

The Anthropoid Pelvis*

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IN 1932 Drs. W. E. Caldwell and H. C. Moley, of Columbia University, suggested a new classification of pelvis on the basis of form and structure. X-ray examination by a special technique played an important part in their work. As expressed by the authors, "Information of greater importance than actual measurements, either linear or volumetric, is gained by a study of the pelvis, or of the fetal-pelvic relationship, under stereoscopic vision."¹ "This permits the obstetrician to visualize clearly the presenting part and the maternal pelvis at term, or during labor, bearing the same size and shape and relationship to each other as would be observed by his own eyes held approximately ten inches perpendicularly above the pelvic region"².

It was my privilege to present their work in full before the Obstetrical Section of the North Carolina State Medical Society in May. (see the transactions). The photographs shown below are from that paper, and were supplied by Dr. Moley.

Classification of the female pelvis, as proposed by Caldwell and Moley is as follows (see photographs):

I. The Gynecoid Type (*G. gyne*—woman).—This is the normal pelvis of other classifications.

II. The Android Type (*G. ander*—man).—This bears resemblance to the male pelvis. The Masculine and Funnel Type of other classifications.

III. The Anthropoid Type (*G. anthropos*—man).—This, in a general way, bears a resemblance to the pelvis of the anthropoid apes.

IV. The Platypelloid Type (*G. platy*—flat, *pettis*—pelvis).—Very rare—the simple flat, non-rachitic pelvis of other classifications. By checking clinical findings with x-ray examination, most of the so-called simple flat pelvis are found to be android.

V. The Asymmetrical Type.—Number of cases observed too small to judge the obstetric significance. In addition to asymmetry, the general pelvic shape usually conforms to one of the four types listed above.

In addition, the so-called "Assimilation Pelvis" of other authors is considered by Caldwell and Moley as a developmental anomaly and of little obstetric significance.

Frequency in Occurrence in Skeletal Material³
(Collection at Western Reserve University)

	White Female		Negro Female
Gynecoid type	41.4	!	41.4
Android type	32.5	!	15.7
Anthropoid type	23.5	!	40.5
Platypelloid type	2.6	!	1.7
Number of cases, female, White	147		
Number of cases, female, Negro	121		

In order to more accurately describe the pelvic architecture, Caldwell and Moley considered it advisable to modify their original classification to include mixed types (see photographs). Classification is according to the shape of the posterior pelvis. A mixed type would be, *e.g.*, a pelvis showing a masculine (android) posterior pelvis and a normal (gynecoid) anterior or fore pelvis—this is classified as an android pelvis with a gynecoid tendency etc.

The complete classification (of the four parent types and their associated mixed types), as revealed by x-rays in a series of 215 primigravida admitted consecutively to the antepartum clinic of the Sloane Hospital for Women is tabulated:⁴

	No of Cases		Incidence Per Cent.
Gynecoid type	126	!	58.5
Android type	48	!	22.2
Anthropoid type	39	!	18.1
Platypelloid	2	!	
Asymmetrical forms	4	!	

The Anthropoid Pelvis⁵—

This is the pelvis of women with broad shoulders, narrow hips and straight, slender legs and is characterized chiefly by an increase in the antero-posterior diameter, with decrease in the transverse, producing a long and rather narrow pelvis with a long oval inlet. The long, narrow sacrum frequently has six segments, has a high promontory, steep backward inclination. The sacrospinous notch is wide and shallow, the sacrospinous ligaments long. The ischial spines are broad and blunt, the side walls most often divergent or straight. The symphysis is deep and wide, the subpubic angle characteristically wide, the ischial tuberosities broad. Pelvic capacity anteriorly is decreased, due to the decreased width of pelvis—this in decided contrast to the posterior pelvis,

* Presented to the Mecklenburg County Medical Society, September 6th.

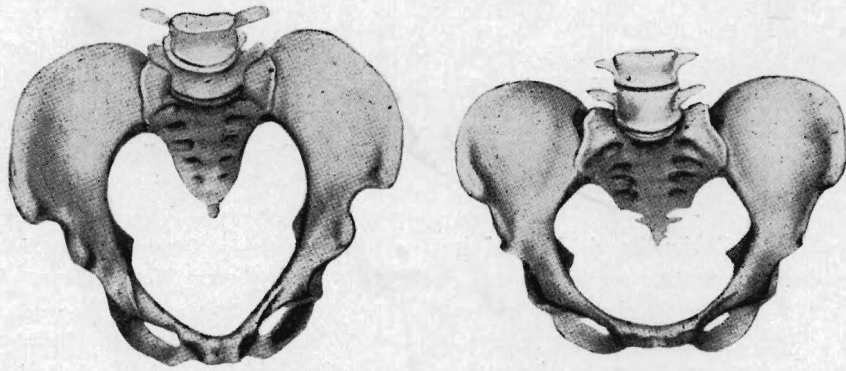


Fig. 1.—*The true anthropoid type of pelvis (parent type).*
 Note the long oval inlet. The anteroposterior diameter is long, the transverse is narrow. Study particularly the shape of the anterior segment (long and narrow) and posterior segment. In this pelvis the anthropoid influence predominates.

Fig. 2.—*The anthropoid type with gynecoid tendency (mixed type).*
 The pelvis is wider and shorter than the true anthropoid and in general appearance is a long broad oval. The posterior segment is anthropoid, the anterior segment more gynecoid in form.

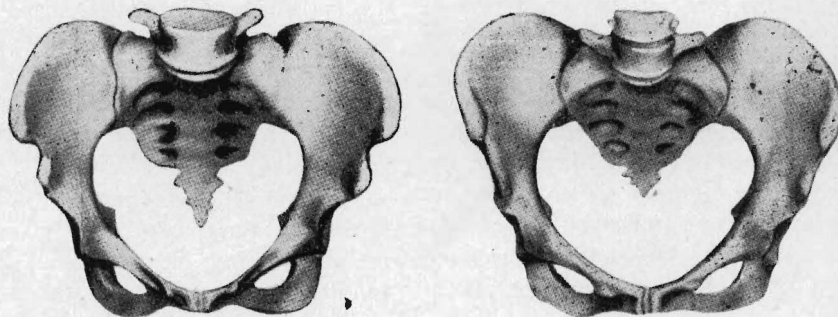


Fig. 3.—*The gynecoid type with anthropoid tendency (mixed type)*
 The posterior segment is gynecoid, the transverse diameter being closer to the promontory. The long oval appearance is caused by the long, narrowed fore pelvis.

Fig. 4.—*The gynecoid type with a narrow, fore pelvis (mixed type).*
 This pelvis is practically normal. The narrow fore pelvis is evidence of a weak anthropoid or male influence.

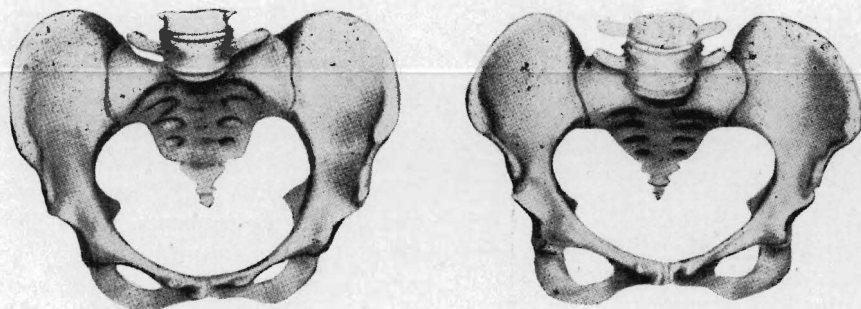


Fig. 5.—*The true gynecoid pelvis (parent type).*
 In the developmental cycle this inlet is round and typically female in all portions. The female influence predominates.

Fig. 6.—*The gynecoid type with a flat tendency (mixed type).*
 Note that the pelvis is wider and flatter, indicating a trend toward the true flat type.
 Plate 1.18 (Courtesy of the Authors.)

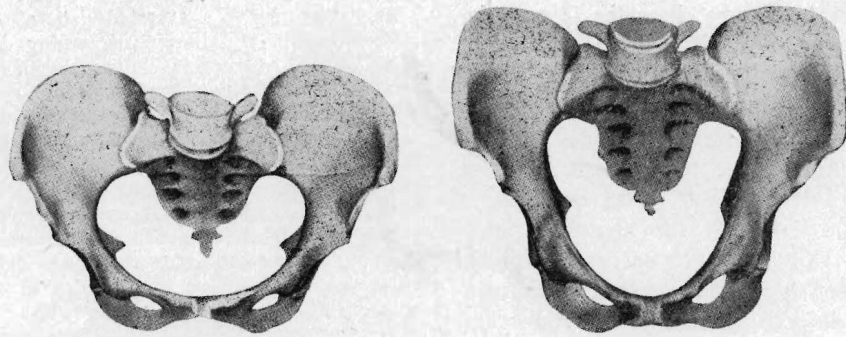


Fig. 7.—The flat (platypelloid) type (parent type).
The wide transverse and short anteroposterior diameter are the salient characteristics.

Fig. 8.—The android type with anthropoid tendency (mixed type).
The posterior segment conforms to the male type. The long oval appearance is caused by the long narrow fore pelvis. This places it also in the anthropoid class.

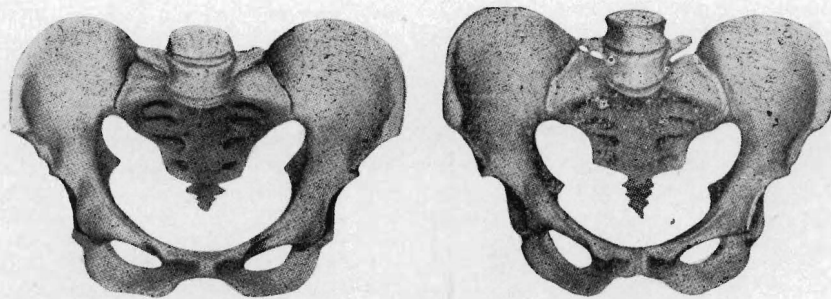


Fig. 9.—The android type with gynecoid tendency (mixed type).
The flat masculine posterior segment is characteristic and defines the pelvic type. The fore pelvis is gynecoid, similar to the fore pelvis seen in Fig. 5.

10. The true android type (parent type).
Note the flat male posterior segment, the narrow anterior segment, the forward sacrum and converging side walls. This pelvis approaches very closely the shape of the average male.

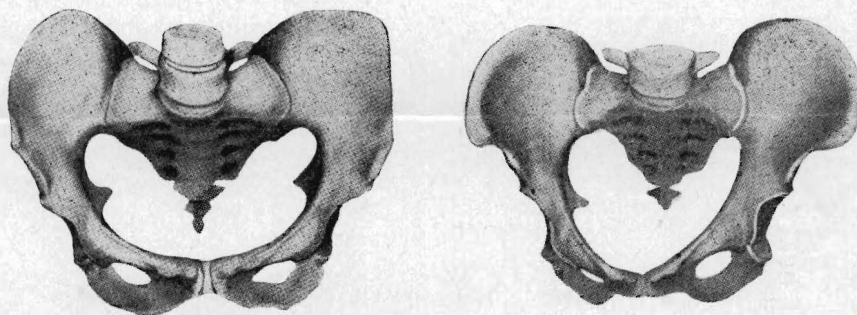


Fig. 11.—The android type with flat tendency (mixed type).
Although a male posterior pelvis is present, the general form is broad and flat.

Fig. 12.—The asymmetrical type.
The asymmetry is limited to the right side. The sacrosciatic notch is narrower on that side and the iliopectineal line is straighter.

(Courtesy of the Authors)

where the widest transverse diameter is considerably in advance of the sacral promontory.

The Obstetrical Significance of the Anthropoid Pelvis⁵—

1) The head may be found unengaged at term. Engagement occurs in the anteroposterior diameter; since the anterior pelvic inlet is narrowed and compensation exists in the posterior pelvis, engagement as occiput posterior occurs more often than in any other type, while direct occipitoanterior positions as well as anterior oblique positions are frequent. Usually a small baby will come through. However, rotation of the head can be expected to cause difficulty so that if this type of pelvis is recognized it may be easier to deliver with forceps as a persistent occiput posterior. "It is mechanically wrong to attempt the rotation of the fetal head from a wide diameter through a narrower one." In a pelvis with a wide outlet rotation may be accomplished manually, but if difficulty is encountered it is advisable to deliver the head in the posterior position

2) In version and breech extraction, delivery of the after-coming head should be guided by the principle just stated, for if the head is allowed to enter the pelvis in the transverse position it may be arrested in the narrowed transverse; so, if possible, the head should be rotated to a posterior or anterior position in the inlet.

3) "In the extreme forms, particularly when narrowing of the subpubic angle exists, the head fails to engage and cesarean section becomes the usual method of delivery."

Case Report

White woman, 19, primipara. Measurements and architecture as revealed by routine pelvic examination:

	Cm.
1) interspinous	20½
2) intercrystal	27½
3) left oblique	21½
4) external conjugate	20½
5) diagonal conjugate—promontory not reached at...	13
6) transverse of outlet	8½
7) height of symphysis	7
8) inclination—steepened	
9) subpubic arch—wide	
10) forepelvis—ample	
11) side walls—converge slightly	
12) spines—somewhat prominent	
13) sacrosiatic notch—admits three fingers	
14) coccyx—slightly movable	
15) sacrum—well hollowed	

Type of pelvis anthropoid.

Prognosis good; pelvis ample; watch for occipitoposterior position.

Physical examination essentially negative. Weight, 132½; broad shoulders and narrow hips (anthropoid type) Wassermann negative; hemoglobin—90.

Pregnancy uncomplicated until 7th month when a mild toxemia developed necessitating a strict toxemia regimen until pregnancy terminated.

Ten days past the expected date of confinement the fetal head was still unengaged, merely dipping over the pelvic brim. Although, from my examination, I felt sure this was an anthropoid type of pelvis ample for the baby present, which seemed to be of average size, I knew that x-ray examination was in order. Pictures taken by Dr. O. D. Baxter, following the Caldwell and Moloy technique—anteroposterior stereorentgenograms obtained with patient supine, using a thick lumbosacral pad, and a large lateral film (chiefly to outline the sacrosiatic notch).

Under stereoscopic vision the pelvis was seen as of the anthropoid type (some question as to whether a true anthropoid, or a gynecoid type with anthropoid tendency; however, no doubt about the anthropoid element—the increased anteroposterior with decrease in the transverse diameter). Promontory considerably back. Side walls converging slightly. Spines slightly prominent. The lateral film showed the sacrosiatic notch to be wide and somewhat shallow. The fetal head was not engaged but was dipping in the pelvic brim in the *direct occipitoposterior* position. Pelvis ample. No apparent disproportion.

Such was the interpretation made of the films by the roentgenologist and myself. The obstetrician should always view the films and form his own opinion.

Three days after the x-ray examination the membranes ruptured spontaneously, with onset of labor shortly thereafter. The head was found engaged and in the occipitoposterior position. A five-hour labor with nembutamorphine-scopolamine analgesia followed. With head bulging the perineum as a *direct occiput posterior*, manual rotation was attempted; but this manœuvre not succeeding easily, delivery as a *persistent occiput posterior* was performed using prophylactic forceps, after doing a medio-lateral episiotomy. Delivery of a normal baby was easily effected. Rotation could have been accomplished manually, or with forceps, by pushing the head up, but delivery as a posterior was much easier. Postpartum course was uneventful.

SUMMARY

1. The anthropoid pelvis, which is characterized chiefly by an increase in the anteroposterior diameter with an associated decrease in the transverse diameter, is found in 18-23% of the cases. It apparently occurs twice as frequently in Negroes.

2. The head may be found unengaged at term.

3. Engagement occurs in the anteroposterior diameter.

4. It may be easiest to deliver the head with forceps as a persistent occiput posterior.

5. If the outlet is wide rotation may be accomplished manually, but if difficulty occurs it is advisable to deliver the head in the posterior position.

6. Accuracy in the diagnosis and prognosis of the anthropoid pelvis is greatly aided by x-ray study, as described by Caldwell and Moloy.

References

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2. ID'EM: 28; 6, (Dec.) 1934.
3. -5. CALDWELL, W. E., and MOLOY, H. C., Am. J. Obst. & Gynec., 26; (Oct.) 1933.
4. CALDWELL, W. E., MOLOY, H. C., and D'ESOP, Am. J. Obst. and Gynec., 28; 4, (Oct.) 1934.