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PREPARATION OF DRY SPECIMEN OF BONES

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ABSTRACT:

Dry bone specimen preparation only by fixing with 10% Formalin, boiling with water and hard brushing removes important marks and allows the growth of Fungi and other microorganisms over them. Therefore to prepare a presentable dry bone specimen for the museum and students, a new method consisting of three steps, a) removal of soft tissue by softening, b) extraction of fat by chloroform and c) bleaching with hydrogen peroxide is described. The method produces satisfactory specimen and can be used to prepare the articulated skeleton for museum, instead of importing a plastic model from abroad.

INTRODUCTION:

Medical students study osteology on dry bones. For this purpose bones are collected from used dissected cadavers which had been buried for a year or so in temporary graves.[1] These bones are boiled in water and rubbed with hard brush to remove soft tissue from them. Such procedures usually remove important marks, small projections and tubercles from their surface. After use of a few months, further deterioration in some of the dry bones takes place by the growth of Fungus over them, while others start giving bad odor[2]. They do not remain in good presentable form.

Present study aims at the preservation of cadaver bones by using those chemicals which are commonly used in tissue processing techniques for histological studies.

MATERIALS AND METHOD:

For this study humerus, radius, ulna and two cervical vertebrae with some soft tissue attached to them, were collected from the cadavers whom the students had already dissected. To prepare dry specimen from these bones the method developed consists of three steps.

A) **Removal of soft tissue:**

Surplus soft tissue from the bones was removed by cutting and gentle scraping. Then bones were transferred to 10% Sodium hydroxide solution and were boiled for three to four hours. This processing softened the attachment sites of the unwanted tissue and assisted its removal with nylon brush. After removing all the unwanted soft tissue from the bones, they were allowed to dry at room temperature for 24 hours.

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B) **Removal of fatty tissue:**

The adult long bones contain large amounts of fat in their medullary cavity and some fat associated with their surface. This fat was removed by immersing the bones in Chloroform for 12 hours. Then a second change with fresh Chloroform was given for another 12 hours. After removing the bones from Chloroform they were allowed to dry at room temperature for 24 hours.

C) **Bleaching:**

The dried bones were transferred to Hydrogen peroxide solution for overnight and once more allowed to dry at room temperature for 24 hours. Finally the dried bones were painted with Varnish.

RESULTS:

Two years back when the dry bone specimen were prepared, they had all the important marks on them. Now, even after two years of their use, there is no growth of Fungi or microorganisms over them. They are free of any greasy material on their surface.

DISCUSSION:

In tissue processing for histological purposes, generally 10% Formalin is used as a Fixative[3]. In this procedure fixation with formalin has been intentionally avoided, because the bones were collected from those cadavers which were already preserved in 10% Formalin.

Sodium hydroxide has softening effect on the body tissue[4]. Boiling the bones in 10% Sodium hydroxide solution had well assisted the removal of soft tissue from the bones.

Generally Xylene and Chloroform are used in histopathological techniques for clearing the tissues[5].In present study it has been used for extraction of fat from the bones. Many histological and cosmetic procedures involve the use of Hydrogen peroxide[4] as a bleaching agent. In the present procedure it has been successfully used to bleach the colour of the bones. Ordinary varnish available from the market was used to paint the bones. It produced shine and luster over the surfaces of the bones.

It is suggested that the bones collected from a single body and prepared by the present procedure can be utilized to prepare articulated skeleton for the museum.

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