

## CORRESPONDENCE

### On variations in micrographic surgery and the use of horizontal histological sections in the evaluation of the surgical margin ☆☆☆



Dear Editor,

Complete microscopic control of the excisional margins remains the most effective method for treating non-melanoma skin tumors. Since the original idea of chemosurgery was developed by Frederic Mohs, in the 1930s, there has been substantial development of techniques for incision, inclusion, and processing of histological specimens, sectioning techniques, histological markings, and evaluation of margins. This has allowed the performance of these procedures in an outpatient setting, reducing operational time, minimizing resection of healthy tissue adjacent to the neoplasm, and reducing the cost and number of stages of surgery.<sup>1,2</sup>

The fundamental difference between variations in micrographic surgery is the form of inspection of the involved surgical margin. Peripheral analysis techniques (e.g., Mohs surgery, Tübingen, the muffin technique) assess the presence of tumor cells in the hypothetical surgical border. Central analysis techniques (e.g., Munich), assess the entire neoplasia and its relationship with the actual surgical borders, based on the integral analysis of the excised tumor tissue sample.<sup>3</sup>

Portela et al. presented a technique of horizontal sectioning of the excised tissue, aiming to assess the margin compromise prior to the execution of the Mohs surgery.<sup>4</sup> However, such an approach corresponds exactly to the Munich technique, described in 1995 and disseminated especially in Europe, but mentioned extensively in micrographic surgery articles, whose historical relevance cannot be disregarded.<sup>1-3</sup>

It should be noted that the authors make well-founded criticisms of the Mohs technique and perceive the benefits of

margin control using horizontal sections, due to their experience with confocal microscopy, in addition to the emphasis on the vertical incision, which spares adjacent healthy tissue.

In fact, the modifications and advances in micrographic surgery have led to intrinsic differences in the main technical variations, which clearly favor their indications in specific situations, and whose understanding leads to the maximization of results by the micrographic surgeon.<sup>1-3</sup> However, there is a lack of systematic studies (head-to-head) comparing the techniques regarding their characteristics, especially outcomes related to the surgical time, number of stages, and removal of healthy tissue. Moreover, the North American hegemony of the Mohs technique in both practice and publications has hindered dermatological science and the potential beneficiaries of the technical advances brought by the other techniques.<sup>5</sup> Some particularities highlighted in the literature are listed in table 1.

Parallel to promoting diffusion of knowledge and research in the development of micrographic control techniques for oncological surgical margins, it is necessary to appreciate the historical merit of classically described techniques, such as the Munich technique.

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### Authors' contributions

Anna Carolina Miola: Approval of the final version of the manuscript; drafting and editing of the manuscript; critical review of the literature; critical review of the manuscript.

Hélio Amante Miot: Approval of the final version of the manuscript; conception and planning of the study; critical review of the literature; critical review of the manuscript.

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### Conflicts of interest

None declared.

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**Table 1** Comparison of the characteristics of the main variants of oncological surgery with microscopic control of the margins



	Mohs	Tübingen	Muffin	Munich
Optimal tumor size	<4 cm	>2 cm	<2 cm	<2.5 cm
Favorable excision plane	Flat or convex	Flat or convex	Flat or convex	Any
Number of histological slides <sup>a</sup>	Intermediate	Intermediate	Lower	Higher
Skin incision	Oblique	Vertical	Vertical	Vertical
Type of margin assessment	Peripheral	Peripheral	Peripheral	Central
Relationship of the neoplastic mass with the surgical margin	Impossible	Impossible	Impossible	Possible
Assessment of perineural invasion	More difficult	More difficult	More difficult	Easier
Resection of adjacent normal tissue	Greater <sup>b</sup>	Lower	Lower	Lower

<sup>a</sup> Considering an incision of the same size.

<sup>b</sup> Incision at 30°–45°.

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## On the different methods of micrographic surgery and their differences in the visualization of the tumor and surgical margin, and in the contribution to clinical and oncological aspects ☆,☆☆



Dear Editor,

Micrographic surgery was developed in the 1930s by Dr. Friedrich Mohs, using the *in vivo* tissue fixation method. In 1970, Stegman and Tromovitch published a series of cases using *ex vivo* fixation. In 1995, the Munich method was described.

Since then, surgeons have been constantly learning these techniques.<sup>1–4</sup>

In the study by Portela et al.<sup>5</sup> a new form of debulking assessment was described, but it is identical to the Munich method previously described in the literature. The concepts of margin and surgical border are imprecise. The authors illustrate an essential feature of the Munich method: the possibility of assessing the tumor–surgical margin relationship and observation of the tumor. Thus, it is possible to better demonstrate the subtype, cytological aspects, and tumor architecture, which have clinical and oncological relevance and are important for decision making. These factors gain importance in tumors with rarer histology and with greater metastatic potential; it also facilitates the identification of perineural invasion. In turn, peripheral methods evaluate only the surgical border, and do not observe the tumoral core. Although bread-loafing of the paraffin block is performed during debulking, the sample is smaller and the results are not available in the trans-operative period, given the time required for paraffin embedding and processing. A drawback of the fresh method is the greater chance of technical artifacts (Table 1).

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