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原　著

A RETROSPECTIVE STUDY OF 100 CASES OF X-RAY PELVIMETRY WITH CEPHALOPELVIC DISPROPORTION IN FORMOSAN CHINESE WOMEN

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As many authors have mentioned, it seems logical to assume that factors such as standard of living, daily diet, living customs, climate and race can affect the size and structure of the pelvis. The purpose of this study was not to find criteria for the contracted pelvis in Formosan Chinese women, but rather to seek more knowledge about their pelves that will be helpful and important in our daily obstetrical practice. On the basis of these results, it may be possible to draw certain conclusions regarding the points which constitute the main indications for possible surgical intervention for dystocia in Taiwan.

Fukunaga[1] in 1942 reported the actual measurements of skeletal pelves of thirty-three Formosan Chinese women. P. Y. Wei, H. Y. Chen, Y. P. Chen[2] in 1956 and 1957, reported the study of three hundred and fifty-three unselected patients, including 21% difficult labours, by the Colcher-Susman radiographic technique. In 1962 the method and the limits of accuracy of X-ray pelvimetry, and in 1964 the study of normal Formosan Chinese bony pelves and their relation to height, were reported by Wu and Chang[3,4]

• TECHNIQUE OF X-RAY PELVIMETRY

Three films were taken in the X-ray pelvimetry of the study. Inlet view; the patient was in the semisitting position, to make the pelvic inlet parallel with the film. Lateral view; a picture was taken in the horizontal lateal view, with the patient recumbent. Outlet view; An X-ray picture was taken with the patient sitting in a forward-pending position with the abdomen pendant between the thighs, to make the subpubic arch parallel with the film. In X-ray pelvimetry of a dried bony pelvis with this technique, Wu and Chang found that distortion in diameters of plus or minus 0.3 cm. was unavoidable. From the clinical point of view, although it is preferable to assess the pelvis with the most accuracy, the method has to be simple and not too costly. What is most important is to familiarize oneself with a certain technique and interpretation of these pictures.

MATERIALS

In 6 years, from July 1961 until June 1967, there were 7,033 deliveries in the Mackay Memorial Hospital, Taipei. The rate of forceps deliveries was 4.82% or 340 cases. The rate of cesareansection was 4.56%, totaling 321 cases. From the latter we have collected one hundred cases, in which cesarean section was performed solely for cephalopelvic disproportion. Namely cesarean section performed for obstructed labour was 1.4%. To discuss the abnormal pelves of Formosan

Chinese women, it was necessary to have a general idea of their normal counterparts. The measurements of pelves of normal Formosan Chinese women are shown in the following tables for comparison. Two cases of grossly distorted pelves and four cases of large babies weighing more than 4500 Gm. were discarded from the statistics. Except for eight elective cases and ten primipara breech cases, the cesarean sections were performed after a trial of labour of at least 12 hours duration.

RESULTS

The age and parity are shown in Table 1. The youngest was 19 years old and the oldest 41. The mean age was 27.8 years. There were 70 primipara and 30 multiparous patients. Among 30 multiparous patients, 18 cases were repeated cesarean section, and the rest of 12 cases were cases of cesarean section with previous vaginal deliveries which were analysed and discussed[5].

The height of the patients; Table 2 shows the distribution of the height of 82 patients on whom we had records of the measurement. The mean value of height was 148.02±0.6 cm. S. D. is 5.80 cm. When compared with the average height of our normal series, 154.8± 0.44 cm. the difference was 6.78 cm. and S. E.

Table 1. Distribution of the age and parity.

Age in years/para	0	1	2	3	4	5	6	12	Total
19	1								1
20	3								3
21	3								3
22	7								7
23	4	1							5
24	9	3							12
25	9	1							10
26	6	3	1						10
27	7		2						9
28	7	2							9
29	3	1		1					5
30	1	3							4
31	2	2	1						5
32	2				2				4
33	2								2
34	1								1
35	1		1		1				3
36	1	1		1					3
37									
38				1					1
39									
40						1			1
41	1							1	2
Total	70	17	5	2	4	1		1	100

Age Mean=27.8 S. D.=4.70 S. E.=0.47 Median=26.9

of the mean is 0.6 cm. The difference was statistically highly signigicant. ($P<0.001$) It was clear that the taller women had much fewer incidences of cephalopelvic disproportion. There were only 11 patients whose heights were above 155 cm. which was the mean height of our normal series. In 164 patients who had smooth vaginal deliveries, there were only 4 patients whose height was below 145 cm. It might be reasonable to suspect the possibility of cephalopelvic disproportion in Formosan Chinese women, when their heights are below 145 cm.

Table 2. Distribution of the height of the patients

Height in cm.	Number
130-	1
132-	
134-	
136-	3
138-	
140-	5
142-	4
144-	10
146-	11
148-	14
150-	13
152-	3
154-	7
156-	6
158-	4
160-	
162-164	1
Total	82

Normal=154.8±0.44 d=6.78

$\frac{d}{S.E.d} = 8.73$

Mean 148.02±0.64 S. D. 5.80

Smallest 131.0 Largest 163.0

The position of the fetus; Table 3 shows the position of the fetus confirmed at operation. Breech presentation 10, occiput anterior 44, occiput posterior and occiput transverse 43, face presentation 3. It is worthwhile to notice the considerably higher proportion of abnormal rotation of the presenting part. In our experiences there were many borderline cases which would not need repeat cesarean section in subsequent deliveries when previous section was for cephalo-pelvic disproportion.

Table 3. Fetal Position at the Operation.

Breech		10
Vertex	O. A.	44
	OP. and O. T.	43
Face		3
Total		100

The weight of babies; The average weight of 69 primiparous babies was 3130±50 g. S.D. 405, and of the 30 multiparous babies 3207±75 g. S. D. 410. The average weight of 97 babies was 3149±41 g. S. D. 405. The distribution of the baby weight is shown in Table 4.

The shape of pelvic inlet; The shape of the pelvic inlet by Nicholson's Classification[6] was as follows, Round 52% (in normal 89.3), Scutiform 17% (in normal 0), Narrow 5% (in normal 7.1) and Flat 26% (in normal 3.6). There was a 37.3% decrease in the number of round type pelves and a 22.4% increase in the number of flat type pelves. The other remarkable difference was a 17% incidence of scutiform type pelvis, which was zero in 164 normal patients.

* Nicholson classified the pelvic brim as follows,

Flat: Brim index 81 per cent or less

Narrow: Brim index 104 per cent or more

Scutiform: Sagittal index 30 per cent or less with brim index of between 81 and 104 per cent.

Round: All the remainder

There was a slight decrease in the number of Narrow type pelves. It was interesting to

Table 4. Distribution of the weight of babies

Weight g.	para O	Para I and over	Total
2,100	1	1	1
2,200			1
2,300		2	2
2,400	2		2
2,500	3		3
2,600	6		6
2,700	7	1	8
2,800	4	1	5
2,900	5		5
3,000	5	5	10
3,100	6	2	8
3,200	5	5	10
3,300	6	4	10
3,400	6	3	9
3,500	5	3	8
3,600	4	1	5
3,700	1	1	2
3,800	2		2
3,900			
4,000			
4,100	1	1	2
Total	67	30	97
Mean	3130±50	3207±75	3149±41
S. D.	405	410	405

find that 31 cases of the mixed type by Caldwell and Molloy classification fell into the round group by the Nicholson classification. The other figures classified by both methods remained almost the same.

The measurement of 100 cesarian section cases with that of the 196 normal cases were arranged in tables A-R. The smallest, the largest, mean value, standard deviation, and median of each measurement were included in these tables. The differences and the critical ratio between normal and abnormal were also indicated in these tables. The differences were statistically significant in all diameters except spino-sacral tip diameter, intertuberous diameter, sacral inclination and subpubic angle. The reason being that in abnormal cases there were more patients who had extremely large or extremely small subpubic angles and the same was true for sacral inclination. It is important to realize that highly significant differences existed in anteroposterior diameters, posterior sagittal diameters and circle fit of inlet. For these measurements the critical ratio $\frac{d}{S.E.d}$ was more than ten. The another important finding was the shortness of the posterior sagittal diameters in the three planes of the pelves.

Table 5. Nicholson's and Caldwell Molloy's Classification of the Telvic Inlet.

Nicholson's Classification	Normal	Contracted	Contracted	Caldwell Molloy Classification
			20%	Small Gynecoid
Round	89.3%	↘52%	32%	Mixed type
Narrow	7.1%	↘ 5%	3%	Anthropoid
Flat	3.6%	↖26%	28%	Platypelloid
Scutiform	0.0%	↖17%	18%	Android
Number of casse	196 (100%)	100 (100%)	100 (100%)	

Table A. Inlet: Anteroposterior diameters of the normal and the cesarean section patients.

Diameter in cm.	Normal	C. Section
8.0–		1
8.5–		4
9.0–		10
9.5–		10
10.0–	3	29
10.5–	19	23
11.0–	42	18
11.5–	28	3
12.0–	48	2
12.5–	31	
13.0–	20	
13.5–	5	
Total	196	100
Smallest	10.1	8.2
Largest	14.1	12.1
Mean	12.01±0.05	10.40±0.08
Median	12.38	10.43
S. D.	0.74	0.79

$d = 1.61$ $\frac{d}{S.E.\ d} = 17.1$

Table B. Inlet: Widest transvers diameters of the normal and the cesarean section patients.

Diameter in cm.	Normal	C. Section
10.0–		4
10.5–		10
11.0–	2	14
11.5–	10	21
12.0–	52	25
12.5–	46	24
13.0–	42	9
13.5–	14	1
14.0–	6	2
14.5–	1	
Total	196	100
Smallest	10.8	10.2
Largest	14.2	14.3
Mean	12.64±0.05	11.99±0.09
Median	12.30	12.02
S. D.	8.74	0.86

$d = 0.65$ $\frac{d}{S.E.\ d} = 6.3$

Table C. Inlet: Available transverse diameters of the normal and the cesarean section patients.

Diameter in cm.	Normal	C. Section
9.0–		1
9.5–		4
10.0–		9
10.5–	4	13
11.0–	11	27
11.5–	36	19
12.0–	62	15
12.5–	49	
13.0–	20	3
13.5–	11	1
14.0–	2	
14.5–	1	
Total	196	99
Smallest	10.9	9.1
Largest	14.5	13.5
Mean	12.42±0.05	11.45±0.09
Median	12.38	11.43
S. D.	0.70	0.87

$d = 0.97$ $\frac{d}{S.E.\ d} = 9.4$

Table D. Inlet: Posterior Sagittal diameters of the normal and the cesarean section patients.

Diameter in cm.	Normal	C. Section
1.5–		2
2.0–		4
2.5–		12
3.0–	1	29
3.5–	5	27
4.0–	21	12
4.5–	44	7
5.0–	40	6
5.5–	43	1
6.0–	31	
6.5–	11	
Total	196	100
Smallest	3.0	1.8
Largest	6.9	5.5
Mean	5.27±0.05	3.62±0.08
Median	5.34	3.56
S. D.	0.76	0.79

$d = 1.65$ $\frac{d}{S.E.\ d} = 17.6$

Table E. Inlet: Circle fit diameters of the normal and the cesarean section patients.

Diameter in cm.	Normal	C. Section
6.0–		1
6.5–		9
9.0–		9
9.5–		23
10.0–	15	37
10.5–	50	18
11.0–	48	3
11.5–	48	
12.0–	26	
12.5–	9	
Total	196	100
Smallest	10.0	6.2
Largest	13.2	11.1
Mean	11.37±0.05	11.01±0.06
Median	11.34	10.11
S. D.	0.65	0.64

$d = 1.36$ $\frac{d}{S.E.d} = 17.4$

Table F. Midplane: Anteroposterior diameters of the normal and the cesarean section patients

Diameter in cm.	Normal	C. Section
9.5–		4
10.0–	2	21
10.5–	6	20
11.0–	22	27
11.5–	28	16
12.0–	44	7
12.5–	38	5
13.0–	34	
13.5–	17	
14.0–	3	
14.5–	2	
Total	196	100
Smallest	10.0	9.5
Largest	14.8	12.9
Mean	12.4±0.06	11.10±0.08
Median	12.45	11.09
S. D.	0.87	0.75

$d = 1.36$ $\frac{d}{S.E.d} = 13.6$

Table G. Midplane: Interspinous diameters of the normal and the cesarean section patients.

Diameter in cm.	Normal	C. Section
8.0–		2
8.5–		7
9.0–	7	13
9.5–	30	13
10.0–	40	18
10.5–	46	15
11.0–	35	15
11.5–	20	6
12.0–	13	5
12.5–	4	1
13.0–	1	
13.5–		1
Total	196	96
Smallest	9.2	8.2
Largest	12.8	13.8
Mean	10.79±0.06	10.39±0.11
Median	10.73	10.31
S. D.	0.83	1.07

$d = 0.40$ $\frac{d}{S.E.d} = 3.20$

Table H. Midplane: Posterior sagittal diameters of the normal and the cesarean section patients.

Diameter in cm.	Normall	C. Section
2.0–		1
2.5–		2
3.0–	2	5
3.5–	9	18
4.0–	31	30
4.5–	37	18
5.0–	53	13
5.5–	41	7
6.0–	14	2
6.5–	7	3
7.0–	2	
Total	196	99
Smallest	3.4	2.2
Largest	7.3	6.9
Mean	5.16±0.06	4.50±0.09
Median	5.18	4.40
S. D.	0.77	0.85

$d = 0.66$ $\frac{d}{S.E.d} = 6.1$

Table I. Midplane: Spino-sacral diameters in the normal and the cesarean section patients.

Diameter in cm.	Normal	C. Section
2.0-	2	
2.5-	13	9
3.0-	32	22
3.5-	59	27
4.0-	55	24
4.5-	19	7
5.0-	12	8
5.5-	4	2
Total	196	99
Smallest	2.1	2.5
Largest	5.9	5.9
Mean	3.96±0.05	3.90±0.07
Median	3.93	3.89
S. D.	9.69	0.72

$d = 0.66$ $\frac{a}{S.E.d} = 0.70$

Table J, Midplane: Spino-symphyseal diameters in the normal and the cesarean section patients.

Diameter in cm.	Normal	C. Section
5.5-		2
6.0-	2	24
6.5-	7	25
7.0-	51	30
7.5-	72	13
8.0-	50	3
8.5-	13	1
9.0-	1	1
Total	196	99
Smallest	6.1	5.9
Largest	9.2	9.0
Mean	7.77±0.04	6.98±0.06
Median	7.76	6.98
S. D.	0.51	0.64

$d = 0.79$ $\frac{d}{S.E.d} = 11.0$

Table K. Midplane: Spino-conjugate diametersin the normal and the cesarean section patients.

Diameter in cm.	Normal	C. Section
3.5-		1
4.0-		
4.5-		
5.0-	5	3
5.5-	32	27
6.0-	86	30
6.5-	55	16
7.0-	18	5
7.5-		2
8.0-		1
Total	196	100
Smallest	5.2	2.6
Largest	7.3	8.4
Mean	6.38±0.03	6.08±0.07
Median	6.35	76.0
S. D.	0.46	0.70

$d = 0.30$ $\frac{d}{S.E.d} = 3.90$

Table L. Sacal inclination in the normal and the cesarern section patients.

Diameter in cm.	Normal	C. Section
70-	1	9
75-	13	16
80-	44	15
90-	51	14
95-	21	13
100-	1	8
105-	1	1
110-		
115-		1
Total	196	100
Smallest	72	70
Largest	105	117
Mean	88.2±0.14	87.50±0.94
Median	87.78	87.17
S. D.	5.75	9.36

$d = 0.71$ $\frac{d}{S.E.d} = 0.70$

Table M. Outlet: Anteroposterior diameters of the normal and the cesarean section patients.

Diameter in cm.	Normal	C. Section
8.5-	1	2
9.0-	1	14
9.5-	3	12
10.0-	19	20
10.5-	31	26
11.0-	41	13
11.5-	53	8
12.0-	35	3
12.5-	6	
13.0-	6	1
Total	196	99
Smallest	8.9	8.8
Largest	13.4	13.0
Mean	11.45±0.06	10.49±0.09
Median	11.52	10.45
S. D.	0.79	0.87

$d = 0.96$ $\frac{d}{S.E.d} = 8.9$

Table N. Outlet: Intertuberous diameters of the normal and the cesarean section patients.

Diameter in cm.	Normal	C. Section
7.5-	1	1
8.0-		3
8.5-	1	
9.0-	6	9
9.5-	19	10
10.0-	48	13
10.5-	30	19
11.0-	27	12
11.5-	27	12
12.0-	21	8
12.5-	6	5
13.0-	10	1
13.5-		1
14.0-		1
14.5-		
15.0-		1
Total	196	97
Smallest	8.1	7.7
Largest	13.0	15.0
Mean	11.02±0.07	19.91±0.13
Median	10.88	10.81
S. D.	1.04	1.27

$d = 0.11$ $\frac{d}{S.E.d} = 0.70$

Table O. Outlet: Posterior sagittal diameters of the normal and the cesareans ection patients.

Diameter ni cm.	Normal	C. Section
5.5-		2
6.0-	3	4
6.5-	5	10
7.0-	15	18
7.5-	17	17
8.0-	41	16
8.5-	44	13
9.0-	34	14
9.5-	21	3
10.0-	12	2
10.5-	2	
11.0-	2	
Total	166	99
Smallest	6.3	5.5
Largest	11.1	10.0
Mean	8.82±0.07	7.99±0.10
Median	8.69	7.97
S. D.	0.95	1.00

$d = 0.83$ $\frac{d}{S.E.d} = 6.80$

Table P. Outlet: Anterior sagittal diameters of the normal and the cesarean section patients.

Diameter in cm.	Normal	C. Section
3.0-		2
3.5-		8
4.0-	2	19
4.5-	34	27
5.0-	92	31
5.5-	48	9
6.0-	19	3
6.5-	1	1
Total	166	99
Smallest	4.1	3.2
Largest	6.8	6.5
Mean	5.40±0.03	4.87±0.07
Median	5.34	4.91
S. D.	0.45	0.66

$d = 0.53$ $\frac{d}{S.E.d} = 7.0$

Table Q. Outlet: Subpubicangle angle of the normal and the cesarean sectiont patiens.

Diameter in cm.	Normal	C. Section
65–		1
70–	3	5
75–	11	5
80–	18	13
85–	41	21
90–	54	22
95–	42	21
100–	21	7
105–	6	1
110–		1
Total	196	97
Smallest	73	68
Largest	180	110
Mean	91.99±0.53	90.2±0.88
Median	92.32	90.13
S. D.	7.45	8.43

$d = 1.77$ $\frac{d}{S.E.d} = d\,1.70$

Table R. The main pelvic measurements of 196 normal and 100 cesarean section patients.

Inlet	Normal			Cesarean Section			d	$\frac{d}{S.E.d}$
	No.	Mean	S. D.	No.	Mean	S. D.		
A. P.	196	12.01±0.05	0.74	100	10.40±0.08	0.79	1.61	17.1
Widest transverse	196	12.64±0.05	0.74	100	11.99±0.09	0.86	0.65	6.3
Available transverse	196	12.42±0.05	0.70	99	11.45±0.09	0.87	0.97	9.4
Posterior sagittal	196	5.27±0.09	0.76	100	3.62±9.08	0.79	1.65	17.6
Circle fit	196	11.37±0.05	0.67	100	10.01±0.06	0.64	1.36	17.4
Midplane:								
A. P.	196	12.4 ±0.06	0,87	100	11.10±0.08	0.75	1.36	13.6
Interspinons	196	10.79±0.06	0.83	96	10.39±0.11	1.07	0.40	3.2
Posterior sagittal	196	5.16±0.06	0.77	99	4.50±0.09	0.85	0.66	6.1
Spino-sacral-tip	196	3.96±0.05	0.69	99	3.90±0.07	0.72	0.66	0.7
Spino-conjugate	196	6.38±0.03	0.64	100	6.08±0.07	0.70	0.30	3.9
Spino-synphyseal	196	7.77±0.04	0.51	99	6.98±0.06	0.64	0.79	1.10
Sacral inclination	196	8.2 ±0.14	5.75	100	87.50±0.94	9.35	0.71	0.70
Outlet:								
Intertuberous	196	11.02 ±0.70	1.04	97	10.91±0.13	1.27	0.11	0.7
A. P.	196	11.45±0.06	0.79	99	10.49±0.09	0.87	0.96	8.9
Posterior sagittal	196	8.82±0.07	0.95	99	7.99±0.10	1.00	0.83	6.8
Anterior sagittal	196	5.40±0.03	0.45	99	4.87±0.07	0.66	0.53	7.0
Subpubic angle	196	91.9 ±0.53	7.45	97	90.2 ±0.88	8.43	1.7	1.7

The sacral inclination and the subpubic angle of individual type of pelves:

Table 6. The sacral inclination of individual type of pelves

	Pure small gynecoid	Pure android	Pure anthropoid	Pure platypelloid
Number	19	16	4	24
Degree	90.5°	84.5°	89°	89.9°

Table 7. The subpubic angle of individual type of pelves

	Pure small gynecoid	Pure android	Pure anthropoid	Pure platypelloid
Number	19	16	4	24
Degree	89.3°	84.2°	80°	93.5°

In the android type pelvis, the subpubic angle was narrow and the sacral inclination was forward. The platypelloid type pelves had a wider subpubic angle, and the anthropoid type pelves had a narrower one. In platypelloid type pelves, the sacral inclinations were for the most part extremely backward but sometimes were extremely forward.

To understand the pelvic causes of obstructed labour in Formosan Chinese women, we adopted the suggestions made by Berman[7]. Namely, inlet contraction was defined as a shortening of either anteroposterior or transverse diameter of the inlet by 2 cm. or more, or as a diminishing of both of these measurements by 1 cm. or more. Midpelvic contraction was defined as having a normal inlet and outlet associated with a shortening of either the interspinal or anteroposterior diameter by 1.5 cm. or more. Outlet contraction was defined as having a normal inlet and midpelvis associated with a contraction of 1 cm. in the intertuberous and posterior sagittal diameter or a contraction of 2 cm. in either diameter. The subpubic angle less than 80 degrees was usually associated with a shortened intertuberous diameter. Comparisons of the diameters were done with the standard pelvic measurements of Formosan Chinese female pelves which were made by Wu and Chang[4].

Table 8. Variation of contraction of 100 abnormal pelvis

Inlet	Midpelvis	Outlet	Complete	Upperpelvis	Lowerpdvis	Abnormal in-let shape	Total
30	12	1	18	14	12	13	100

According to the above definition, variations of the contraction were classified as follows: Inlet contraction was 30%, midpelvic contraction 12%, outlet contraction 1%, complete contraction definend as contraction at all the three levels 18%, upper pelvic contraction 14%, lower pelvic contraction 12%, abnormal inlet shape defined as having the diameters all within normal limits but with the shape of inlet not "Round" 13%.

Inlet contraction, upper pelvic contracion, complete pelvic contraction and abnormal shape of inlet will be obstructed at the level of the inlet. Thus in 75% of all cases operated

due to cephalopelvic disproportion, the presenting part had not engaged after the trial of labour. In midpelvic contraction and lower pelvic contraction amounting to 24% of all the operated cases, the deliveries were obstructed at the level of the midplane. There was one per cent pure outlet contraction.

Comment: Thoms's[8] position for the picture of the pelvic inlet. and Chassard and Lapine's[9] position for that of the subpubic arch were valuable because the inlet, and the outlet of the pelvic cavity were made parallel with the film, which gave us their real shapes. The classification suggested by Niccholson was more objective to decide the type of shape than was caldwell-Molloy's classification.

To understand the relationship between difficult labour and pelvic structure, the differences between the measurements of pelves which have had smooth vaginal deliveries and those which have had obstructed labour gave us useful information. Clinical experiences had shown the danger of putting too much emphasis on the so called criteria of pelvic contracion.

The majority of Formosan Chinese were Fu-Kienese in race and like the Cantonese in Hongkong[10] were shorter compared with Europeans, but the average measurements of the diameters at all levels of pelvis, the shape of the brim, and the subpubic angle indicate that they were more frequently gynecoid. Even among one hundred cesarean section cases, fifty-two had small gynecoid type pelves. It was interesting to note that the predominant type of pelvis in Fu-Kien women as well as in Cantonese women was gynecoid.

In poorly developed short women, either (1) all of the pelvic measurements were more or less proportionately shortened making a small round pelves or (2) the posterior segment was flattened making a scutiform pelvis or flat type pelvis.

Table 9. The shape of pelvic inlet in Formosa, Hongkong and Scotland

	Formasan Chinese (Wu)		Hongkong Chinese (Chun, Kan)	Scotland (Bernard) (11)	
	Normal average height 154.8 cm. %	Cesarean-section average-height 148 cm. %	Average-height 150 cm. %	Height under 152 cm. %	Height over 162.5 cm. %
Round	88.2	52	80.4	65	87
Narrow	7.1	5	13.6	Nil	6
Flat	3.6	26	5.4	34	7
Scutiform	Nil	17	0.6	1	Nil

Chinese females are generally more tolerant to pain. They have a racial advantage in pelvic structures such as a more circular brim, a more spacious posterior segment and a wider subpubic angle. In Taiwan, at least in the urban areas, due to improved diet and living conditions it is not very frequent to find a patient whose pelvis is so contracted that vaginal delivery is absolutely impossible. Considering the average biparietal diameter of the newborn head as 9.5 cm., the number of patients whose circle fit of pelvic brim was below 9.5 cm. was 19 in 100 obstructed labour (Table E). This was only 0.28% of all the 7,033 deliveries.

However, there is reason to doubt the advisablity of allowing delivery from below under circumstances of apparent cephalopelvic disproportion, due to fetal death from laceration of the tentorium, and possible damage to fetal mental status. At the same time, the mother's soft parts sustain injury, bleeding,

infection, and a relaxing of pelvic floor.

Present day safety of cesarean section would justify dealing with borderline cases of disproportion by cesarean section in order to protect the child and the mother. A trial of labour for a reasonable length of time with an accurate knowledge of the fetal pelvic relationship in all the suspective cases of disproportion, no matter primipara or multipara. should lead us to the most correct decision.

SUMMARY

This paper records a radiological study of pelves in a series of 100 cesarean section patients, operated at tne Mackay Memorial Hospital, Taipei in the years 1961-1967. A summary of the results follows.

1. The frequency of cesarean section performed due to cephalopelvic dispropartion was 1.4%. There was only 0.28% namely 19 in 7,033 whose circle fit of the pelvic brim was below 9.5 cm.
2. The presenting part was not engaged after a trial of labour in 75 per cent of all of the operated patients. Only one per cent were really obstructed at the level of the outlet.
3. There was a remarkable increase in the flat type pelvis (3.6% to 26%) and in the scutiform type pelvis (0.0 to 17%) and a decrease in the round type pelvis (89.3% to 52%).
4. The correlation coefficients of the measurements were significant for evaluation of the importance of each measurement of the pelvis.
5. The shortening of the anteroposterior diameters at the three levels of pelvic cavity was due mostly to shorter posterior sagittal diameters.
6. In many borderline pelves abnormal position of fetus was the main cause of the obstructed labour. There were 43 per cent occiput transverse, and 4 per cent face presentations which might have smooth vaginal deliveries in next pregnancy.
7. The average height of the operated patients was 6.78 cm. shorter than that of normal patients. This implied an important relation between the height of the patient and obstructed labour. Formosan Chinese women whose heights are below 145 cm. chould be highly suspect to have difficult labour.

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臺灣婦女胎頭骨盆不相稱100例的X光骨盆測定術之探討

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許多學者認爲：生活水準，生活方式，日常飲食，風俗習慣，營養，氣候和種族都會影響骨盆腔的構造，大小和形狀。著者爲了要使臺灣的婦產科醫師，對臺灣婦女的骨盆有更正確的認識起見，特地觀察研究100例胎頭骨盆不相稱的產婦，測量其骨盆腔的主要徑線，形狀和角度，並與196例正常臺灣婦女的骨盆比較，以便對臺灣婦女不正常骨盆的概況，有更進一步的了解。

自1961年至1967年之6年間，馬偕醫院婦產科共有7,033分娩例，其中剖腹產有321例，占4.56%因胎頭骨盆不相稱而施行剖腹產者共100例，占所有分娩例之1.4%。

茲摘其要發表於後，以供參考：

(1) 因胎頭骨盆不相稱而行剖腹產者，占所有分娩例之1.4%，其中骨盆上口合適圓直徑9.5公分以下者，只有19例即0.28%。所以骨盆狹窄至絕對無法由陰道分娩的病例很少。

(2) 所有剖腹產例之75%，試產陣痛12小時後，其胎兒先露部位尚未銜接入骨盆腔內。只有剖腹產例之1%，其狹窄平面眞正在骨盆下口。

(3) 胎頭骨盆不相稱之產婦，其扁平骨盆(由正常之3.6%增至26%)及盾狀骨盆(由正常之0.0%增至17%)有顯著之增加，而圓形骨盆(由正常之89.3%減至52%)有明顯之減少。

(4) 骨盆各徑線之相關係數，對於骨盆各徑線測量時之估計，甚爲重要。

(5) 骨盆腔三平面前後徑之短小，大部分由於後矢徑之短小所致。

(6) 許多界於正常和狹窄邊緣之骨盆，產生難產之主要原因，實由於胎兒之異常胎位，其中有43%之枕橫位，4%之顏面位。如下次妊娠時之胎位正常，則可順利由陰道分娩。

(7) 因胎頭骨盆不相稱而施行剖腹產術的產婦，其身高較正常婦女低6.78公分。這顯示出身高與難產有極密切的關係。臺灣婦女身高145公分以下者，發生難產的可能性很大。