

Images in Gynecologic Surgery

Near-Infrared Imaging for Better Identifying the Cleavage Plane Between the Uterine Fibroid and its Pseudocapsule

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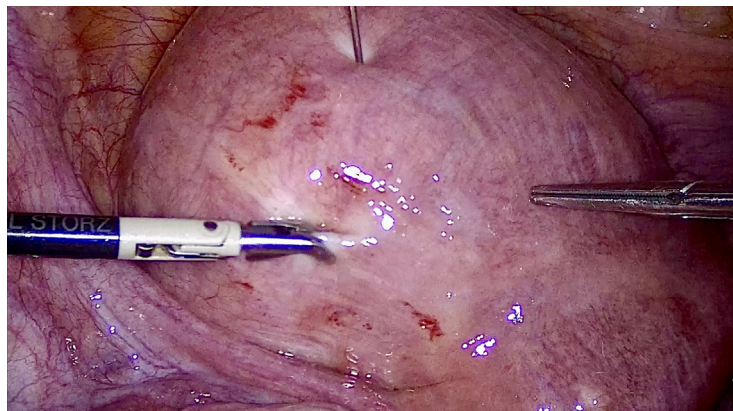
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Uterine fibroids are the most common gynecologic solid tumors and they are reported to prevail in 20 to 50% of women [1]. Fibroids are surrounded by a pseudocapsule formed by compressed myometrial cells and neurovascular plexuses supplying the tumor [2]. Uterine fibroids do not have a proper vascular pedicle and they are nourished by the arteries of the pseudo-capsular neurovascular plexus [3]. To minimize bleeding and allow an easier and complete resection of the fibroid, the myomectomy should be performed within the pseudocapsule [2].

In this work, we present the results of the intra-tumoral injection of Indocyanine Green (ICG) within the uterine fibroid of a 28-year-old patient. The patient presented with a 10-cm anterior intramural uterine fibroid for surgical treatment. Twenty-Five milligrams of ICG (Aurogreen, Aurolab, Madurai, India) was diluted in 10cc of normal saline and 3cc of the solution was injected directly into the fibroid (Fig. 1). The uterine wall was incised over the injection area with bipolar forceps. Near-infrared imaging was then carried out through the IMAGE1 S Rubina System

Fig. 1

Injecting the ICG solution into the fibroid during laparoscopic myomectomy.



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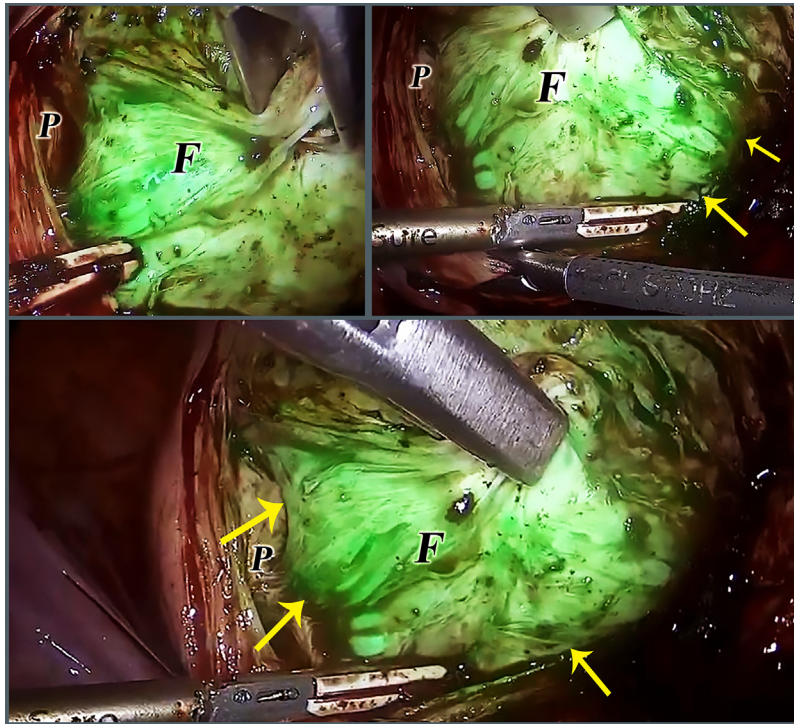
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Fig. 2

The appearance of the uterine fibroid (F) in the near-infrared imaging after the injection of the ICG solution. Note the fluoresced borders of the uterine fibroid and the quiescent pseudocapsule (P). The arrows point towards the cleavage plane between the fluoresced fibroid and its pseudocapsule.



(Karl Storz, Tuttlingen, Germany). The uterine fibroid clearly fluoresced and its borders were easily identifiable (Fig. 2).

It is noteworthy that neither the myometrium nor the fibroid's pseudocapsule captured ICG or fluoresced during the near-infrared imaging. This phenomenon facilitated an easier identification of the fibroid's pseudocapsule and –as we believe– a safer development of the cleavage plane between the pseudocapsule and the fibroid. We hypothesize that ICG diffuses within the fibroid due to its histopathologic structure characterized by predominant collagenous extracellular matrix and diminished cellular component, when considering its large size [4]. However, it is unclear how ICG would diffuse and fluoresce in smaller fibroids since those differ in the histopathologic structure. To our knowledge, this is the first paper that investigated the effects of ICG injection within fibroids.

Patient Consent

The patient provided a written informed consent regarding the procedure and the publication of her anonymized medical data and surgical images.

Data Availability Statement

All relevant data are included in the manuscript.

Acknowledgments

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