

PELVIC TYPOLOGIES IN NORTH CENTRAL NIGERIA

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ABSTRACT

PURPOSE: To characterize and compare the pelvic typologies in Jos, North Central Nigeria with the reported types in North East Nigeria.

METHOD: A total of 588 female pelvic radiographs were retrieved from the archives of the Department of Radiology, Jos University Teaching Hospital (JUTH) and Plateau Specialist Hospital (PSH). The antero-posterior, the transverse and the oblique diameters of the pelvic inlet were measured and data was processed and descriptive statistics was computed.

RESULT: The result showed that 53% of the 588 pelvis assessed were platypelloid, 8% were gynaecoid and 39% were android pelvis. The findings are in sharp contrast to 90.6% for gynaecoid, 9% for android and 0.8% for anthropoid pelvic types, obtained in North East Nigeria.

CONCLUSION: Three pelvic types were observed in Jos, North Central Nigeria namely - gynaecoid, android and platypelloid pelvis types. The dimensions of these pelvic types were different from reported figures in North East Nigeria.

KEYWORDS: Pelvimetry; pelvic types; child birth

INTRODUCTION

Description of the pelvis has been changing over the centuries as changing beliefs regarding sex differences influenced the views of the medical profession [1]. X-ray pelvimetry techniques in the 1920s provided the opportunity to obtain average values for various pelvic measures in humans [1].

Before the dangers of radiation exposure were understood, antenatal pelvimetry X-ray studies were routinely carried out to assess the adequacy of the maternal pelvis for childbirth [2]. The obstetric pelvis was described in terms of three functional planes: the inlet, the midplane and the outlet [2].

The knowledge of the female pelvic typology is helpful in prognostication of progress of labour with early intervention when necessary [3, 4, 5]. The size and shape of the pelvic inlet determines the ease in which the fetal head enters the lesser pelvis during labour because it determines the size of the bony pelvic canal through which the fetus passes during a vaginal delivery [3]. Early pelvic typologies were based on racial differences and not on birth process until the anthropologists developed the concept of the obstetrical dilemma, although much of the variations in pelvic shape were documented more by the obstetrician and the midwife than the anthropologist [1]. Greulich and Thoms classified the pelvis into four types based on ratios between the transverse and sagittal diameters of the inlet. The four types, in order of decreasing sagittal diameter, were dolichopellic, mesatipellic, brachypellic and platypellic. But the most enduring of the pelvic type classification is however that of Caldwell and Moloy which describes the pelvis based on the shape of the pelvic inlet. Four main types are recognized: gynaecoid, a rounded inlet; android, a heart-shaped inlet; anthropoid, a long, narrow, oval inlet and platypelloid, a flat inlet with its long transverse axis, like a flat bowl [7].

A female pelvis may belong to any of the four types but some persons may have a mixture of these pelvic types [7, 8,]. Again the size and shape of the pelvis reflects physical appearance of a woman with the shapely and curvy likely to have a gynaecoid pelvis and those with “flat rear ends” likely to have the android type. Those with “larger rear ends” are likely to have the anthropoid type[1, 8]. The gynaecoid pelvis is considered the most favourable for childbirth [1, 8].

Cephalopelvic disproportion is still the leading indication for caesarean section in many developing countries and the contribution of pelvic typology may play some role in developing proper management criteria for the affected women [5]. As a follow up to the work done at the University of Maiduguri Teaching Hospital in North East Nigeria by Bukar et. al. in 2010, this study will try to make a statistical-based exploration of the pelvic typologies in Jos, North Central Nigeria based on the shape of the pelvic inlet and also compare results with that done in North East Nigeria and outside Nigeria.

METHODOLOGY

The data for this study were collected from the archives of the Department of Radiology, Jos University Teaching Hospital (JUTH) and the Plateau State Specialist Hospital (PSH). These are the only two reference centres in Plateau State, serving the entire population of Plateau State and neighbouring Gombe, Nasarawa and Bauchi States of North Central Nigeria.

Anterior-posterior projected radiographs of women within the ages of 16 - 70 years, who had undergone plain pelvis examination between March, 2009 and April, 2010 were reviewed for pelvic typology. The research sample included 388 radiographs from JUTH and 200 radiographs from PSH, making a total of 588 radiographs. The method employed in selecting these radiographs is the purposive (judgmental) sampling in which the samples were picked based on Doctor's queries, patient clinical histories and radiological reports. Exclusion criteria included bone fractures, bone pathology and positioning defects.

For each pelvis, anteroposterior (conjugate), the transverse and oblique diameters of the pelvic inlet were measured (Figure1): (1) The antero-posterior or true conjugate diameter of the pelvic inlet – the distance, between the sacral promontory and the postero-superior border of the pubic symphysis; (2) The transverse diameter of the pelvic inlet – the widest distance between iliopectineal lines;

(3)The oblique diameter of the pelvic inlet – the distance between the iliopectineal eminences of one side to the sacroiliac articulation of the opposite side. The pelvic types defined in this study were not only based on their absolute dimensions, but also on their overall shape. Data obtained was processed and descriptive statistics computed and presented in tables.

RESULTS

Tables 1 and 2 presents the details of measurements of the pelvis reviewed in this study. Table 1 depicts the age distribution of the patients whose radiographs were used for the study. Of the 588 radiographs studied between March, 2009 and April, 2010; 391 radiographs representing (66.5%) were of the reproductive age interval of between 16-37 years. Meaning that majority of the patients for pelvic x-ray within said period were 37 years and below. The age distribution shows that 34 patients were in the age interval of 60 -70 years (5.6%) representing the lowest frequency while 268 patients were in age interval of 27 - 37 years (45.6%) representing the highest frequency.

Table 2 shows the distribution of the pelvic types. It can be seen that the Platypelloid Pelvis is the most prevalent of the 588 radiographs reviewed with a frequency of 314(53%), the Gynaecoid Pelvis, the least prevalent with a frequency of 44(8%) and the Android Pelvis in-between with frequency of 230(39%). The Anthropoid and Mixed pelvises were not seen in the radiographs studied.

DISCUSSION

The female pelvic typologies described in the obstetrical literature were developed when X-ray pelvimetry was a standard part of prenatal care and because of their relationship to childbirth practice [1]. Even though the use of X-ray pelvimetry has declined substantially over the years due to its limited clinical utility and clinicians have explored other imaging modalities like Computed Tomography and Magnetic Resonance Imaging pelvimetry for the management of breech pregnancy[9], plain pelvic radiographs are routine and common radiographic investigations that are carried out on patients that present themselves [5].

The findings from this study show that the Platypelloid Pelvis is 53%, Android Pelvis 39% and the Gynaecoid Pelvis 8%. This is in sharp contrast to that obtained in Maiduguri, North East Nigeria in which the Gynaecoid Pelvis is 90.6%, Android Pelvis 9% and Anthropoid 0.8%.

Pelvic Typologies in North Central Nigeria

The flattened shaped platypelloid and heart shaped android pelvic types which are the most common from this study have been implicated in most obstructed labor[11]. The platypelloid type implies a certain unnaturalness of the human birth process [1].

The android pelvic type is designated when one or more male characteristics are present in the inlet. Obstetric prognosis is described as poor in women with the android type, though improved if the subpubic angle is wide [1]. It constitutes a significant factor thought to be associated with the fetal malposition occiput-posterior [10].

The prevalence of the Platypelloid and Android Pelvis types could be the reason why cephalopelvic disproportion[5] is the leading cause of caesarean section in this environment as these pelvic types are not well suited to childbirth[1]. The Platypelloid Pelvis are more frequent when erect posture was acquired before 14 months and the Android Pelvis is frequent in women exposed to strenuous physical activity during adolescence and observed more often when the acquisition of erect posture was delayed beyond the usual age of 14 months[11].

The Gynaecoid Pelvis with its large, elliptical inlet, that is ideally suited for childbirth, is the least seen in this study at about 8%. This is worrisome because within biomedicine, birth mechanisms other than the one associated with the Gynaecoid Pelvic type are considered pathological [1].

CONCLUSION

This study is a good representation of the types of female pelvis in Jos Metropolis. It can be concluded that only three pelvic types were observed in Jos, North Central Nigeria namely - Gynaecoid, Android and Platypelloid Pelvis types. The Platypelloid and Android types were predominant in the area.

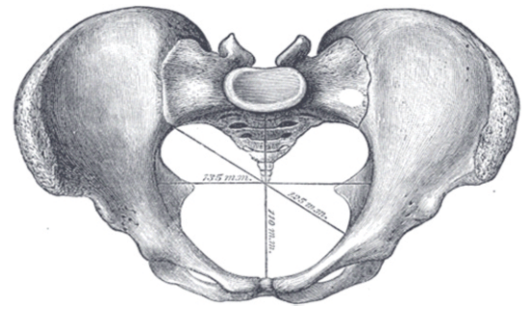


Figure 1 Bony Pelvis showing the different measurements

Table 1: Age Distribution

Age Group	Frequency	Percentage %
16 - 26	123	20.9
27 - 37	268	45.6
38 - 48	121	20.6
49 - 59	42	7.1
60 -70	34	5.6
Total	588	100

Table 2: Distribution of Pelvic Types

Pelvis Type	Frequency	Percentage %
Gynaecoid	44	8
Android	230	39
Platypelloid	314	53
Total	588	100

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