

Bony projection from the pectineal line of hip bone

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Abstract

Introduction

Superior ramus of pubic bone has three borders namely inferior border, anterior border and posterior border also known as pectineal line. Pectineal line extends from pubic tubercle to iliopubic eminence. One female and two male hip bones were found to possess bony projections arising from pectineal line lateral to pubic tubercle. The case has been reported for its virgin occurrence.

Case report

During examination of hip bones in the osteology lab of department of anatomy, KG Medical University, Lucknow, UP, India. 3 out of 100 hip bones found to have bony projection erupting from pectineal line of pubic bone. The length and thickness of these bony tubercles in female hip bone were 5mm each. The length and thickness in one male hip bone were 6mm and 5mm respectively. These measurements in other male hip bone were 6mm and 4mm.

Discussion

Pectineal line which gives attachment to lacunar ligament, pectineus muscle and conjoint tendon. Bony tubercle arising from pectineal line might be formed due to ossification of lacunar ligament/ pectineus muscle/ conjoint tendon. These bony spurs may impinge on surrounding structures damaging them creating clinical complications. The knowledge will be of utmost use to anatomists, radiologists, clinicians and anthropologists.

Introduction

Pubic bone is one of the constituent of hip bone. It consists of body, superior ramus and inferior ramus. Superior ramus is triangular in cross section. It has three borders namely, Posterior border known as pectineal line or pectin pubis extending from pubic tubercle to iliopubic eminence, anterior border also known as obturator crest extending from pubic tubercle to acetabular notch and Inferior border.

Pectineal surface lies between pectineal line and obturator crest. Pectineal line gives attachment to conjoint tendon, lacunar ligament and pectineus muscle. One female and two male hip bones were found to possess bony projections arising from pectineal line lateral to pubic tubercle. The bony tubercle may impinge on surrounding structures causing bundle of complications. The case has been reported for its virgin occurrence.

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Case report

During routine examination of hip bones in the osteology lab in the department of anatomy of KGMU, Lucknow, UP, India, three hip bones (one female and two male) were found to have bony projection from the pectineal line. The length and thickness of bony tubercle on pectineal line in female hip bone (left side) were 5 mm each (Figure 1).

The volume of this tubercle is 392.4 mm³. The distance of this exostosis from pubic tubercle is 15 mm and 32 mm from pubic eminence. The length and thickness of these bony outgrowths in male hip bones (right side) were 6mm, 5mm and 6mm, 4mm (Figure 2).

The volume of these bony growths of male hip bones was 471 and 301.4 mm³ respectively. The distances of these exostoses in these right hip bones of male from pubic tubercles were 8 and 15 mm respectively. The distances of these bony spurs from iliopubic eminence were 30 and 40 mm. The appearance of this tubercle on X-ray has been displayed in figure 3.

The shape of bony projection is nearly cylindrical (Figure 4). The incidence of these bony growths was 3% in Indian population. Considering the sex in these 100 assorted hip bones, one female and two male hip bones were detected with this bony tubercle. There was no other abnormality in these hip bones.

This work conforms to the values laid down in the Declaration of Helsinki (1964). The protocol of this study has been approved by the relevant ethical committee related to our institution in which it was performed. All subjects gave full informed consent to participate in this study.

Discussion

Bony growth arising from bone are of two types- those arising along the joint margins known as osteophytes and those arising from the sites of attachment of ligaments and tendons known as enthesophytes. Bony growth may be

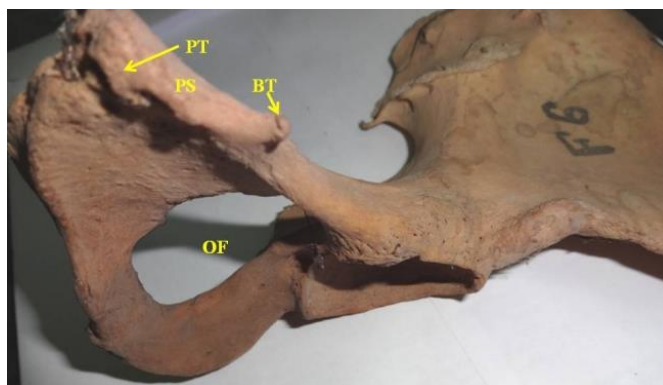


Figure 1: anterolateral view of female hip bone showing bony projection from pectineal line BT- bony tubercle, PS- pectineal surface, PT- pubic tubercle, OF- obturator foramen.

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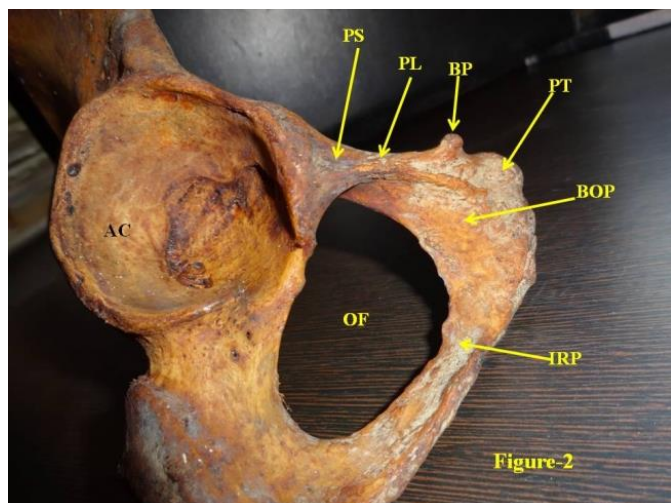


Figure 2: lateral view of male hip bone showing bony growth PS-pectineal surface, PL- pectineal line, BP- bony projection, PT- pubic tubercle, BOP- body of pubis, IRP- inferior ramus of pubis, OF- obturator foramen, AC- acetabulum F.

manifestation of bone tumour. Bony projection under present study arises from pectineal line which gives attachment to lacunar ligament, pectineus muscle and conjoint tendon. As the location of bony out growth is at site of attachment of tendon/ muscle/ ligament, hence these are examples of enthesophytes as per the definition of Resnick et al.¹ or occasionally bone tumour. Other examples of these enthesophytes reported by various authors are the enthesophytes/ bony projections from obturator foramen², from iliac crest³, from external occipital protuberance⁴ and from olecranon process of ulna⁵.

Causes

It may be caused by ossification of lacunar ligament or conjoint tendon or pectineus muscle due to repetitive strain on these structures during frequent biomechanical movements of adduction involving thigh. As repetitive

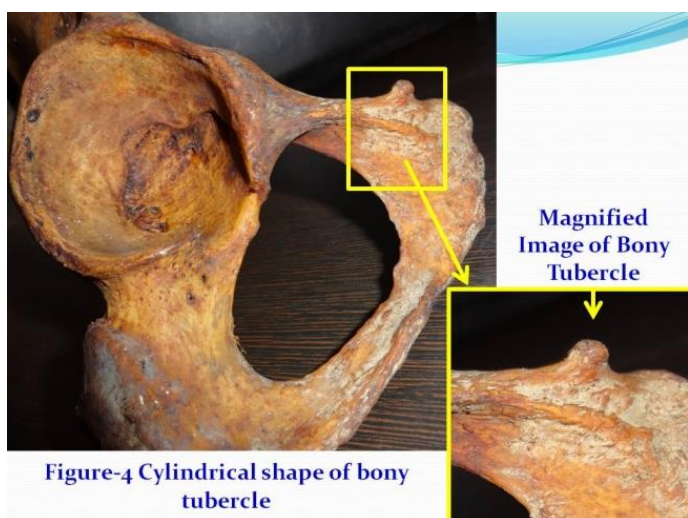


Figure 4: shows cylindrical shape of bony projection from pectineal line.

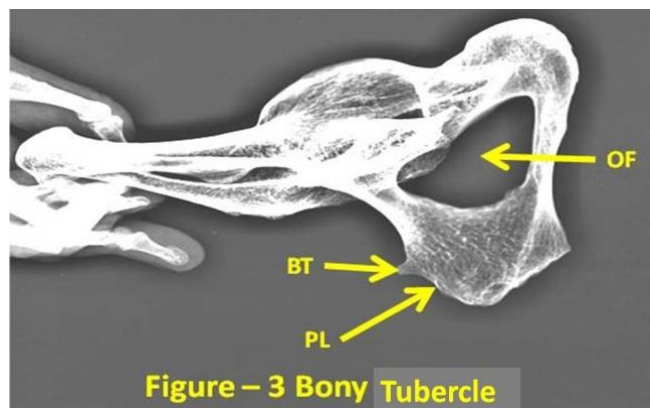


Figure 3: X-ray showing lateral view of hip bone displaying bony projection from pectineal line BT- bony tubercle, PL- pectineal line, OF- obturator foramen.

strain on these structures causes lifting of periosteum exposing the osteogenic layer containing osteocytes. These osteocytes lay down the bone forming bony out growth. As observed under present study.

New bone can form at individual entheses in response to a seronegative spondylarthritis⁶. More commonly, they are seen in several sites as part of the condition first described in the spine by Forrester and Rotes-Quero⁷ and now known as diffuse idiopathic skeletal hyperostosis⁸ (DISH). So the cause of this bony out growth from pectineal line may be attributed to part of seronegative spondylarthritis or DISH syndrome.

The third probable cause may be calcium metabolism disorder.

Since the bony tubercle is found in persons who frequently adduct their thigh as horse riders or sports requiring frequent adduction of thigh, the defect can be used in identifying such persons making study important to anthropologists and medico legal experts.

Clinically, the bony spurs may impinge on pectineus muscle causing spasm and pain during adduction of thigh. It may also damage the fibres of conjoint tendon which make the person susceptible to inguinal hernia. Moreover, it may injure the inguinal canal and structures contained in it i.e. spermatic cord in males and round ligament of uterus in females causing pain and spasm of these structures. Not only there may be sensory loss in the region supplied by ilioinguinal nerve due to damage to this nerve but also abnormal obturator artery when present along the medial margin of femoral canal is at risk of being damaged by this type of bony projection leading to haemorrhage. The femoral sheath and one of its content i.e. femoral veins may also be damaged by the tubercle as the vein lie in the close proximity of bony projection on pectineal line. The said bony spur may be manifestation of bony tumour which is to be confirmed by clinical studies. But the chances of bony spur under present study to be a bony tumour are less since incidence of bony tumour in general population is very less because the incidence of bony spur under consideration is quite high (3%).

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X-ray film (Figure 3) shows bony tubercle which may be mistaken for abnormal structure like calcification of lymph node. Thus bony tubercle from pectineal line may be confused with some abnormal structure in radiographs making it useful to radiologists.

Thus knowledge of this bony tubercle is of paramount importance to clinicians, anatomists and radiologists, anthropologists and medico-legal experts.

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