INDOCYANINE GREEN WHITE LIGHT OVERLAY ALLOWS FOR SIMULTANEOUS VISUALIZATION OF BILIARY ANATOMY DURING WHITE LIGHT LAPAROSCOPY IMPROVING OPERATIVE DISSECTION AND AVOIDING COMMON DUCT INJURY DURING BARIATRIC AND BILIARY OPERATIONS

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INTRODUCTION

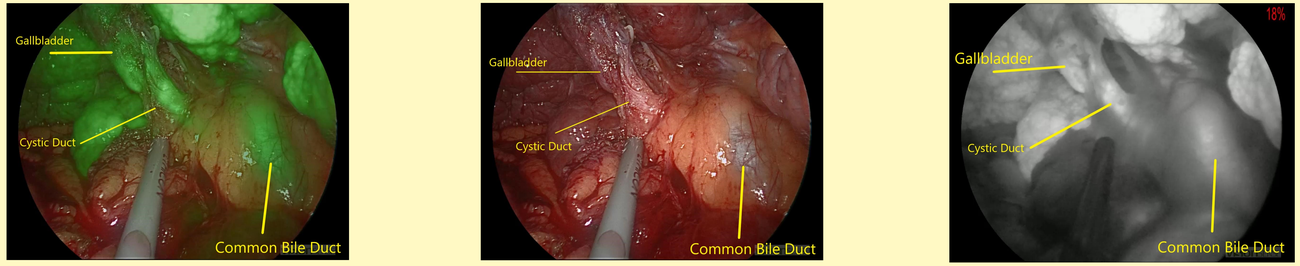
White Light Overlay Laparoscopy is a new and innovative utilization of Indocyanine Green florescent Imaging (ICG) that allows for both ICG florescent imaging to be visualized simultaneously with traditional white light laparoscopy. This technology eliminates the need to alternate back and forth between florescent ICG mode and white light laparoscopy, allowing the surgeon to continuously dissect fields of interest while simultaneously visualizing important structures such as major vessels, biliary structures or tissue planes.

METHODS

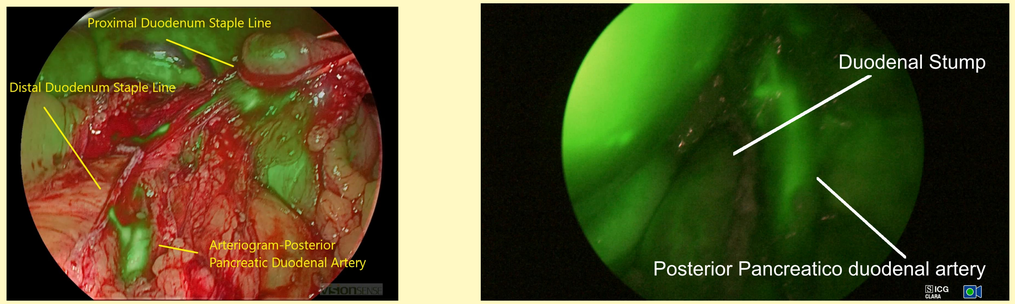
We utilized White Light Overlay technology to evaluate its utility while performing laparoscopic cholecystectomy and duodenal switch procedures (N=20). White Light Overlay was used to determine the utility of this new ICG technology in evaluating and defining the precise location of biliary and vascular anatomy. In specific cases the location of the common bile duct, the common hepatic duct and posterior pancreatico-duodenal vessels were consistently identified during laparoscopic cholecystectomy and duodenal dissection and transection.

RESULTS

- **In all cases (N=20), specific biliary anatomy including the common bile duct and common hepatic duct were continuously visualized using florescent indocyanine green during operative dissection of the duodenum and biliary tree.**
- **Important branches providing blood flow to the proximal duodenum were identified and preserved during dissection. These vessels would not have been identified, visualized or preserved during conventional white light laparoscopy.**
- **There were no injuries to the common bile duct. The common bile duct and common hepatic duct were brilliantly visualized in all cases.**
- **Preservation of vascular blood flow to the proximal duodenum was possible in all cases**



- Identical frames demonstrating the same image using white light overlay (left), conventional white light (middle) and pure ICG (right)



- Two images highlighting white light fused ICG arteriogram (left) of the Posterior Pancreaticoduodenal Artery versus traditional ICG arteriogram (right) for comparison

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CONCLUSIONS

White Light Overlay with continuous ICG florescent imaging is a promising technology that may decrease the incidence of bile duct and vascular injuries during biliary dissection and duodenal switch surgery. The ability to eliminate the need to switch between white light and ICG mode improves operative visualization and allows better dissection of biliary and vascular anatomy.

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