

# The Rule of Halves

## A Method of Controlling the Uniform "Cutting-in" of Skin Biopsies

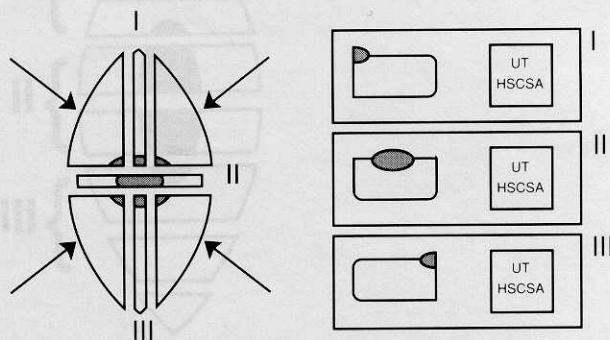
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This article describes a method of uniform gross-room sectioning of skin biopsy specimens, especially excisional biopsy specimens, to insure even thickness and maximum control of the tissue before paraffinization. This is accomplished by sequentially halving portions of the specimen after each cut as opposed to serially cutting the skin from one end to the other.

**Key Words:** Rule of halves—Diagnosis by silhouette—Skin biopsy—Gross-room technique.

In the course of training a pathology resident or pathology assistant to cut in tissues properly for paraffin blocks, invariably an important specimen is less than optimally sectioned, resulting in poor orientation, tissues that are too thick, or (if more than one tissue is in the block) unequal thickness of the tissues. Some of these problems occur because of traditions of the institution; others—most in this author's experience—occur purely from lack of instruction.

One popular misconception is that a perpendicular representation of fusiform or circular excisions (Fig. 1) is adequate to evaluate margins, although, in most cases (especially for benign lesions), the diagnosis can at least be made. With this technique, the lesion is represented in two planes, but the over-



**FIG. 1.** Perpendicular technique. Portions of the lesion are sampled as half-sections, obscuring the architecture on two of the three slides. The arrows correspond to the unsampled lateral portions of the margins, which may be important if the lesion is diffuse. The roman numerals correspond to the block number. The use of this technique is discouraged.

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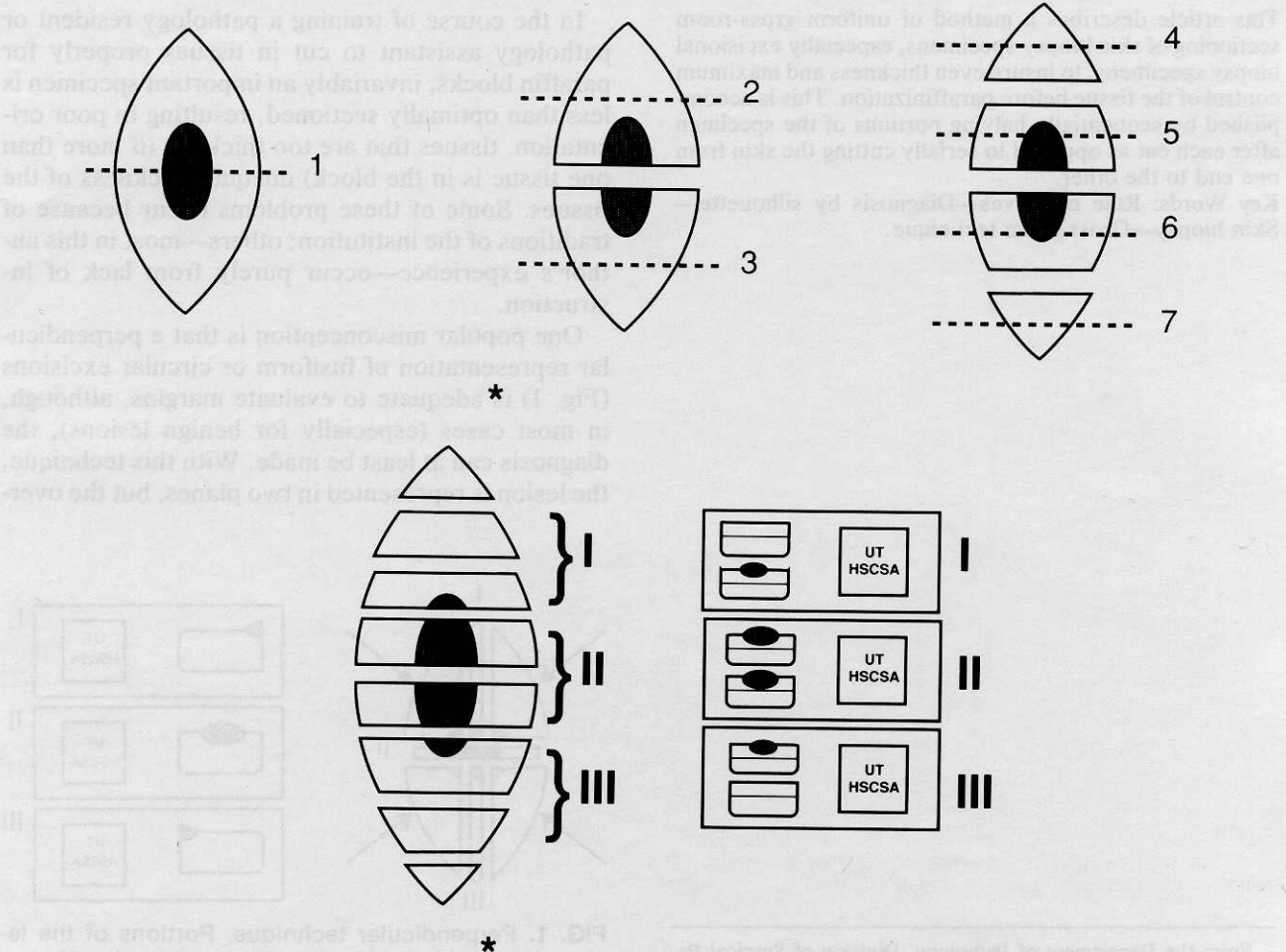
all configuration, or silhouette (1), of the growth pattern of the lesion is often obscured, especially if there is difficulty in processing the section showing the complete lesional architecture. In addition, significant portions of the tissue may go unsampled. To sample more of the lesion, as well as to insure pleasing sections of the *entire* lesion (which is especially critical for melanocytic tumors) and to insure sections of equal thickness, the *rule of halves* is recommended. In many instances, this technique will add no additional paraffin blocks to the case.

**DESCRIPTION OF METHOD**

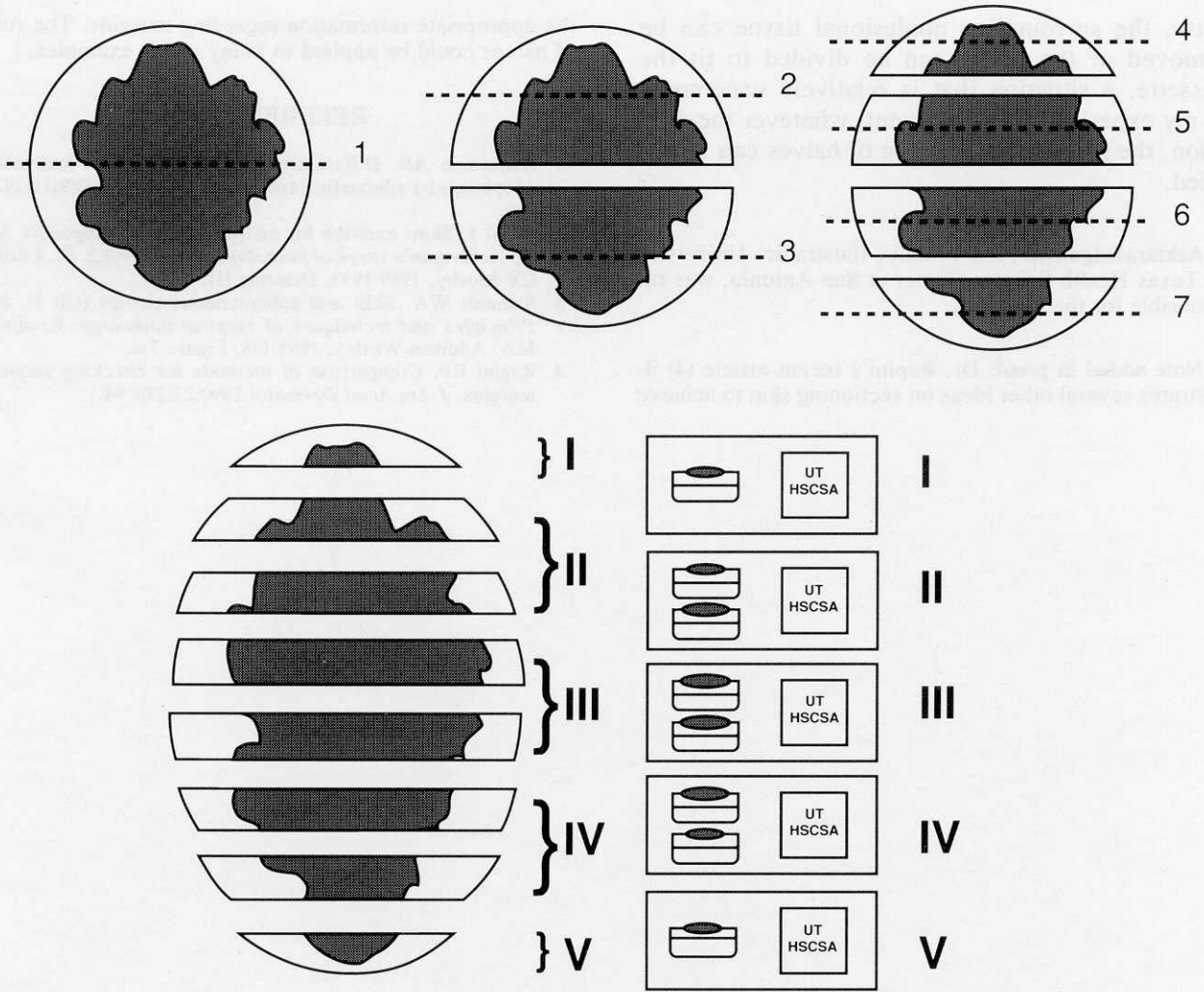
The rule of halves is the method of sequentially halving the biopsy specimen until uniform sections

are achieved. Depending upon the type of biopsy, the sections are made perpendicular to the long axis if fusiform (Fig. 2), or into two semicircles, if circular (Fig. 3). This results in two equal halves. Each half is then treated as a separate biopsy specimen and, in turn, halved. The halving technique is performed until all tissues are of acceptable thickness, usually no thicker than 2 mm, and then are transferred into blocks.

In our laboratory, submitting more than two tissues per block is discouraged. In the case of fusiform excisions, the end pieces are marked and retained in the jar as it is usually not necessary to submit them for examination. In the case of the circular excision, the end pieces are submitted in special blocks in the event that serial sections are required in order to assess the margins properly.



**FIG. 2.** The rule of halves applied to a fusiform excision. The arabic numerals correspond to the sequence in which sections should be made. The roman numerals correspond to the block number. Note that each of the halves is successively halved until the proper thicknesses are achieved. The asterisks correspond to the end pieces, which are usually retained in the jar, but may be submitted if needed.



**FIG. 3.** The rule of halves applied to a circular excision. The arabic numerals correspond to the sequence in which sections should be made. The roman numerals correspond to the block number. Note that each of the halves is successively halved until the proper thicknesses are achieved. Due to the irregular nature of the lesion, the end pieces are submitted separately to insure maximum control of the block in the assessment of the margins of resection.

**COMMENT**

It is important, to insure correct understanding of the margins, that the tissues be maintained in proper orientation when this method is employed. Any of the commonly used inking systems will serve this purpose.

With the use of this method, it is simple to produce sections of  $\leq 2$  mm. When compared with the method of trying to carefully—and usually unsuccessfully—cut successive ends off of the tissue, the rule of halves is usually superior and less frustrating.

It can also usually be adapted to large excisions

of skin, although many times these large excisions are *re-excisions* containing little, if any, of the original lesion and may require less critical sampling. Alternatively, special peripheral tangential or grid sectioning may be required if such an excision is broad, irregular, and the lesional margins are clinically ill-defined. Techniques addressing the issues of obtaining margins at the tangential portions of the epidermis (2) and subcutaneous (3) portions of the biopsy specimen have been illustrated elsewhere. Once the margins are blocked in, the rule of halves can be applied to the lesion proper, just as in the small specimen. At this point, if the *lesion* is so large as to preclude its sectioning for a single cas-

sette, the surrounding nonlesional tissue can be removed or the lesion can be divided to fit the cassette, a situation that is relatively uncommon in my experience. In any event, whatever the situation, the principle of the rule of halves can be applied. □

**Acknowledgment:** Ann Pressly, Illustrator, University of Texas Health Science Center at San Antonio, was responsible for the drawings.

**Note added in proof:** Dr. Rapini's recent article (4) illustrates several other ideas on sectioning skin to achieve

the appropriate information regarding margins. The rule of halves could be applied to many of his examples.

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FIG. 3. The rule of halves applied to a circular excision. The static numerals correspond to the sequence in which sections should be made. The roman numerals correspond to the block number. Note that each of the halves is successively halved until the proper thickness is achieved. Due to the irregular nature of the lesion, the two pieces are submitted separately to insure maximum control of the block in the assessment of the margins of resection.

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