiograms and 1324 PCIs. All these patients were not fasted preprocedure. Details of patients who underwent PCI: Mean age was 67 +/- 16 years. 860(65%) male. The admission diagnoses were Non-ST elevation myocardial infarction(NSTEMI) and ST-elevation myocardial infarction (STEMI) in 41%(542/1324) and 8%(110/1324) patients respectively. 18%(237/1324) were diabetics while 42%(555/1324) were hypertensive. PCI was technically successful in 93%(1234/1324) patients, while 6.7%(90/1324) had neutral outcome. 87%(1156/1324) had trans-radial approach. Glycoprotein 2b3a inhibitors were used in 12%(158/1324), Pressure Wire studies in 11%(149/1324) and Intra-Vascular Ultrasound (IVUS) assessments were performed in 4%(52/1324) patients. The average in-hospital stay for ACS patients was 4 +/- 1 day. 75% of patients who underwent PCI for stable angina were discharged within 6 hours postprocedure. None of the patients required emergency coronary artery bypass surgery or emergency endo-tracheal intubation. Conclusions: Our study demonstrates that patients before undergoing diagnostic and interventional coronary procedures need not be fasted. None of our patients required emergency endo-tracheal intubation or developed pulmonary sequelae. We recommend that the traditional stringent fasting protocols be abandoned or changed.

Source: EMBASE

8. Fasting in labour and before CS

Abstract: Background: NPO (nil per os) guidelines prior to elective surgery, including caesarean section, are well established, (1,2), Table 1. However, whether (or not) to eat and drink during labour continues to provoke debate? Given the duration of labour, particularly for nulliparae, all women should be allowed to drink clear fluids during labour (3). This will also obviate the need for intravenous (IV) cannulation in low risk women? The issue of eating during labour is more contentious and therefore the risks of eating during labour need to be clearly evaluated. Historically women were encouraged to eat light digestible food during labour (4). This changed after Mendelson published, in 1946, his paper on the risks associated with acid pulmonary aspiration in obstetrics (5). Today the incidence of pulmonary aspiration in obstetrics, and in particular at the time of induction of anaesthesia for emergency surgery during labour is vanishingly rare. This is illustrated in Fig 1 which shows the deaths rate from aspiration in the UK since the introduction of the Confidential Enquiries into Maternal Deaths in the (6). Gastro-intestinal physiology during pregnancy. Gastroesophageal reflux, resulting in heartburn, is a common complication of late pregnancy. Pregnancy compromises the integrity of the lower esophageal sphincter. A pregnant woman at term, requiring anaesthesia, should therefore be regarded as having an incompetent lower esophageal sphincter. These physiological changes return to their pre-
The rate of gastric emptying of both liquid and solid material is not significantly altered by pregnancy. In addition, it has also been demonstrated that, following an overnight fast, the emptying of 300ml water is not delayed in both obese and or non-obese parturients (8). During labour parenteral opioids significantly delay gastric emptying, as do bolus doses of epidural and intrathecal opioids. Continuous epidural infusion of low-dose local anaesthetic with fentanyl does not appear to delay gastric emptying until the total dose of fentanyl exceeds 100mcg. Gastric emptying is normal by 18 hours post-partum (9). Pre-operative fasting prior to elective caesarean section. The purpose of fasting is to ensure a relatively empty stomach whilst at the same time minimising thirst and dehydration. Pre-operative fasting guidelines have been liberalised, for both pregnant and non-pregnant patients, in recent years. A Cochrane review compared peri-operative complications in groups who either had shortened or traditional pre-operative fasting regimens and noted that the volume or pH of gastric contents at the time of intubation did not differ significantly between the groups (10). In addition patients with pre-operative water intake had a smaller gastric volume of higher pH. Gastric emptying in parturients at term is not delayed and therefore pre-operative fasting times prior to elective caesarean section should be the same as for non-obstetric surgery, (Table 1). Pharmacological prophylaxis. There is no direct evidence to link the reduction in the incidence of pulmonary aspiration in obstetrics to the use of antacids, H2-receptor antagonists or to proton pump inhibitors. Deaths from aspiration in obstetrics were already declining at the time of their introduction as a result of the more widespread use of regional anaesthesia. However logic would support the concept that increasing gastric pH and decreasing gastric volume should help prevent aspiration or at least mitigate against an adverse outcome. A meta-analysis comparing the ability of proton pump inhibitors and H2 receptor to achieve therapeutic targets suggests that pre-medication with ranitidine is more effective than proton pump inhibitors in reducing the volume of gastric secretions (by an average of 0.22 ml/kg; 95% confidence interval 0.04-0.41) and increasing gastric pH (by an average of 0.85 pH units; 95% confidence interval -1.14 to -0.28) (11). Suitable pre-operative antacid regimens for both elective and emergency surgery are shown in Table 2. Approximately 66% of all caesarean sections (CS) are performed as an emergency. Therefore women who are at risk of requiring an emergency CS during labour should given oral ranitidine 150mg at regular intervals (6-8 hourly) during labour. If the mother has not received oral ranitidine during labour intravenous (IV) ranitidine 50mg should be administered prior to surgery. If the surgery mandates a general anaesthetic 30ml of oral 0.3M sodium citrate should be administered shortly before induction of anaesthesia. This strategy will ensure that gastric pH is high at both intubation and extubation. Further strategies for preventing pulmonary aspiration during obstetric surgery. The ultimate aim is that aspiration syndromes should never occur. It is important therefore to identify risk and in obstetrics the risk of aspiration is greatest when emergency surgery is performed under general anaesthesia during labour. Therefore the single most effective strategy for the prevention of pulmonary aspiration is the avoidance of general anaesthesia. The ethos that regional anaesthesia is the optimal form of anaesthesia for parturients, with obvious exceptions, should be paramount on all delivery units. The role of NPO policies in labour in the 21st Century. The proponents of natural childbirth have long argued that denying women food during labour can cause an adverse obstetric outcome. This issue has been addressed in a randomised controlled trial in 2443 low risk nulliparae in labour who were assigned to an 'eating' or a 'water only' group. The study demonstrated that eating during labour did not improve obstetric outcome, i.e. the rate of spontaneous vaginal delivery was not increased, the duration of labour was not shorter and fetal outcomes (APGAR scores and NICU admissions) were not altered. Equally this study did not show that eating in labour is safe as the study was underpowered to demonstrate safety (12). Current evidence suggests that the risk of aspiration is greatest if the woman is critically ill, obese or has a difficult airway; and such women should remain NPO (apart from water) during labour. The American Society of Anesthesiology (ASA) recommends that low risk women be allowed to consume moderate amounts of clear liquids during labour (3). Therefore women should be advised to alleviate thirst during labour by consuming ice chips and clear fluids (isotonic sports drinks, fruit juices, tea and coffee, etc). Women should be discouraged from eating solid food during labour as eating confers no benefit to obstetric outcome. Arguably however low risk women could be allowed to consume low residue foods (soups, yoghurt, ice cream and etc) during labour, especially in view of the almost negligible incidence of deaths from aspiration. When deciding whether or not to allow women to eat during labour, the use of parenteral opioids, because of their profound delay on the rate of gastric emptying, must be considered. In addition, units who perform a significant volume of their
emergency obstetric surgery under general anaesthesia should also probably not allow women to eat during labour. Maternal death from aspiration of regurgitated gastric content is now extremely rare, and its decline probably owes more to the widespread use of regional anaesthesia for operative obstetrics than to fasting policies. Thus, as there is no obstetric benefit to eating in labour, the decision to eat during labour becomes a risk/benefit analysis. For many women and their carers it is likely that this risk/benefit analysis will favour eating during labour? (Figure presented).

Source: EMBASE
Available in fulltext from Regional Anesthesia and Pain Medicine at the ULHT Library and Knowledge Services’ eJournal collection

9. Increase of perioperative oral energy and protein intake with shortening of perioperative fasting time, affects rate of surgical site infection after open colon surgery

Author(s) Ishibashi N., Takahashi K., Kibe S., Tanaka K., Murakami N., Uchida S., Murakami H., Shirouzu K., Ogata Y.

Citation: Clinical Nutrition, Supplement, September 2012, vol./is. 7/1(68), 1744-1161 (September 2012)

Publication Date: September 2012

Abstract: Rationale: One of the important factors to accelerate recovery after surgery is reducing perioperative fasting time. We proposed to investigate the effect of reduction of perioperative fasting time and the importance of the perioperative oral intake after open colon cancer surgery. Methods: Colon cancer patient in our hospital, were enrolled in this study. In Short fasting (SF) group, patients (n = 50) were allow to eat liquid diet until midnight before surgery. In control group, patients (n = 50) who were received mechanical bowel preparation and starved from the morning one day before surgery. Inflammatory responses, incidence of surgical site infection (SSI), complication and time of hospital stay were evaluated. Perioperative energy and protein intake were evaluated from medical record and total energy and protein intake from 1 day before surgery to 3 days after surgery were compared. Student's t-test, Mann Whitney test and chi-square test were employed for statistical significance. Results: There was no difference in inflammatory responses, while the incidence of SSI were significantly high er in control group than in SF group (SSI: 16% vs 6%, p < 0.01) and and time of hospital stay was prolonged in control group. There was no significant difference on perioperative total energy and protein intake between two groups. Mean daily oral energy (SF: 670 kcal, control: 98 kcal) and protein intake (SF: 43 g, control: 3 g) was both significantly higher in SF group than in control group (p < 0.01). Conclusion: Patients in SF group, could eat more orally and it might be correlate with reduction of an incidence of complication and shorten hospital stay, suggesting that fasting time and perioperative oral intake, rather than total calorie administration are important factors for recovery after open colon surgery.

Source: EMBASE


Author(s) Zelic M, Stimac D, Mendrila D, Tokmadzic VS, Fisic E, Uravic M, Sustic A

Citation: Hepato-Gastroenterology, July 2012, vol./is. 59/117(1385-9), 0172-6390;0172-6390 (2012 Jul-Aug)

Publication Date: July 2012

Abstract: BACKGROUND/AIMS: Preoperative management involves patients fasting from midnight on the evening prior to surgery. Fasting period is often long enough to change the metabolic condition of the patient which increases perioperative stress response. That could have a detrimental effect on clinical outcome. The aim of the present study was to investigate the possible effects of carbohydrate-rich beverage on stress response after colon resection.METHODOLOGY: Randomized and double blinded study included 40 patients with colon, upper rectal or rectosigmoid cancer. Investigated group received a
carbohydrate-rich beverage the day before and two hours before surgery. In the control group patients were in the standard preoperative regime: nothing by mouth from the evening prior to operation. Peripheral blood was sampled 24h before surgery, at the day of the surgery, and 6, 24 and 48h postoperatively. RESULTS: Colonic resection in both groups caused a significant increase in serum interleukin 6 (IL-6) levels 6, 24 and 48h after the operation. Increase was more evident and statistically significant in the group with fasting protocol. More significant increase of interleukin 10 (IL-10) occurred in patients who received preoperative nutrition. CONCLUSIONS: Smaller increase in IL-6 and higher in IL-10 are indicators of reduced perioperative stress.

Source: Medline

11. Intraoperative fluids: how much is too much?.
Author(s) Doherty M, Buggy DJ
Citation: British Journal of Anaesthesia, July 2012, vol./is. 109/1(69-79), 0007-0912;1471-6771 (2012 Jul)
Publication Date: July 2012
Abstract: There is increasing evidence that intraoperative fluid therapy decisions may influence postoperative outcomes. In the past, patients undergoing major surgery were often administered large volumes of crystalloid, based on a presumption of preoperative dehydration and nebulous intraoperative 'third space' fluid loss. However, positive perioperative fluid balance, with postoperative fluid-based weight gain, is associated with increased major morbidity. The concept of 'third space' fluid loss has been emphatically refuted, and preoperative dehydration has been almost eliminated by reduced fasting times and use of oral fluids up to 2 h before operation. A 'restrictive' intraoperative fluid regimen, avoiding hypovolaemia but limiting infusion to the minimum necessary, initially reduced major complications after complex surgery, but inconsistencies in defining restrictive vs liberal fluid regimens, the type of fluid infused, and in definitions of adverse outcomes have produced conflicting results in clinical trials. The advent of individualized goal-directed fluid therapy, facilitated by minimally invasive, flow-based cardiovascular monitoring, for example, oesophageal Doppler monitoring, has improved outcomes in colorectal surgery in particular, and this monitor has been approved by clinical guidance authorities. In the contrasting clinical context of relatively low-risk patients undergoing ambulatory surgery, high-volume crystalloid infusion (20-30 ml kg(-1)) reduces postoperative nausea and vomiting, dizziness, and pain. This review revises relevant physiology of body water distribution and capillary-tissue flow dynamics, outlines the rationale behind the fluid regimens mentioned above, and summarizes the current clinical evidence base for them, particularly the increasing use of individualized goal-directed fluid therapy facilitated by oesophageal Doppler monitoring.

Source: Medline
Available in fulltext from British Journal of Anaesthesia at Highwire Press
Available in print at Lincoln County Hospital Professional Library

12. Pre-cardiac procedures fasting: Is it time to change practice?
Author(s) Hamid T., Aleem Q., Hassan S., Choudhary N., MacDonald J., Balachandran K.P., Singh R.
Citation: Circulation, May 2012, vol./is. 125/19(e870), 0009-7322 (15 May 2012)
Publication Date: May 2012
Abstract: Introduction: Patients are usually kept starved (Nil-By-Mouth) pre-cardiac interventions including coronary interventions and and devices therapy. Fasting reduce the risk of aspiration if patients has to undergo emergency surgery or develop cardiac arrest. Currently there is no clear evidence available for pre-procedure fasting in patients undergoing coronary interventions. Fasting increases the risk for dehydration, hypoglycaemia and omission of medications. Objectives: To assess that low to medium risk procedures does not need Fasting pre-cardiac procedures. Methods: The data source was a retrospective data registry of consecutive patients who underwent percutaneous coronary
interventions (PCI) for acute Coronary syndrome (ACS) and stable angina at our institution where no on-site cardio-thoracic services are available. Patients who underwent PCI between Jan 2010 and June 2011 were included. Additional information was collected through follow-up clinic letters, hospital and PCI database. Results: A total of 611 patients underwent PCI. Mean Follow-up of 6+/−2 months. Mean age was 68+/−16 years. 397(65%) male, Asians 85 (14%), 135 (22%) diabetic, 303 (49%) hypertensive, 311 (51%) smoker and 390 (64%) had Hyperlipidemia. 269 (44%) patients had Non-ST elevation myocardial infarction (NSTEMI), 84(14%) had ST-elevation myocardial infarction (STEMI) and 240(39.27%) with stable angina. PCI was technically successful in all patients. More than 80% procedures were via radial access. In-Hospital complications included 1 death (related to cardiogenic shock), 6 had bleeding from the groin site requiring femstop (no blood transfusion) and 2 had re-infarction (requiring repeat angiography). None of the patients required emergency coronary artery bypass surgery, coronary perforation causing pericardial tamponade, complete heart blocks and stroke. The average in-hospital stay post-procedure for ACS was 4+/−1 days while for stable angina was 1 day. A total of 17 (3%) patients were re-admitted post-discharge within 30 days. 9 had troponin negative chest pains, 1 each with heart failure and complete heart block requiring permanent pacemaker (PPM), while 7 had non-cardiac related problems. Only 3 patients had repeat coronary angiograms with 1 requiring further coronary intervention. Conclusion: This study indicates that patients undergoing medium risk PCI post ACS in a district general hospital with no on site cardio-thoracic facilities, does not need to be starved before the procedure and can safely undergo coronary interventions.

Source: EMBASE

Available in fulltext from Circulation at Highwire Press
Available in fulltext from Circulation at the ULHT Library and Knowledge Services’ eJournal collection

13. Safety, quality and comfort of upper gastrointestinal endoscopy with conscious sedation after fasting for two hours

Author(s) Koeppe A.T., Lubini M., Piazzetta K.T., Pereira L., Bonadeo N.M., Moraes I., Stobbe J.C., Fornari F.

Citation: Gastrointestinal Endoscopy, April 2012, vol./is. 75/4 SUPPL. 1(AB287), 0016-5107 (April 2012)

Publication Date: April 2012

Abstract: Background: Upper gastrointestinal (GI) endoscopy is widely used in the clinical practice. An empty stomach is required to ensure quality and safety. For this reason, endoscopy is conventionally performed after 8 or more hours of fasting, which is potentially related to discomfort to the patients. In recent studies, surgical cholecystectomy has been described to be safe after two hours of fasting on liquids. Aims: To assess safety, quality and comfort of upper GI endoscopy after two hours of fasting. Methods: In this prospective study, patients who were referred for elective endoscopy and accepted to participate were randomly assigned to perform the procedure after fasting for 8 (F8) or 2 hours (F2). F2 patients were instructed to avoid food for 6 hours and drink 200 ml of a liquid protein supplement (300 Kcal) two hours before the endoscopy. Four skilled endoscopists carried out the endoscopies, blinded to patient fasting status. Safety was defined by the endoscopists as presence/absence of regurgitation of gastric contents into the esophagus following intubation, as well as occurrence of aspiration. Quality was graded by the endoscopists using a Likert scale (1 = poor10 = excellent), whereas comfort was assessed by questioning the patients about presence/absence of anxiety, discomfort, hunger, thirst, nausea, and weakness. Results: A total of 115 patients were interviewed. Of these, 17 (14.8%) were excluded: 8 denied to participate, 6 had unstable clinical conditions, 2 had morbid obesity, and one patient had anti-reflux surgery. Ninety-eight patients were studied (aging 48.5 +/- 16.5 years, 60.2% women): 50 (51%) were F2 and 48 F8. Regurgitation of gastric contents into the esophagus did not differ significantly between F2 and F8 (26% vs. 19%; P = 0.471). There was no case of aspiration in both groups. Quality was slightly but significantly higher in F8 compared to F2 [median (IQR25-75%): 9 (9-10) vs. 9 (7.75-10); P = 0.010]. In comparison to F8, a higher proportion of F2 patients classified the procedure as more comfortable in terms of anxiety (F2: 8% vs. 25%; P = 0.029), discomfort (18% vs. 42%; P = 0.010), hunger (44% vs. 67%; P = 0.024), and weakness (22% vs. 42%; P =
Conclusions: Our data suggest that upper GI endoscopy after two hours of fasting on liquids is as safe as the endoscopy with the conventional 8-hour fasting. It was classified by patients as more comfortable. However, endoscopists found it with a slightly lower quality. Further data and discussion are needed to decide whether this shorter fasting period can be assumed in the clinical practice of upper GI endoscopy.

**Source:** EMBASE

---

**14. Pre-op fasting: how long is long enough?**

**Author(s)**

**Citation:** The Johns Hopkins medical letter health after 50, April 2012, vol./is. 24/2(8), 1042-1882 (Apr 2012)

**Publication Date:** April 2012

**Source:** EMBASE

---

**15. Pre-operative fasting times in a neurosurgical unit: Are we starving patients longer than is necessary?**

**Author(s)** Ali H., Dhamija B., Oakley P., Shaw S.A., Brydon H.L.

**Citation:** British Journal of Neurosurgery, April 2012, vol./is. 26/2(146-147), 0268-8697 (April 2012)

**Publication Date:** April 2012

**Abstract:** Objectives. The indications for pre-operative fasting are well recognised. There are clear guidelines indicating appropriate durations for stopping the intake of solids and liquids prior to surgery. Due to the nature of our specialty, lists are commonly modified to meet clinical requirements and specifically to address emergencies. This poses an impact on pre-operative preparation including fasting times. Design. For each patient, we reviewed the duration of halting solid and clear fluid intake prior to the induction of anaesthesia. Our results are compared with published national recommendations, allowing improvements to be made to better our service. Subjects. Over a 3-month period from September to November, 2011, data was collected for 35 patients (19 male, 16 female). Methods. Fasting times for solids and clear fluids were collected for each patient and compared with national guidelines, that is, 6 hours for solids and 2 hours for clear fluids. Results. The mean duration of stopping solids was 17 hours 44 minutes (mode of 15 hours), for liquids 9 hours 20 minutes (mode of 8 hours 45 minutes). Conclusions. Where identified, we discuss the reasons for prolonged starvation, the potential for deepening co-morbidity in this group and identify management strategies to deal with unexpected changes in elective neurosurgical lists. We also propose the use of preoperative carbohydrate loading as successfully trialled in studies involving general surgery and orthopaedic patients.

**Source:** EMBASE

Available in fulltext from British Journal of Neurosurgery at EBSCOhost

---

**16. Preoperative fasting: Reviewing concepts and behaviors**

**Author(s)** Machado M.N.

**Citation:** Brazilian Journal of Cardiovascular Surgery, March 2012, vol./is. 27/1(IV-V), 0102-7638;1678-9741 (March 2012)

**Publication Date:** March 2012

**Source:** EMBASE

---

**17. Reducing preoperative fasting in elective adult surgical patients: a case-control study.**

**Author(s)** Power S, Kavanagh DO, McConnell G, Cronin K, Corish C, Leonard M, Crean A,
Abstract: BACKGROUND: The practice of fasting from midnight prior to surgery is an outdated one. AIM: The aim of this study was to assess the impact of an evidence-based protocol for reduced preoperative fasting on fasting times, patient safety, and comfort. METHODS: A non-randomised case-control study of preoperative fasting times among adult surgical patients undergoing elective procedures was conducted. Consecutive patients were allocated to a reduced preoperative fasting protocol allowing fluids and solids up to 2 and 6 h prior to anaesthesia, respectively (n = 21). These were compared to control patients identified from an historic study of preoperative fasting times who followed the traditional fast from midnight (n = 29). Fasting times and details of patients' subjective comfort were collected using an interview-assisted questionnaire. Incidence of intraoperative aspirations was obtained from anaesthetic records. RESULTS: Significant reductions in fasting times for fluids (p = 0.000) and solids (p = 0.000) were achieved following implementation of the fasting protocol. Less preoperative thirst (0.000), headache (0.012) and nausea (0.015) were reported by those who had a shorter fast. Intraoperative aspiration did not occur in either group. CONCLUSION: Implementation of this protocol for reduced preoperative fasting achieved an appreciable reduction in fasting times and enhanced patient comfort. Patient safety was not compromised. Further modifications of our protocols are necessary to meet the international best practice. We recommend its implementation across all surgical groups in our institution.

Source: Medline

18. Safety and efficacy of oral rehydration therapy until 2 h before surgery: a multicenter randomized controlled trial.


Abstract: PURPOSE: In many countries, patients are generally allowed to have clear fluids until 2-3 h before surgery. In Japan, long preoperative fasting is still common practice. To shorten the preoperative fasting period in Japan, we tested the safety and efficacy of oral rehydration therapy until 2 h before surgery. METHODS: Three hundred low-risk patients scheduled for morning surgery in six university-affiliated hospitals were randomly assigned to an oral rehydration solution (ORS) group or to a fasting group. Patients in the ORS group consumed up to 1,000 ml of ORS containing balanced glucose and electrolytes: 500 ml between 2100 the night before surgery and the time they woke up the next morning and 500 ml during the morning of surgery until 2 h before surgery. Patients in the fasting group started fasting at 2100 the night before surgery. Primary endpoints were gastric fluid volume and pH immediately after anesthesia induction. Several physiological measures of hydration and electrolytes including the fractional excretion of sodium (FENa) and the fractional excretion of urea nitrogen (FEUN) were also evaluated. RESULTS: Mean (SD) gastric fluid volume immediately after anesthesia induction was 15.1 (14.0) ml in the ORS group and 17.5 (23.2) ml in the fasting group (P = 0.30). The mean difference between the ORS group and fasting group was -2.5 ml. The 95% confidence interval ranged from -7.1 to +2.2 ml and did not include the noninferior limit of +8 ml. Mean (SD) gastric fluid pH was 2.1 (1.9) in the ORS group and 2.2 (2.0) in the fasting group (P = 0.59). In the ORS group, mean FENa and FEUN immediately after anesthesia induction were both significantly greater than those in the fasting group (P < 0.001 for both variables). The ORS group reported they had been less thirsty and hungry before surgery (P < 0.001, 0.01). CONCLUSIONS: Oral rehydration therapy until 2 h before surgery is safe and feasible in the low-risk Japanese surgical population. Physicians are encouraged to use this practice to maintain the amount of water in the body and electrolytes and to improve...
the patient's comfort.

Source: Medline
Available in fulltext from Journal of Anesthesia at EBSCOhost


Author(s) Dock-Nascimento DB, de Aguilar-Nascimento JE, Magalhaes Faria MS, Caporossi C, Silhassarenko N, Waitzberg DL

Citation: Jpen: Journal of Parenteral & Enteral Nutrition, January 2012, vol./is. 36/1(43-52), 0148-6071;0148-6071 (2012 Jan)
Publication Date: January 2012

Abstract: BACKGROUND: Prolonged preoperative fasting increases insulin resistance (IR). The authors investigated whether an abbreviated preoperative fast with glutamine (GLN) plus a carbohydrate (CHO)-based beverage would improve the organic response after surgery.METHODS: Forty-eight female patients (19-62 years) were randomized to either standard fasting (control group) or to fasting with 1 of 3 different beverages before video-cholecystectomy. Beverages were consumed 8 hours (400 mL; placebo group: water; GLN group: water with 50 g maltodextrine plus 40 g GLN; and CHO group: water with 50 g maltodextrine) and 2 hours (200 mL; placebo: water; GLN: water with 25 g maltodextrine plus 10 g GLN; and CHO: water with 25 g maltodextrine) before anesthesia. Blood samples were collected pre- and postoperatively.RESULTS: The mean (SEM) postoperative homeostasis model assessment-insulin resistance was greater (P < .05) in control patients (4.3 [1.3]) than in the other groups (placebo, 1.6 [0.3]; CHO, 2.3 [0.4]; and GLN, 1.5 [0.1]). Glutathione was significantly higher (P < .01) in the GLN group than in both CHO and control groups. Interleukin-6 increased in all groups except the GLN group. The C-reactive protein/albumin ratio was higher (P < .05) in controls than in CHO and GLN groups. The nitrogen balance was less negative in GLN (-2.5 [0.8] gN) than in both placebo (-9.0 [2] gN; P = .001) and control (-6.6 [0.4] gN; P = .04) groups.CONCLUSIONS: Preoperative intake of a GLN-enriched CHO beverage appears to improve IR and antioxidant defenses and decreases the inflammatory response after video-cholecystectomy.

Source: Medline

20. Preoperative management of surgical patients by "shortened fasting time": a study on the amount of total body water by multi-frequency impedance method.

Author(s) Taniguchi H, Sasaki T, Fujita H

Citation: International Journal of Medical Sciences, 2012, vol./is. 9/7(567-74), 1449-1907;1449-1907 (2012)
Publication Date: 2012

Abstract: AIM: Preoperative fasting is an established procedure to be practiced for patients before surgery, but optimal preoperative fasting time still remains controversial. The aim of this study was to investigate the effect of "shortened preoperative fasting time" on the change in the amount of total body water (TBW) in elective surgical patients. TBW was measured by multi-frequency impedance method.METHODS: The patients, who were scheduled to undergo surgery for stomach cancer, were divided into two groups of 15 patients each. Before surgery, patients in the control group were managed with conventional preoperative fasting time, while patients in the "enhanced recovery after surgery (ERAS)" group were managed with "shortened preoperative fasting time" and "reduced laxative medication." TBW was measured on the day before surgery and the day of surgery before entering the operating room. Defecation times and anesthesia-related vomiting and aspiration were monitored.RESULTS: TBW values on the day of surgery showed changes in both groups as compared with those on the day before surgery, but the rate of change was smaller in the ERAS group than in the control group (2.4+/-.8% [12 patients] vs. -10.6+/-.6% [14 patients], p<.001). Defecation times were less in the ERAS
CONCLUSION: The results suggest that preoperative management with "shorted preoperative fasting time" and "reduced administration of laxatives" is effective in the maintenance of TBW in elective surgical patients.

Source: Medline
Available in fulltext from International Journal of Medical Sciences at National Library of Medicine

21. Pragmatic fluid optimization in high-risk surgery patients: when pragmatism dilutes the benefits.

Author(s) Reuter DA
Citation: Critical Care (London, England), 2012, vol./is. 16/1(106), 1364-8535;1466-609X (2012)
Publication Date: 2012
Abstract: There is increasing evidence that hemodynamic optimization by fluid loading, particularly when performed in the early phase of surgery, is beneficial in high-risk surgery patients: it leads to a reduction in postoperative complications and even to improved long-term outcome. However, it is also true that goal-directed strategies of fluid optimization focusing on cardiac output optimization have not been applied in the clinical routine of many institutions. Reasons are manifold: disbelief in the level of evidence and on the accuracy and practicability of the required monitoring systems, and economics. The FOCCUS trial examined perioperative fluid optimization with a very basic approach: a standardized volume load with 25 ml/kg crystalloids over 6 hours immediately prior to scheduled surgery in high-risk patients. The hypothesis was that this intervention would lead to a compensation of preoperative fluid deficit caused by overnight fasting, and would result in improved perioperative fluid homeostasis with less postoperative complications and earlier hospital discharge. However, the primary study endpoints did not improve significantly. This observation points towards the facts that: firstly, the differentiation between interstitial fluid deficit caused by fasting and intravascular volume loss due to acute blood loss must be recognized in treatment strategies; secondly, the type of fluid replacement may play an important role; and thirdly, protocolized treatment strategies should also always be tailored to suit the patients' individual needs in every individual clinical situation.

Source: Medline
Available in fulltext from Critical Care at National Library of Medicine

22. The perioperative continuation of post- pyloric enteral nutrition is safe in critically ill patients

Author(s) McElroy L., Codner P., Brasel K.
Citation: Critical Care Medicine, December 2011, vol./is. 39/(70), 0090-3493 (December 2011)
Publication Date: December 2011
Abstract: Introduction: To challenge the notion that traditional 8 hour fasting prior to surgery is unnecessary. Hypothesis: It is safe to continue post- pyloric enteral nutrition in any critically ill patient undergoing surgery. Methods: A policy was instituted at our hospital allowing patients undergoing surgery with a secure airway to continue post- pyloric enteral nutrition up until entry into the operating room. The study population included consecutive intubated or tracheotomized patients from July 2010 to July 2011 in the surgical intensive care unit who received enteral nutrition via a naso-jejunal (NJ) feeding tube and underwent one or more surgical procedures. Demographic, illness and injury information were obtained from record review. Length of time to NJ placement, time to initiation of tube feedings, tube feed interruptions and complications (defined as a perioperative aspiration event either during induction or several hours after surgery, high gastric residuals, clinical sepsis, pneumonia, or a perioperative death defined as within 24 hours after surgery and related to an aspiration event) were also recorded. Results: 14 patients with mean age 44.3
(+/- 19.9) were included. Average injury severity score was 26.2 (+/-9.2). Mean number of operations was 3.4 (+/-1.5). Reason for ICU admission included trauma (N = 11.0, 78.5%) and general surgical cases including necrotizing soft tissue infection (N = 2.0, 14.3%) and incarcerated bowel (N = 1.0, 7.1%). The most frequent operation was an orthopedic procedure (N = 17.0, 46.1%). Length of tube feed interruptions for a single procedure was 222.4 (+/-206.9) minutes. Patients received an additional 11.9 (+/-4.7) hours of enteral nutrition and 1064.9 (490.0) calories per day per operation as a result of not having their nutrition stopped at midnight on the evening preceding an operation. There were no complications. Conclusions: Perioperative continuation of post-pyloric enteral nutrition is safe and feasible in many critically ill surgical patients. A multi-disciplinary approach and an institutional policy can increase the ability to meet nutritional goals in these patients.

Source: EMBASE
Available in fulltext from Critical Care Medicine at the ULHT Library and Knowledge Services’ eJournal collection

23. CE test 2.4 hours: preoperative fasting: will the evidence ever be put into practice?

Author(s) Contrada E
Citation: American Journal of Nursing, October 2011, vol./is. 111/10(44-5), 0002-936X;1538-7488 (2011 Oct)
Publication Date: October 2011
Source: Medline
Available in fulltext from American Journal of Nursing at the ULHT Library and Knowledge Services’ eJournal collection

24. Preoperative fasting: will the evidence ever be put into practice?.

Author(s) Crenshaw JT
Citation: American Journal of Nursing, October 2011, vol./is. 111/10(38-43), 0002-936X;1538-7488 (2011 Oct)
Publication Date: October 2011
Abstract: OVERVIEW: Decades of research support the safety and health benefits of consuming clear liquids, including those that are carbohydrate rich, until a few hours before elective surgery or other procedures requiring sedation or anesthesia. Still, U.S. clinicians routinely instruct patients to fast for excessively long preoperative periods. Evidence-based guidelines, published over the past 25 years in the United States, Canada, and throughout Europe, recommend liberalizing preoperative fasting policies. To improve patient safety and health care quality, it’s essential that health care professionals abandon outdated preoperative fasting policies and allow available evidence to guide preanesthetic practices.

Source: Medline
Available in fulltext from American Journal of Nursing at the ULHT Library and Knowledge Services’ eJournal collection

25. Preoperative fasting before interventional techniques: is it necessary or evidence-based?.

Author(s) Manchikanti L, Malla Y, Wargo BW, Fellows B
Citation: Pain Physician, September 2011, vol./is. 14/5(459-67), 1533-3159;2150-1149 (2011 Sep-Oct)
Publication Date: September 2011
Abstract: BACKGROUND: Interventional pain management is an evolving specialty. Multiple issues including preoperative fasting, sedation, and infection control have not been well investigated and addressed. Based on the necessity for sedation and also the adverse
events related to interventional techniques, preoperative fasting is considered practical to avoid postoperative nausea and vomiting. However, there are no guidelines for interventional techniques for sedation or fasting. Most interventional techniques are performed under intravenous or conscious sedation.OBJECTIVE: To assess the need for preoperative fasting and risks without fasting in patients undergoing interventional techniques.STUDY DESIGN: A prospective, non-randomized study of patients undergoing interventional techniques from May 2008 to December 2009.STUDY SETTING: An interventional pain management practice, a specialty referral center, a private practice setting in the United States.METHODS: All patients presenting for interventional techniques from May 2008 to December 2009 are included with documentation of various complications related to interventional techniques including nausea and vomiting.RESULTS: From May 2008 to December 2009 a total of 3,179 patients underwent 12,000 encounters with 18,472 procedures, with patients receiving sedation during 11,856 encounters. Only 189, or 1.6% of the patients complained of nausea and 3 of them, or 0.02%, experienced vomiting. There were no aspirations. Of the 189 patients with nausea, 80 of them improved significantly prior to discharge without further complaints. Overall, 109 patients, or 0.9% were minimally nauseated prior to discharge. The postoperative complaints of continued nausea were reported in only 26 patients for 6 to 72 hours. There were only 2 events of respiratory depression, which were managed with brief oxygenation with mask without any adverse consequence of nausea, vomiting, aspiration, or other adverse effects.LIMITATIONS: Limitations include the nonrandomized observational nature of the study.CONCLUSION: This study illustrates that postoperative nausea, vomiting, and respiratory depression are extremely rare and aspiration is almost nonexistent, despite almost all of the patients receiving sedation and without preoperative fasting prior to provision of the interventional techniques.

Source: Medline

26. **A liberal preoperative fasting regimen improves patient comfort and satisfaction with anesthesia care in day-stay minor surgery.**

**Author(s)** Bopp C, Hofer S, Klein A, Weigand MA, Martin E, Gust R

**Citation:** Minerva Anestesiologica, July 2011, vol./is. 77/7(680-6), 0375-9393;1827-1596 (2011 Jul)

**Publication Date:** July 2011

**Abstract:** BACKGROUND: The aim of this study was to evaluate whether a single preoperative limited oral intake of a carbohydrate drink could improve perioperative patient comfort and satisfaction with anesthesia care in elective day-stay ophthalmologic surgery.METHODS: A single-center, prospective, randomized clinical trial was conducted in a university hospital. The study included ASA I-III patients undergoing ophthalmologic surgery. Patients undergoing both general anesthesia and local anesthesia were included in the study. The control group fasted in accordance to nil per os after midnight, while patients in the experimental group received 200 mL of a carbohydrate drink 2 h before the operation. Both groups were allowed to drink and eat until midnight ad libitum. Patient characteristics, subjective perceptions, taste of the drink, and satisfaction with anesthesia care were ascertained using a questionnaire administered three times: after the anesthesiologist's visit, before surgery and before discharge from the ward to assess patient comfort. An analysis of variance and the Mann-Whitney U-test were used for statistical analysis.RESULTS: A total of 123 patients were included and 109 patients were randomly assigned to one of two preoperative fasting regimens. Patients drinking 200 mL 2 h before surgery were not as hungry (P<0.05), not as thirsty preoperatively (P<0.001) and not as thirsty after surgery (P<0.05), resulting in increased postoperative satisfaction with anesthesia care (P<0.05).CONCLUSION: Standardized limited oral preoperative fluid intake increases patient comfort and satisfaction with anesthesia care and should be a part of modern day-stay ophthalmologic surgery.

**Source:** Medline

27. **The influence of perioperative care and treatment on the 4-month outcome in elderly patients with hip fracture.**
Author(s) Bjorkelund KB, Hommel A, Thorngren KG, Lundberg D, Larsson S

Citation: AANA Journal, February 2011, vol./is. 79/1(51-61), 0094-6354;0094-6354 (2011 Feb)

Publication Date: February 2011

Abstract: The purpose of this descriptive cohort study was to identify perioperative risk factors associated with postoperative outcome up to 4 months after surgery in elderly patients with hip fracture. Data were collected prospectively through the Swedish National Hip Fracture, the local Acute and Emergency, and Anesthesia registers, and retrospectively from medical and nursing records. The 428 patients (aged ≥ 65 years) with hip fracture were consecutively included. Multiple logistic regression analyses were used to identify factors predicting each of 4 outcomes. Perioperative risk factors predicting death within 4 months after surgery were fasting time of 12 or more hours and blood transfusion of 1 U or more. Risk factors predicting postoperative confusion were postoperative oxygen saturation less than 90% and fasting time 12 hours or longer. Risk factors predicting in-hospital complications were transfusion of 1 or more units of blood, preoperative oxygen saturation less than 90%, and fasting time 12 hours or more. Risk factor predicting length of stay longer than 10 days was blood transfusion of 1 U or more. To minimize morbidity and mortality, providers should increase efforts to optimize the patients' oxygen saturation and hemoglobin level and reduce fasting time and waiting time for surgery.

Source: Medline

Available in fulltext from AANA Journal at EBSCOhost


Author(s) Perrone F, da-Silva-Filho AC, Adorno IF, Anabuki NT, Leal FS, Colombo T, da Silva BD, Dock-Nascimento DB, Damiao A, de Aguilar-Nascimento JE

Citation: Nutrition Journal, 2011, vol./is. 10/(66), 1475-2891;1475-2891 (2011)

Publication Date: 2011

Abstract: BACKGROUND: Prolonged preoperative fasting increases insulin resistance and current evidence recommends carbohydrate (CHO) drinks 2 hours before surgery. Our hypothesis is that the addition of whey protein to a CHO-based drink not only reduces the inflammatory response but also diminish insulin resistance. METHODS: Seventeen patients scheduled to cholecystectomy or inguinal herniorrhaphy were randomized and given 474 ml and 237 ml of water (CO group) or a drink containing CHO and milk whey protein (CHO-P group) respectively, 6 and 3 hours before operation. Blood samples were collected before and 24 hours afterwards for biochemical assays. The endpoints of the study were the insulin resistance (IR), the prognostic inflammatory and nutritional index (PINI) and the C-reactive protein (CRP)/albumin ratio. A 5% level for significance was established. RESULTS: There were no anesthetic or postoperative complications. The postoperative IR was lower in the CHO-P group when compared with the CO group (2.75 +/- 0.72 vs 5.74 +/- 1.16; p = 0.03). There was no difference between the two groups in relation to the PINI. The CHO-P group showed a decrease in the both CRP elevation and CRP/albumin ratio (p < 0.05). The proportion of patients who showed CRP/albumin ratio considered normal was significantly greater (p < 0.05) in the CHO-P group (87.5%) than in the CO group (33.3%). CONCLUSIONS: Shortening the pre-operative fasting using CHO and whey protein is safe and reduces insulin resistance and postoperative acute phase response in elective moderate operations. TRIAL REGISTRATION: ClinicalTrail.gov NCT01354249.

Source: Medline

Available in fulltext from Nutrition Journal at National Library of Medicine
Available in fulltext from Nutrition Journal at BioMedCentral
Available in fulltext from Nutrition Journal at EBSCOhost

29. Safety of oral glutamine in the abbreviation of preoperative fasting: a double-
blind, controlled, randomized clinical trial.

**Author(s)** Borges Dock-Nascimento D, Aguilier-Nascimento JE, Caporossi C, Sepulveda Magalhaes Faria M, Bragagnolo R, Caporossi FS, Linetzky Waitzberg D

**Citation:** Nutricion Hospitalaria, January 2011, vol./is. 26/1(86-90), 0212-1611;1699-5198 (2011 Jan-Feb)

**Publication Date:** January 2011

**Abstract:** INTRODUCTION: No study so far has tested a beverage containing glutamine 2 h before anesthesia in patients undergoing surgery.OBJECTIVES: The aim of the study was to investigate: 1) the safety of the abbreviation of preoperative fasting to 2 h with a carbohydrate-L-glutamine-rich drink; and 2) the residual gastric volume (RGV) measured after the induction of anesthesia for laparoscopic cholecystectomies.METHODS: Randomized controlled trial with 56 women (42 (17-65) years-old) submitted to elective laparoscopic cholecystectomy. Patients were randomized to receive either conventional preoperative fasting of 8 hours (fasted group, n = 12) or one of three different beverages drunk in the evening before surgery (400 mL) and 2 hours before the initiation of anesthesia (200 mL). The beverages were water (placebo group, n = 12), 12.5% (240 mOsm/L) maltodextrine (carbohydrate group, n = 12) or the latter in addition to 50 g (40 g in the evening drink and 10 g in the morning drink) of L-glutamine (glutamine group, n = 14). A 20 F nasogastric tube was inserted immediately after the induction of general anesthesia to aspirate and measure the RGV.RESULTS: Fifty patients completed the study. None of the patients had either regurgitation during the induction of anesthesia or postoperative complications. The median (range) of RGV was 6 (0-80) mL. The RGV was similar (p = 0.29) between glutamine group (4.5 [0-15] mL), carbohydrate group (7.0 [0-80] mL), placebo group (8.5 [0-50] mL), and fasted group (5.0 [0-50] mL).CONCLUSION: The abbreviation of preoperative fasting to 2 h with carbohydrate and L-glutamine is safe and does not increase the RGV during induction of anesthesia.

Source: Medline

---

30. Preoperative nutritional support [French] Prise en charge nutritionnelle preoperaoire

**Author(s)** Coti-Bertrand P., Bachman P., Petit A., Sztark F.

**Citation:** Nutrition Clinique et Metabolisme, December 2010, vol./is. 24/4(167-172), 0985-0562;1768-3092 (December 2010)

**Publication Date:** December 2010

**Abstract:** Undernutrition is an independent factor of postoperative morbidity and mortality. The aim of a preoperative nutritional support is to enhance immune, muscular and cognitive functions, and to support wound healing. This nutritional support (e.g. dietary management, enteral or parenteral nutrition) should be limited to high-risk situations with a beneficial effect of nutrition for the patient: undernutrition, major surgery and elderly. Preoperative nutritional support should be scheduled for at least 7 to 10 days before the surgery. During the preoperative period, the type and route of an eventual postoperative nutritional assistance should be anticipated. In the case of emergency surgery, nutritional assessment of the patient should be done as soon as possible before surgery or in the 48-h postoperative period. Finally, in elective surgery, preoperative fasting should be limited to 2-3 hours for clear liquids and 6 hours for solids. 2010.

Source: EMBASE

---

31. Preoperative fasting doesn't mean nothing after midnight.

**Author(s)** Sendelbach S

**Citation:** American Journal of Nursing, September 2010, vol./is. 110/9(64-5), 0002-936X;1538-7488 (2010 Sep)

**Publication Date:** September 2010

Source: Medline
32. Perioperative fasting: A time to relook

Author(s) Subrahmanyam M., Venugopal M.

Citation: Indian Journal of Anaesthesia, September 2010, vol./is. 54/5(374-375), 0019-5049 (September - 2010)

Publication Date: September 2010

Source: EMBASE

33. "Nil per oral after midnight": Is it necessary for clear fluids?

Author(s) Dalal KS, Rajwade D, Suchak R

Citation: Indian Journal of Anaesthesia, September 2010, vol./is. 54/5(445-7), 0019-5049:0976-2817 (2010 Sep)

Publication Date: September 2010

Abstract: Fasting before general anaesthesia aims to reduce the volume and acidity of stomach contents, thus reducing the risk of regurgitation and aspiration. Recent guidelines have recommended a shift in fasting policies from the standard 'nil per oral from midnight' to a more relaxed policy of clear fluid intake a few hours before surgery. The effect of preoperative oral administration of 150 ml of water 2 h prior to surgery was studied prospectively in 100 ASA I and II patients, for elective surgery. Patients were randomly assigned to two groups. Group I (n = 50) was fasting overnight while Group II (n = 50) was given 150 ml of water 2 h prior to surgery. A nasogastric tube was inserted after intubation and gastric aspirate was collected for volume and pH. The gastric fluid volume was found to be lesser in Group II (5.5 +/- 3.70 ml) than Group I (17.1 +/- 8.2 ml) which was statistically significant. The mean pH values for both groups were similar. Hence, we conclude that patients not at risk for aspiration can be allowed to ingest 150 ml water 2 h prior to surgery.

Source: Medline

34. The effects of fasting and refeeding with a 'metabolic preconditioning' drink on substrate reserves and mononuclear cell mitochondrial function.

Author(s) Awad S, Stephenson MC, Placidi E, Marciani L, Constantin-Teodosiu D, Gowland PA, Spiller RC, Fearon KC, Morris PG, Macdonald IA, Lobo DN

Citation: Clinical Nutrition, August 2010, vol./is. 29/4(538-44), 0261-5614;1532-1983 (2010 Aug)

Publication Date: August 2010

Abstract: BACKGROUND AND AIMS: Preoperative fasting induces metabolic stress and leads to reduced postoperative insulin sensitivity, changes attenuated by preoperative carbohydrate loading. However, the mechanisms underlying these effects remain unknown. We investigated the dynamic changes in substrate metabolism and mononuclear cell mitochondrial function after fasting followed by refeeding with a drink [ONS (Fresenius Kabi, Germany)] designed to improve metabolic function preoperatively.

METHODS: Twelve healthy volunteers took part in this study. They were fed a standardized meal and studied 4h later (baseline 'fed' state), after 12 and 24h of fasting, and 2, 4 and 6h after ingestion of ONS (contained 100g carbohydrate, 30g glutamine, and antioxidants). Changes in liver and muscle glycogen and lipids were studied using (13)C and (1)H magnetic resonance spectroscopy. The activities of mitochondrial electron transport chain complexes I, II and IV in blood mononuclear cells were measured spectrophotometrically.

RESULTS: Compared to the baseline fed state, 12 and 24h fasts led to 29% and 57% decreases (P<0.001) in
liver glycogen content, respectively. Fasting for 24h decreased mitochondrial membrane complexes I (-72%, P<0.05), II (-49%, P<0.01) and IV (-41%, P<0.05) activities compared to those following a 12h fast. A 23% increase (P<0.05) in calf intramyocellular lipid (IMCL) content occurred after a 24h fast. Liver glycogen reserves increased by 47% (P<0.05) by 2h following ingestion of ONS.

CONCLUSIONS: Short-term fasting (up to 24h) affected mononuclear cell mitochondrial function adversely and increased IMCL content. Refeeding with ONS partially reversed the changes in liver glycogen. Copyright 2010 Elsevier Ltd and European Society for Clinical Nutrition and Metabolism. All rights reserved.

Source: Medline

35. Is a six hour fast after a rice meal sufficient before upper gastrointestinal endoscopy?.

Author(s) De Silva AP, Niriella MA, Perera H, Aryasingha S, Kalubovila U, Manchanayake J, Dassanayake AS, Devanarayana NM, Pathmeswaran A, de Silva HJ

Citation: Scandinavian Journal of Gastroenterology, August 2010, vol./is. 45/7-8(987-91), 0036-5521;1502-7708 (2010 Aug)

Publication Date: August 2010

Abstract: OBJECTIVE: Rice is the staple diet in many Asian countries. Current endoscopic guidelines advice a 6 h fast for solids and a 4 h fast for liquids before the procedure. However, these guidelines focus on a Western type diet. The aim of the study was to determine if a 6 h fast for rice is sufficient prior to upper gastrointestinal endoscopy (UGIE).

PATIENTS AND METHODS: After informed consent, 212 patients referred for UGIE, who had no alarm symptoms, were randomized into two groups in preparation for UGIE. Fasting 6 h after a rice meal (R6) or fasting 10 h after a rice meal (R10). All meals contained lentils and an egg, and were isocaloric. Endoscopic vision was graded as poor, average, or good.

RESULTS: In the R10 group (n = 107) vision was poor in 2 (1.9%), average in 7 (6.5%), and good in 98 (91.6%). While in the R6 group (n = 105) vision was poor in 30 (28.6%), average in 19 (18.1%), good in 56 (53.3%). The observed difference of percentages among the two groups for endoscopic vision was significant (M-H Chi-Square for trend = 25.67; df = 1; p < 0.001).

CONCLUSIONS: Fasting for 6 h after a rice based meal seems inadequate for UGIE. Fasting for 10 h significantly improves endoscopic vision. Current guidelines need to be re-evaluated for populations where rice is the staple diet.

Source: Medline

Available in fulltext from Scandinavian Journal of Gastroenterology at EBSCOhost

36. Review of studies and guidelines on fasting and procedural sedation at the emergency department.

Author(s) Molina JA, Lobo CA, Goh HK, Seow E, Heng BH

Citation: International Journal of Evidence-Based Healthcare, June 2010, vol./is. 8/2(75-8), 1744-1595;1744-1609 (2010 Jun)

Publication Date: June 2010

Abstract: AIM: Procedural sedation and analgesia allows urgent procedures to be performed safely by preserving patients' airway reflexes. Fasting, which is required before deeper levels of sedation, and where the airway reflexes are not preserved, is difficult to impose in emergencies. This paper aims to synthesise evidence on the need for pre-procedure fasting to minimise aspiration among adults undergoing procedural sedation and analgesia for emergency procedures.

METHODS: Overviews, guidelines with graded recommendations and primary studies on aspiration and pre-procedure fasting in procedural sedation and analgesia were retrieved from Medline, Cochrane, and Center for Reviews and Dissemination Databases. Terms searched were procedural sedation, fasting, emergency and sedation.

RESULTS: One primary study and one guideline were included. The American College of Emergency Physicians Clinical Policies Subcommittee on Procedural Sedation and Analgesia issued a recommendation based on 'preliminary, inconclusive or conflicting evidence, or on panel consensus'. The recommendation states:
The primary study conducted by Bell in an emergency department in Australia compared patients who last ate or drank more than 6 and 2 h from induction, respectively, with those who last ate or drank within 6 and 2 h. There were no cases of aspiration in both groups. Out of 118 patients who fasted, 1 (0.8%) vomited, as did one of 282 patients (0.4%) who did not fast.

**CONCLUSIONS:** Aspiration risk is expected to be lower in procedural sedation and analgesia than in general anaesthesia. Current guidelines rely on expert consensus due to the lack of primary studies. Contextualisation of existing guidelines are quick and efficient strategies for developing locally relevant tools.

**Source:** Medline

Available in fulltext from *International Journal of Evidence-Based Healthcare* at EBSCOhost

**37. Randomized controlled trial of preoperative oral carbohydrate treatment in major abdominal surgery.**

**Author(s)** Mathur S, Plank LD, McCall JL, Shapkov P, McIlroy K, Gillanders LK, Merrie AE, Torrie JJ, Pugh F, Koea JB, Bissett IP, Parry BR

**Citation:** British Journal of Surgery, April 2010, vol./is. 97/4(485-94), 0007-1323;1365-2168 (2010 Apr)

**Publication Date:** April 2010

**Abstract:** Major surgery is associated with postoperative insulin resistance which is attenuated by preoperative carbohydrate (CHO) treatment. The effect of this treatment on clinical outcome after major abdominal surgery has not been assessed in a double-blind randomized trial.

**METHODS:** Patients undergoing elective colorectal surgery or liver resection were randomized to oral CHO or placebo drinks to be taken on the evening before surgery and 2 h before induction of anaesthesia. Primary outcomes were postoperative length of hospital stay and fatigue measured by visual analogue scale.

**RESULTS:** Sixty-nine and 73 patients were evaluated in the CHO and placebo groups respectively. The groups were well matched with respect to surgical procedure, epidural analgesia, laparoscopic procedures, fasting period before induction and duration of surgery. Postoperative changes in fatigue score from baseline did not differ between the groups. Median (range) hospital stay was 7 (2-35) days in the CHO group and 8 (2-92) days in the placebo group (P = 0.344). For patients not receiving epidural blockade or laparoscopic surgery (20 CHO, 19 placebo), values were 7 (3-11) and 9 (2-48) days respectively (P = 0.054).

**CONCLUSION:** Preoperative CHO treatment did not improve postoperative fatigue or length of hospital stay after major abdominal surgery. A benefit is not ruled out when epidural blockade or laparoscopic procedures are not used. Registration number: ACTRN012605000456651 (http://www.anzctr.org.au). Copyright (c) 2010 British Journal of Surgery Society Ltd. Published by John Wiley & Sons, Ltd.

**Source:** Medline

Available in fulltext from *British Journal of Surgery* at the ULHT Library and Knowledge Services’ eJournal collection

**38. Reducing preoperative fasting time: A trend based on evidence.**

**Author(s)** de Aguilar-Nascimento JE, Dock-Nascimento DB

**Citation:** World Journal of Gastrointestinal Surgery, March 2010, vol./is. 2/3(57-60), 1948-9366 (2010 Mar 27)

**Publication Date:** March 2010

**Abstract:** Preoperative fasting is mandatory before anesthesia to reduce the risk of aspiration. However, the prescribed 6-8 h of fasting is usually prolonged to 12-16 h for various reasons. Prolonged fasting triggers a metabolic response that precipitates gluconeogenesis and increases the organic response to trauma. Various randomized trials and meta-analyses have consistently shown that is safe to reduce the preoperative fasting time with a carbohydrate-rich drink up to 2 h before surgery. Benefits related to this shorter
Preoperative fasting include the reduction of postoperative gastrointestinal discomfort and insulin resistance. New formulas containing amino acids such as glutamine and other peptides are being studied and are promising candidates to be used to reduce preoperative fasting time.

Source: Medline

Available in fulltext from World Journal of Gastrointestinal Surgery at National Library of Medicine

39. Fasting periods and dehydration before elective caesarean section

Author(s) Mackenzie M., Yentis S., Woolnough M., Johnson M.

Citation: Anaesthesia, January 2010, vol./is. 65/1 SUPPL. 1(99), 0003-2409 (January 2010)

Publication Date: January 2010

Abstract: The aim of a fasting period before elective caesarean section is to reduce the risk of aspiration of gastric contents, should general anaesthesia be required. Guidance from the AAGBI suggests a minimum 2-h fasting period for clear fluids before general elective surgery [1]; in obstetrics, the ASA Obstetric Task Force recommends a similar period [2] although this is based largely on opinion. In the UK, there is a wide variation in practice [3]. Methods After Research Ethics Committee approval and informed consent, 60 healthy women booked for elective caesarean section were recruited to an observational study of postoperative urine output. As part of this study, the pre-operative fasting period and urinary and blood osmolarity at surgery and on the first postoperative day were recorded. Results The median (IQR [range]) starvation period for fluids was 12.6 (10.9-14.0 [2.7-20.7]) h. Mean (SD) plasma osmolarity at surgery and on day one was 282 (4.7) and 280 (4.7) mosm.l)1, respectively. Urine osmolarity is shown in Fig. 1. Discussion During the larger study of urine output, we came to realise that the midwives in our unit were advising patients booked for elective caesarean section to fast from the midnight before surgery. Despite this, there was a wide variation in the starvation times, although some of the longer fasting times are likely to reflect the operation start time. The combination of long fasting times with some of the high urine osmolarities seen suggests significant dehydration in some patients, indicating a need to re-evaluate our own departmental guidelines.

Source: EMBASE

Available in fulltext from Anaesthesia at EBSCOhost

Published Research - Google Scholar

From 1st fifty results:

Perioperative nutrition in abdominal surgery: recommendations and reality
Y Cerantola, F Grass, A Cristaudi... - ... research and practice, 2011 - hindawi.com
... FTN) were able to reduce postoperative complications in gastrointestinal (GI) surgical patients, when ... based guidelines in an attempt to standardize perioperative nutrition in abdominal surgery. ... Nevertheless, cost issues for outpatient nutrition and time restraints are obviously ...
Cited by 16 Related articles All 8 versions Cite More

Preoperative carbohydrate loading in contrast to fasting
O Ljungqvist - Wiener klinische Wochenschrift, 2010 - Springer
... the evidence behind the use of carbohydrate loading as part of the routine in surgical practice and as a ... This is the first time that this has been investigated, and the authors show that, at ... JR, et al (1986) Preoperative oral fluids: is a five-hour fast justified prior to elective surgery? ...
Cited by 4 Related articles All 8 versions Cite
Reducing preoperative fasting in elective adult surgical patients: a case–control study

S Power, DO Kavanagh, G McConnell, K Cronin… - Irish journal of medical ..., 2012 - Springer