Prise en charge péri-opératoire des patients bénéficiant d'une chirurgie hépatique et/ou présentant une hépatopathie

Gabriel THIERRY

Présentation SAC 05/2024

CHIRURGIE HÉPATIQUE = CHALLENGE

- Chirurgie digestive majeure
- Challenge hémorragique
- Challenge hémodynamique
- Challenge métabolique

RÉHABILITATION AMÉLIORÉE

Information Counselling
No bowel preparation
Carbohydrate loading No medication for sedation
Thrombo and antimicrobial prophylaxis
Anaesthetic protocol Epidural analgesia
Preventing PONV
Laparoscopy or minimal length incisions
No routine nasogastric tube
Preventing intra-operative hypothermia
Perioperative fluid restriction
No routine abdominal drainage
Urinary drainage
Preventing postoperative ileus
Postoperative epidural analgesia
Early postoperative oral diet
Early mobilization
Audit

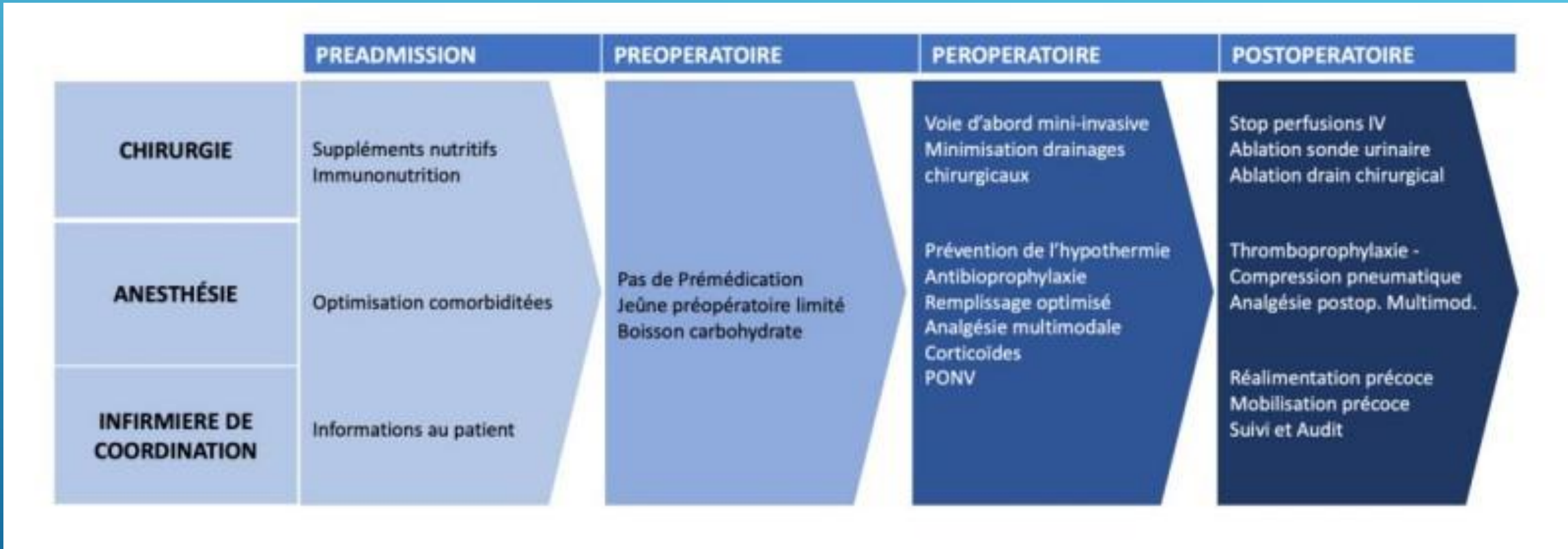
Recovery after laparoscopic colonic surgery with epidural analgesia, and early oral nutrition and mobilisation

L Bardram, P Funch-Jensen, P Jensen, M E Crawford, H Kehlet

Lancet 1995; **345:** 763

The first two patients in the programme were not discharged until day 3, despite having normal bowel function on day 2, because of logistic or personal problems. The next six patients followed the scheduled plan and went home on the 2nd postoperative day. 1 month postoperatively all patients were back to normal function. They were very satisifed with the entire perioperative course and all would recommend the procedure to others; no one felt they had been discharged too early.

RÉHABILITATION AMÉLIORÉE



RÉHABILITATION AMÉLIORÉE

ERAS® Society

World J Surg (2023) 47:11–34
https://doi.org/10.1007/s00268-022-06732-5

World Journal of Surgery

Check for updates

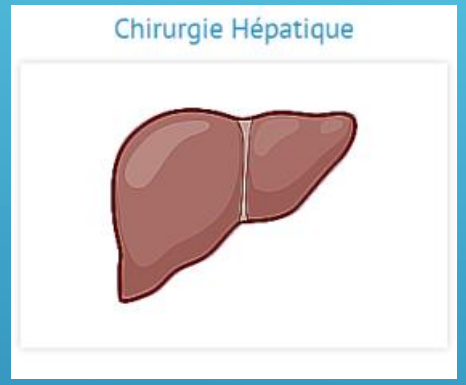
SCIENTIFIC REVIEW

Guidelines for Perioperative Care for Liver Surgery: Enhanced Recovery After Surgery (ERAS) Society Recommendations 2022

Notre protocole

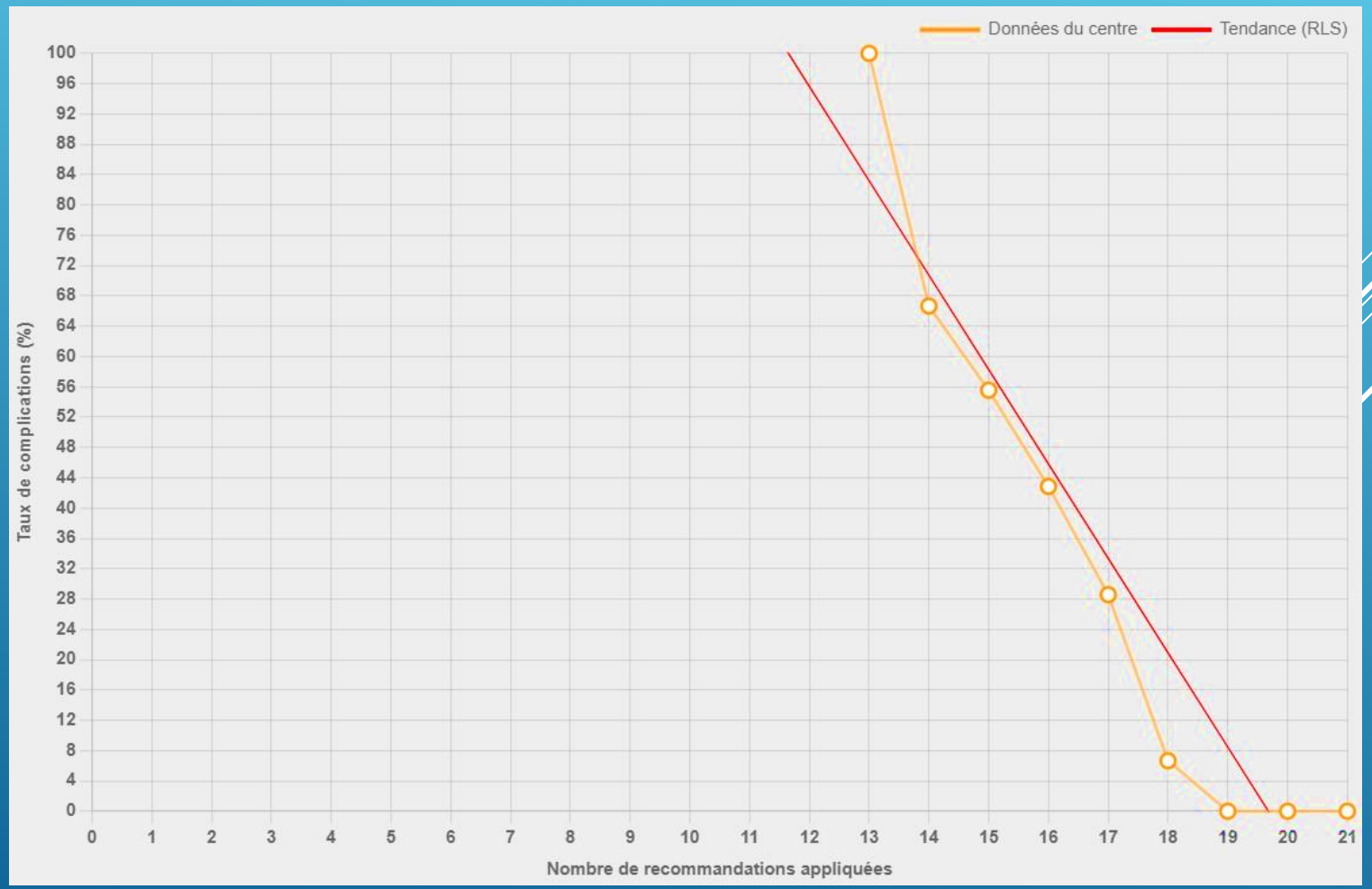
1. Written and oral patient information was provided by an anaesthetist at the time of the preoperative visit.
2. Fasting was as short as possible (6 hours for food, 2 hours for fluids expected)
3. Preoperative carbohydrate load 2-hour before induction of anaesthesia (except in case of insulin requiring diabetes mellitus or known gastroparesis)
4. Preoperative oral immunonutrition or nutrition therapy only if indicated.
5. No sedative premedication
6. Respect of antibioprophylaxis
7. Prevention of perioperative hypothermia
8. Laparoscopic approach
9. Locoregional anaesthesia (transversus abdominis plane block only)
10. Intravenous fluid and noradrenaline titrated using goal-directed-therapy.
11. Prevention of postoperative nausea and vomiting
12. Absence of abdominal drain
13. Absence or withdrawal of nasogastric tube at the end of surgery
14. Absence or withdrawal of urinary catheter at the end of surgery
15. Peroperative infusion of corticoids (dexamethasone)
16. Thromboprophylaxis
17. Early mobilisation (first 24h postoperative hours) with the help of a physiotherapist
18. Early oral intake (first 24h postoperative hours)
19. Multimodal peroperative analgesia (at least 3 modalities)
20. Multimodal postoperative analgesia (at least 3 modalities)
21. Use of anti-inflammatory drugs

IMPACT DE LA RÉHABILITATION AMÉLIORÉE SUR LA MORBIDITÉ POSTOPÉRATOIRE



CHU de Liège

GRACE
Groupe francophone de Réhabilitation Améliorée après Chirurgie



Impact of enhanced recovery program implementation on postoperative outcomes after liver surgery.

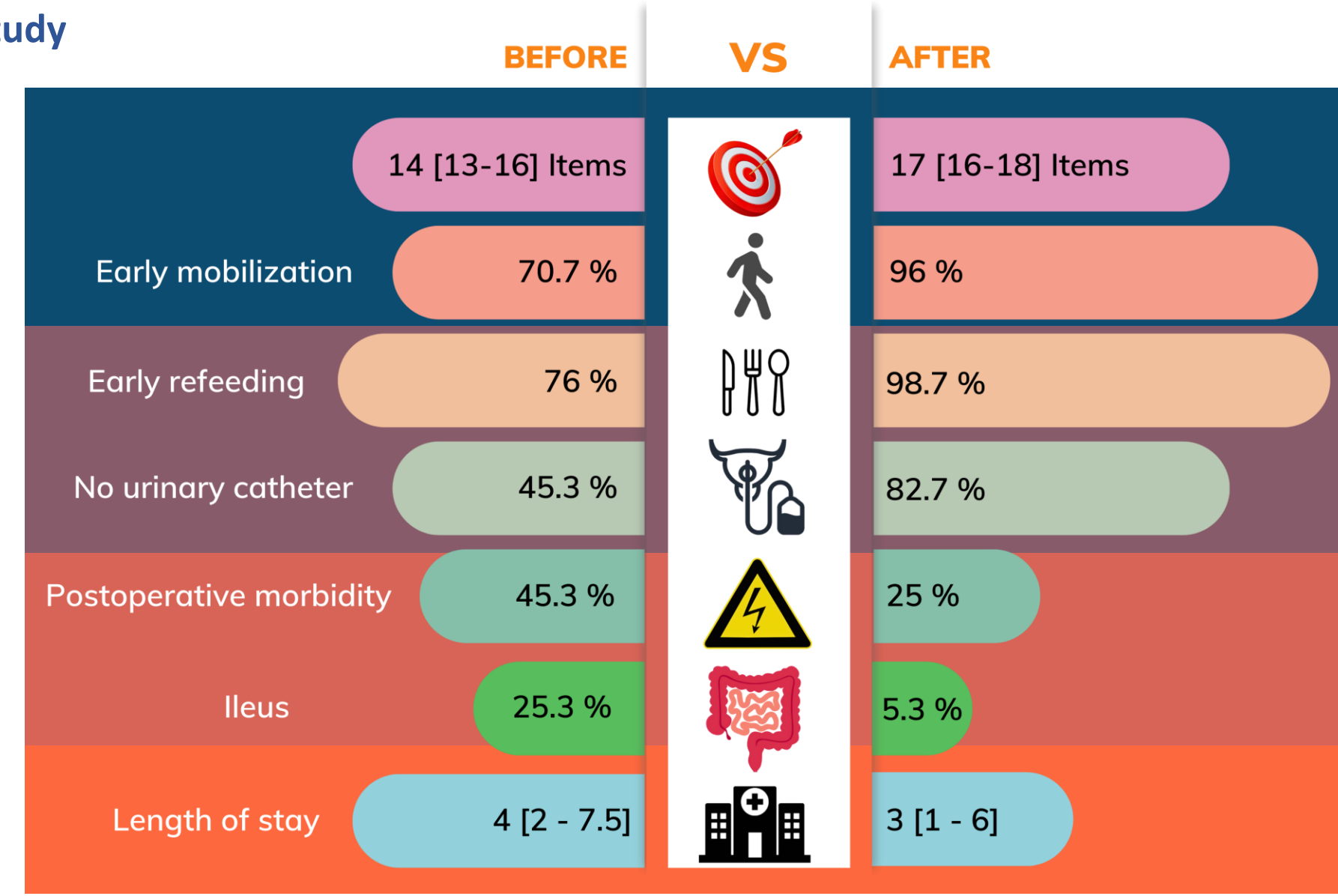
A monocentric retrospective study

Implementation of an enhanced rehabilitation protocol in liver surgery in December 2020

Application of 21 items Based on ERAS recommendations

Labeling of our hospital through an annual audit by the GRACE association

2 cohorts of 75 patients
(before and after ERP implementation)



Gabriel Thierry & al, *Surgical Endoscopy*, April 2024

DÉNUTRITION

Identifier et traiter une dénutrition → ↘ morbidité postop

- Chirurgie oncologique colorectale : 1/3
- Chirurgie oncologique upper-gastrointestinal : 1/2

ESPEN
European Society for Clinical Nutrition and Metabolism

- *Peri- or at least postoperative administration of specific formula enriched with immunonutrients (arginine, omega-3-fatty acids, ribonucleotides) should be given in malnourished patients undergoing major cancer surgery (Recommendation B).*

- *There is currently no clear evidence for the use of these formulae enriched with immunonutrients vs. standard oral nutritional supplements exclusively in the preoperative period (Recommendation 0).*

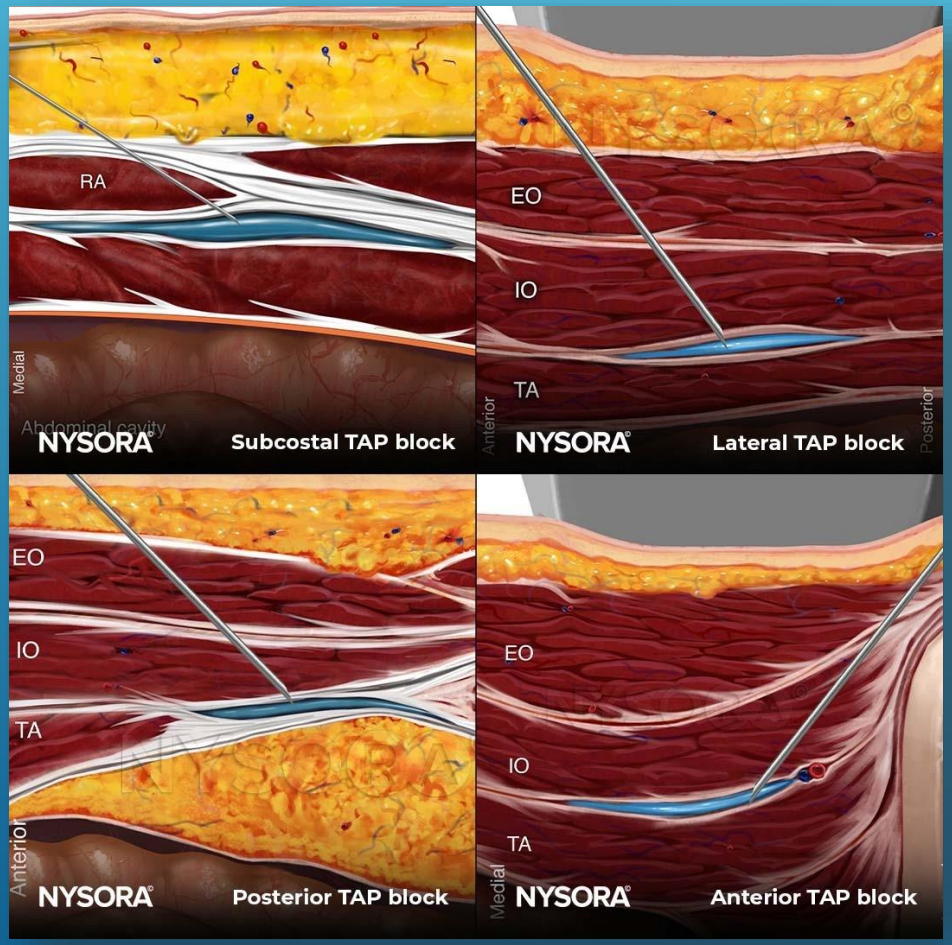
Consensus (89% agreement)

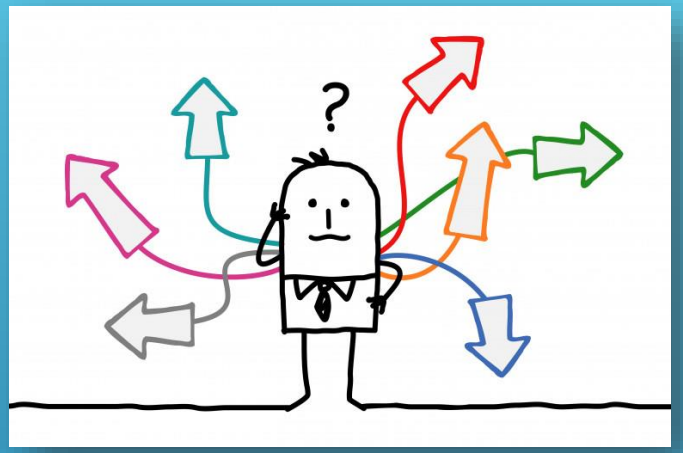
ANALGÉSIE MULTIMODALE

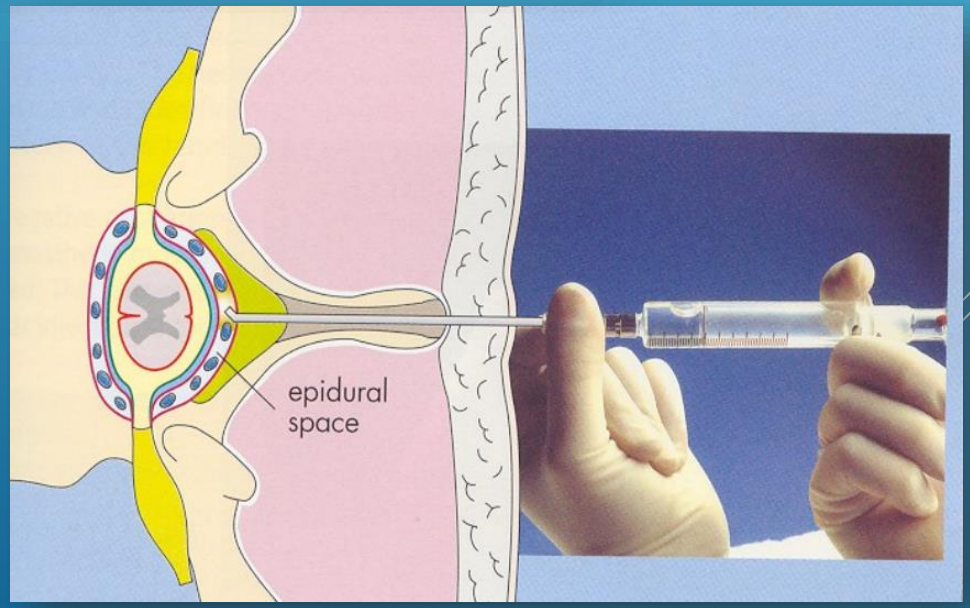
ERAS® Society

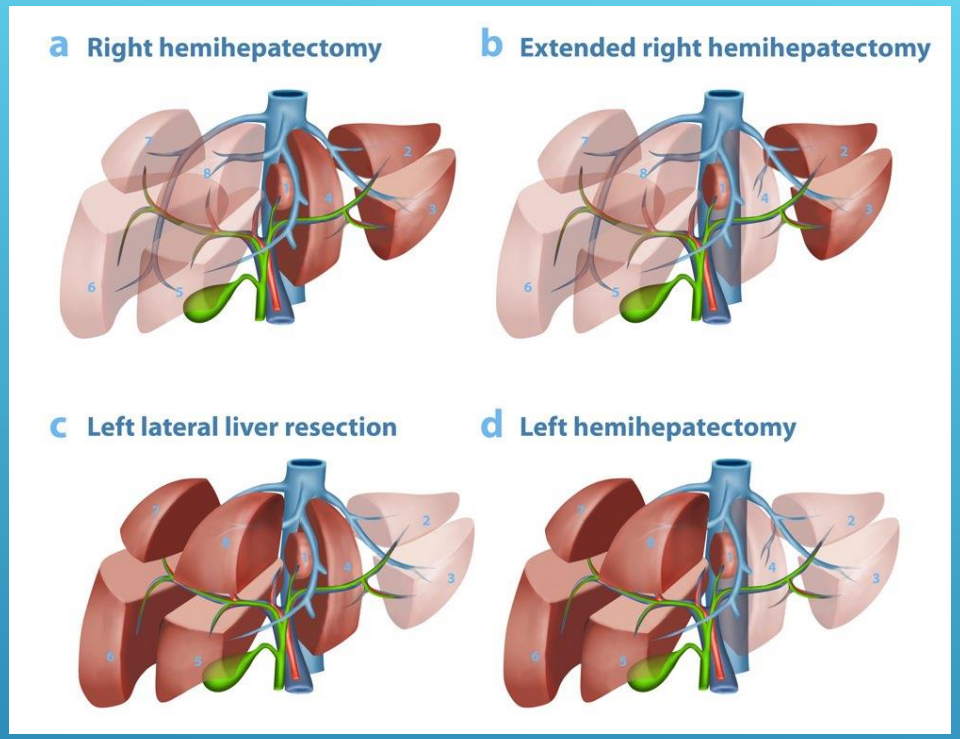
ERAS item	Summary	Evidence level	Grade of recommendation
12. Minimally invasive surgery	In trained teams and when clinically appropriate, laparoscopic liver resection is recommended since it reduces postoperative length of stay and complication rates.	Moderate	Strong
13. Epidural, postoperative intravenous, and postoperative per oral analgesia	For open liver surgery, thoracic epidural analgesia can provide excellent analgesia but has significant disadvantages. In fact, optimal postoperative management is key to avoid hypotension and mobility issues which can be detrimental to rapid recovery. Multimodal analgesia (including potential use of intrathecal opiates) is recommended.	High	Strong
	Regarding laparoscopic surgery, there is no need for regional anesthesia techniques, as multimodal analgesia combined with judicious intravenous opiates provides functional analgesia.	Low	Weak

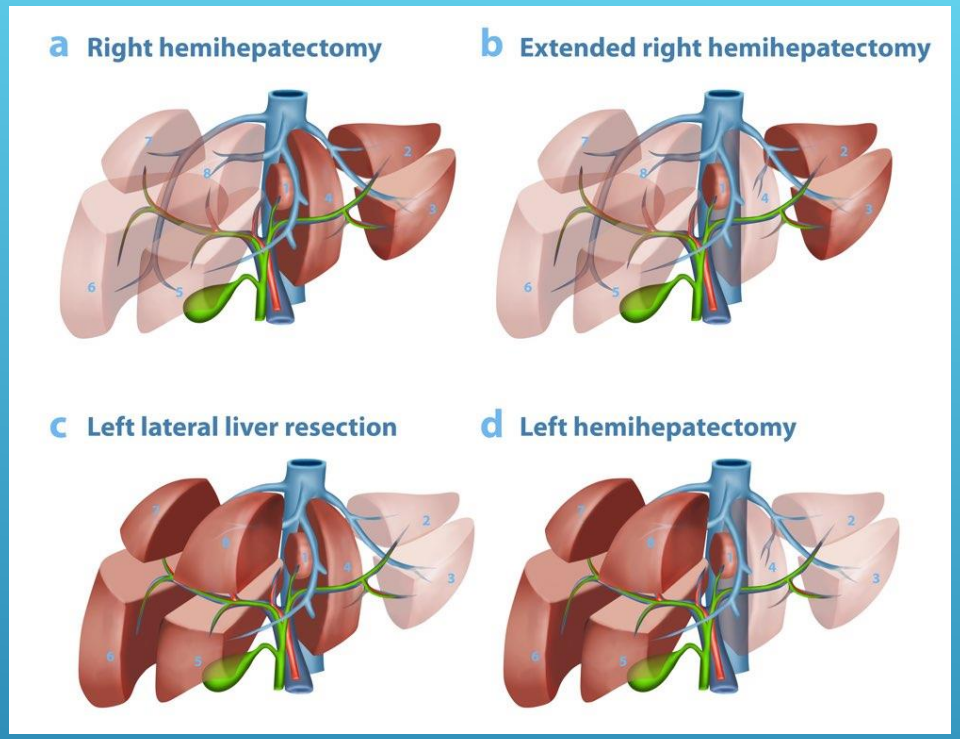
ANESTHÉSIE LOCORÉGIONALE

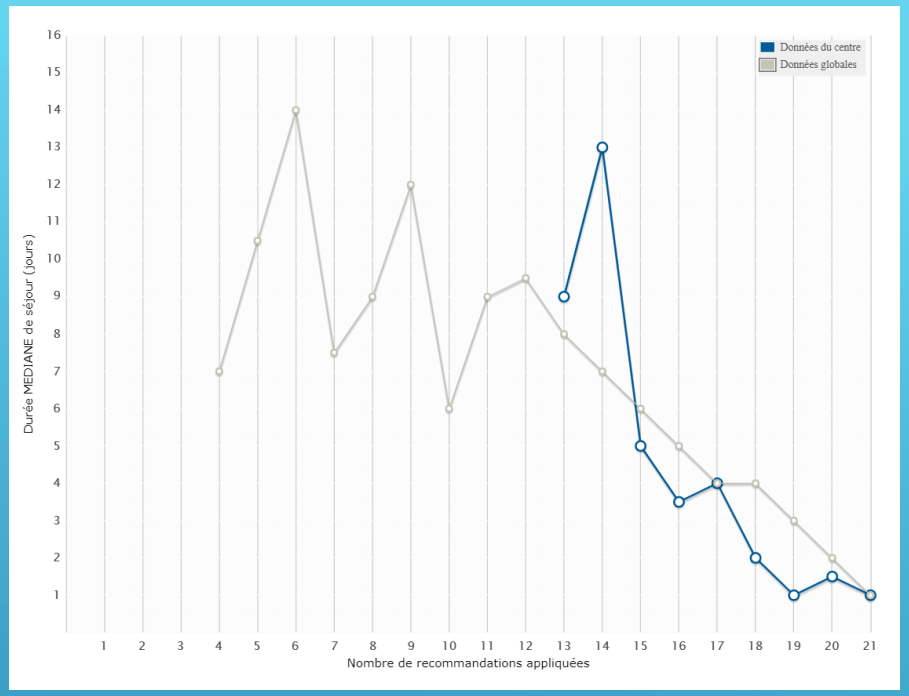







a Right hemihepatectomy
b Extended right hemihepatectomy
c Left lateral liver resection
d Left hemihepatectomy





Benchmark : 3.0 jours

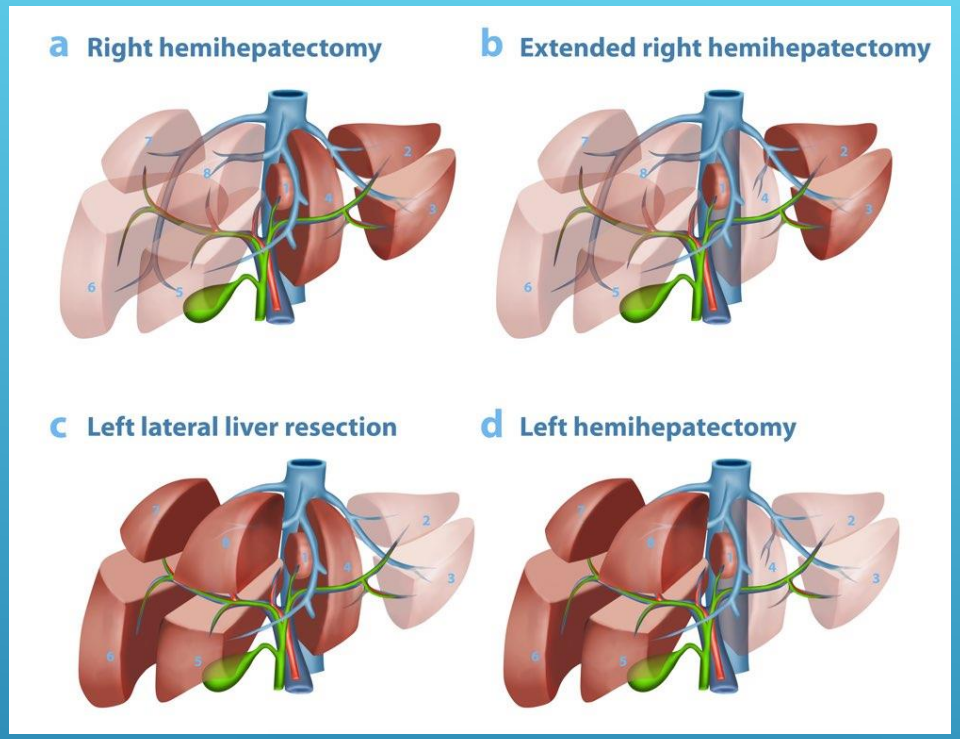
Benchmark = durée maximale de séjour des 25% de dossiers ayant les durées les plus courtes.

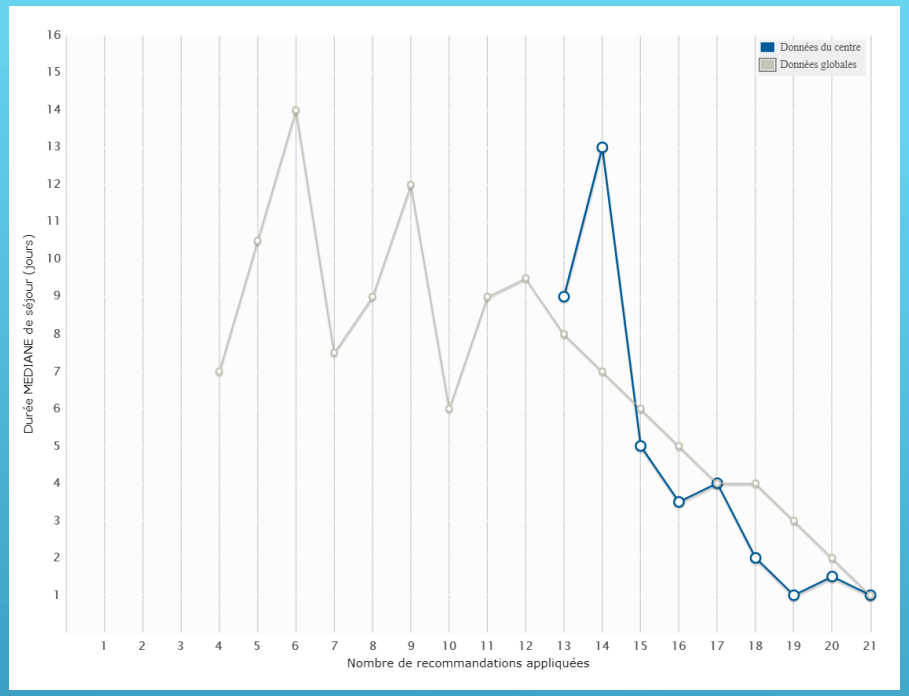
MES STATISTIQUES

Durée médiane réelle de séjour : **2.0 jours** (écart interquartile : **4.0 jours**)
Durée médiane théorique* de séjour : **2.0 jours** ** durée au bout de laquelle tous les critères de sortie étaient réunis*
Taux de réadmission dans le premier mois : **14.3 %**

ENSEMBLE DES CENTRES GRACE

Durée médiane réelle de séjour : **5.0 jours** (écart interquartile : **4.0 jours**)
Durée médiane théorique de séjour : **5.0 jours**
Taux de réadmission dans le premier mois : **5.0 %**





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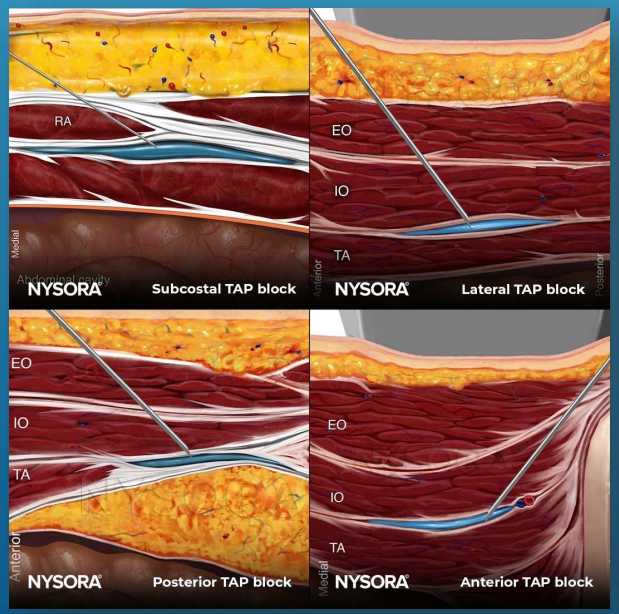
Taux de réadmission dans le premier mois : **5.0 %**



LIDOCAÏNE ET HÉPATECTOMIE

Lidocaine HCl *Systemic*

Xylocaine®

- **Ventricular Arrhythmia**
  - Stable VT: 1-1.5 mg/kg IV/IO + 0.5-0.75 mg/kg Q5-10min; 1-4 mg/min infusion after rhythm corrected
  - Pulseless VT/VF: 1-1.5 mg/kg IV/IO + 0.5-0.75 mg/kg Q5-10min; 1-4 mg/min infusion after return of perfusion
- **Status Epilepticus**
  - *Off-label:* 1 mg/kg IV, wait 2 min then 0.5 mg/kg IV, then 30 µg/kg/min continuous IV

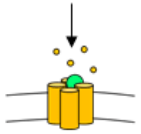
Arrhythmia
Cardiovascular Depression
Respiratory Depression
Audiovisual Disturbance
Dizziness/Seizures
Malignant Hyperthermia
Methemoglobinemia
Lethargy/Nausea (common)

Lidocaine Hypersensitivity
Amide Anesthetic HS
Adams-Stokes
WPW
Severe SA/AV/IV Block

Pregnancy Category B

Voltage-Gated Sodium Channel Blocker

Lidocaine



Na^+ Conduction Inhibited

↓ AP Initiation & Propagation

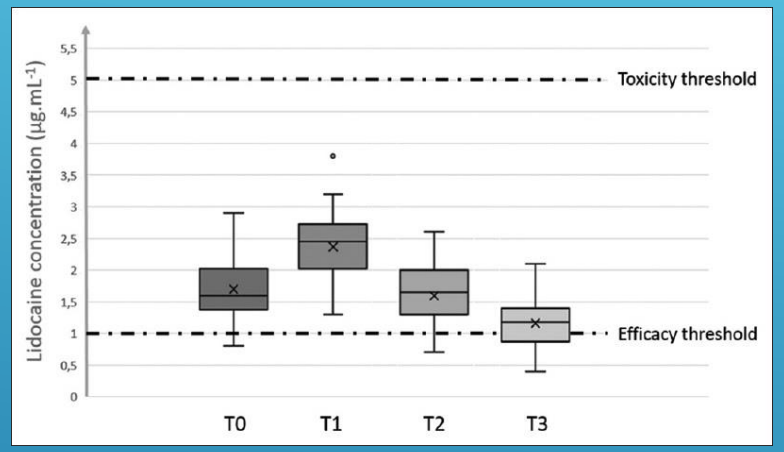
Cardiac & Neuronal Membranes Stabilized

Hepatic Metabolism, Active Metabolites
CYP1A2/3A4 Substrate, CYP2D6 Inhibitor

½-Life: 1.5-2h
Renal Excretion

$4.59/50 mL 1% lidocaine vial (Generic)

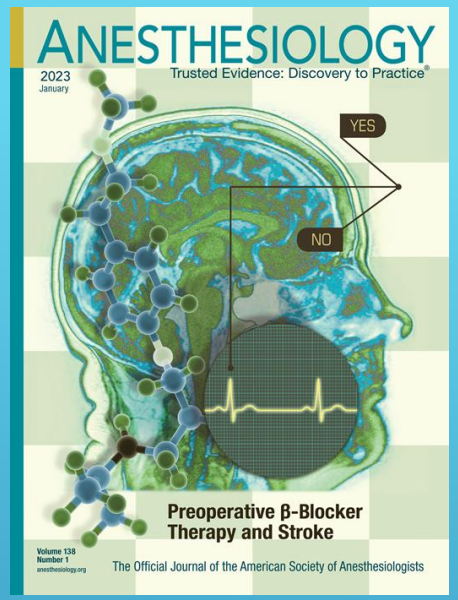
LIDOCAÏNE ET HÉPATECTOMIE MAJEURE



Source

Safety of perioperative intravenous lidocaine in liver surgery – A pilot study

Journal of Anaesthesiology Clinical Pharmacology : April 08, 2024



Perioperative Medicine | January 2023

Lidocaine Intraoperative Infusion Pharmacokinetics during Partial Hepatectomy for Living Liver Donation

Cara E. Crouch, M.D.; Barbara J. Wilkey, M.D.; Adrian Hendrickse, B.M., F.R.C.A.; Alexander M. Kaizer, Ph.D.; Björn Schniedewind, B.S.; Uwe Christians, M.D., Ph.D.; Thomas K. Henthorn, M.D.; Ana Fernandez-Bustamante, M.D., Ph.D.

+ Author and Article Information

Anesthesiology January 2023, Vol. 138, 71–81.

https://doi.org/10.1097/ALN.0000000000004422

Conclusions

Intravenous lidocaine infusions are an acceptable option for multimodal pain management in patients undergoing a hepatectomy for living donation if the lidocaine infusion is stopped when the liver resection is complete. Clearance of lidocaine is decreased proportionally to the remaining liver mass, which should guide lidocaine infusion administration or dosing adjustments for patients undergoing liver resection surgery.

AINS ET HÉPATECTOMIE

REVIEW ARTICLE: PDF ONLY

Controversies in the Perioperative Use of Nonsterodial Antiinflammatory Drugs

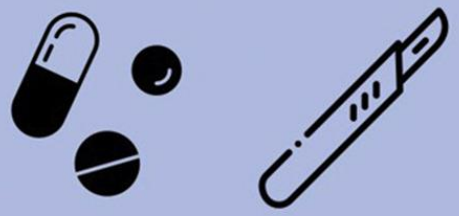
Souter, Andrew J. MBChB, FRCA; Fredman, Brian MBBCh; White, Paul F. PhD, MD, FFARACS

Author Information

Anesthesia & Analgesia 79(6):p 1178-1190, December 1994.

Systematic Review and Meta-Analysis of the Association Between Non-Steroidal Anti-Inflammatory Drugs and Operative Bleeding in the Perioperative Period

Opioid Crisis has led to Need for Increased use of Non-steroidal Anti-inflammatory Drugs (NSAIDs) in the Perioperative Period



Concern for bleeding prevents uptake

Searched 2,536 articles
74 manuscripts included
1987-2019

151,031 patients over a wide range of specialties

Three types of complications

Hematoma
Operating Room Takeback
Blood Transfusions

No evidence of significant difference in risk for complications in NSAID versus non-NSAID groups

Bongiovanni et al. J Am Coll Surg, May 2021

JACS

ACIDE TRANEXAMIQUE

Effect of tranexamic acid on surgical bleeding: systematic review and cumulative meta-analysis

OPEN ACCESS

BMJ

BMJ 2012;344:e3054 doi: 10.1136/bmj.e3054 (Published 21 May 2012)

World J Surg (2022) 46:441–449
https://doi.org/10.1007/s00268-021-06355-2

World Journal of Surgery

Check for updates

SCIENTIFIC REVIEW

Safety and Efficacy of Tranexamic Acid to Minimise Perioperative Bleeding in Hepatic Surgery: A Systematic Review and Meta-Analysis

http://dx.doi.org/10.1016/j.hpb.2016.09.005 HPB

ORIGINAL ARTICLE

Major liver resection, systemic fibrinolytic activity, and the impact of tranexamic acid

Conclusions: There is no thromboelastographic evidence of hyperfibrinolysis in patients undergoing major liver resection. TXA does not influence the change in systemic fibrinolysis; it may reduce bleeding through a different mechanism of action.

ACIDE TRANEXAMIQUE

EJA European Journal of Anaesthesiology

ANAESTHESIA

Oral as compared to intravenous tranexamic acid to limit peri-operative blood loss associated with primary total hip arthroplasty

A randomised noninferiority trial

Piette, Nicolas; Beck, Florian; Carella, Michele; Hans, Gregory; Maesen, Didier; Kurth, William; Lecoq, Jean-Pierre; Bonhomme, Vincent L.

Author Information

European Journal of Anaesthesiology 41(3):p 217-225, March 2024. | **DOI:** 10.1097/EJA.0000000000001950

Biodisponibilité de 50%

Posologie préopératoire H-2 :2gr (4 cp de 500mg)

GESTION DE LA VENTILATION

EJA

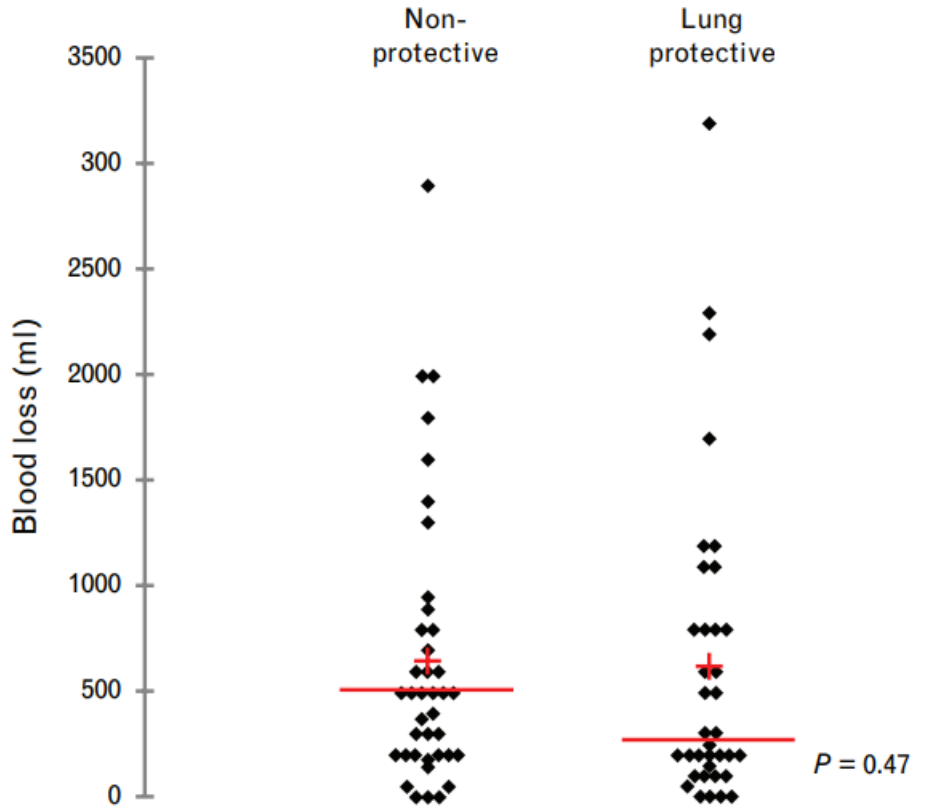
Eur J Anaesthesiol 2016; **33:**292–298

ORIGINAL ARTICLE

The effects of intraoperative lung protective ventilation with positive end-expiratory pressure on blood loss during hepatic resection surgery

A secondary analysis of data from a published randomised control trial (IMPROVE)

Arthur Neuschwander, Emmanuel Futier, Samir Jaber, Bruno Pereira, Mathilde Eurin, Emmanuel Marret, Olga Szymkewicz, Marc Beaussier and Catherine Paugam-Burtz



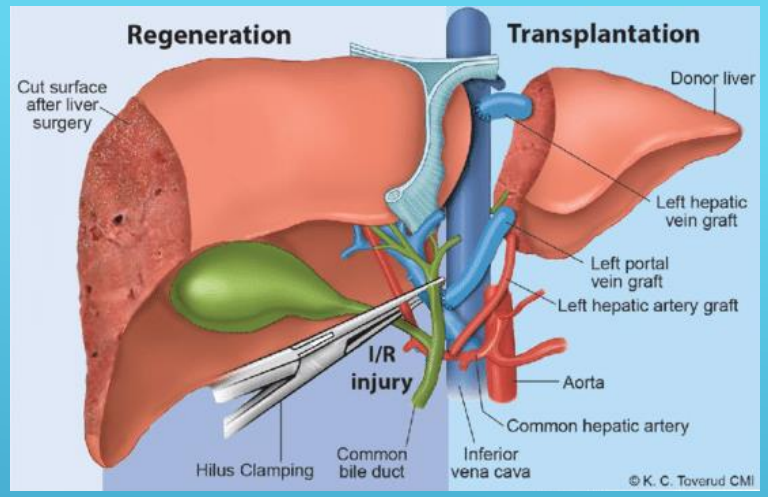
Intraoperative bleeding in the non-protective and lung protective ventilation groups. The red crosses are means and the red horizontal bars are medians.

MANŒUVRES DE PRINGLE

- **Préconditionnement ischémique (5 min)**

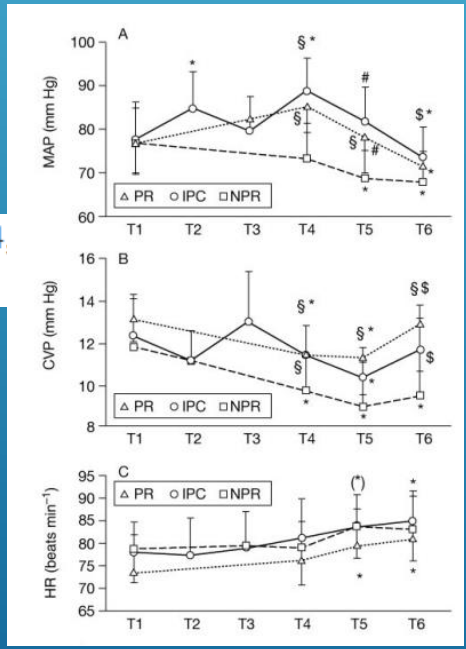
Puis phases de 15-20 min

5 min de déclampage entre chacune

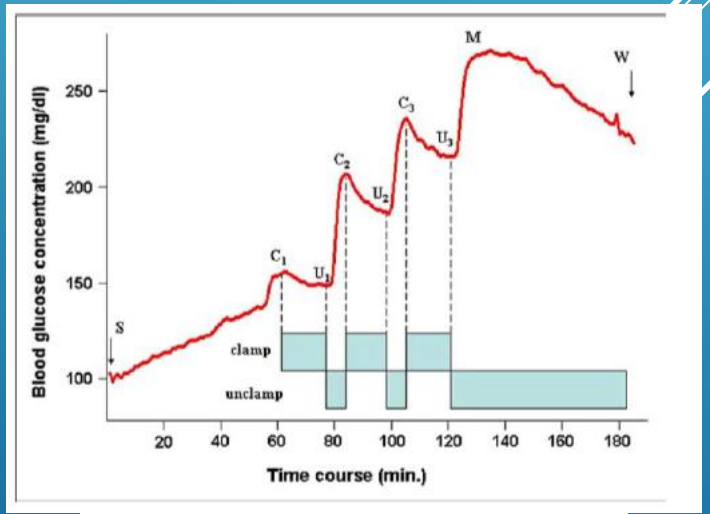


- **Variations hémodynamiques**

BJA: British Journal of Anaesthesia, Volume 93, Issue 2, August 2004
https://doi.org/10.1093/bja/aeh195

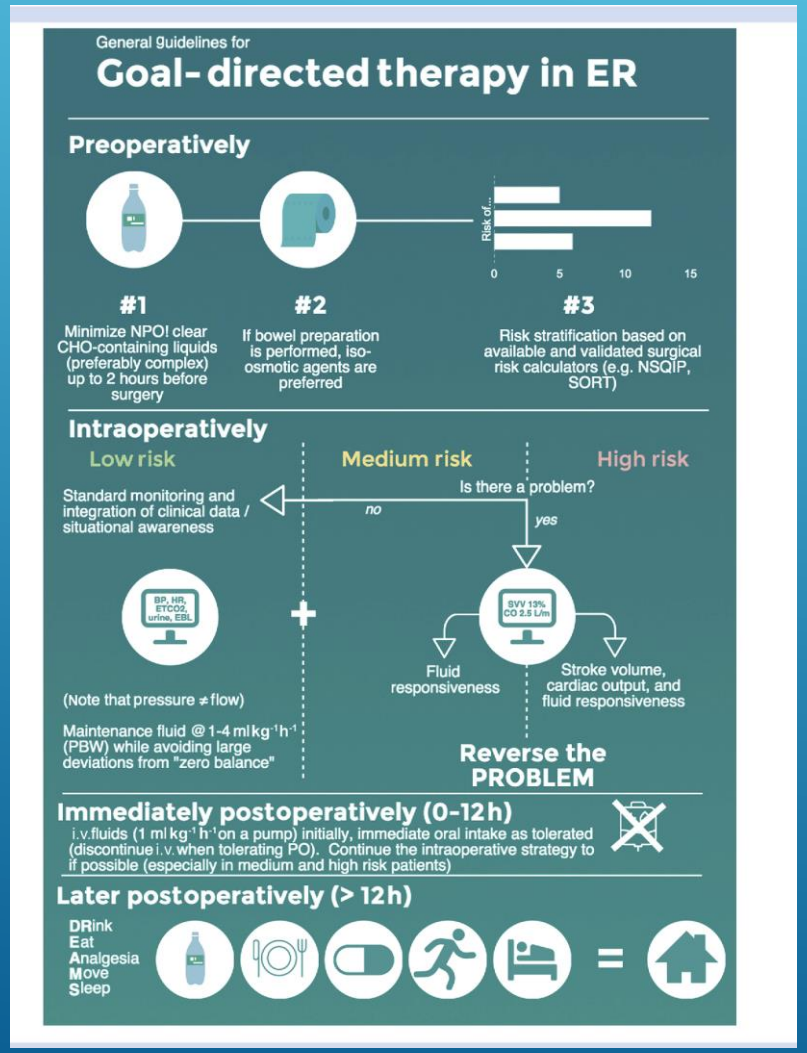


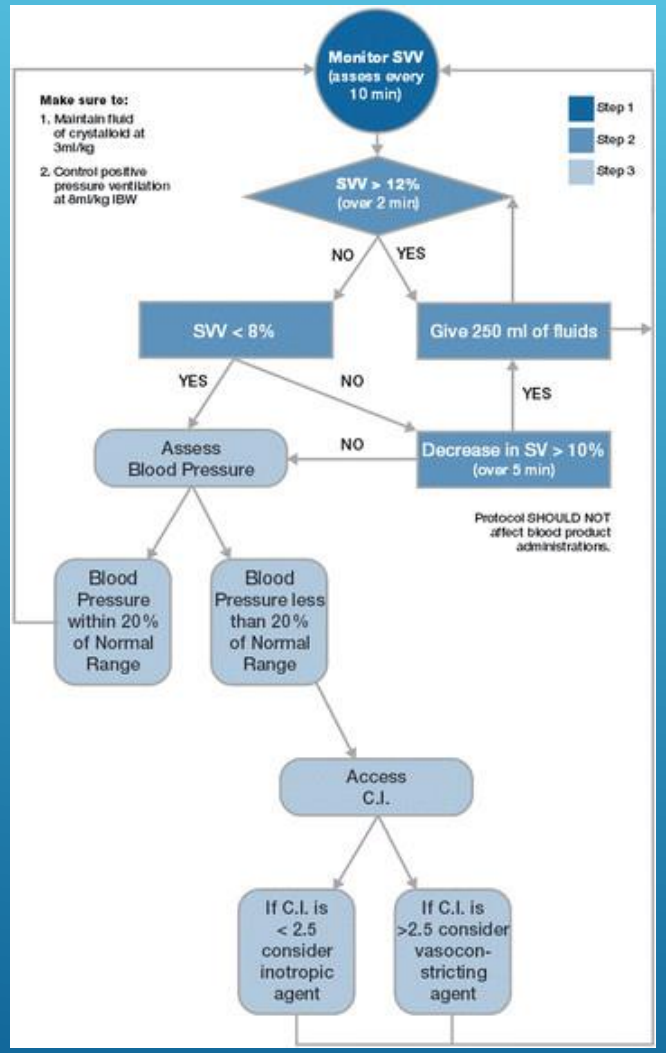
- **Hyperglycémies +++**



The American Journal of Surgery
Volume 199, Issue 1, January 2010, Pages 8-13

GESTION DE LA VOLEMIE
= GOAL DIRECTED FLUID THERAPY





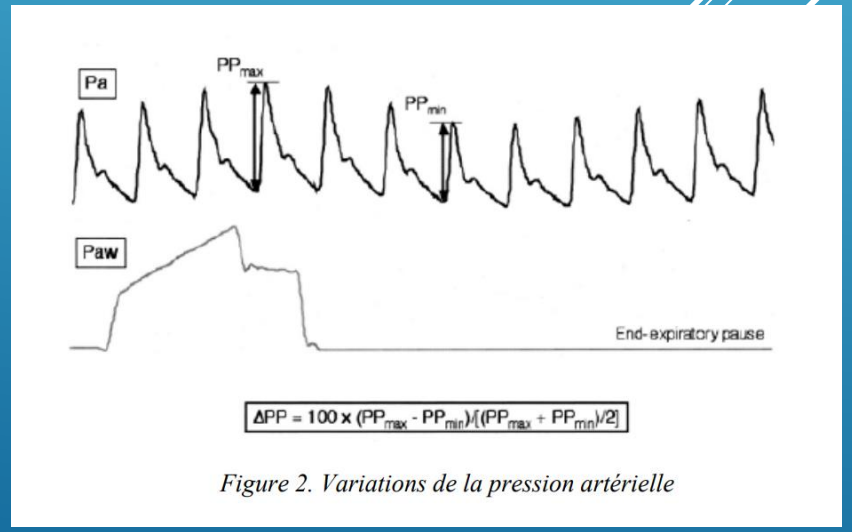


Figure 2. Variations de la pression artérielle

REVIEW ARTICLE

Central venous pressure and liver resection: a systematic review and meta-analysis

Michael J. Hughes, Nicholas T. Ventham, Ewen M. Harrison & Stephen J. Wigmore

Department of Clinical Surgery, Royal Infirmary of Edinburgh, Edinburgh, UK

All surgeries
Low PVC = ↘ EBL
but same morbidity

ORIGINAL ARTICLE

Goal-directed fluid therapy *vs.* low central venous pressure during major open liver resections (GALILEO): a surgeon- and patient-blinded randomized controlled trial

Iris M. Jongerius[1,*], Timothy H. Mungroop[1,2*], Zühre Uz[2], Bart F. Geerts[1], Rogier V. Immink[1], Martin V.H. Rutten[1], Markus W. Hollmann[1], Thomas M. van Gulik[2], Marc G. Besselink[2] & Denise P. Veelo[1]

[1]Amsterdam UMC, University of Amsterdam, Department of Anesthesiology, and [2]Amsterdam UMC, University of Amsterdam, Department of Surgery, Cancer Center Amsterdam, Meibergdreef 9, Amsterdam, the Netherlands

Major, Open. GDFT = EBL and morbidity

GESTION DE LA GLYCÉMIE

-> CHARGE GLUCIDIQUE PRÉOPÉRATOIRE

- **400 ml le matin de l'intervention : G12,5% ou jus de pomme/oasis**

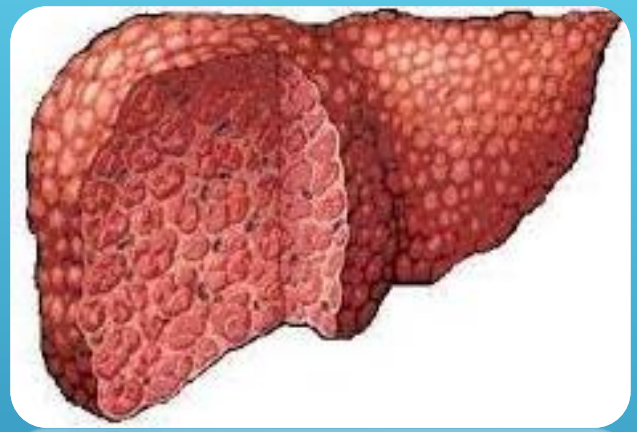
- ↓ Résistance à l'insuline postopératoire
  (Multicentric RCT 662 p : Ann Surg 2018)

- ↓ DMS en chirurgie abdominale majeure
  (3 MT 2013-17 1500-3000 p : Brit J surg)

- Amélioration du confort patient

Pas de diminution des taux de complications postopératoires

ANESTHÉSIE ET CHIRURGIE CHEZ LE CIRRHOTIQUE = CHALLENGE



- Patient à risque élevé
- Challenge hémorragique
- Challenge analgésique
- Challenge métabolique

PRISE EN CHARGE (PRÉ)PÉRIOPÉRATOIRE

⇗ **morbidité** :

- ⇗ **complications infectieuses**
- ⇗ taux de transfusion
- ⇗ décompensation cardiaque
- ⇗ décompensation œdémato-ascitique

- Evaluer la gravité de l'hépatopathie
  - Anticiper les risques liés à la chirurgie
    - Corriger ce qui peut l'être
      - Adapter notre anesthésie

MELD (*MODEL FOR END-STAGE LIVER DISEASE*)

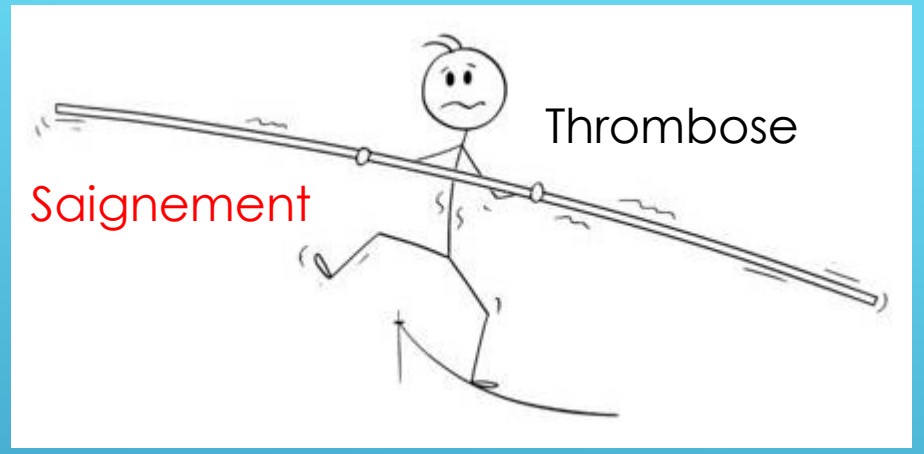
- Patrick Kamath : 2001
- 3,78 x ln(**bilirubinémie** *mg/dL*)
  + 1,12 x ln(**INR**)
  + ln(**créatininémie** *mg/dL*) + 6,43
- 2016 : ajout de la valeur de Na sérique = **MELD-Na Score**
- *Si dialyse 2x/semaine : créatininémie encodée 4 mg/dL*

EN PRATIQUE

- Si MELD ≤ 8 : Risque de morbidité périopératoire faible
- Si MELD 9 - 14 : Risque de morbidité périopératoire élevé
  Indication chirurgicale prudente
- Si MELD ≥ 15 : Intervention non vitale contre-indiquée

Assessing the risk of surgery in patients with liver disease. Cleve Clin J Med 2006 Apr;73(4):398-404.

CIRRHOSE ET HÉMOSTASE



↘ Synthèse facteurs de coagulation
facteurs inhibiteurs
protéines de la fibrinolyse

⇗ INR ≠ ~~⇗ risque hémorragique~~
= ⇗ degré de sévérité de la cirrhose

Thrombopénie (+ thrombopathie) et afibrinogénémie = ⇗ risque hémorragique

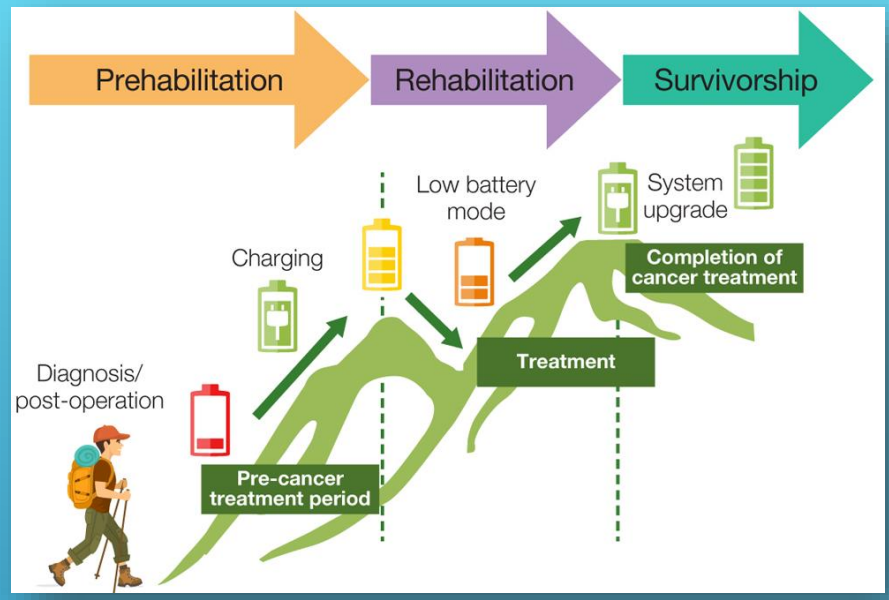
- **En pratique** (empirique, efficience non prouvée) :

Plaquettes pour taux > 50.000

PFC (15 mL/kg) si Quick < 50% (INR 1,6) ou TCA ≥ + 4 sec

Fibrinogène 30mg/kg si saignement et fibri < 1,5 g/L

PRÉHABILITATION



- Kinésithérapie préopératoire
- Sevrage OH (4 semaines)
- Prise en charge pluridisciplinaire :
  - Optimisation du traitement (diurétiques, ponction ascite,…)
  - Bilan/Suivi nutritionnel
  - Suivi psychologique -> Sevrage
  - Bilan globale : ETT, gastroscopie

The influence of prehabilitation in patients with liver cirrhosis before liver transplantation: a randomized clinical trial

Ľubomír SKLADANÝ [1, 2], Dávid LÍŠKA [3] *, Daniel GURÍN [4], Pavol MOLČAN [1], Roman BEDNÁR [5], Janka VNENČÁKOVÁ [1], Tomáš KOLLER [6]

ÉTAT NUTRITIONNEL ET CIRRHOSE

- **Cirrhose → Dénutrition fréquente**

  60% des patients cirrhotiques Child-Pugh C

Identifier et traiter une dénutrition en préop → ↘ morbidité postop

- ✓ Diagnostic à la consultation préop
- ✓ Renutrition préopératoire (SNO/*immunonut*)
- ✓ Postposer l'intervention si besoin (7j préop minimum)
- ✓ Hospitaliser pour prise en charge nutritionnelle si indiquée

Diagnostic de dénutrition et cirrhose

- Oublier les protéines sériques (albumine, préalbumine)
- Rester critique face au BMI (œdème, ascite)

- Le mieux :

  La calorimétrie

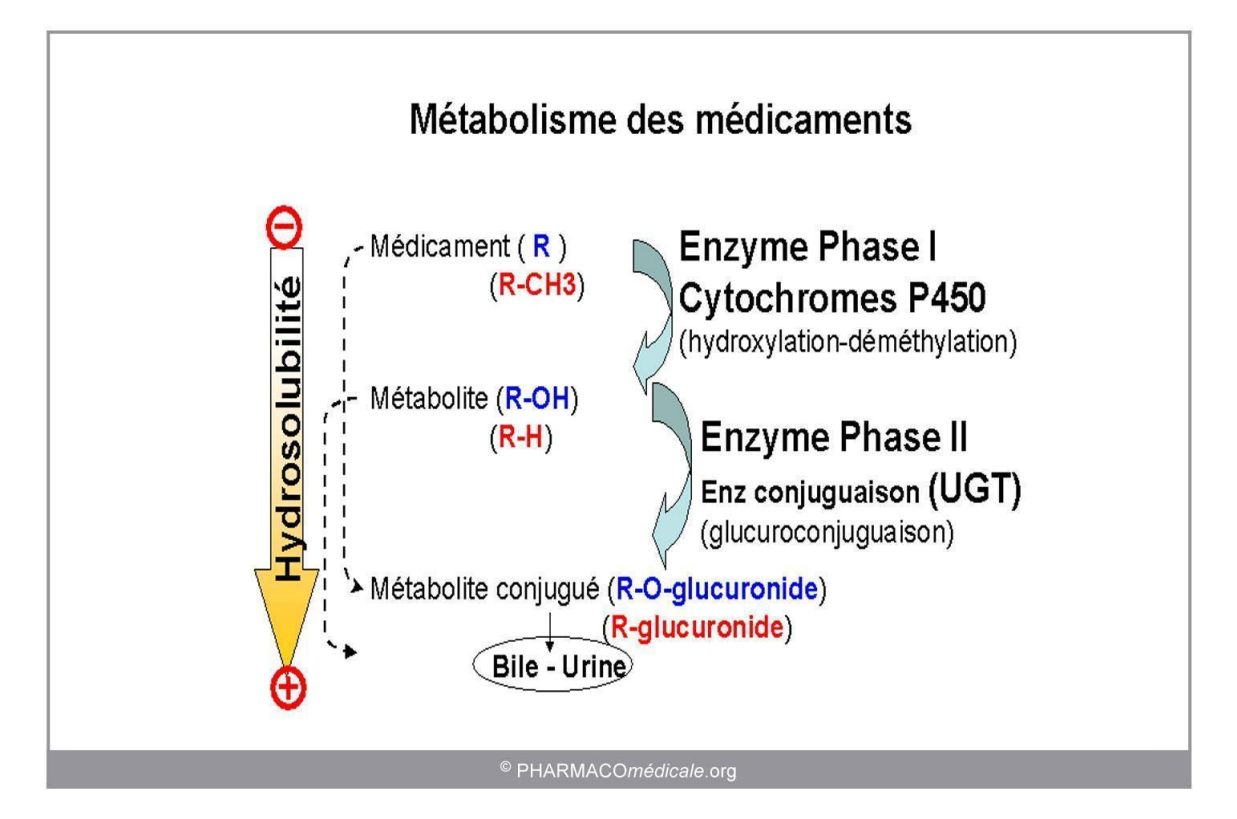
  Estimation radiologique de la sarcopénie

  → *Difficile en pratique clinique*

Rechercher :

BMI < 20 / Perte de poids > 10% / ⇘ Apports

MÉTABOLISME HÉPATIQUE ET CIRRHOSE



S'y ajoutent les conséquences de la cirrhose :

Hypoalbuminémie – ⇘ liaison protéique, ⇗ fraction libre

Hypertension portale → shunt porto-systémique → ⇘ 1er passage hépatique

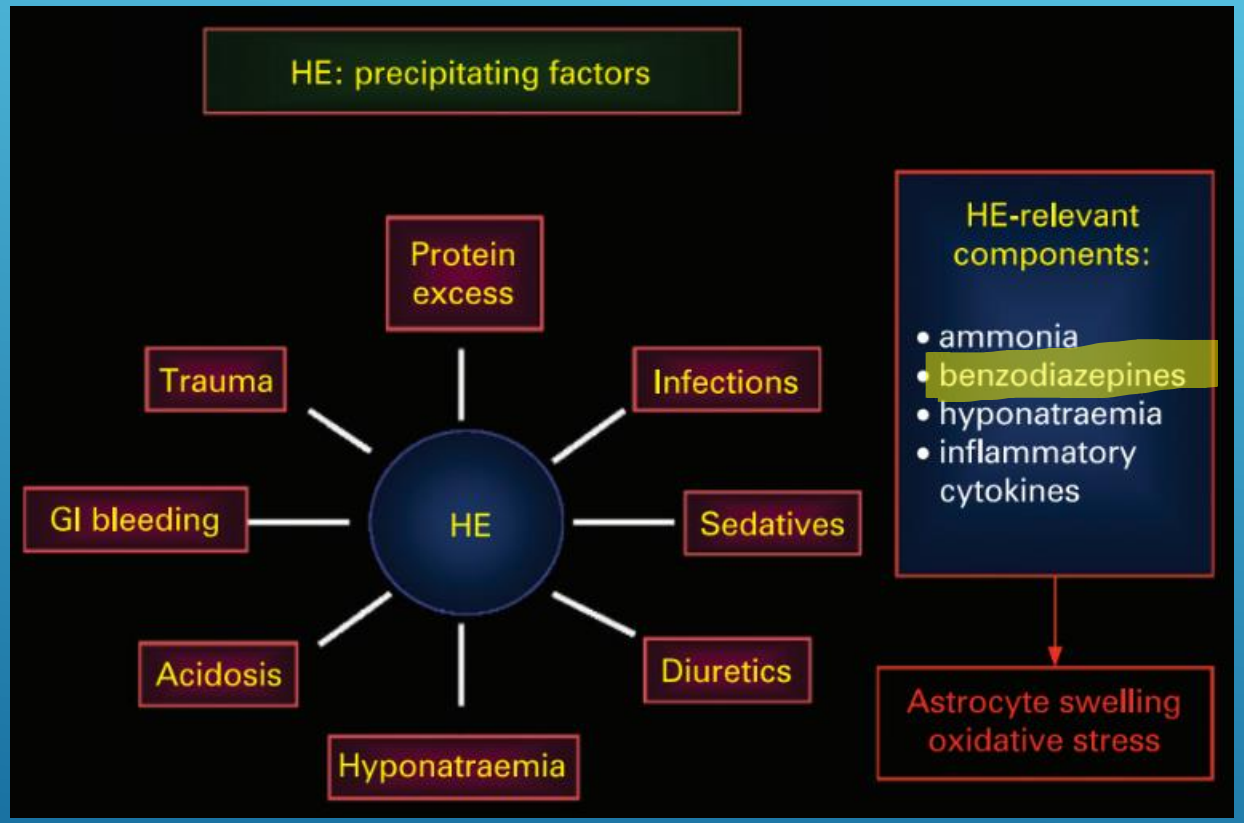
PHARMACOLOGIE ET CIRRHOSE

- **Child-Pugh A** : pharmacocinétique presque inchangée

- **<u>Child-Pugh B/C</u>** :
  - ⇘ excrétion biliaire
  - ⇗ fraction libre
  - ⇗ biodisponibilité

⇗ potentiel d'action, toxicité et risque de surdosage

BENZODIAZÉPINES



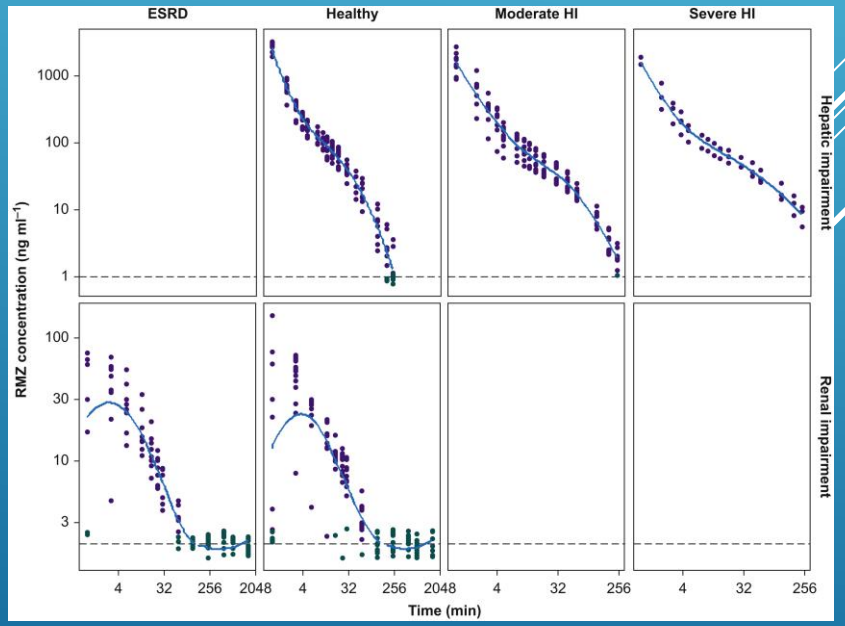
Pathogenetic mechanisms of hepatic encephalopathy
Gut
Haussinger, D; Schliess, F
Vol. 57 Issue 8, pp. 1156–1165, 2008.

Clinical Investigation

Pharmacokinetic properties of remimazolam in subjects with hepatic or renal impairment

British Journal of Anaesthesia
Volume 127, Issue 3, September 2021, Pages 415-423

Remimazolam ?



PARACETAMOL ET CIRRHOSE

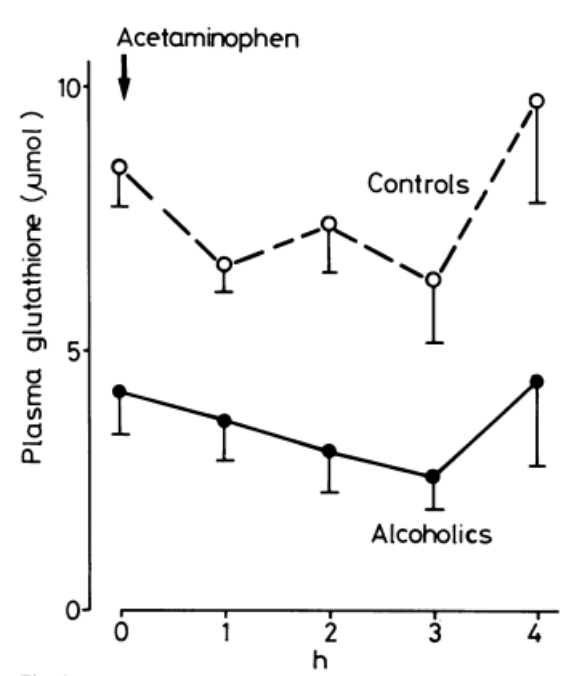
Gut, 1988, **29**, 1153–1157

Liver and biliary

Glutathione deficiency in alcoholics: risk factor for paracetamol hepatotoxicity

B H LAUTERBURG AND MARIA E VELEZ

From the Department of Clinical Pharmacology, University of Berne, Switzerland and Center for Experimental Therapeutics and Department of Psychiatry, Baylor College of Medicine, Houston, Texas, USA



Research article

The effect of acetaminophen (four grams a day for three consecutive days) on hepatic tests in alcoholic patients – a multicenter randomized study

EK Kuffner[1], JL Green[1], GM Bogdan[1], PC Knox[2], RB Palmer[1], K Heard[1], JT Slattery[3] and RC Dart*[1]

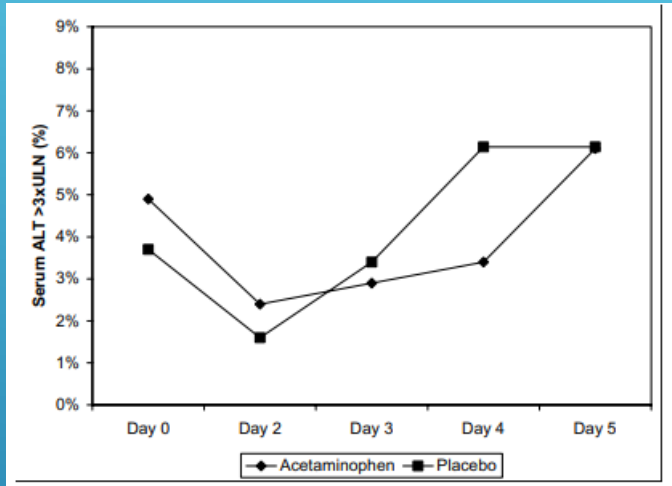
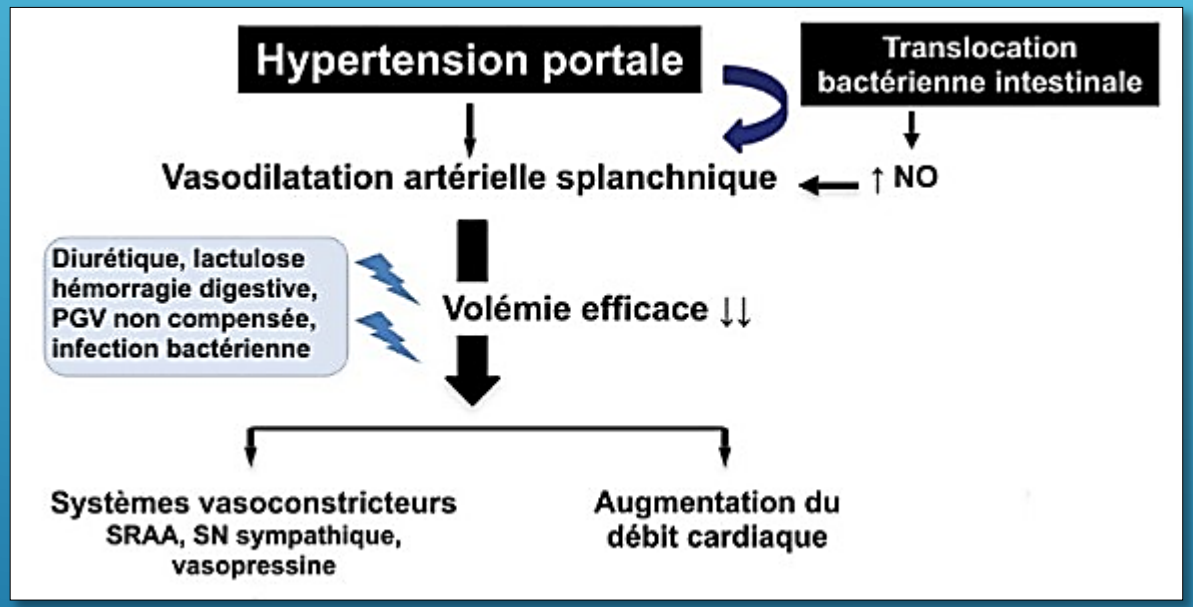


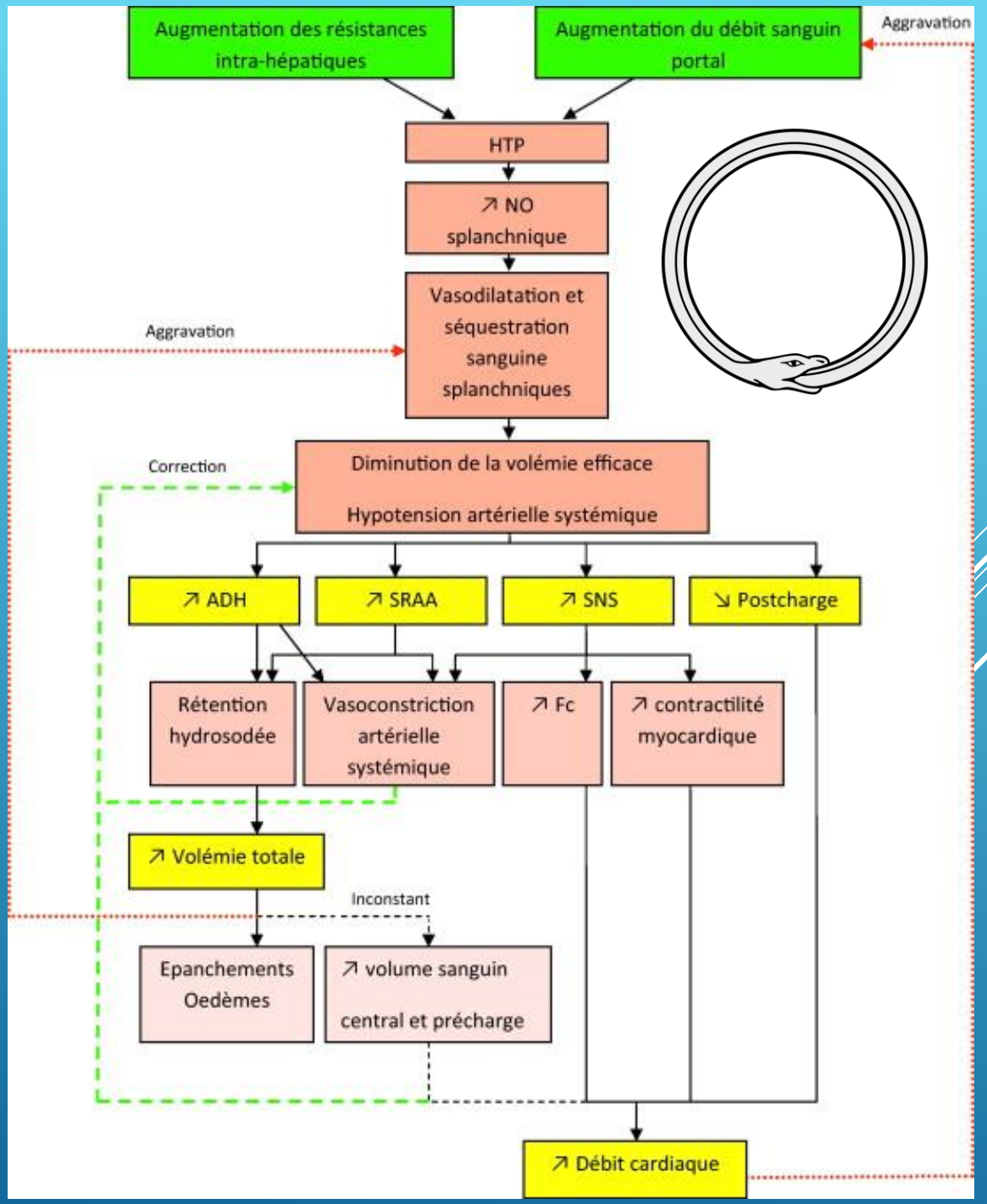
Figure 2
Incidence of alanine aminotransferase (ALT) measures greater than three times upper limit of normal throughout study by treatment group.

dose APAP (650 mg twice per day, <1 week) is likely safe in patients with compensated cirrhosis. These data provide a foundation for future studies to test higher doses, longer treatment, and subjects who are decompensated, especially in light of the remarkably delayed adduct clearance in subjects with cirrhosis. (*Hepatology Communications* 2022;6:361-373).

HÉMODYNAMIQUE : PROFIL PARTICULIER



« HYPER DEBIT »



ATTEINTE PULMONAIRE

- Ascite volumineux/Epanchements pleuraux → **Syndrome restrictif**
- NO → Vasodilatation pulmonaire = **Syndrome hépato-pulmonaire**
- Circulation veino-veineuse → **Effet shunt**

Mismatch V/Q

- Stade le plus avancé de la maladie : **Hypertension porto-pulmonaire** (HTAP) contre-indication à toute chirurgie non vitale

  → Prise en charge complexe/Référer au pneumologue

!!! Les recruter !!!

Plusieurs études prouvent que des valeurs de PEEP allant jusque 10mmHg ne majorent pas le risque de saignement périopératoire et n'altèrent pas la vascularisation hépatique


merci !