

Poster Presentation

AB002. “Lightsabers” fluorescence imaging in laparoscopic liver surgery

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Background: You don’t go into a war unarmed. In the battlefield of laparoscopic liver surgery (LLS), especially in the setting of a country wherein cases are almost always impossible to resect laparoscopically & resources do not always come in readily, an auxiliary tool is of significance in overcoming such a challenging feat. Fluorescence-guided surgery (FGS) using indocyanine green (ICG) is currently revolutionizing standards of practice. The authors of this paper strongly believe that ICG use is a dynamic innovation—providing real-time intraoperative imaging & assessment, tumor localization & an aid in liver resection, addressing the limitation of tactile feedback, ultimately decreasing possible morbidities with improved visualization in laparoscopic surgery.

Methods: This study contains index cases of ICG use in our country, aiming to strengthen the international data & provide additional information on fluorescence-guided LLS. Thirteen [13] patients were given ICG 1–7 days pre-operatively through intravenous route, taking into consideration their liver status. Pre-operative amount of dye given was at 6–10 cc. In some cases, ICG was administered

intraoperatively to demonstrate angiography & negative fluorescence. Pre-operative imaging was correlated with intraoperative findings under fluorescence-guidance. Intraoperative ultrasound (IOUS) was used to countercheck demarcation lines thru ICG-guidance prior to parenchymal transection. Post-operatively, histopathology and surgical margins of resection were also correlated.

Results: Target & non-target lesions identified. Timing of administration resulting in positive fluorescence for non-cirrhotic & cirrhotic liver of a malignant pathology is observed at least 3 & 4 days respectively. Minimum pre-operative amount of ICG given, currently noted at 6 cc for non-cirrhotic liver and 7 cc for cirrhotic liver. Vascular structures identified with ICG application intraoperatively for those cases needing vascular angiography. Not all pre-operative imaging accorded with the intraoperative findings, but with FGS, satisfactory tumor mapping/localization was attained. Surgical margins of resection with FGS were also correlated with histopathology results, which also presented agreeable results. No adverse reactions observed. Operative time & hospital stay were not affected. Dosage & timing of ICG administration and integrity of the liver are significant in the outcomes of FG-LLS.

Conclusions: Fluorescence guidance with ICG in LLS is one of the few innovations for cancer that has reached clinical application & the possibilities are indispensable. It is safe, simple and of significant use in LLS. ICG may be an adjunct tool for now, but with continuing studies and innovations, authors of this paper believe that it might become a standard of practice in the very near future of liver surgery.

Keywords: Fluorescence-guided surgery (FGS); indocyanine green in liver surgery (ICG in liver surgery); ICG; innovations; emerging technology

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