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Intra-testicular indocyanine green injection for lymphatic mapping during laparoscopic varicocelectomy in children: preliminary experience from a single center

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INTRODUCTION

Varicocele is the abnormal dilatation of the pampiniform plexus and testicular veins, most often managed in pediatrics by non-selective high laparoscopic ligation. This technique shows low recurrence rates but carries a risk of postoperative hydrocele (up to 30%). Preservation of lymphatic vessels can reduce this complication. Esposito *et al*. (2019) first reported intra-testicular indocyanine green (ICG) injection to identify lymphatics intraoperatively.

STUDY AIM

Report our preliminary experience with laparoscopic varicocelectomy with ICG, performed without near-infrared fluorescence (NIRF) filter.

METHODOLOGY

4 cases
(12-16 years old)

Varicocele grade III (Dubin and Amelar)
(2 cases testicular pain; 2 case testicular asymmetry)

Laparoscopic varicocelectomy

Testicular injection of 1ml of ICG, following trocar placement

RETROSPECTIVE STUDY

Variables: Timing of lymphatic visualization, technical feasibility, safety

RESULTS

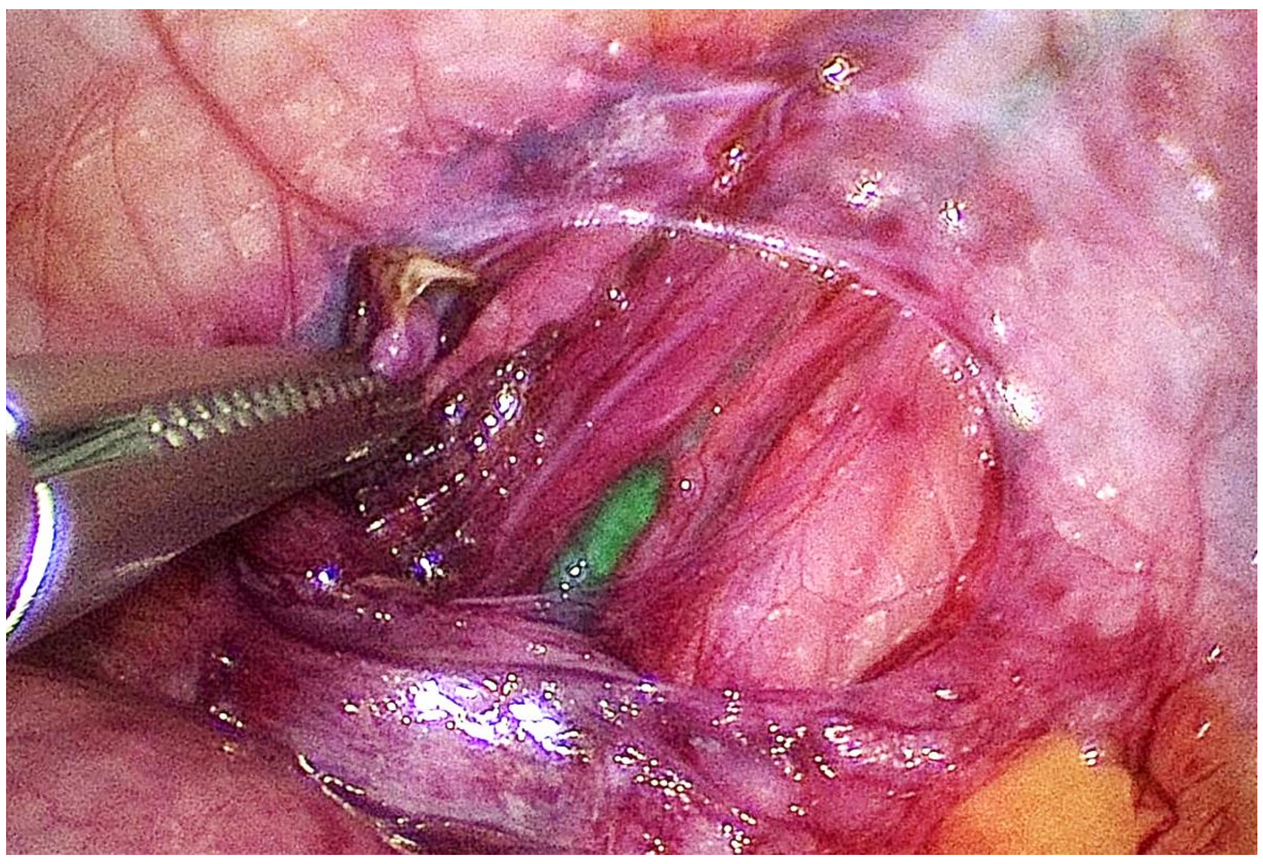

Image 1: Visualisation of a testicular lymphatic vessel with ICG.

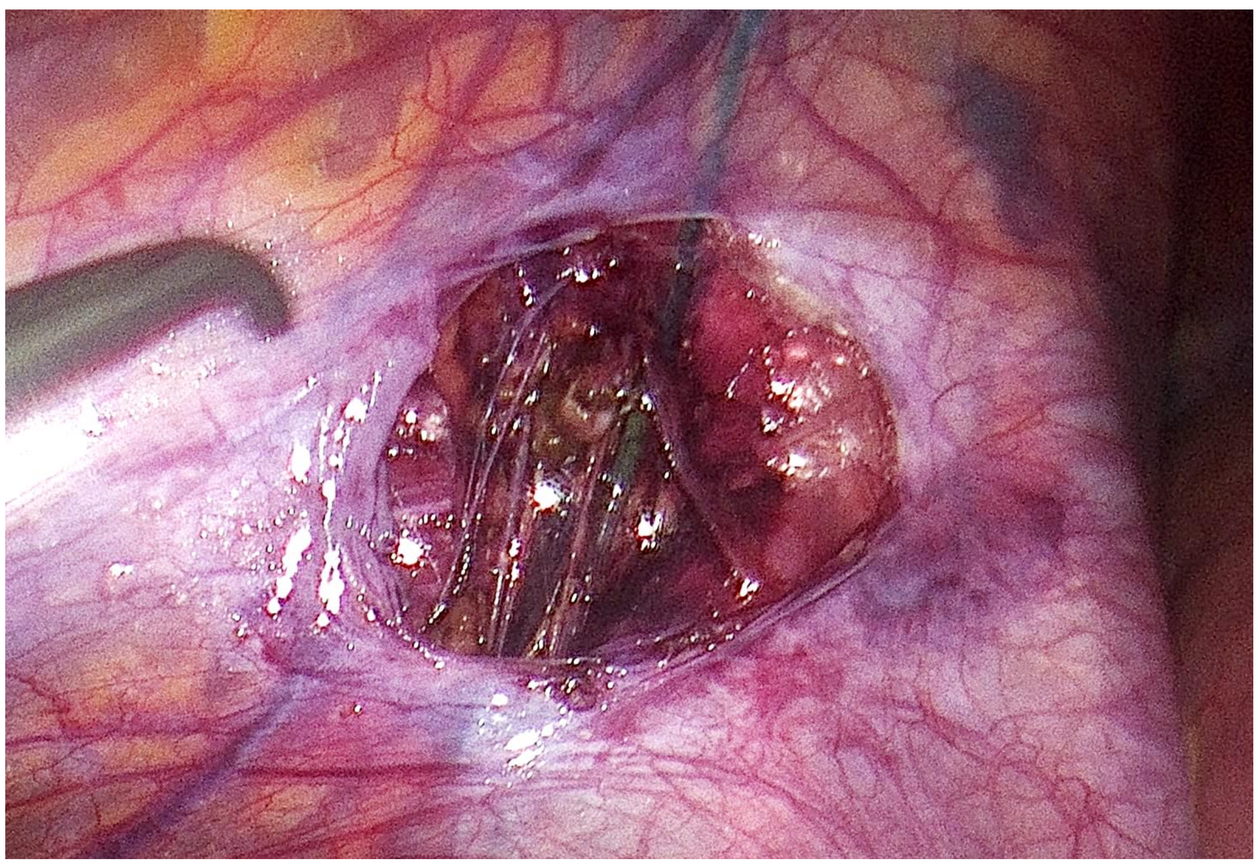

Image 2: Visualisation of a testicular lymphatic vessel with ICG.

- Lymphatic vessels were visualized in all cases within 30–60 seconds.
- No allergic or systemic reactions were observed.
- Follow-up: 4–16 months.
- No postoperative complications or hydroceles occurred.
- Follow-up ultrasound (1 month) showed no testicular abnormalities or hypoechoic areas at the injection site.
- Symptoms resolved in all cases.

CONCLUSION

- Intra-testicular injection of 1 ml ICG allows rapid and clear lymphatic visualization during laparoscopic, even without NIRF filter.
- No adverse reaction or complication occurred. Follow-up ultrasound showed no testicular parenchymal abnormalities.
- ICG use may enhance lymphatic sparing and reduce postoperative risk of hydrocele. Although promising, the safety of intra-testicular ICG requires further validation.

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