

A NOVEL METHOD FOR COLORING AND LABELING SPECIMENS IN THE ANATOMY MUSEUM

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ABSTRACT

Introduction: In today's medical educational programs in various institutes anatomy is an essential part of the curriculum in the first year of the medical course. An attractive and innovative anatomical museum forms a vital role in furthering the interest and educating a medical student. Once a specimen has undergone fixation it is essential to color and label the specimens in order to ensure better visualization of required structures and for its proper placement in the museum.

Materials and methods: We have utilized a novel method of using commercially available nail polish as a coloring agent and as a part of the labeling of museum specimens.

Results: Nail polish being non- toxic and readily available can be used without causing any complications.

Discussion: Commercially available nail polish is cost effective and non-toxic. Its various usages are described along with the techniques of labeling done in our anatomy museum.

KEY WORDS: Coloring, Labeling, Nail Polish, Proxy labeling.

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INTRODUCTION

Anatomy refers to the science of investigating a body's internal structure. It is one of the basic sciences in a student's medical career. It forms an essential part of the medical curriculum. As early as the 19th century anatomy has become a prerequisite for a medical career, hence private lecturers and hospital practitioners developed anatomical teaching in both England and France at a fast pace [1].

The norm of today's medical teaching is 'No Dissection, No Knowledge' [2]. Following dissection of specimen's normal anatomy of the

given structure and the various possible variations of the specimen could be analyzed. Thus developed the process of preservation of specimens and establishing of anatomical museums. Once the specimens are fixed, it is then mounted and displayed in anatomy museums. A good anatomy museum can provide an in depth learning of the various structures of the body and can further the medical education of the student. The effectiveness of a museum in an educational program is based on the principle that viewing an object is better remembered and recollected than a written or a verbal description.

Coloring and labeling, forms an essential component in the display of specimens in an anatomical museum. As emphasis is placed on the use of prosected specimens to support teaching and learning of gross anatomy, we have utilized a novel method of using commercially available nail polish as a coloring agent as well as for preservation of wet specimen labels.

MATERIALS AND METHODS

Nail Polish has been used as a coloring agent in dry specimens and also in fixing colored wet specimens. The specimen usually bones that is to be colored is dried to remove all remaining moisture. The areas to be colored are marked and commercially available nail polish of various colors are used for painting. Wet specimens where coloring is required are first allowed to dry overnight for removal of formalin from its surface. Then the areas to be colored are marked and commercially available poster or acrylic paints are used. Vessels, nerves and various tissues are colored in this manner.

Glass rods or cotton balls can be inserted into larger vessels to maintain its configuration. Once the paint is dried clear nail polish with amyl acetate in a 1:1 ratio is applied on the painted areas. The mixture is applied directly using paint brushes.

Computerized labeling is done on charts or drawing sheets of required size. Certain labels like numbers or direct names can be fixed directly on to the specimen by super glue. Or the labels could be fixed beside the specimen on the central stage. Before affixing the label a coat of clear nail polish mixed with amyl acetate in 1:1 ratio is applied.

RESULTS AND DISCUSSION

Good museum specimens are only obtained and preserved by care and planning and careful treatment after its removal. The original techniques of preservation included 3 steps fixing, restoring color and mounting [3]. Coloring and labeling are essential components in mounting a specimen in the museum.

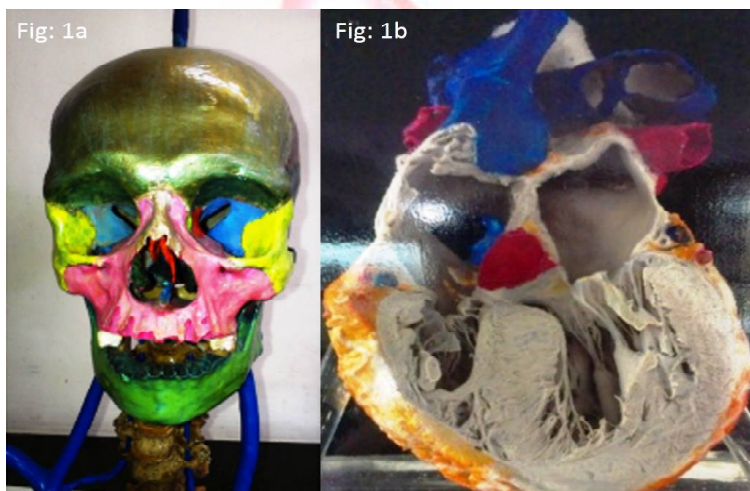


Fig. 1: **1a-** Dry human skull colored with different colored nail polish. **1b-** Wet specimen of chambers of heart. The pulmonary artery and vein are colored using different colored nail polish.

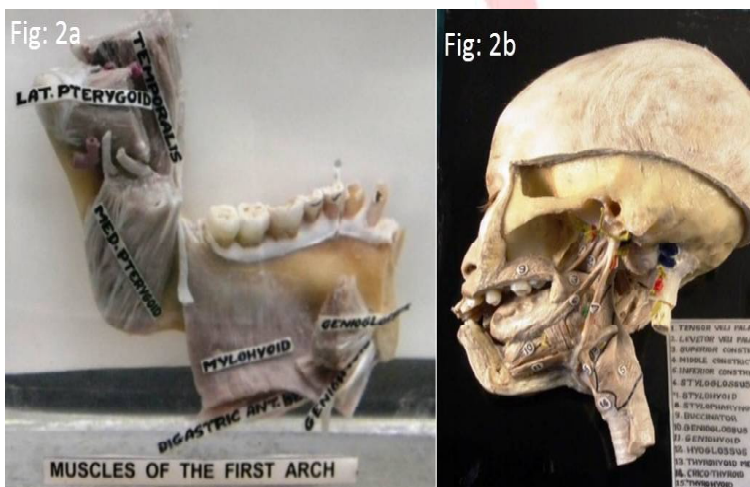


Fig. 2: **2a-** Wet specimen of Mandible with muscles derived from first pharyngeal arch. The direct labels used here are coated with clear nail polish, **2b-** Wet specimen showing the muscles of head and neck region. The proxy labels used here are coated with clear nail polish.

Nail polish is a type of lacquer applied on human finger and toe nails to protect and decorate nails. Nail polish was discovered in China in early 3000BC, being made in the Ming Dynasty using a mixture of egg whites and bee wax [4]. The constituents of commercially available nail polish include nitrocellulose resin, adhesive polymers, solvents and coloring agents [4]. Amyl acetate is an organic compound and an ester. It is used as a solvent for lacquer compounds. Nail polishes are of three varieties gel, base and top coat. We use base preparations in direct coloring and the top coat clear nail polish for layering. Use of nail polish as a coloring agent for dry bones is now practiced in our museum with relative ease (Figure 1a). Clear nail polish can also be layered directly on to colored wet specimens (Figure 1b). These specimens were colored more than 6 years ago. There has been no damage or observable fading of its color.

Lacquer has been used earlier as well. Saunders demonstrated the use of lacquer for painting wet specimens. It was proved to be satisfactory for larger vessels but inadequate for smaller tissues as the colors blurred and tended to run. We use nail polished as direct paint only for dry bones [5]. A glossy effect is obtained and the bone has remained undisturbed without fading of its colors for a period of 6-7 years. Layering colored specimens with a coat of amyl acetate and clear nail polish prevents the running of the color into the mounting fluid. This increases the durability of the specimen and also prevents turbidity of the fluid necessitating its change. This proves the cost effectiveness of the product.

There are two schools of thought regarding labeling of specimens. Firstly, that the object should speak for itself and secondly, that the label should serve to illustrate the principles involved. In early days labels were made using old X-ray sheets by removing the emulsion in hot water [6]. We use computerized labels of required size with a clear font. In our museum earlier direct labeling was practiced. These days we perform proxy labeling where the specimens are numbered and the description is by the side or mounted separately. Applying a finishing layer of the above mixture has proved to increase the quality of the label. Figure 2a and 2b depicts specimens that have been labeled using the

above described technique. The coat offered by the amyl acetate and clear nail polish prevents the leakage of the ink on to the specimen and in to the fixating fluid. Thereby long term preservation of the displayed specimens in the anatomy museum is ensured.

CONCLUSION

Usage of commercially available nail polish is a cost effective and a productive methodology. Being readily available and non-toxic it can be used to highlight structures in dry bones as well as a protective covering for colored wet specimens and in labels.

Conflicts of Interests: None

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