



PRESERVATION & DISPLAY OF ANATOMICAL SPECIMENS IN MUSEUM SETTINGS

INTRODUCTION

All teaching hospitals and colleges of Pathology have Museums which serve many functions: permanent exhibition of common specimen for undergraduate and postgraduate teaching purposes, illustrating specimens of rarity, permanent source of histologic material and for gross and microscopic photography.

MODIFIED MUSEUM TECHNIQUES

Any specimens for museum are handled by following steps:

- 1. Reception**
- 2. Preparation (Initial fixation)**
- 3. Primary Fixation (Primary fixative solution A)**
- 4. Color restoration and final preservation (Final mounting solution B)**
- 5. Presentation and mounting the specimens**

RECEPTION OF THE SPECIMEN

Any specimen received in the museum should be recorded in a Reception book and given a number followed by year (e.g. 32/2025). This number will stay with specimen even after it is catalogued in its respective place. This number is Written on tie-on type label in indelible ink and is firmly attached or stitched to the specimen. The reception book should contain all necessary information about the specimen (clinical, gross and microscopic findings).

PREPARATION OF THE SPECIMEN

An ideal specimen is received fresh in unfixed state. However, it is mostly obtained from pathology laboratory after being examined. After the initial grossing/dissection the specimen should be immediately fixed in primary fixative solution 'A', in case of unavailability of primary fixative solution 'A'; 10% neutral buffered formalin may be used until the specimen is transferred to the primary fixative solution 'A'. The specimen which is being used for museum, part of it can be kept without disturbing for museum, e.g. in kidney it can be bisected and one half kept aside for museum.

PRIMARY FIXATION OF THE SPECIMEN

The objective of fixation is to preserve cells and tissue constituents in as close a life-like state as possible and to allow them to undergo further preparative procedures without change. Fixation arrests autolysis and bacterial decomposition and stabilizes the cellular and tissue constituents.

Primary Fixative Solution A:

Volume ratio : The specimen needs to be kept in large enough container which can accommodate specimen along with 10 to 20 times volume of primary fixative solution A.

Fixation Time:

The specimen is typically suspended in this solution for the period of 24 hours to 5 days or even more up to several weeks, depending on the size of the specimen.

Penetration rate of the Primary fixative solution 'A':

1 mm/ hour at Room temperature.

Note: The specimen should not rest on bottom or an artificial flat surface will be produced on hardening due to fixation.

COLOR RESTORATION AND FINAL PRESERVATION : (Final mounting solution B)

It is required to restore the specimens, as they lose their natural color on fixation. It is recommended to wash the specimen in running water after removing from Primary fixative solution A.

In the conventional technique, a separate controlled immersion in alcohol based color restoration solution is required to restore the natural color of the specimen after the primary fixation. This step is delicate and time sensitive because prolonged exposure to alcohol can cause permanent bleaching.

In this modified technique a powerful reducing agent is used as a color retaining agent in the final mounting solution B. So it is modified one step method for both color restoration and final preservation of specimen for display in museum techniques.

Note: Before sealing the jar the proportionate quantity of reducing agent must be added as recommended by authoritative museum technologist.

PRESENTATION AND MOUNTING THE SPECIMENS

Initially all museum specimens were mounted in cylindrical jars and sealed with sheep bladder walls. Later they were replaced by rectangular glass jars. They were better than cylindrical ones as the flat surfaces afforded a clear view of specimens without any distortion. They are covered by rectangular glass plates.

These jars can be purchased readymade or assembled in museum itself, as per need. Nowadays, Perspex jars are also available, which are lighter than glass jars. However, they cannot be used to store specimens fixed in alcohol or methyl salicylate as they react with plastics.

For museum anatomical display, museum grade adhesive offers a fast, strong bond for mounting specimens (like organs or tissues) onto clear backing like Perspex sheets, replacing fragile threads, by applying small amount to specimen and pressing it onto the backing, allowing quick polymerization for orientation and long term fixation, simplifying preservation, especially for delicate or re-mounted specimens.

Note: After the permanent attachment of specimens onto Perspex sheet which is used as backing, the specimen should be immersed in final mounting solution 'B'. Further before sealing the jar for permanent display, the reducing agent must be added as recommended by authoritative museum technologist.

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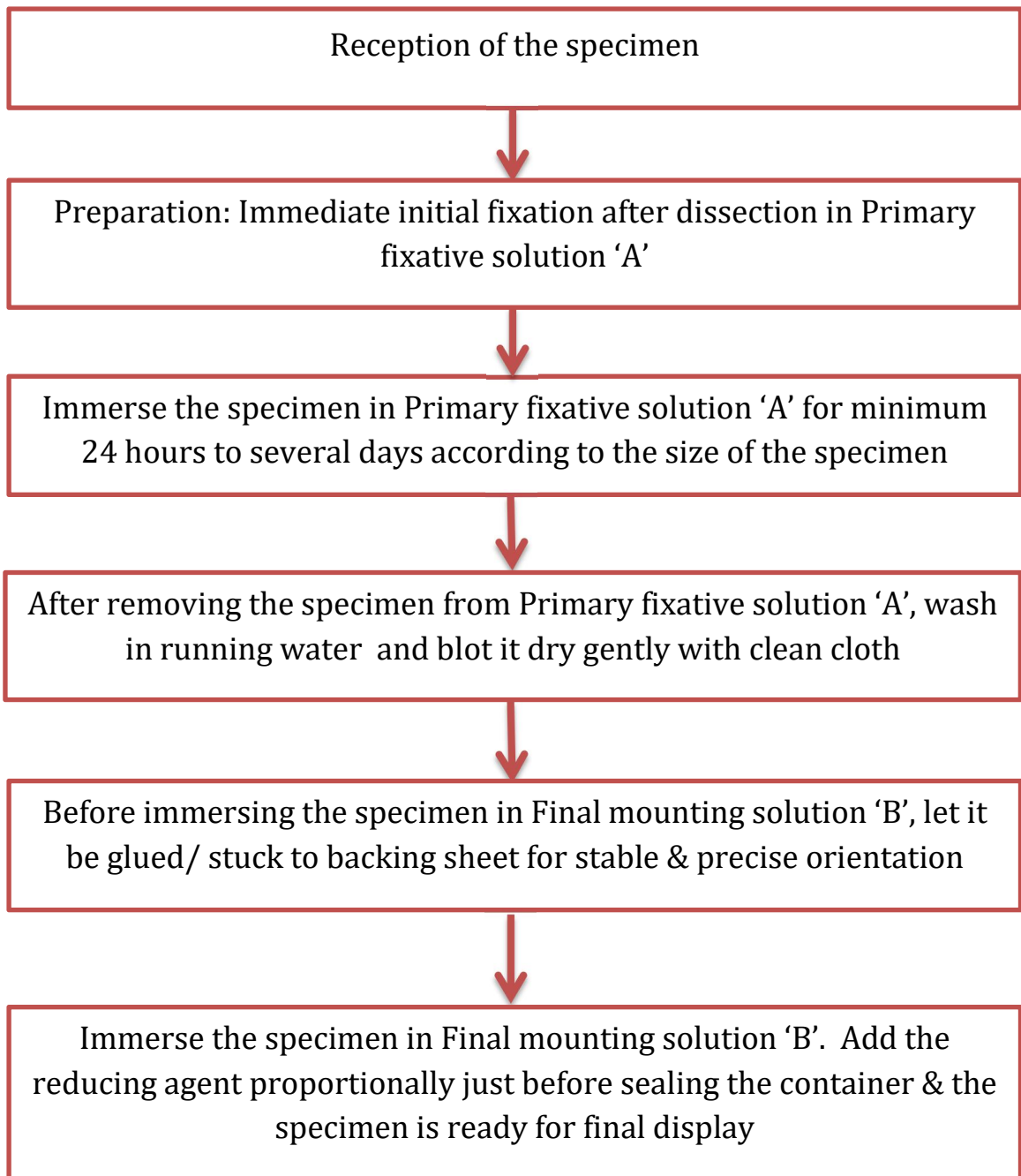
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PROCEDURAL FLOWCHART FOR NEW SPECIMEN





RE-PRESERVATION OF OLD SPECIMENS

To re-preserve old anatomical specimens and restore their appearance in modified final mounting solution B, you will need to follow a multi-step process involving potential re-fixation (conditional), color restoration and correct preservation in final mounting solution B.

Safety Precautions

Use personal protective equipment (PPE) like gloves, eye protection, and work in a well-ventilated area.

Step 1: Assess and Prepare the Specimen

Carefully remove the specimen from its current container and gently drain the old solution. Inspect it for any signs of decomposition or mold. If there is significant decay, the specimen may not be salvageable for clear display.

Step 2: Re-Fixation (If necessary)

If the specimen shows signs of decomposition or the original fixation was inadequate, it may need to be re-fixed.

Immerse the specimen in primary fixative solution A for a minimum of 24 hours to several days, depending on its size,

The rate of penetration of fixative :1 mm/hour

Ensure the volume of fixative is 10-20 times the volume of the specimen.

Suspend the specimen in the Primary fixative solution A, so it does not rest on the bottom of the container to prevent artificial flattening.

After adequate fixation, wash the specimen gently in running tap water for a short time to remove excess fixative and blot it dry gently with a clean cloth.

Step 3: Attachment/ gluing of specimen to the mounting plate

With the help of medical grade special adhesive the specimen should be attached/glued to the Perspex sheet/mounting plate for stable and precise orientation.

Step 4: Color restoration and Final Preservation in Final mounting solution B

Immerse the specimen into the jar/container containing final mounting solution B. Add the reducing agent proportionally just before sealing the jar/container as recommended by the authoritative technologist. In this final step the natural color of the specimen is restored and the specimen is ready for the final display.

Note:

Ensure the jar/container is completely filled with the solution, with no air bubbles.

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PROCEDURAL FLOWCHART FOR RE-PRESERVATION OF OLD SPECIMENS

