



RESEARCH ARTICLE

FAST METHOD OF ASSEMBLING A FOWL SKELETON

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ABSTRACT

The skeleton of the domestic fowl can be used to study the avian morphology in teaching and comparative anatomical studies of skeletal features of aves with other vertebrates. Adult bird of 72 weeks old was sacrificed and the feathers, flesh and internal organs were removed manually by using scissors, forceps and knife. The disarticulated bones were prepared by using domestic pressure cooker, hot air oven, acetone and bleaching powder. The skeleton was assembled by standard method.

Key words: Domestic fowl, Skeleton, Fast method.

INTRODUCTION

The domestic birds which are distributed numerous in breeds throughout the world. Economically most important among the domestic birds is the fowl. Since the fowl is used as a type species to compare morphological characteristics with other species in teaching anatomy. The skeletal system or loco motor apparatus consists of weight bearing skeleton it is prerequisite for the movement and certain parts of the skeleton form cavities for the protection of internal organs. The skeleton of domestic fowl is the hard substance that forms the frame work of its body. The bones are fit together and held in place by strong flexible tissues that bind the bones together to form joints. The present study was undertaken to produce a fowl skeleton in short time by using fast curing cement for improved understanding of comparative avian anatomy.

MATERIALS AND METHODS

Adult bird of 72 weeks old was sacrificed by severing the carotid artery care should be taken to not to damage the bones. After all the life left the bird, the skin with feathers was removed by scalding in the hot water. Evisceration of abdominal and thoracic contents were done by hand and severing them at the point of attachments. The major muscles in the breast, thigh and legs were removed with the help of knife without damaging the ribs and other bones. After that, the bird was boiled in domestic pressure cooker at 100°C for three hours. The muscles and cartilage were removed and the bones were separated by using blunt scalpel without damaging the periosteum. Afterwards, the disarticulated bones were boiled with 10 % bleaching powder solution in domestic pressure cooker for thirty minutes to remove the minor tissue debris. The bones were removed from domestic pressure cooker, drained and dried in hot air oven at 60°C for two hours. The dried bones were immersed in acetone solution for overnight to de fat. Again the bones were sun dried for several

days and they were mounted and skeleton was assembled in solid base.

RESULTS AND DISCUSSION

The endoskeleton of the domestic fowl is a bony frame work that supports the body parts, protects delicate internal organs, provides surface for muscle attachment and gives rigidity and shape to the bird (Ashkharad 1978). Guttman 1999 stated that the bones are light weight with numerous air spaces unlike those of other animals which are compact and heavy. The vertebral column of domestic fowl consists of total of 40 bones as shown in the Table below (Ogugua *et al.*, 2012). (Table)

Vertebrae	Number of bones
Cervical	14
Thoracic	7
Lumbosacrals	15
Caudal	4
Total	40

According to West, 1977, the copper wire of 2mm thickness was bent according to the natural curvature of the vertebral column of domestic fowl. Cervical, thoracic and lumbosacrals were arranged in the natural order into the wire and they were fixed by using flexible adhesive. Stainless steel rod of 1mm diameter, 12'' height was drilled and fixed in the 7x16'' granite base at the centre 7 inches from the front margin of the granite base. The upper end of the rod was curved like 'U' shape. Anterior end of the copper wire was inserted into the skull through foramen magnum so that the single occipital condyle articulated with the dens of axis. The oscoxae and pygostyle were fixed to the posterior end of the copper wire. The assembled vertebral curvature was fixed in the rod in such a manner that the first thoracic vertebra should be fitted in the 'U' shape curve. The both side hind limb bones were arranged in the correct order and angle viz. Femur, tibiotarsus, tarsometatarsus and digits and they were fixed by using fast

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Fig. 1. Skeleton of domestic fowl prepared and mounted by fast method of skeleton preparation

curing cement. The assembled hind limb was fixed to the os coxae by head of the femur articulated with the acetabulum. The vertebral ribs were arranged serially and attached to the right place of articulation with the corresponding thoracic vertebrae. Corresponding sternal ribs connected to the distal end of the vertebral rib. The articulation of the sternal rib should be in such a manner that its distal end articulates with facets in the sternum. 2, 3, 4 and 5th rib should be articulated to the sternum 6th, 7th and first rib should be free. While attaching

the vertebral rib the uncinat process of the anterior should be overlap the posterior ribs (Campbell, 1987 and Ogugua *et al.*, 2012). The sternum is a highly modified breast bone which is positioned under the body of the fowl (Towel). Then the sternum was fixed to the corresponding facets of the sternal ribs. Lateral part of the posterolateral process of sternum should overlap the last three vertebral ribs to give additional support to the sternum. Finally, the bones of wing were arranged and fixed in the order of natural resting position with the help of fast curing cement. (Fig. 1)

Conclusions

The study has established for local and cheaper pattern of preparation of the fowl skeleton for the study and teaching comparative anatomy and which did not involved lot of laboratory chemicals.

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