Perfusion Evaluation with Real-time ICG-FlUorescence in inteStinal ischEmia

PERFUSE

SOD Chirurgia d'Urgenza

Azienda Ospedaliero Universitaria Careggi

DISCLOSURES

- No financial conflicts of interest.
- The study is still under approval by the Ethics Committee.

- **Like all novel approaches and ideas, these, too are contestable.**
- **We stand on each other's shoulders, not in each other's way.**

AREA OF RESEARCH: Emergency Surgery
KEYWORDS: Bowel Ischemia, ICG Fluorescence, Navigation Surgery, Emergency Surgery, Laparoscopic Surgery

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Surgical Endoscopy (2018) 32:4351–4356
https://doi.org/10.1007/s00464-018-6226-9

NEW TECHNOLOGY

Does near-infrared (NIR) fluorescence angiography modify operative strategy during emergency procedures?

Emilie Liot[1,2] · Michela Assalino[1] · Nicolas Christian Buchs[1] · Boris Schiltz[1] · Jonathan Douissard[1] · Philippe Morel[1] · Frédéric Ris[1]

World Journal of Gastrointestinal Surgery

Submit a Manuscript: https://www.f6publishing.com World J Gastrointest Surg 2023 September 27; 15(9): 1841-1857

DOI: 10.4240/wjgs.v15.i9.1841 ISSN 1948-9366 (online)

REVIEW

Indocyanine green dye and its application in gastrointestinal surgery: The future is bright green

Zavier Yongxuan Lim, Swetha Mohan, Sunder Balasubramaniam, Saleem Ahmed, Caroline Ching Hsia Siew, Vishal G Shelat

World Journal of Gastrointestinal Surgery

Submit a Manuscript: https://www.f6publishing.com World J Gastrointest Surg 2024 February 27; 16(2): 270-275

DOI: 10.4240/wjgs.v16.i2.270 ISSN 1948-9366 (online)

EDITORIAL

Don't forget emergency surgery! Lessons to learn from elective indocyanine green-guided gastrointestinal interventions

Davina Perini, Jacopo Martellucci

De Simone et al.
World Journal of Emergency Surgery (2025) 20:13
https://doi.org/10.1186/s13017-025-00575-w

World Journal of Emergency Surgery

RESEARCH Open Access

Indocyanine green fluorescence-guided surgery in the emergency setting: the WSES international consensus position paper

SICUT Società Italiana di Chirurgia d'Urgenza e del Trauma

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PERFUSE study - Perini D et al.

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World Journal of Emergency Surgery

RESEARCH Open Access

Indocyanine green fluorescence-guided surgery in the emergency setting: the WSES international consensus position paper

The **2025 WSES position paper** identified several emergency surgical scenarios in which **ICG fluorescence-guided procedures may improve patient outcomes, including intestinal ischemia.**

Assessing bowel viability can be challenging during emergency surgical procedures, especially regarding acute intestinal ischemia. Intraoperative ICG fluorescence may be a **valuable tool for the surgeon to determine whether bowel resection is necessary and to define the most appropriate resection margins**.

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The PERFUSE study aims to **compare standard intraoperative assessment (surgeon's visual assessment) with ICG-fluorescence–guided evaluation of bowel viability**, determining intraoperative (duration of surgery, need to laparotomic conversion, length of resected bowel) and postoperative outcomes (post-operative complications, length of hospital stay, reintervention, mortality).

A secondary objective is to **evaluate whether ICG fluorescence can change surgical strategy**, avoiding unnecessary or underestimated resections.

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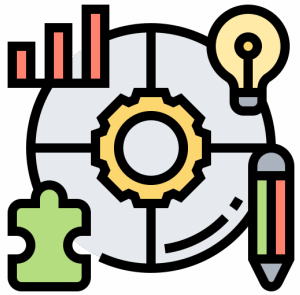

Study design

PERFUSE is a multicenter randomized controlled trial enrolling patients with CT-diagnosed or suspected acute intestinal ischemia undergoing emergency surgery.

Patients will be randomized 1:1 between the ICG-fluorescence-guided surgery (ICG arm) and visual assessment-guided surgery (control arm) by computer-generated random numbers.

ICG should be administered intravenously, typically as a bolus of 5 mg, with injection occurring just prior to imaging acquisition (1–2 min before) for optimal assessment.

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Study population

Adult patients (≥18 years) undergoing urgent or emergency **surgery for suspected/documented intestinal ischemia**, including **both laparoscopic and laparotomic** procedures.

Exclusions: patients <18 years, pregnant women, elective procedures, patients with known allergies to ICG dye or iodinated contrast agents.

EXPECTED RESULTS

PERFUSE study is expected to evidence whether ICG fluorescence might **enhance precision in emergency intestinal surgery** by improving **real-time assessment of bowel viability**, **guiding** intraoperative **decision-making**, and contributing to **better patient outcomes**.

ICG is a safe, feasible and effective aid, even in the field of emergency surgery. Despite this promising evidence, the literature is sparse, small, and heterogeneous; thus, this protocol seeks to **address this gap and potentially guide future surgical practice and guidelines**.

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PERFUSE

Surgical inspiration comes from a variety of sources — I will always be grateful to *mine*.