

Indocyanine green imaging

Citation for published version (APA):

Pruimboom, T. (2023). *Indocyanine green imaging: the application in plastic and reconstructive surgery*. [Doctoral Thesis, Maastricht University]. Maastricht University. <https://doi.org/10.26481/dis.20230317tp>

Document status and date:

Published: 01/01/2023

DOI:

[10.26481/dis.20230317tp](https://doi.org/10.26481/dis.20230317tp)

Document Version:

Publisher's PDF, also known as Version of record

Please check the document version of this publication:

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Brief Summary (English)

Indocyanine green (ICG) imaging is an innovative imaging technique that uses green ICG powder as a fluorescent contrast agent. ICG imaging can facilitate the plastic surgeon's perioperative decision-making and improve surgical precision through real-time assessment of blood flow and the lymphatic vessels.

This thesis describes several factors (including light, distance, camera angle, penetration depth) that influence ICG fluorescence intensity, and therefore, the quality of ICG imaging. In addition, the influence of noradrenaline on intestinal perfusion is described. This thesis also describes a number of applications and the effect of ICG imaging in plastic and reconstructive surgery: prevention of mastectomy skin flap necrosis and the influence of the internal mammary artery (IMA) as well as its application in lymphatic surgery and abdominal wall reconstruction.

Korte Samenvatting (Nederlands)

Beeldvorming met indocyanine groen (ICG) is een innovatieve beeldvormingstechniek waarbij groen ICG-poeder wordt gebruikt als fluorescerend contrastmiddel. Door real-time beoordeling van bloed – en lymfevaten kan ICG-beeldvorming de perioperatieve besluitvorming van de plastisch chirurg vergemakkelijken en de chirurgische precisie verbeteren.

Dit proefschrift beschrijft verschillende factoren (waaronder licht, afstand, camerahoek, penetratiediepte) die de fluorescentie-intensiteit en de kwaliteit van ICG-beeldvorming beïnvloeden. Daarnaast wordt de invloed van noradrenaline (op de doorbloeding van het darmweefsel) beschreven. Dit proefschrift beschrijft ook een aantal toepassingen en het effect van ICG-beeldvorming in de plastische en reconstructieve chirurgie: preventie van huidflapnecrose en de invloed van de interne mammary arterie en de toepassing daarvan bij lymfatische chirurgie en buikwandreconstructies.