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Article *in* Global Journal of Medical Pharmaceutical and Biomedical Update · February 2023

DOI: 10.25259/GJMPBU_124_2022

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Short Communication

Novel Pin Method for Labeling Surfaces on a Gross Specimen

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Received : 26 October 2022
Accepted : 29 December 2022
Published : 08 February 2023

DOI
10.25259/GJMPBU_124_2022

Quick Response Code:

ABSTRACT

At present, surgeons and pathologists mark surfaces on a gross specimen by means of sutures of variable lengths or by inking them with different colors. However, both the existing methods have certain disadvantages associated with them such as tissue damage and interference with staining characteristics. Herein, we have introduced a novel "pin method" for labeling surfaces on a gross specimen to overcome the drawbacks of existing methods. The method involves marking different surfaces on a gross specimen using pin-like instruments such as table pins, endodontic files, and spreaders having colored knobs to mark the corresponding surfaces. The method is efficient and effective for labeling surfaces on a gross specimen, requiring minimal time and effort on the part of the surgeon, as compared to the existing methods.

Keywords: Grossing, Orientation, Margin status, Oncology

INTRODUCTION

Identification of various surfaces of a specimen is required for various purposes: (i) to know whether tumor mass with sufficient margin of normal tissue is removed from all surfaces; if not, then which surfaces show the presence of tumor cells, (ii) particular areas of interest to the surgeon or the pathologist, (iii) to guide regarding the orientation of the tissue –, i.e., how it will be mounted in the block so that the required section displays entirety of specimen from the center to the periphery.[1]

A pathologist, therefore, needs to be completely aware of the various surfaces of the specimen, namely – anterior, posterior, medial, lateral, superior, and inferior.

Conventionally, surgeons have been indicating the different surfaces of a specimen to the pathologists by marking them with sutured threads of different lengths and with a variable number of knots for respective surfaces. A general rule states that marking at least two margins is mandatory to allow a pathologist to re-orient the tissue in the same anatomic position at the grossing table.[2] Despite these efforts, frequent disorientation has been found in specimens marked with sutures, with a rate as high as 78%.[3]

Various possible reasons have been cited for the disorientation of specimens marked with sutures, which constitute their drawbacks. If the strength of the tissue is not sufficient, the suture

thread may get dislodged, causing loss of tissue in the process and also leading to confusion during the grossing of the specimen. The suture needle may also damage essential areas of interest during the process of inserting thread from one end to another. Furthermore, the sutures are also not easily identifiable in the photographs.

At times, the surgeons or pathologists also label the surfaces by inking them with various colors. Although they eliminate the disadvantages of the suturing method, inking interferes with the staining of the specimen and its subsequent microscopic examination.[1,4] Furthermore, the procedure is time-consuming and the surgeon must wait until the ink dries on one surface before proceeding to the next surface, which is not feasible in normal clinical settings.[5]

Herein, we have introduced a novel "pin method" for labeling surfaces on a gross specimen to overcome the drawbacks of existing methods.

MATERIAL AND METHODS

The method comprises utilizing pin-like instruments such as table pins, endodontic files, and spreaders with colored knobs for labeling surfaces on a tissue specimen [Figure 1]. The pins of different colored knobs are inserted in the respective surfaces to be marked by that color up to a depth adequate for their retention. If needed, stoppers used for endodontic files can aid in controlling the depth of insertion.

For the sake of demonstration in our case, we utilized endodontic Kerr files.

1. The handles of files were trimmed using micromotor and bur to the desired extent.
2. About 1 cm of the fluted portion of the files was retained and the remainder was broken off using pliers [Figure 2].
3. The prepared files were then inserted into the respective surfaces of the tissues with desired angulation [Figure 3].

DISCUSSION

Although endodontic files were used for the sake of demonstration in the present case, any type of similar instruments such as endodontic spreaders or table pins can be used for the purpose. The principal focus here is the utility of pin-like instruments for labeling surfaces on gross specimens. These pins have significantly lower diameters as compared to suture needles and leave only one point of entry into the tissue.[6] However, this may not always be the case when files of larger size are required to be used, in which case the diameter of files would exceed that of the suture needle.

Different types of tissues such as fat, muscles, cartilage, and bone require different extents of perforative ability and retention by the pins. The K-files used in the present demonstration offer moderate retention due to the flutes present on their square blanks with negative rake angles. Similarly, endodontic H-files offer superior retention due to their rounded blanks with positive rake angle.[7] However, they would also engage more of the surface area and consequently damage a greater amount while removing them from the tissue.

The flutes were retained up to 1 cm, which was deemed as optimal for retention without causing much damage to the tissue. For this purpose, endodontic files of 21 mm in length were most suitable due to the short distance between the handle and the beginning of the flutes. The handles were also reduced to the corresponding size, to minimize the chances of removal due to the lever mechanism.

The extent of flutes and handle retained can be customized depending on the size of a tissue or individual preference. Larger tissues practically required files of larger lengths of more than the prescribed 1 cm and larger diameters. In such cases, the diameter of the files became equal to or greater than that of the suture needles. Nevertheless, the advantage

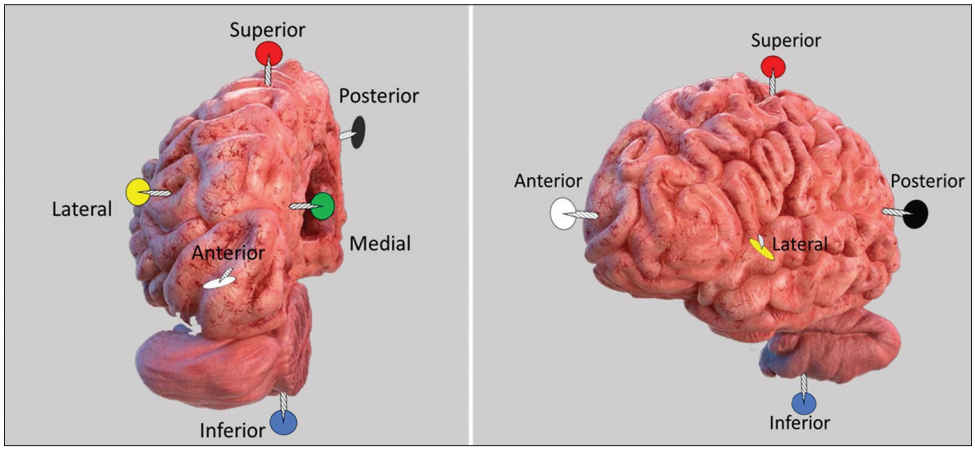

Figure 1: Diagrammatic representation of the pin method for labeling surfaces.

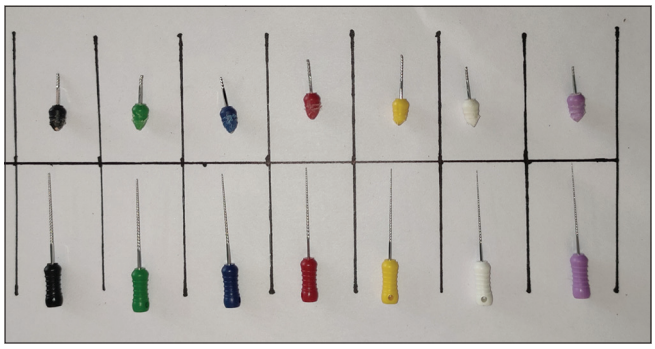

Figure 2: Comparative demonstration of original and trimmed endodontic files used for the method.

Figure 3: Gross specimen with surfaces labeled using endodontic K-files with colored handles.

of a single point of entry and ease of placement of files as compared to sutures was maintained.

Routinely available table pins inserted into the tissues were also able to retain their position in the specimen under running tap water. The retention was only compromised in the case of fragile or loose tissues. Certain advantages were offered by endodontic files in this aspect. The flutes provided additional retention in the specimen, such that the files remained in place even under vigorous pressure from tap water. The handles of endodontic files also facilitated improved grip due to the presence of scalloped protuberant rings.

There are a few obvious limitations to using the pin method for labeling surfaces. Although much less time and effort are required by the surgeon for labeling the surfaces, preparing the endodontic files as demonstrated in this case requires a certain amount of preparatory effort. The method does not enable direct observation of the inked margins under the microscope and requires labeling of the margins while preparing the tissue blocks.

Overall, the "pin method" would be advantageous over existing systems in the following ways:

1. In most cases, the files would damage less tissue as compared to a suturing method, with the latter traversing through a greater amount of tissue and having two different points of puncture in the tissue, for entry and exit, respectively.
2. Unlike sutures, retention of the pins would depend relatively less on tissue fragility and more on the surface area of contact. Therefore, it would have greater retention, which is much needed, especially when the tissue will be placed in certain chemicals.
3. The pins could be angulated in such a way that they would all be visible in a single photograph from one angle. This would overcome the photography drawback of the inking method.
4. Unlike the inking method, the pin method would not interfere with the staining characteristics after histopathological processing.
5. The colored knobs of the pins could be used following a color-coding system, giving an instant idea to the viewer about the surfaces without needing specific instructions regarding the labeled surfaces.

CONCLUSION

Barring a few limitations, the novel pin method is an efficient and effective method for labeling surfaces on a gross specimen. The pins are easily available and require minimal effort and time for placement. At the same time, in most cases, they damage less amount of tissue as compared to the suturing method. The method also does not interfere with the staining characteristics as noted in the surfaces marked by the inking method.

Declaration of patient consent

Patient's consent not required as there are no patients in this study.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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How to cite this article: Sachdev SS, Chettiankandy TJ, Sayed AB, Landge JS. Novel pin method for labeling surfaces on a gross specimen. Glob J Med Pharm Biomed Update 2023;18:4.