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# Fluorescence guided management of deep endometriosis

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**Capsule:** Fluorescence guided surgery using ICG could navigate the surgeon and facilitate the management of deep endometriosis towards more complete and safe treatment.

## Structured abstract

**Objective:** To demonstrate the advantages of the fluorescence guided surgery using indocyanine green (ICG) in the management of deep endometriotic nodules towards more complete and save excision of the disease in cases when rectal shaving is performed.

**Design:** Surgical video demonstrating the result of the application of a fluorescent dye (ICG) during deep endometriosis surgery. The local IRB was consulted and ruled that approval was not required for this video article, because the video describes a technique and the patient cannot be identified whatsoever.

**Setting:** Tertiary care university hospital.

**Patient:** Patient undergoing rectal shaving due to deep endometriotic nodule located at the level of the rectovaginal septum.

**Intervention(s):** The procedure starts with exploration of the lesion and the anatomical structures. The nodule is approached using the “reverse technique”. As the nodule is infiltrating in the vagina, complete resection of the posterior vaginal wall is performed. At the start of the rectal shaving, indocyanine green (ICG) is injected and its fluorescence effect is used to navigate the surgeon during the excision. At the

end of the procedure the vascularisation of the bowel wall and the vagina are evaluated with the help of the ICG.

**Main Outcome Measure(s):** Visual assessment and distinction between the borders of the endometriotic nodule and the rectal wall as a result of the fluorescence effect of the ICG.

**Results:** After injection of the ICG, the borders of the healthy rectum are delineated and a clear distinction between the endometriotic nodule and the bowel wall is demonstrated. In addition, the effect of the ICG is used to assess the vascularisation of the affected by the disease organs (vagina, rectal wall).

**Conclusion:** The deep endometriosis at the level of the rectum usually represents a solid fibrotic nodule. The fibrosis plays a major role in the development of the disease. The ICG is a fluorescent contrast agent, routinely used in wide range of specialties to assess the blood supply and vascularisation of different organs and tissues. Based on the fibrotic nature of the disease, the fluorescence could facilitate the distinction between healthy vascularised tissues and the endometriotic nodule. In the presented case, using ICG, a clear difference between the nodule and the rectum is demonstrated, as well as the vascularisation of the bowel wall and the vagina. The implementation of ICG during endometriosis surgery could navigate the surgeon towards a more complete and safer treatment of the disease, reducing the risk of complications and reinterventions. Additional studies are needed to further evaluate ICG fluorescence guided surgery in the management of deep endometriosis.

**Keywords:** Laparoscopy, fluorescence imaging, indocyanine green (ICG), endometriosis, rectal shaving

#### **Suggested reading:**

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