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A Low-Cost and Reproductible Method to Obtain Mapping of Lymphatic Drainage in Patient with Early Endometrial Cancer

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Abstract

Introduction: Endometrial cancer is the most common form of gynecological cancer in developed countries. Current recommended therapeutic management takes into account a number of factors such as: TNM stage, justification for primary surgery, desire to preserve fertility. For primary operable cases, surgical staging has become an extremely important pillar, in which the status of the pelvic lymph nodes needs to be known (1-3).

Material and Method: Between August 2015 and June 2021, a multicenter prospective observational study was performed in the "Prof. Dr. I. Chiricuta" Oncological Institute Cluj Napoca, 2nd Department of Surgery of "Pius Brînzeu" County Hospital Timisoara, 1st Department of General Surgery of Arad County Hospital, 2nd Department of Obstetrics and Gynecology "Dominic Stanca" Cluj Napoca and "Dr. Carol Davila" Central Military Emergency University Hospital Bucharest, Romania with the main aim of examining the sentinel lymph node detection rate using methylene blue as a tracer. Surgeries were performed by the team of surgeons of the mentioned clinics, and patients were informed about this study and signed an informed consent form for enrollment.

Results: A total of 116 cases met the inclusion criteria for this prospective study. The mean age of the included patients was 62.3 years (minimum - 38, maximum - 83). The mean body mass index was 31.8 (minimum - 19.9, maximum - 48.2). In terms of histological type of the endometrial cancer, the majority of cases were endometrioid cancer, amounting to 72.5% of the total (n=84). A considerable number of cases were of mixed type, either with clear cell carcinoma (8.6%, n=10) or mixed carcinosarcoma (17.2%, n=20). The preferred approach for surgery was laparoscopic surgery rather than traditional surgery (72% vs 28%). Another element investigated from a histological point of view is the tumour grading, the degree of differentiation of cells with anarchic development, we note that 50% (n=58) were G2. Of the 116 cases of endometrial carcinoma included in the study, in 83% of cases (n=96) methylene blue tracer injection was successful and sentinel node was identified. The SLN technique continues to be of great interest and use in surgical centers around the world. The method of detecting sentinel lymph nodes varies depending on the individual. According to literature studies, indocyanine (ICG- Indocyanine green) is the gold standard for lymph node mapping, with superior detection rates when compared to other existing versions. Another key factor to consider when selecting a sentinel node identification method is cost-effectiveness. The

use of methyl blue as a marker tracer is the most cost-effective option with equivalent detection rate outcomes.
Conclusions: Based on the results of our study and other studies in the literature, lymphatic mapping using methylene blue as a tracer in endometrial cancer is a cost-effective method with a favourable detection rate. With this low-cost procedure we can achieve a correct tumor staging, avoiding overtreatment. There are multiple ways to identify the sentinel node using different tracers with higher accuracy, but the objective of the study was not to make a comparison between different tracers, but to present the feasibility of lymph node mapping using methylene blue as a low cost tracer with good reproducibility, short learning curve and optimal detection rate.
Key words: endometrial tumor, lymphatic metastasis, sentinel lymph node biopsy, lymphadenectomy, methylene blue