

## Short Communication

# Supracondylar and infratubercular processes observed in the humeri of Nigerians

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**We present the first recorded supracondylar and infratubercular processes of humerus among Nigerians of the West African nation. Morphometrical analyses of 40 humeri (20 left and 20 rights) were conducted. One of the humeri possesses the supracondylar spine which measures 1.6 cm and stands at 100° on the anteromedial surface 5.5 cm above the medial epicondyle and exactly midway between the medial epicondyle and nutrient foramen. We also report the first infratubercular process ever.**

**Key words:** Humerus, supracondylar, infratubercular, process, medial epicondyle, nutrient foramen, morphometrical analysis.

## INTRODUCTION

Race estimation from skeletal data has always been a central focus in anthropology (Gray, 1999). Also, knowledge of variations in anatomy which is important to anatomists, radiologists, anesthesiologists and surgeons, has gained more importance due to wide use and reliance on computer imaging in diagnostic medicine (Harry et al., 1997). Morphological differences are the tools being used to find the missing links between the different stages of evolution. Two of such variations are the "supracondylar" and what we call the "infratubercular" processes.

The spur of the humerus or supracondylar process was first reported by Struthers (1849). It has been referred to as the "supraepithrochlear", "supracondyloid" "epicondyloid" or "supracondylar" process by various authors. It is a normal anatomical structure in climbing animals (Aydinlioglu et al., 2000). In human, it is a rare, anomalous, beak-like bony process on the anteromedial surface

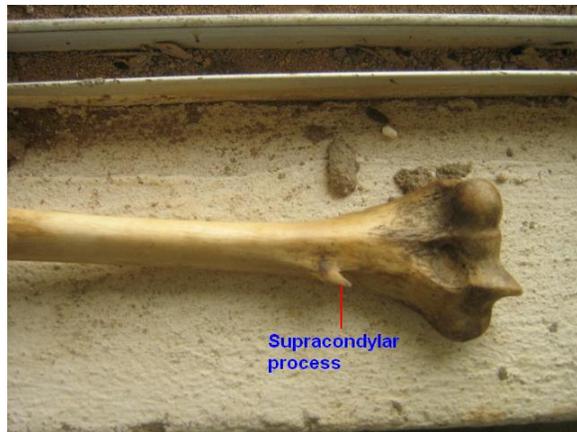
of the humerus. It represents the embryologic vestigial remnant of climbing animals and seen in many reptiles, most marsupials, cats, lemurs and American monkeys (Parkinson, 1954). It is usually found 5 - 7 cm above the medial epicondyle. The process projects anteroinferomedially from the distal third of the humerus and presents in 0.7 to 2.7% of the population (Aydinlioglu et al., 2000). A ligament called Struthers' ligament extends from the apex of the process to the medial epicondyle. It may be a vestige of the tendon of the latissimocondyloideus muscle.

The infratubercular process has not been addressed in the literature to date. The aim of this paper is therefore to report the presence of supraclavicular and infratubercular processes in the humeri of Nigerian cadavers.

## MATERIAL AND METHODS

20 cadavers dissected by the medical students of Igbinedion University Okada between 2004 and 2005 were buried and excavated after a period of one year. After excavation, the recovered bones were processed and dried for future osteological studies. The 40 humeri were anthropometrically measured and examined for any morphological variations.

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**Figure 1.** One of the 40 humeri possesses a spine located on the anteromedial surface exactly midway between the medial epicondyle and the nutrient foramen.

The following parameters were examined: length of the humerus (from the lowest tip of the trochlea to the highest point of the head), distance between the nutrient foramina and the medial epicondyle and the presence of any uncommon feature.

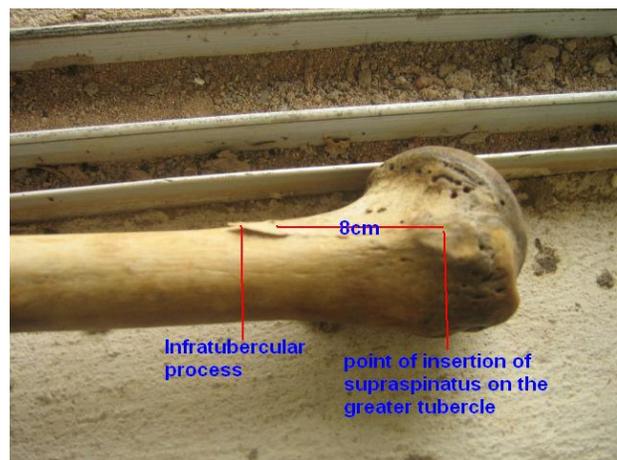
## RESULTS AND DISCUSSION

All the cadavers used for this research are of adult origins, because the proximal epiphyses are absent. The proximal epiphysis usually disappears at about 20 years of age in males and about 2 years earlier in females (Pansky, 1984). The mean length of the humeri was found to be 29.67 cm. The mean distance between the medial epicondyles and the nutrient foramina is 10.94 cm.

One of the 40 humeri (left humerus with length of 27.4cm) possesses a spine (Figure 1) located on the anteromedial surface exactly midway between the medial epicondyle and the nutrient foramen (that is, the spine is 5.5 cm superior to the medial epicondyle, while the distance between the medial epicondyle and the nutrient foramen is 10.8 cm) (Figure 2). It is 6.5 cm above the tip of the trochlea and 20.9 cm inferior to the highest point of the head of the humerus (Figure 1). The length of the spine measures 1.6 cm and it makes an angle of about  $100^\circ$  with the axis of medial supracondylar ridge. This spine was reported and referred to as the supracondylar process. The spine was observed to be located along the course of the brachial vessels and median nerve which it assumedly overhanged. A ligament-Struthers' ligament-occasionally connects its apex to the medial epicondyle converting its angulation to a foramen called the supracondylar foramen. This foramen transmits brachial artery and median nerve. This usually leads to compression of the brachial artery and median nerve running under the ligament. This has been confirmed by surgical operations (Subasi et al., 2002, Straub, 1997, Suranyi, 1983). This is actually against the recorded protective role of this tunnel



**Figure 2.** The distance between the medial epicondyle and the nutrient foramen is 10.8 cm).



**Figure 3.** Infratubercular process observed about 8 cm inferior to the greater tubercle of one of the right humeri.

as reported by Gray's (1999). Entrapment of brachial artery and median nerve by this ligament at the level of supracondylar process is known as the supracondylar process syndrome which can be treated by surgical removal of the process and ligament (Pecina et al., 2002, al-Naib, 1994). The anterior surfaces of the humerus are also covered by the brachialis muscle. The spine is thus likely to be within the sub-stance of the brachialis muscle. This could probably impair the function of the muscle.

Figure 3 shows the infratubercular process observed about 8 cm inferior to the greater tubercle of one of the right humeri. It is a flat spinous structure with irregular margins and measures about 1 cm in length. It is located on the posterior aspect of the surgical neck of the humerus about 5 cm from the point of insertion of supraspinatus muscle on the greater tubercle. It is therefore located on the course of posterior circumflex humeral branch of the axillary artery. This could be a predisposing

factor responsible for aneurysm of the said artery. Also, the anterior division of axillary nerve could be compressed by the process as it runs with the posterior circumflex humeral artery. It is not known yet whether any structure attaches to this Infratubercular process as in the case of supracondylar process. Anatomists and surgeons should therefore watch out for this structure during dissection and surgery.

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