

## PREGNANCY AND LABOR IN YOUNG PRIMIPARÆ

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In spite of the fact that most text-books of obstetrics contain little information upon the subject, there is a prevalent opinion that pregnancy and labor are attended by greater danger in young girls than in older women. Williams' differs from this view and states that labor in the girl of 16 or less is no more serious than in the women of more mature years. In order to test the correctness of this view I have collected and analyzed all labors in girls of 16 years of age or less which have occurred in the obstetrical service of The Johns Hopkins Hospital.

Varnier<sup>1</sup> has compared the average duration of labor in 100 primiparæ of less than 20 years of age with that in a similar number of patients between the ages of 20 and 30.

He found the average duration was 13 hours, 5 minutes in the former as compared with 13 hours, 28 minutes in the latter. In all of the patients in both groups the pelvis was normal and the child presented by the vertex.

Gache,<sup>2</sup> of Buenos Aires, analyzed 91 cases of labor occurring in girls between the ages of 13 and 16. In 84 patients the pelvis was normal. Of the 91 patients, 78 were delivered spontaneously and 13 by operative measures. He estimated that the average duration of labor was 24 hours and that the children averaged 3039 grams in weight, and concluded that, so far as he could ascertain, the age of the patient is practically a matter of indifference.

Bondy\* has reported 69 labors between the ages of 14 and 16, of which 12 resulted in the birth of premature children. In the 57 patients delivered at term he believed that labor was prolonged in 19 instances.

From the first 10,000 admissions to the obstetrical service of The Johns Hopkins Hospital I have collected the details of 500 labors occurring in girls between the ages of 12 and 16 inclusive. Since most of the abortions are admitted to the gynecological service, the few that appear in our records have not been considered, as they would give no accurate picture of the frequency of this complication.

Table 1 presents an analysis of the age at which delivery took place in each of the two races, and shows that there are more than twice as many blacks as whites in the series. As less than 45 per cent of all patients admitted to the service are blacks, this unusual predominance of colored young primiparæ may be regarded as an index of the incidence of precocious sexual relations in that race.

TABLE 1

Age	White	Black	Total
12	0	2	2
13	1	6	7
14	18	28	46
15	45	95	140
16	96	209	305
Total .....	160	340	500

*Pelvis.*—In every patient in the series the pelvis was measured both externally and internally and the results are shown in Tables 2 and 3.

In the 160 white patients contracted pelves were noted in 21, a percentage of 13.12. The generally contracted and the funnel were the most frequent types noted, making up 16 of the 21 cases.

Williams,\* in a series of 1313 white women, irrespective of age, found that the incidence of contracted pelvis was 13.33 per cent, and stated that the funnel and the generally contracted were the two types most frequently encountered, the two making up 125 of his 175 cases. On comparing our figures with his, it is seen that the incidence of contracted pelvis is practically the same in both series, and that the types of pelvic contraction most frequently noted were identical. In other words, the white girl of 13 to 16 years of age has as large a pelvis as her older sister.

In the 340 blacks in our series the incidence of pelvic contraction was 60.58 per cent. The two most frequent types encountered were the generally contracted and the generally contracted rhachitic, the two making up 140 of our 206 cases. Williams\* found 312 contracted pelves in 902 colored women of all ages, a percentage of 40.93. Of these the generally contracted and the generally contracted rhachitic made up 258 of his 312 cases. Thus it is seen that in colored young

primiparæ contractions of the pelvis occur 50 per cent times more frequently than in colored women of more mature years. This is to be expected when it is remembered that casual observation seems to indicate that the black woman in Baltimore reaches physical maturity later than does the white. Our figures are in accord with those of Williams that the two types of contracted pelves most frequently noted in the black are the generally contracted and the generally contracted rhachitic.

*Abnormal Pregnancy.*—Table 4 shows the complications of pregnancy met with in the series of 500 cases.

TABLE 2

CLASSIFICATION OF PELVES IN 160 WHITE YOUNG PRIMIPARÆ

Age	Normal pelves	Contracted pelves					Total
		Generally contracted	Simple flat	Funnel	Gen. cont. funnel	Total cont. pelves	
13	1	0	0	0	0	0	1
14	14	1	0	2	1	4	18
15	37	5	0	2	1	8	45
16	87	3	2	3	1	9	96
Total.	139	9	2	7	3	21	160

TABLE 3

CLASSIFICATION OF PELVES IN 340 BLACK YOUNG PRIMIPARÆ

Age	Normal pelves	Contracted pelves							Total	
		Generally contracted	Simple flat	Gen. cont. rhachitic	Flat rhachitic	Funnel	Gen. cont. funnel	Coxalgic		Total cont. pelves
12	0	2	0	0	0	0	0	0	2	2
13	0	3	0	3	0	0	0	0	6	6
14	8	11	0	4	0	2	3	0	20	28
15	41	16	0	16	1	9	12	0	54	95
16	85	51	1	34	1	12	24	1	124	209
Total.	134	83	1	57	2	23	39	1	206	340

TABLE 4

ABNORMAL PREGNANCIES

	Preeclamptic toxæmia	Eclampsia	Nephritic toxæmia	Syphilis	Pyelo-nephritis	Typhoid	Measles	Total
White .....	2	9	1	1	0	0	0	13
Black .....	8	7	0	25	1	1	1	43
Total .....	10	16	1	26	1	1	1	56

At first glance it appears that there was an abnormally high incidence of preeclamptic toxæmia and eclampsia, 10

of the former and 16 of the latter. However, five of the cases of the former and 14 of the latter were not treated in the prenatal clinic but were referred to the service because of the existence of the disease. Consequently, no such incidence of these complications should be expected to obtain in the average run of young primiparæ.

It is noted that there were 26 cases of syphilis in the series, 25 being in black women and 1 in white. This is a much lower incidence of the disease than that reported from this clinic by Williams.\* The discrepancy can be explained not only on the grounds that in the young girl syphilis would not be expected to be present so frequently, but also because of the fact that more than half of the patients in the series passed through our hands before the introduction of the routine Wassermann determination and, therefore, it may be assumed that many cases of infection escaped detection.

**Premature Labor.**—Of the entire series of 500 cases 58, or 11.6 per cent, terminated in premature labor. When divided according to race, it is seen that this termination occurred in 17 of the 160 whites and in 41 of the 340 blacks, an incidence of 10.52 and 12.05 per cent, respectively.

In the majority of cases in both races the cause of premature termination could not be determined. In the blacks syphilis was the most important ascertainable etiological factor, and it seems safe to surmise that, had the more recent methods of diagnosis been applied throughout the series, many of the cases classified as undetermined would have shown that syphilis was the causative factor.

TABLE 5  
PREMATURE LABORS

	Undeter- mined	Syphilis	Eclampsia	Prem. sep. placenta	Twins	Monsters	Measles	Typhoid	Total
White .	11	1	2	0	2	1	0	0	17
Black..	24	11	1	2	1	0	1	1	41
Total ..	35	12	3	2	3	1	1	1	58

**Duration of Labor.**—Of the 442 patients delivered at term the duration of labor was accurately recorded in 430—138 whites and 292 blacks. The 12 remaining patients were delivered by Cæsarean section or *accouchement forcé* before the cervix had become fully dilated.

Tables 6 and 7 show the average duration of term labor in the two races. From Table 6 it is seen that the average duration of labor for the entire series of 138 white girls is 15 hours, 44 minutes. However, when the pelvis is normal the average falls to 15 hours, 10 minutes; on the other hand, when the pelvis is contracted, labor is 4 hours, 42 minutes, longer than when it is normal.

The average duration of labor in the 292 blacks is 16 hours, 40 minutes. This increase may be assumed to be due to the greater frequency of contracted pelvis in that race; as, when the pelvis is normal, the average duration is 14 hours, 40

minutes, as compared with an average of 18 hours, 7 minutes, when the pelvis is contracted.

It is usually stated that the average duration of labor in primiparæ, irrespective of age, is 18 hours. G. Veit\* places it at 20 hours. Accepting the lower figure as correct, it is seen that the young primipara has a labor shorter by 2 hours, 16 minutes in the white and 1 hour, 20 minutes in the black race.

TABLE 6  
AVERAGE DURATION OF LABOR—WHITE

Age	Total		Normal pelvis		Contracted pelvis	
	No. cases	Average duration	No. cases	Average duration	No. cases	Average duration
13	1	10h. 12m.	1	10h. 12m.	0	0
14	15	20h. 02m.	11	18h. 48m.	4	23h. 24m.
15	40	15h. 15m.	33	15h. 27m.	7	14h. 15m.
16	82	15h. 16m.	76	14h. 35m.	6	24h. 06m.
Total . . .	138	15h. 44m.	121	15h. 10m.	17	19h. 52m.

TABLE 7  
AVERAGE DURATION OF LABOR—BLACK

Age	Total		Normal pelvis		Contracted pelvis	
	No. cases	Average duration	No. cases	Average duration	No. cases	Average duration
12	2	18h. 03m.	0	0	2	18h. 03m.
13	5	17h. 20m.	0	0	5	17h. 20m.
14	25	19h. 44m.	8	18h. 50m.	17	20h. 10m.
15	82	16h. 48m.	39	13h. 53m.	43	19h. 27m.
16	178	16h. 09m.	75	14h. 43m.	103	17h. 15m.
Total . . .	292	16h. 40m.	122	14h. 40m.	170	18h. 07m.

More precise information as to the duration of labor may be gained by the "modal" method. This is shown in Tables 8 and 9. The shaded blocks represent the total number of term labors divided into groups of two hours each, while the lines represent the labors occurring in patients with normal pelvises. Inspection of these tables shows that in both races the most frequent duration of labor in the entire series, as well as in those with normal pelvises, is between 10 and 12 hours. Unfortunately, no comparable statistics concerning the duration of labor in older women are available, but it is not believed that they would show a shorter duration than that observed in young primiparæ.

It is interesting to note that, in spite of the much higher incidence of contracted pelvis in the blacks, the most frequent duration of labor is the same as for the whites. The explanation is, as will be shown later, that the babies of the former are smaller, and, therefore, are less likely to be disproportionate to the size of the pelvis.

*Delivery.*—Of the 442 deliveries at term, 379 were spontaneous and 63 were operative, an incidence of 85.74 and 14.26 per cent respectively. Of the latter 18 were in whites and 45 in blacks. Notwithstanding the apparently greater frequency of operative interference in the blacks, the determination of the percentage frequency shows that the incidence is approximately the same in both races, being 12.95 per cent for the whites and 14.85 per cent for the blacks.

TABLE 8

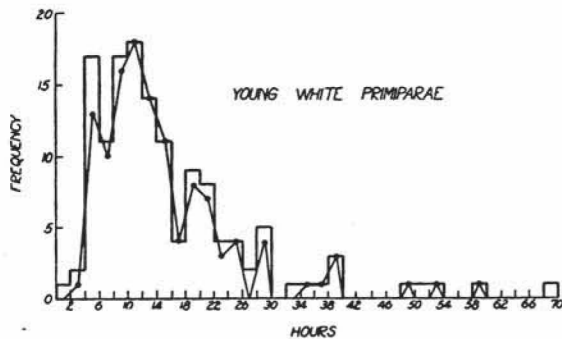
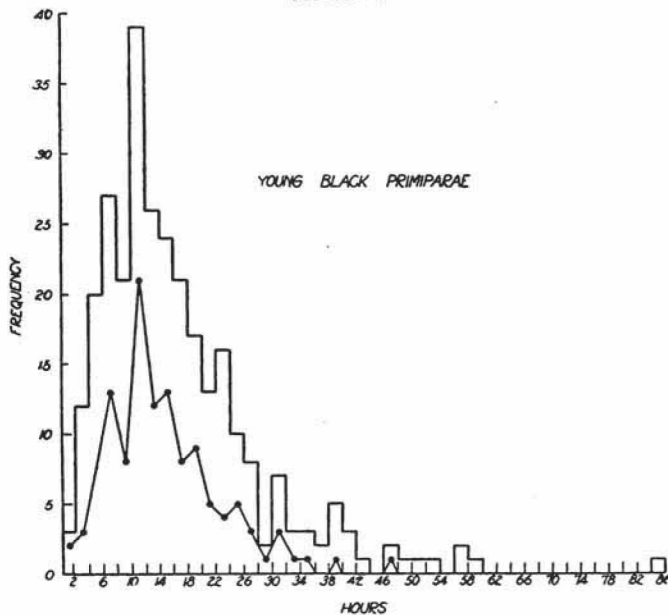


TABLE 9



*Operations.*—The types of operations are shown in Table 10. While the incidence of pelvic contraction was 60.58 per cent in the blacks, only 17 of the 45 operations were done because of pelvic dystocia. Of these, 10 were Cæsarean sections, 4 pubiotomies and 3 craniotomies. In the whites only two operations were necessitated by the pelvis, one Cæsarean section and one high forceps.

*Weight of the Child.*—In casting about for an explanation for the relatively short labor in very young primiparæ it seemed possible that it might be afforded by the smaller size of the children. Accordingly the material was studied from

that point of view. Tables 11 and 12 show the average weight of the children in both races. In the series of 143 whites delivered at term the average weight of the children was 3181 grams. When classified according to the pelvis of the mother, the average in the 126 patients with normal pelvises was 3200 grams, while in the 17 with contracted pelvises it was 3045 grams, a difference of 155 grams in favor of the child born of a mother with a normal pelvis. The average weight of

TABLE 10  
OPERATIONS

	Low forceps	Mid forceps	High forceps	Breach extraction	Version and extraction	Cæsarean section	Pubiotomy	Craniotomy	Accouch. forc.	Induction of labor	Total
White ....	7	3	2	3	0	1	0	0	0	2	18
Black ....	18	2	2	2	1	10	4	3	1	2	45
Total ...	25	5	4	5	1	11	4	3	1	4	63

TABLE 11  
AVERAGE WEIGHT OF THE CHILDREN—WHITE

Age	Total		Normal pelvis		Contracted pelvis	
	No. cases	Av. weight	No. cases	Av. weight	No. cases	Av. weight
13	1	2700	1	2700	0	0
14	15	3063	12	3030	3	3199
15	42	3171	34	3213	8	2994
16	85	3106	79	3239	6	3037
Total....	143	3181	126	3200	17	3045

TABLE 12  
AVERAGE WEIGHT OF THE CHILDREN—BLACK

Age	Total		Normal pelvis		Contracted pelvis	
	No. cases	Av. weight	No. cases	Av. weight	No. cases	Av. weight
12	2	2830	0	0	2	2830
13	5	3030	0	0	5	3030
14	24	3034	8	3211	16	2945
15	82	3043	39	3062	43	3025
16	186	2979	75	3042	111	2945
Total....	299	3004	122	3060	177	2966

the colored children born at term was 3004 grams—177 grams less than that in the whites. In the 122 blacks with normal pelvises the average weight was 3060 grams, while it was 2966 grams in the 177 patients with contracted pelvises—a difference of 94 grams.

Riggs,\* in a report from this clinic, found the average weight of the children of 370 white and of 196 black primiparæ of

all ages was 3224 and 2996 grams respectively—a difference of 228 grams. The figure usually given as the average weight of term white children is 3250 grams. A comparison of our findings with this figure, as well as with those of Riggs, shows that the children of young primiparæ vary but little in weight from those born to older women. It is, therefore, evident that the relatively short labor of the young primipara cannot be explained on the ground that the baby is smaller than at a more advanced maternal age.

*Maternal Mortality.*—In our series of 500 patients there were four maternal deaths, a percentage of 0.8. All of these deaths occurred in colored girls. One died from eclampsia

TABLE 13  
FETAL MORTALITY.

	Toxæmia	Syphilis	Cause not de- termined.	Asphyxia	Destructive operations	Infected cord	Pneumonia	Total
White .....	3	2	4	2	0	1	1	13
Black .....	3	4	4	1	4	1	1	18
Total .....	6	6	8	3	4	2	2	31

on the third day after the the spontaneous delivery of a term child. The other three patients were delivered of premature children, one by manual dilatation of the cervix and version and extraction because of prolonged labor and intrapartum infection. She died suddenly two hours later, with a clinical diagnosis of hæmorrhage and shock, but the findings at autopsy were negative. Of the other patients one died on the fifth day of the puerperium from streptococcus peritonitis and the other on the tenth day from pyelonephritis which had existed for weeks before delivery.

*Fatal Mortality.*—Of the 442 deliveries at term, 31 children were stillborn or died within the first two weeks of life, a percentage of 7.0. The causes of death are shown in Table 13.

#### CONCLUSIONS

Based upon the study of the 500 patients comprised in this report, it seems permissible to conclude that pregnancy and labor are attended by no greater danger in the young primipara than in the older woman. On the other hand, the duration of labor is actually shorter. As our figures show that the size of the children is not inferior to that noted in older women, and that abnormal pelves occur quite as frequently, this result must be attributed to the greater elasticity of the soft parts. Consequently, speaking from a purely obstetrical point of view, the ages under consideration appear to be the optimum time for the occurrence of the first labor.

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