

# Oriented biopsies in cutaneous oncology

*Biópsias orientadas em oncologia cutânea*

## New Techniques

### ABSTRACT

Oriented biopsies are fragments of tissue (usually fusiform) that are positioned relative to the tumor in a way to favor the observation of its histology in a panoramic and topographical manner. Commonly performed on the edge of a tumor, an oriented biopsy allows for better surgical planning, eventually helping to decrease the number of stages of micrographic surgery. The present article details the procedure's technical execution not only from a surgical, but also from a laboratorial perspective.

**Keywords:** biopsy; ambulatory surgical procedures; mohs surgery; pathology, surgical; skin neoplasms

### RESUMO

*Biópsias orientadas são fragmentos de tecido, geralmente fusiformes, posicionados em relação ao tumor de maneira a observar sua visualização histológica de modo panorâmico e topográfico. Realizadas comumente nas bordas do tumor, permitem melhorar o planejamento cirúrgico, eventualmente ajudando a diminuir o número de estágios em uma cirurgia micrográfica. Este artigo detalha a execução técnica do procedimento dos pontos de vista cirúrgico e laboratorial.*

**Palavras-chave:** *biópsia; procedimentos cirúrgicos ambulatoriais; cirurgia de Mohs; patologia cirúrgica; neoplasias cutâneas.*

### INTRODUCTION AND CONCEPT

In cutaneous oncology it is not uncommon to come across tumors with poor clinical demarcation—a situation that can hinder defining even the starting point for an excision.

Tumors with predominantly infiltrative growth may offer difficulties for their detection, especially in the early stages, when the clinical appearance is that of hypopigmented macules or slightly elevated plaque with poorly defined margins. These lesions arise mainly on the face of patients with fair and photo-damaged skin. In some cases, multiple procedures (curettage and electrocauterization, cryotherapy, and even surgery), in addition to the use of topical medications (5-Fluorouracil, imiquimod and others), which can cause partial regression of tumors, can still compromise the determination of boundaries.

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Although indistinguishable in those situations, a tumor's margin can be further examined through a topographically oriented, narrow fusiform excision, which can provide more comprehensive information and through which it is possible to view the tumor along a variable extent. This would be the theoretical conception of an oriented biopsy (Figure 1).

Depending on the size of the tumor and its predominant histologic type, the oriented biopsy may be incisional or excisional. Conceptually, nothing prevents the use of an oriented biopsy in tumors that are clinically well visible, however this technique is more useful in the evaluation of tumors with difficult clinical delimitation or that conflict from a histopathological point of view.

## TECHNIQUE

The extent and orientation of the fusiform excision will depend on the required or needed overview. In this way, it is possible to plan more than one fusiform excision in different orientations (one latero-lateral and another cranial-caudal, for instance). As for the longitudinal extension, it would be advisable that it did not exceed 2cm, as that could hinder its inclusion in the histological preparation, since ordinary microscope slides are 2.5cm wide. This however does not constitute a limiting factor, given that it is possible to prepare the slide in its longitudinal direction, enabling specimens of over 2.5cm long. However, from a practical standpoint, the maximum length of 2cm appears to be sufficient in most cases.

It is important that the ellipsis is not wide, but very thin, as this will facilitate the inclusion of the material. However, ellipses that are too thin may prove fragile and rupture during the laboratory process, which would undermine the purpose of such an examination.

Once the orientation of the fusiform excisions are established, a suture will be placed at one end to mark it—conven-

tionally, by the side that is potentially tumor-free. A sketch of the entire topographical situation is drawn, instructing the laboratory to stain the ellipses' opposite sides in different colors, thus orienting the cut and the biopsy. Preferably, these details should be photographed, avoiding future difficulties of interpretation when the blades are finalized.

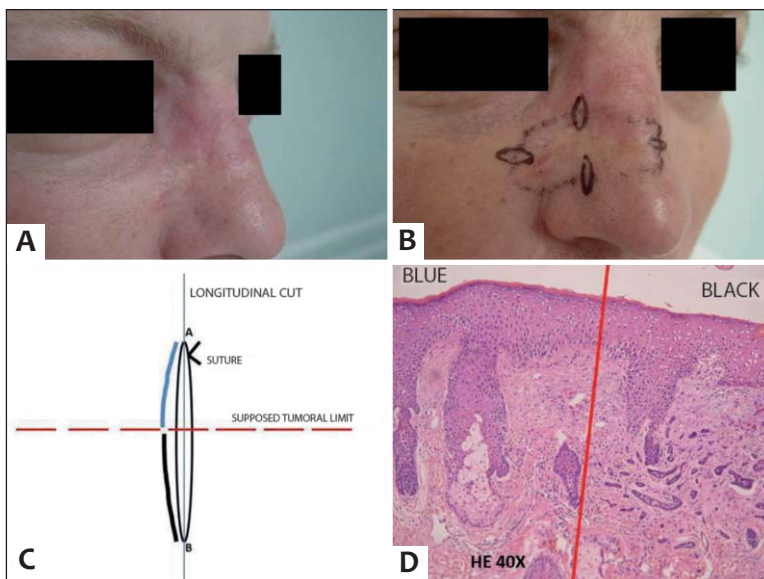
The laboratory must be familiar with the procedure, otherwise undue cuts and cleavages may occur. Cleaving the fragment should be avoided. It is easier and safer to include it in its entirety so that one of its sides is completely presented to the microtome knife. Preferably, the block should be trimmed in its longitudinal direction up to the point where the central region be reached. In this manner, it is possible to obtain an overview from one end to the other, distinctly stained.

### *Situations of applicability of the technique*

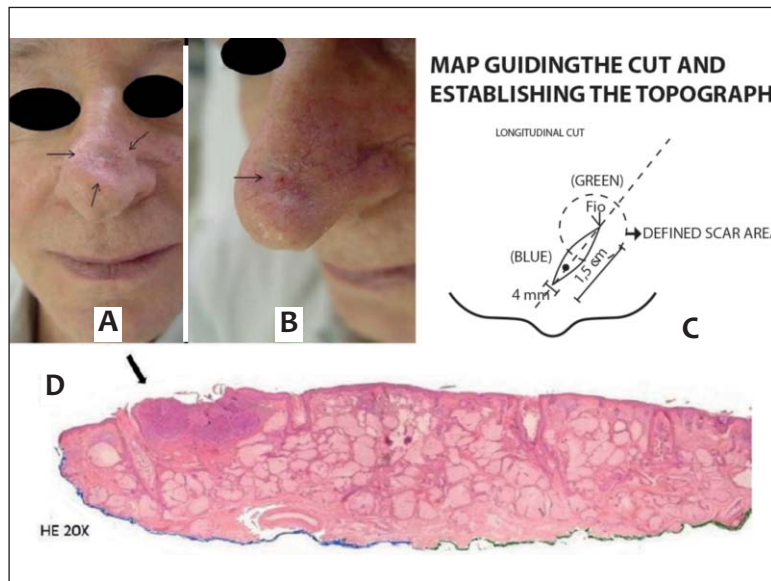
1. Planning of the initial incision in cases of micrographic surgery, as already illustrated in Figure 1.
2. Collection of more reliable data than that provided by punctiform multiple biopsies, which may fail for lack of the panoramic view (Figures 2 to 4).
3. Complete study of the lateral and deep borders of the tumor (Figures 5 and 6).

## DISCUSSION

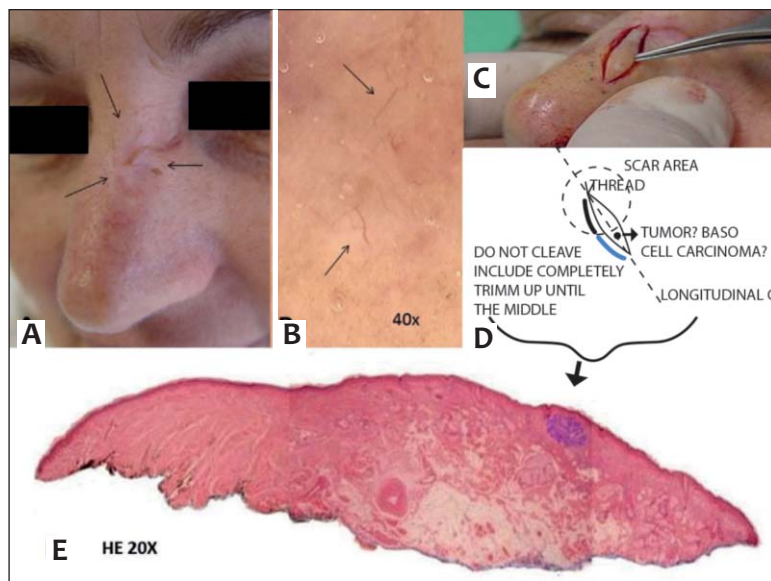
Although no specific bibliographic reference on the subject in the literature has been found, one might intuitively think that this procedure is already routinely carried out, due to being straightforward and logical. While this may be true, it is important to describe the method and standardize it, in order for its straightforward approach to be widely assimilated and for it to become useful in different clinical and surgical situations. The author is unaware of any similar procedure that may have been previously published or detailed in the 57 articles on



**Figure 1:** A - Infiltrating basal cell carcinoma with multiple recurrences. Where are the tumor limits? Where should the incision be made? B - In dermoscopy, for example, a hypothetical boundary can be drawn. How to prove it? C - Schematic representation of an oriented biopsy. The piece will not be cleaved, however trimmed until it is halfway, yielding a longitudinal and panoramic section, from point A to point B. By convention, a suture stitch marks the point likely to be tumor-free, with the two ends distinctly stained for guidance in the histological section. D - The histological section shows a detail of the tumor border, as if a line could be drawn from which there would be a presence of tumor cells (red line)



**FIGURE 2:** A - Patient referred for micrographic surgery for presumed recurrent tumor previously treated with cryotherapy (large depressed area - arrows). B - Next to the depressed area, a papule of recent onset (arrow) is the cause of the suspicion that the whole area is affected by tumor recurrence. C - A fusiform oriented biopsy of 1.5 x 0.4cm was carried out in order to panoramically study the area involved, according to the photographed map sent to the pathologist. D - Overview of the oriented biopsy showing an isolated and expansive tumor in the blue end (arrow)– probably a new tumor. Sebaceous hyperplasia occupies the green area: the oriented biopsy may have been excisional, as the margins are free. The oriented biopsy has avoided the implementation of a micrographic surgery, removing the hypothesis of recurrence. All evidence indicates that it was a new isolated tumor. The patient was observed for three years without clinical or dermoscopic alteration in the region



**FIGURE 3:** A - Patient referred for micrographic surgery due to alleged recurrence. Five years before had undergone curettage and electrocoagulation for basal cell carcinoma throughout the region indicated by the arrows. Recent biopsy in this area, with 2mm punch, revealed basal cell carcinoma. All of the cicatricial area would be removed through micrographic surgery? B - Complete dermoscopy with great magnification was performed in the whole region. Thin arboriform vessels (arrows) indicated the possibility of a basal cell carcinoma. C -The oriented biopsy was performed containing the previously marked area through dermoscopy at one end of the ellipsis. The other extremity penetrated much of the scar area, which had imprecise borders. D - Biopsy ready for pathology with the sketch of the topographic situation and additional instructions for the technician. E - Overview of the oriented biopsy, in which a small expansive basal cell (arrow) is seen coinciding with the dermoscopic finding. The remainder of the biopsy does not reveal neoplasia. It was a new tumor. There was no indication of micrographic surgery

“biopsies” that have been researched. The same situation applies to the references listed in the present study,<sup>1-12</sup> allowing the inference that this is probably an original piece of research.

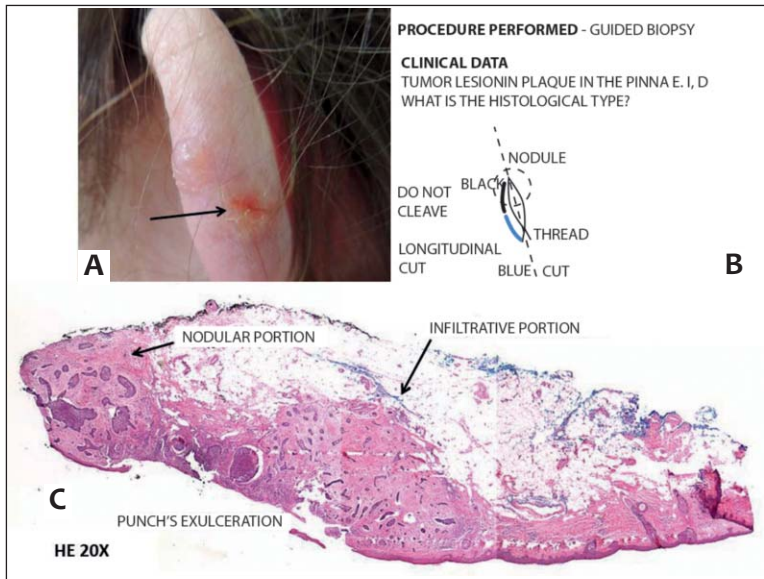
For this reason, there are no specific bibliographic references in the present article, with the exception of two, 13 and 14, which serve only for compliance reasons.

Although it is difficult to prove the usefulness of oriented biopsies due to the variability of the clinical and surgical circumstances, the author has reviewed the cases in which the method was applied in 173 situations in the previous five years,

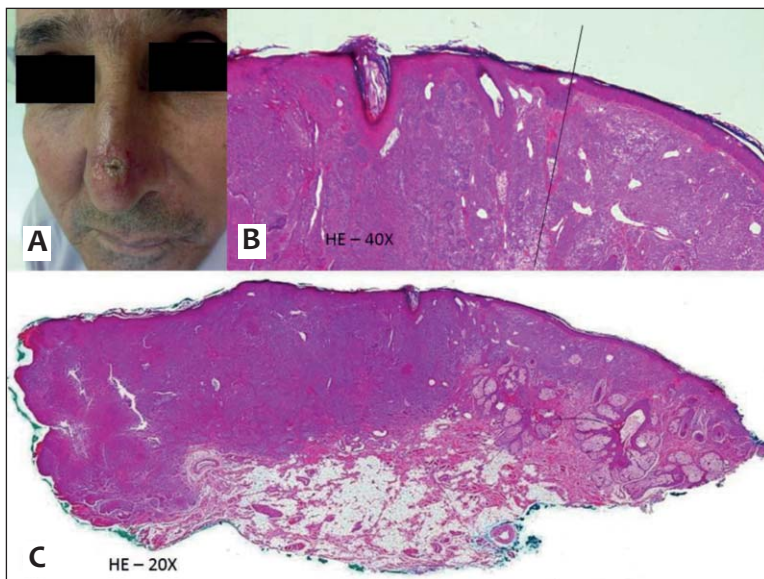
noting that in 93% of cases the histological information obtained was important in the implementation and completion of various clinical and surgical situations.

The data obtained can be summarized and grouped as described in the section *Situations of applicability of the technique*.

In cases where the oriented biopsy is considered as an excisional biopsy, the surgeon has to relativize the findings, understanding that in certain situations, if the ellipsis was very narrow and the tumor found to be predominantly infiltrative, the presence of the free margin in the longitudinal direction



**FIGURE 4:** **A** – Previous punch biopsy in the exulcerated site (arrow) revealed solid circumscribed basal cell carcinoma. **B** - Scheme of the oriented biopsy performed through the mark of the punch and instructions to the laboratory. **C** - The overview of the oriented biopsy reveals a tumor with more nodular pattern in the black end, a solid circumscribed pattern where there was exulceration of the punch and a frankly infiltrative pattern on the blue side. Were it not for the oriented biopsy, the tumor would have been considered of low malignant potential



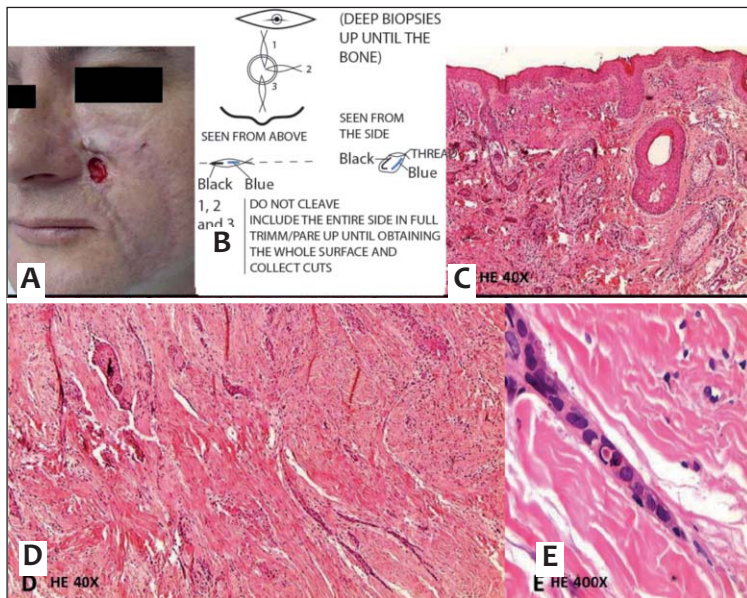
**FIGURE 5:** **A** – Basal-squamous carcinoma that recurred twice, during more than three years of development. The patient is a bearer of chronic lymphocytic leukemia. Aiming at avoiding an excessive number of stages of micrographic surgery, an oriented biopsy was performed in the tumoral border, as in the previous examples. **B** – Tumoral border clearly visible laterally (black line) and concomitant intense solar elastosis. **C** - Overview of the oriented biopsy. Opposite/contrary to what was expected, the tumor was still histologically relatively circumscribed. With no major safety margins suggested by the oriented biopsy, the tumor was removed with a single micrographic surgery stage (Mohs method)

does not mean that the lateral margin is free. In this case, transverse serial sections along the piece, with free margins do not guarantee that the tumor has been completely removed.<sup>1</sup>

Due to the fact that in many situations the tumor can hardly be seen, dermoscopy can be a decisive factor indicating the need for surgical intervention.<sup>2</sup> However, it is not always sufficiently clarifying. In such cases, confocal microscopy would be considerably useful in spite of its limited ability to offer deep assessments. As this technology is still very expensive and is not

yet widely available, the use of dermoscopy combined with oriented biopsies can provide extremely important data to allow better surgical planning.

Performing multiple punch biopsies does not amount to an equivalent procedure, as tumors are not always continuous. An oriented biopsy containing a tumor may reveal sites that do not contain a tumor, whereas a punch biopsy could prove negative. On the other hand, the positivity of the punch does not mean that the tumor can extend far beyond that point.



**FIGURE 6:** A - Basal cell carcinoma that had recurred four times, adhered to the bone. Would it be possible to observe tumoral margins in the ulcer region? How would this tumor margin be from the histological point of view? B - As the sketch sent to pathology illustrates, three oriented biopsies were carried out, reaching the depth up until the bone plane. C - Although the tumor is very infiltrative, the tumor border is laterally visible. D - Appearance of the tumor towards the deep plane. There is no reliable margin. Isolated tumor cell cords interwine with the bundles of collagen fibers. E - Detail of a bundle of cells. With this data it was possible to remove the entire tumor with a single stage of micrographic surgery (Munich method), without major lateral safety margins, removing all the periosteum in the deep plane

Recurrent tumors are usually adjacent to an area of scarring. Many surgeons advocate the complete removal of the scar, as it can be frustrating to prove through micrographic surgery whether it was free of a tumor (which could be growing in another direction). In such cases, performing an oriented biopsy in the pre-operative assessment phase, could better guide the micrographic surgery, helping it to fulfill its primary role: to remove only the tumor.

The concept of an oriented biopsy derives closely from surgical excision with microscopic control of the margins, i.e. from the understanding of the logics of the micrographic surgery. The more the subject is known, the more informative the oriented biopsies can be. Also, it is very important to rely on a laboratory that is familiar with these techniques. In the absence of a laboratory able to correctly perform the procedure, a surgeon who has an in-depth understanding of micrographic surgery can provide adequate guidance. ●

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