Mohs Micrographic Surgery: Revisiting its Definition

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"The crucial idea of excising the cancerous site layer by layer and systematically examining the undersurface of each excised layer under the microscope by means of frozen sections is so logical that it is surprising that it was not thought of a century ago."

Dr. Frederick Mohs [1]

In this issue of *IMAJ*, Arnon et al. [2] review a surgical method for the removal of skin cancers, known as Mohs micrographic surgery. This method, and its variants, aims at destroying the skin cancer while affording a maximum degree of preservation for the healthy surrounding tissue, which results in better functioning of the affected organ and a better appearance. The essentials of MMS [3] were published by the American College of Mohs Surgery in 1988, and in 1994 the American Academy of Dermatology published a position paper on the guidelines of MMS [4]. This surgical method has been developed and performed by dermatologists, and most of the articles published in peer-reviewed journals were written by dermatologists. One of the basic features of MMS is the examination of tissues under the microscope by the surgeon himself, as cited in Cottel et al. [3]: "All frozen sections are evaluated microscopically by the Mohs micrographic surgeon and the location of any remaining tumor is marked by the Mohs micrographic surgeon on the tumor map." This basic feature, together with horizontally cut frozen sections and accurate tissue mapping are the distinguishing marks of this method. Or, in the words of the American Academy of Dermatology, "The Mohs surgeon normally acts in two integrated, but separate and distinct capacities: surgeon and pathologist" [4].

MMS has begun to spread among dermatologists worldwide, both in academic institutions and in private practice. In 1978 Shelly [5] suggested honoring Dr. Mohs by using his name not only as an eponym but also as an acronym for his technique, namely, **M**icroscopically **O**riented **H**istographic **S**urgery. Since MMS may not be readily available, alternative techniques and variations of MMS for examining the surgical margins of the tissue in skin cancers have been developed in different parts of the world, bearing different names, such as Slow-Mohs, 3-D Histology and, recently, in Israel, the Mohs-like. Since this method has been proven efficient and highly curative, why do we need variations? There are obvious reasons, such as a) to acquire the ability to diagnose difficult tumors in frozen sections as in Slow-Mohs, b) the need for pathologic assistance as in Mohs-like when there are not enough qualified Mohs surgeons, and c) there are physicians who simply regard their own variations as more advantageous, such as those who practice 3-D histology. Furthermore, having a method that has proven efficient and highly curative, why do we need variations or imitations with the same name? Instead of a direct answer, allow me to cite another dermatopathologist: "Within the general practice of medicine, I have some concerns about Mohs micrographic surgery and medical ethics. It has become clear that the public must be protected against unscrupulous practitioners who inappropriately define themselves as Mohs surgeons, but who do not have the necessary training or technologic support to do the job properly. The reasons for such practice are all too obvious" [6].

While serving as Secretary of the European Society of Micrographic Surgery, it was clear to me why the word Mohs was excluded from the name of the Society. In certain European MMS variations, the surgeon does not read and interpret the histologic slides during the surgery [7]. Rapini, coauthor of the article published in this issue of *IMAJ*, wrote elsewhere about the definition of Mohs surgery [8]: "I advocate a broader definition of Mohs surgery as a method of excising skin cancer in stages using meticulously mapped-out peripheral sections of the margins that completely encompass the neoplasm, resulting in maximal tissue conservation while assuring clear margins histologically."

In contrast to his views and this definition, and based on my personal experience with MMS for almost 20 years, I prefer to define Mohs surgery in a rigid functional way: peripheral margins must be cut at an angle of 45 degrees in most cases; frozen sections are by definition part of modern MMS; the frozen section laboratory must be adjacent to the operating room; and the surgeon should be the one who reads the slides. If not all of these criteria are met, then the surgical method should not be called Mohs surgery, nor should the

MMS = Mohs micrographic surgery

word "Mohs" be part of its name. I add more points in favor of Mohs surgery, which were addressed by McGovern and Leffel [9]. Unifying the roles of surgeon and pathologist assures fewer errors when performing histopathologic and clinical correlation for each patient. Separating the tasks between two physicians increases the errors in mapping and applying the Mohs map to subsequent stages. However, I am strongly in favor of seeking quality assurance via interaction with a dermatopathologist.

In my opinion, all published data by Mohs surgeons "speak the same language," so we can therefore use the same definition. I believe the literature still lacks a solid database on "Mohs Surgery" performed by a surgeon and a pathologist on site and based on frozen sections. Nevertheless, all methods used to treat skin cancer have the same objective: to help our patients the best we can. At the same time, we as physicians are obliged always to inform the patients of alternative treatments. The patient is the one who has to decide whether or not he or she wants Mohs surgery, Pseudo-Mohs surgery, Mohs-like surgery or whatever. True Mohs micrographic surgery simply works. It is a well-accepted method that satisfies both the patient and the dermatologist.

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