

## A quick and effective method of photomicrography in dermatology – pathology

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### Abstract

A quick and effective method of photomicrography in dermatopathology has been devised using the idea of longitudes and latitudes as on a geographical map. In a horizontally oriented scalpel biopsy section, ten equi-distant vertical imaginary lines are drawn starting from the extreme left as V 0/10 and the extreme right as V 10/10. In addition, five equi-distant imaginary horizontal lines are drawn with H 0/5 on the stratum corneum and H 5/5 below the subcutis. The position of a particular field at higher magnification should be then noted at the scanner position (4x objective) for proper orientation.

### Introduction

In various dermatological biopsies, especially those with heavy infiltrates, granulomas or fungal spores (with or without special stains) it would be necessary to “mark” the glass slides for teaching purposes, or for photomicrography, in order to return to a particular microscopic field. One method commonly used is to mark the spot on the section with fountain pen ink, after bringing the microscope to the scanner position (4X objective). This would however deface the slide for photomicrography. Another method is to use the graduated scale with the attached vernier caliper on the vertical and horizontal sections of the mechanical sliding stage on the microscope. The exact readings should be noted down on the vertical and horizontal sections separately of the observer’s microscope. We can then come back to the same position of the biopsy section provided we place the glass slide in a uniform manner, i.e. with the slide number placed to the left of the microscope stage. However, this method may not be suitable for photomicrography, as the graduated scale readings on the observer’s microscope may not correspond with those on the photomicrography microscope. Moreover, this method is laborious and time-consuming and may not be practicable for doing numerous photomicrographs. Accordingly, a new method has been devised for quick evaluation of glass slides on the observer’s microscope, for subsequent photomicrography on a different microscope, based on the idea of longitudes and latitudes as on a map.

As is well known, longitudes and latitudes are imaginary vertical and horizontal lines on a map of a country or of the world to fix the location of a particular city or geographical area. Certain atlases use alphabets for the improvised vertical lines (A to D etc.) and

Arabic figures for the improvised horizontal lines (1 to 4 etc.) to locate a particular place on the map more simply.<sup>1</sup> A modification of the idea of imaginary vertical and horizontal lines is used in this new method.

### Materials and Methods

The required glass slides for photomicrography are placed on one’s study microscope in a uniform manner i.e. with the slide number always on the left. In case there are four sections on the same slide, then the best section is noted e.g. the 2<sup>nd</sup> section. In the case of a scalpel biopsy the length is usually more than the height, and so ten imaginary vertical lines are “drawn” on the section with zero at the extreme left (if the section is horizontally oriented), or on the top (if it is vertically oriented). So the vertical fifth line will be at the vertical centre of the section (V5/10) and the tenth line (V10/10) will be at the opposite extreme end (Figs. 1&2). Similarly five horizontal lines are “drawn” with zero on the stratum corneum and five at the deepest part of the section just below the subcutis. A decimal of 0.5 may be used (if required) e.g. the horizontal line at the halfway depth position would be H 2.5/5 and the deepest part would be H5/5 (Figs. 1&2). In order to identify a particular location on the section, we have to first locate it on the scanner (4X objective) and then turn to a higher magnification e.g. 10X or 40X objectives. While viewing a high power field (40X objective), we have to revert to the scanner position for orientation.

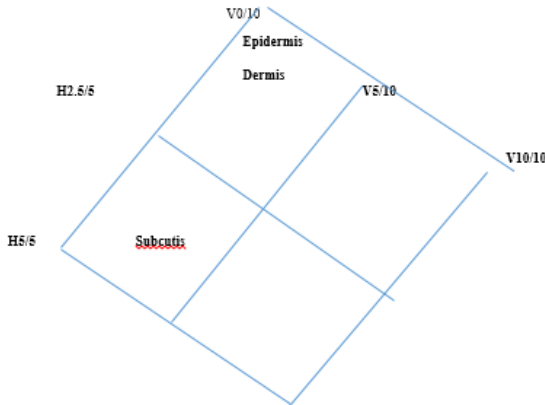
### Results and Discussion

Figs. 1&2 depict a diagrammatic representation of this grading system for a scalpel biopsy section.

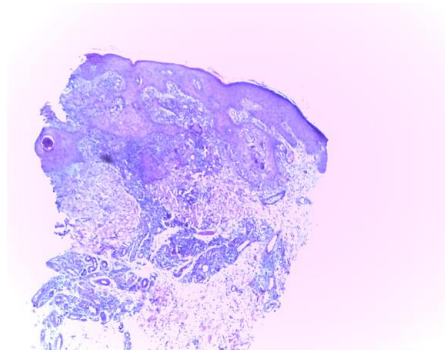
V0/10	V1/10			V5/10				V10/10
H0/5		Epidermis						
		Dermis						
				*				
		Subcutis						

H5/5

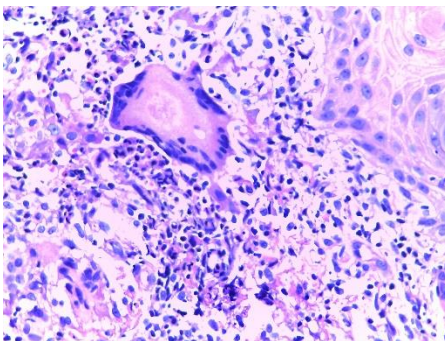
**Fig. 1: Horizontal orientation of the section with the epidermis above and the subcutis below. Position of the asterisk is near V4/10 and H3/5 position**



**Fig. 2: Vertical orientation of the section**



**Fig. 3: Multinucleate giant cell under a pseudoepitheliomatous hyperplasia of the epidermis (H&E X 40) (V5/10 and H2/10 position)**



**Fig. 4: Same multinucleate giant cell with a surrounding granulomatous and acute and chronic inflammatory infiltrate (H&E X400)**

vertical lines could be reduced to five (V1 to V5), and the horizontal lines may be increased to ten (H 1 to 10).

Fig. 3 is an illustration from a punch biopsy slide of chromoblastomycosis, scanner view (4X objective). There is a large multinucleate giant cell in position V5/10 and H2/10 which is just seen even at this magnification, under a pseudoepitheliomatous hyperplasia of the epidermis. There are also deep seated sweat glands in the position V2 – 4/10 and H 8 – 9/10. Fig. 4 shows a high power magnification (4X objective) of the same giant cell and surrounding granulomatous and acute and chronic inflammatory infiltrate in the superficial dermis.

This method of “marking” imaginary vertical and horizontal lines while viewing the best section on the microscope, and writing down the values for each desired photomicrographic detail on the scanner position (4X objective) would be very useful in showing several slides for teaching, or for performing photomicrography of several slides. It is to be remembered that before noting various details at higher magnification, the slide has to be first oriented with reference to the scanner view (4X objective) in order to ascertain its correct position on the vertical and horizontal scale.

Recently, a new grading system was introduced for determining the quantum of infiltration or destruction of the appendages and nerves on a scale from 0 – 4 in macular lesions of pauci-bacillary leprosy.<sup>2</sup> It is suggested that this new system of vertical and horizontal lines for location, could be combined with the previous grading system for accurate recording of the position of an infiltrated nerve or appendage in the dermis.

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In the case of a small punch biopsy, the height (or depth) would be more than the length. In that case, the

## References

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2. Mani M.Z. A new Grading System for Macular Lesions of Paucibacillary Leprosy. *J Clin Diagnostic Res* 2018;12(10):WL01-WL02.

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