

## AB046. SOH22ABS034. Interureteric injection of indocyanine green for intraoperative identification of the ureter

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**Background:** Injury to the urinary tract is a common complication of gynaecologic surgery, with ureteric injury occurring in up to 1.5% of cases, and bladder injury up to 1.8%. As the complexity of the surgery increases, so too does the likelihood of ureteric injury. This may result in serious complications, return to theatre, prolonged stay in hospital, and medico-legal issues. Complex cases that are complicated by previous surgery, adhesions, difficult anatomy, malignancy, or endometriosis can make identification of the ureter difficult. This extends length of surgery and time under anaesthetic, and adversely affects surgical efficiency. To counter these difficulties and improve patient outcomes, we have begun to introduce a novel technique to our hospital. In our initial test of feasibility, interureteric injection of indocyanine green (ICG) allowed for ready identification of the ureter at the time of an operative laparoscopic procedure.

**Methods:** A patient was scheduled to undergo operative laparoscopic surgery. Before the start of the laparoscopic surgery, cystoscopy was performed to insert the tip (2–3 cm) of a 6-F ureteral catheter into the ureteric orifice. Twenty-five milligrams of ICG was dissolved in 10 mL of sterile water and 5 mL of this solution was injected into each ureteric orifice.

**Results:** Use of a near-infrared fluorescence and a filtered lens system (in-built in the da Vinci surgical robot and in certain laparoscopic scopes) allowed us to visualise the length of the pelvic ureters as fluorescent green.

**Conclusions:** We propose that the use of this technique will reduce the risk of ureteric injuries during minimally invasive surgeries for complex benign pathologies and gynaecological malignancies. In addition to reducing

the risk of damage to ureters, ready identification of the ureters will reduce theatre time and improve surgical efficiency, and therefore potentially reduce length of patient stay in hospital. We believe this technique will have a further advantage in that it has a short learning curve. Gynaecologists may be more comfortable using this method, since only the tip of the catheter is inserted in the ureter; this is easier to learn and less likely to cause iatrogenic complications compared to ureteric stenting. We believe this would be the first utilisation of ICG to visualise ureters in gynaecological surgeries in Ireland. We think it will be particularly useful in cases of severe endometriosis or otherwise complicated cases that make ureter identification difficult, and will be expanding to more complex procedures in the near future.

**Keywords:** Ureter, indocyanine green; pelvic surgery; gynaecology; complication prevention

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### Footnote

*Conflicts of Interest:* The authors have no conflicts of interest to declare.

*Ethical Statement:* The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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