

THE DYSTOCIA - DYSTROPHIA SYNDROME

IN THE ELDERLY PRIMIGRAVIDAE.

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The elderly primigravida has long been a source of interest and anxiety to the obstetrician and in view of the increasing numbers of the group, she is becoming ever more important at the present day. Throughout the literature, many writers from Mauriceau¹ to the present day have noted especial risks of pregnancy, labour and the puerperium in the upper age groups. On the other hand we find such statements as "Most accoucheurs have been agreeably surprised by the ease and rapidity with which elderly primigravidae have delivered" (Herring,²) Again, Schulze³ observes that, "Practical experience has shown that although a certain proportion of these women do have serious difficulty, even a woman near menopausal age may have her first baby with surprising ease and rapidity." She further points out that the dangers of labour in the elderly primigravida have been somewhat exaggerated, and that about twenty per cent of the women have strikingly rapid and easy labours. It is obvious, however, when statistics are studied which enable comparison to be made between the upper age-groups and the average for all ages, that the incidence of many complications at all stages of the reproductive life is increased. In consequence of the apparent disparity between this fact and the views quoted above, the question arises as to whether the special risks are evenly spread over the whole group of elderly primigravidae or whether they are incurred by a sub-group. Several writers have attempted to describe special types in whom either easy or difficult labour is to be anticipated (Meyer,⁴ Jaroschka⁵) but none has clearly defined these groups.

A study of the characters of the dystocic types as described by these authors has led to a recognition of the fact that a marked similarity

exists between the groups of elderly primigravidae in whom difficult labour is to be anticipated and the women showing the dystocia-dystrophia syndrome as described by De Lee⁶, Bryan Williams⁷, and others. On examination of a small series of twenty-five personal cases of elderly primigravidae this appeared to be borne out, and a more extensive investigation has been undertaken at the Liverpool Maternity Hospital, where all cases of women of thirty-five years of age and over delivered there during the five-year period 1939 - 43 have been analysed. This Liverpool series numbered four hundred and sixteen cases.

In this paper, I propose to record results of my investigation as follows:-

1. Evidence that the elderly primigravida incurs a higher risk, and conclusions drawn from this evidence.
2. Evidence that the features of the dystocia-dystrophia syndrome are in many instances identical with the complications encountered amongst elderly primigravidae.
3. Evidence that the groups of elderly primigravidae included a considerable proportion of cases corresponding to the dystocia-dystrophia syndrome, and that these cases incur the majority of the increased risks attributed to the higher age-group.
4. Factors of importance in the prognosis of dystocia and their relationship to the dystocia-dystrophia syndrome.
5. The practical application of these findings in relation to prognosis and treatment.

TABLE I. INCIDENCE OF FIRST PREGNANCY IN WOMEN OF 35 YEARS OF AGE AND OVER.

	WAHRSINGER & KUSHNER. 1937-41.	ERVING & POWER. 1937-42.	BROMBERG & BRZEZINSKI. 1929-1940.	TEW & KUDER. 1938.	PERSONAL CASES. 1936-38.	LIVERPOOL SERIES. 1939. 1940. 1941. 1942. 1943.
NUMBER OF CASES.	111	199	67	240	25	62 73 67 97 117
TOTAL CASES (ALL AGES)	10233	15079	12036	-	3200	2043 1882 1581 2093 2089
PERCENTAGE ELDERLY PRIMIGRAVIDAE.	1.08	1.32	0.55	2.01	0.78	3.03 3.93 4.24 4.68 5.60

The numbers of elderly primigravidae are definitely rising, and in Liverpool have almost doubled since 1939. This is shown in Table 1. It is interesting to note the v. Krehninger-Guggenberger and Leutenmayer have recorded a similar increase in Munich during the war years. Some of the increase may be due to an increasing recognition of the risks run by the elderly primigravida and a consequent increase of hospitalisation amongst them, but this is hardly likely to explain the whole of the additional numbers, and social and economic factors undoubtedly play the major part.

1. Evidence that the elderly primigravida incurs a higher risk, and conclusions drawn from this evidence.

The characters of the elderly primigravidae noted by various writers can be classed as occurring before pregnancy, during pregnancy, in labour and in the puerperium, and it will be convenient at this juncture to recapitulate them and to consider the features of the two series examined in the present paper, together with the literature on the subject.

(a) Before Pregnancy.

Schulze has noticed a late onset of menstruation (after 17 years of age) in 13% of elderly primigravidae, while the figure for all ages is 6.0%. Dysmenorrhoea, oligomenorrhoea and irregular menstruation have been described as frequent, and dyspareunia is a frequent complaint. In my personal series the average age of menarche was 14.6 years, and in six cases (24%) it was delayed beyond the age of seventeen years. Four cases had suffered from dysmenorrhoea, (16%) but in all but two cases menstruation had been regular, although in one case the intermenstrual interval had been forty-two days.

*25 cases above
menarche of age*

TABLE II. COMPLICATIONS OF PREGNANCY.

	HERRING.	SCHULZE.	ERVING & BROMBERG & POWER.	DUNCAN & GIBSON.	TEW & KUDER.	MILLER.	PERSONAL.	LIVERPOOL CONTROL SERIES.	
Pre-Eclamptic Toxaemia.	-	18.3	11.5	-	22.5	10	44	22.59	6.2
Eclampsia.	-	-	-	-	-	-	Nil	0.48	0.3
Accidental Haemorrhage.	-	-	-	-	-	3.4	Nil	2.2	2.0
Placenta Praevia.	0	-	-	-	0.8	1.13	4	1.7	1.0
Uterine Fibroids.	13.3	5.8	7.0	-	8.3	6.78	4	10.31	4.9
Pelvic Contraction.	-	8.6	-	16.8	15.5	1.13	52	35.6	16.5

All the above figures are percentages. The control series represents the figures for all cases delivered in the Liverpool Maternity Hospital during the year 1941. This group numbered 1581 cases.

Almost no details of menstrual history are available for the Liverpool series, but scanty and irregular menstruation has been noted in four cases.

⁴ Meyer , ⁹ Tew & ⁵ Kuder , Jaroschka and others have observed that in many cases a primigravida may appear in one of the higher age-groups because of prolonged sterility, even although marriage may have occurred early. This question will be more conveniently discussed later.

(b) During pregnancy.

The incidence of complications of all kinds is increased. The outstanding increases are in toxæmia and eclampsia (Gosta ¹⁰ , Miller ¹¹ , Roeder ¹² , Horner ¹³ , Quigley ¹⁴) in fibroids (Schulze ³ , Erving & Power ²⁵) in pelvic contractions (Tew & Kuder ⁹ , Daichman ¹⁵ , Duncan & Gibson ¹⁶ , Wahrsinger & Kushner ⁴³) and in malpresentations and malpositions (Galloway & Paul ¹⁷ , Nixon ¹⁸) These are shown in tables 2 & 3, which also indicate that the present investigation confirms these increases in both series. As a control group, the figures for all admissions to the Liverpool Maternity Hospital during the year 1941, the central year of the quinquennium under review, have been used.

The increase in toxæmia as compared with the control group is just under 4:1. This may be explained to some extent by the longer exposure in these older women of liver and kidneys to the strains and stresses of life, but this is unlikely to be the whole story, and there seems to be no doubt that the elderly primigravida, quite apart from previous organic damage, is more susceptible to toxæmia of pregnancy. The marked increase in eclampsia ¹⁰ described by Gosta and others, has not been found here, since no case occurred in my personal series, and the increase in the Liverpool series was 1.5:1 only.

The higher incidence of fibroids was not associated with difficulty during pregnancy except in five cases where pain and slight pyrexia indicated some degeneration. Randall & Odell¹⁹, reporting evidence of degeneration in 50 - 75% of all cases of fibroids during pregnancy, had to intervene in a large proportion of their cases, usually carrying out total hysterectomy, but in their present series, palliative treatment was all that was necessary in any case.

The incidence of pelvic contraction as shown at Table 2 is over twice as high in the Liverpool series as in the control. Both figures are high, as the smallest deviations from the normal have been taken into account, but none the less the differences are significant. The nature of the pelvic contraction has not until recently been studied, but Duncan & Gibson¹⁶ have noted "varying types of pelvic deformity - the male type predominates," while Tew & Kuder⁹ observe that "funnel pelvis are definitely more predominant than amongst younger primigravidae". Malpas²⁰, discussing the features of the male type of pelvis, stresses the small sacro-sciatic notch with short sacro-spinous ligaments, the narrow pubic arch and contraction at the outlet. This type of pelvis was noted in no less than 56% of my personal cases, whilst in the Liverpool series the records show outlet contraction, narrow pubic arch, short sacro-spinous ligaments and other male features in twenty-seven cases. In the Liverpool series, full details of the type of pelvis are not always available, and so, the recording of twenty-seven pelvises clearly of the male type is suggestive. It is probable that amongst the remaining cases of pelvic contraction where exact details of the deformity have not been recorded,

TABLE 3. PRESENTATION AND POSITION.

	SCHULZE.	NIXON.	GALLOWAY & PAUL.	MILLER.	PERSONAL CASES.	LIVERPOOL SERIES.	CONTROL.
VERTEX, OCCIPITO) ANTERIOR.	70.7	82.1	80.6	51.5	68	75	86.6
VERTEX, OCCIPITO-POSTERIOR.	22.5	11.6	10.4	36.5	28	12.5	5.2
BREECH.	5.2	6.3	7.0	12.0	4.0	11.3	4.3
OTHER.	1.6	-	2.0	-	-	1.2	3.9

All the above figures are percentages. The same control has been used as in Table 2.

further pelves showing male features have been present.

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Miller has noted an increased frequency of accidental haemorrhage in association with the higher incidence of toxæmia. In my personal series, no case of accidental haemorrhage occurred, but the Liverpool series included nine cases (2.2%) while the incidence in the control group was very little less (2.0%)

Placenta prævia occurred in one of my personal cases (4%) and in seven of the Liverpool cases (1.7%) a considerable increase over the 1.0% of the control group.

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Nixon and others have stressed the frequency of premature labour and abortion amongst elderly primigravidae and amongst my personal cases, three (12%) were premature. In no case had there been previous abortion. One case (4%) was postmature when labour ensued. In the Liverpool series, delivery took place before full term in one hundred and forty-five cases (34.8%) Of these, forty-one cases (10.2%) underwent elective Caesarean section before term, and in twenty-four (5.9%) premature induction of labour was carried out. Abortion during the early weeks of a previous pregnancy had occurred in thirty-two (7.69%) of the women included in this series. Thirty-eight labours (9.13%) were post-mature.

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Schulze, Galloway & Paul, Nixon, Miller, and others have drawn attention to the high frequency of malpresentations amongst elderly primigravidae, and their observations have been amply confirmed in the present series as shown at Table 3.

In the Liverpool series, the incidence both of occipito-posterior positions of the vertex and of breech presentations is almost three times as

high as in the control group, whilst in my personal series, in more than one fourth of all the cases the vertex presented with the occiput posterior. This high incidence of malpresentation is doubtless associated with the increased frequency of pelvic contraction, and in this connection it is interesting to note Hennessy's dictum that, "Delay in anterior rotation of the head is the result of disproportion or of diminution of space in the fore-pelvis". When this is considered in association with the finding of an increased frequency of the male type of pelvis, (Duncan & Gibson , Tew & Kuder) the connection is obvious.

(c) During Labour.

Spiller has shown that the average duration of labour increases with age and almost all authors are agreed that labour lasts longer in the elderly primigravida than in younger women. We have already seen that malpresentation and pelvic contraction are common, and these features of the group explain the prolongation of labour in some cases, but two further factors of the highest importance must be considered at this stage, viz, uterine inertia and rigidity of the soft parts. Herring has remarked that the uterine contractions are less efficient than normal, while Nixon refers to the "sluggish uterus", and Tew and Kuder describe "labour of the weak, unsatisfactory, desultory type". Every obstetrician is familiar with this type of labour, almost as distressing to the attendant as it is to the patient, where labour drags on and on, and where weak but none the less painful contractions fail to achieve cervical dilatation or any other advance. Attempts to minimise the occurrence of this type of labour by means of ante-natal quinine, oestrogens and other

methods have met with indifferent success, and it remains a problem which must be faced whenever one deals with this type of elderly primigravida. In some cases the inertia is the result of inaccurate filling of the lower uterine segment by an occipito-posterior head or by a breech, or it may be associated with a high floating head and cephalo-pelvic disproportion. In other cases the inertia appears to be due to the presence of intra-mural or other fibroids. When all these types of cases have been excluded, however, there still remain a large number where the failure appears to be due to an inherent lack of power to contract in the uterine musculature or to a defect in its neural or hormonal control.

It is a matter of considerable difficulty in some cases to apportion responsibility for delay in labour as between uterine inertia and rigidity or spasm of the cervix. That these latter features also play their part is indicated by the figures of Schulze³ who carried out manual dilatation of the cervix in twenty eight cases, dilatation with the Voorhees bag in three cases, and Duhrssen cervical incisions in four cases, a total of thirty-five cases or 10.4% of her series. In the Liverpool series the incompletely dilated cervix was incised as a preliminary to forceps delivery in three cases (0.72%) while neither manual dilatation nor the Voorhees bag was employed in any case. The most commonly used method of dealing with cervical rigidity was lower segment Caesarean section which was employed for this complication in five cases (1.2%) The disparity between the total of these cases (1.94%) and the 10.4% of Schulze³ is explained by the fact that cervical dilation or incision was carried out fairly readily

in cases of inertia in the American series, whilst in Liverpool the corresponding type of case was treated by Caesarean section.

Rigidity and inelasticity of the vagina and perineum are a cause of delay in labour in the second stage, and the recognition of this fact¹⁶ has led to the widespread use of episiotomy. Thus Duncan & Gibson report 1007 episiotomies in 1068 vaginal deliveries (94.3%) While it must be agreed with some authors that episiotomy is a "fashionable" procedure, none the less that it is frequently necessary is shown by the high incidence of perineal tears in cases where episiotomy has not been carried out. Bromberg and Brzezinski²³ record an incidence of 46%. Racker²⁴ stresses the importance of episiotomy in breech deliveries, especially in elderly primigravidae. In my personal cases, there were eight episiotomies and five tears of the perineum in twenty-one vaginal deliveries, a total of 61.9%. Episiotomy was carried out sixty seven of the Liverpool cases, and the perineum torn in sixty-two, a total of 43.1% of all vaginal deliveries.

The actual figure for the average duration of labour varies considerably in different reports from the 17.4 hours of Erving & Power²⁵ to the 27.5 hours of Duncan & Gibson¹⁶. In my personal cases, the average duration of labour in all cases delivered vaginally was 25.3 hours, whilst the corresponding figure for the Liverpool series was 20.0 hours. In a control group of five hundred consecutive first labours, the average duration was 15.75 hours. The longest labour of my series was 70.0 hours, and the shortest 10.0 hours. In the Liverpool cases durations of 111.85 hours and 3.00 hours were recorded in cases delivered vaginally; one case was successfully delivered by lower

segment Caesarean section after labour had been in progress for 136.0 hours.

The method of delivery is shown in Table 4. The frequency of spontaneous delivery shows considerable variation in different hospitals, from the 7.1% of Roeder¹² to the 71.7% of Bromberg & Brzezinski²³. It is probable, however, that a racial factor plays its part in the latter series where the authors, working in Palestine, record no case of pelvic contraction. Malpas³⁶, in a personal communication, has pointed out the existence of a similar racial difference "closer at hand, viz. the low forceps rate of the Rotunda (Dublin) and the practice there of leaving the posterior position alone compared with the high forceps rate and the frequent interference called for in the Lancashire area". V.Krehninger-Guggenberger & Leutenmayer⁸ record 66.6% spontaneous deliveries in their series treated in Munich, where a racial factor, if it exists, is certainly not the same as in the Palestine series, if only for reasons of ideology. In my personal cases delivery was spontaneous in 36% and in the Liverpool series the corresponding figure was 46.63%; this lies somewhere near the average for all recent British and American studies.

Delivery was by forceps in 48% of my series; in the Liverpool series the rate was 21.86%, or about four times the general forceps rate for the hospital. No case of high forceps delivery occurred in either series, and in no case were forceps applied without some proper obstetrical indication, but no attempt has been made to distinguish between low and mid-forceps deliveries in the table. Only twin deliveries, and cases of deep transverse arrest delivered by manual rotation and forceps have been considered separately, but these have been included in the figures quoted above. High pelvic arrest of

TABLE 4. MODE OF DELIVERY.

	Herring.	Schulze.	Wahrsinger & Kushner.	Erving & Power.
Spontaneous Vertex.	) 53.4)		
do Breech.	) incl	) 58.6	49.0	13.2
do Twin.	) low)		
	) forceps.)		
Forceps. Single.	)	) 29.4	37.0	52.7
do. Twin.))		
Manual Rotation & Forceps.	-			
Breech Extraction.	-	5.7	0.9	8.1
Caesarean Section (Classical))			
do (lower Uterine Segment))			
do (Extra-peritoneal))			
do (with Hysterectomy)	) 26.6	10.3	11.7	14.2
do (high transverse incision)	)			1.6
Version and Extraction.	-	0.95	-	10.2
Craniotomy.	-	0.32	-	-
Brow(Manipulation)	-	-	-	-
Died Undelivered.	-	-	-	-

All the above figures are percentages. The control figures are derived from a series of five hundred consecutive primiparae.

TABLE 4. (Cont'd.)

Irving & Power.	Bromberg & Brzezinski.	Duncan & Gibson.	Tew & Kuder.	V.Krehninger-Guggenberger & Leutenmayer.	Personal cases.	Liverpool series.	Control.
13.2	71.7	32.6	43.3	66.6	36	45 19) 0. 48) 46.63. 0. 96)	84.7.
52.7	25.3	50.5	36.6	16.6	48	17.02) 1.44) 21.86 3.40)	5.7
8.1	-	5.1	4.5	-	-	1.92	0.7
14.2	1.5	9.2	12.9	-	16	3.13) 23.32) 0.24) 27.17	7.9
1.6						0.24) 0.24)	
10.2	-	0.1	1.6	-	-	0.48	1.0
-	-	-	0.4	-	-	0.72	-
-	-	-	-	-	-	0.24	-
-	-	-	-	-	-	0.24	-

are

labour when it occurred, was usually treated by lower segment Caesarean section even when, as in one emergency case admitted late in labour, the child was already dead. Here it was considered that craniotomy of a head still above the brim of a contracted pelvis presented such risks to the mother that Caesarean section was preferable. Duncan & Gibson recording 14 cases (1.2%) of high forceps delivery in their own series comment, "The high forceps group was the result of poor judgement!"

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Amongst my personal cases, the child presented by the breech in only one (4%) and delivery was by Caesarean section. In the Liverpool series, of forty-seven cases, (11.3%) thirty seven were delivered by Caesarean section, eight by breech extraction, and in only two cases was delivery normal (by Burns' method).

Seven cases of occipito-posterior position occurred amongst my own cases, and in six of these rotation was incomplete. Two cases were delivered by Caesarean section and four by manual rotation and forceps. Of fifty-two cases of occipito-posterior position in the Liverpool series, malrotation occurred in thirty-three, in which delivery was completed as follows:

Caesarean section	11
Manual rotation and forceps	14
Forceps delivery face to pubis	4
Spontaneous delivery face to pubis	1
Version and extraction	2
Craniotomy	1

The high incidence of malrotation (63.5% of all occipito-posterior cases) considered in the light of Hennessy's statement quoted above, confirms the view that the male type of pelvis, with its narrow sub-pubic angle and diminished fore-part, is common amongst these women.

Craniotomy was carried out in three cases of the Liverpool series but in none of my personal cases. In one case the head was perforated after forty-four hours labour, protracted by inertia and cervical rigidity. In the second case prolapse of the cord was associated with a persistent occipito-posterior position. The third case was admitted as an emergency still in the first stage after forty-four hours labour. After perforation and cleidotomy a large child was extracted in a macerated condition.

In one of the Liverpool cases, a brow presentation was converted by manipulation to a face, and delivered as such. The child was already dead on admission, rupture of the membranes having taken place prematurely four days previously.

Caesarean section was carried out in 16% of my personal cases, and in 27.1% of the Liverpool series, This latter figure is the highest I have found in any recorded series, although those of Roeder (24.9%) and Herring (26.6%) approach it closely. On the other hand, Lozell records a figure of 1.08% and Bromberg and Brzezinski 1.5%. Of the cases in the Liverpool series which were submitted to Caesarean section, two-thirds were elective and were operated upon at or before the onset of labour. In the remaining one-third, the operation was carried out after failure of trial labour, in severe inertia and in other types of prolonged or arrested labour. Caesarean

TABLE 5. INCIDENCE AND TYPE OF CAESAREAN SECTION IN ELDERLY PRIMIGRAVIDAE (LIVERPOOL).

	1939.	1940.	1941.	1942.	1943.	1939 - 1943.
CLASSICAL.	-	6	2	3	2	13
LOWER SEGMENT.	15	11	11	21	43	101
CAESAREAN HYSTERECTOMY.	-	-	-	1	-	1
EXTRA PERITONEAL.	-	-	-	-	1	1
HIGH TRANSVERSE INCISION.	-	-	-	1	-	1
TOTAL CAESAREAN SECTIONS.	15	17	13	26	46	117
ANNUAL TOTAL CASES.	62	73	67	97	117	416
PERCENTAGE CAESAREAN SECTION.	24.2	23.3	19.4	26.5	39.3	27.6

section was carried out in 24.2% of the cases in 1939 and in 39.3% in 1943 which suggests that it is now recognised as having an even more prominent place than the figure for the whole five-year series would indicate (see table 5) The table also shows the increasing importance of the lower segment as compared with the classical operation during the period under review.

The low figure for the year 1941 may be due to the "blitzing" of Liverpool during the first half of that year. This led in many instances to delay in admission to hospital of cases in labour, owing to transport breakdowns, and in consequence, cases tended to present themselves at a later stage in labour, when vaginal delivery was thought to be safer. Further, a number in whom complications of labour were anticipated, were evacuated from the city to hospitals in "safe" areas.

One case of the Liverpool series died undelivered at the thirty-fourth week of her pregnancy as the result of an acute hepatic necrosis.

No multiple pregnancy occurred in my personal cases, but ten cases (2.4%) are included in the Liverpool series. These were all twin pregnancies, of which four sets were delivered spontaneously and five sets by forceps to the first child presenting by the vertex, followed by breech extraction of the second. In the remaining case, the first child was delivered by forceps, and the second by breech extraction, with forceps to the aftercoming head.

(d) In the puerperium.

The puerperium was morbid (B.M.A.standard) in no less than 28% of my personal cases, and in 12.7% of the Liverpool series, i.e. about four times the average in the control, In my series there were five cases of local

TABLE 6. MORBIDITY AND MORTALITY.

	MILLER.	NIXON.	SCHULZE.	WAHRINGER & KASHNER.	ERVING & POWER.	BROMBERG & BRZEZINSKI.	DUNCAN & GIBSON.
PUERPERAL MORBIDITY.	7.1	-	27.8	-	15.58	14.8	18.8
MATERNAL MORTALITY.	1.1	4.0	0	2.7	0	0	0.7
FOETAL MORTALITY.	26.0	17.0	7.0	9.0	9.5	7.2	7.5
	TEW & KUDER.	v. KREHNINGER-GUGGENBERGER & LEUTENMAYER.	PERSONAL CASES.	LIVERPOOL SERIES.	CONTROL.		
PUERPERAL MORBIDITY.	21.6	-		28	12.7	3.4	
MATERNAL MORTALITY.	1.25	2.7		0	1.2	0.42	
FOETAL MORTALITY.	10.7	18.0		12	9.6	8.1	

All the above figures are percentages. The control figures are those for all cases delivered in Liverpool Maternity Hospital in the year 1941. (As in Tables 1. & 2.)

pelvic infection, one breast abscess and one case of ilio-femoral thrombophlebitis. In the Liverpool series, pelvic infection was noted in twenty-six cases, mastitis or breast abscess in eight, pyelitis in six cases, bronchitis or broncho-pneumonia in five cases of which two died, thrombophlebitis in four cases, and paralytic ileus^u in four cases following Caesarean section. There was one case of B.coli septicaemia which made a good recovery and one fatal case of uraemia. Puerperal haemorrhages occurred in three cases, on the second, sixth and fifteenth day respectively; although all were severe, all three recovered after blood transfusion and other measures.

The higher incidence of puerperal morbidity amongst elderly primigravidae is clearly associated with the higher rate of operative intervention, and it is worthy of note that the morbidity rate and the operation rate are each about four times those of the control. The difficulties associated with lactation are reflected in the high rate of breast-abscess.

During the later post-natal period, the results of difficult vaginal deliveries begin to make themselves apparent. In four of my personal cases, chronic cervicitis with backache and vaginal discharge was present. A further four cases showed more or less severe vaginal or uterine prolapse, associated with backache, dragging abdominal pain and, in one case, stress incontinence. No complete figures are available for the Liverpool series, but prolapse has been recorded in several cases.

Probably the most distressing feature of this stage was the psychological response to loss of the child in those cases where still-birth or neo-natal death had occurred. This is difficult to assess in figures, but it is

particularly severe in those long-sterile women who have "waited a long time" for their babies . The effect upon some of these women is very severe indeed, and as further pregnancy is improbable, the outlook for their whole lives is changed for the worse. Whether or not the depression engendered in such cases forms the starting-point for many of the cases of involuntional melancholia which follow within a few years, it undoubtedly does cause lasting unhappiness; so severe in fact, are the effects of loss of the child, that even at the cost of a slightly increased risk to the mother, in cases of long sterility, every possible step must be taken in the interests of the child.

(e) The Children.

In my personal cases, there were thirteen male and twelve female children, and in the Liverpool series, two hundred and six male and two hundred and twenty female including ten cases of twins. This finding of more or less equal numbers of each sex is in accordance with recent work, although older writers reported a preponderance of male children.

All the children of my personal series were normally developed, but the Liverpool series included two mongoloid defectives, two cases of anencephaly with spina bifida and other defects, one case of complete hare-lip and one of polydactylism.

Birth injuries included four cases of facial paralysis following forceps delivery and four cephalhaematomata all of which made good recoveries. One sterno-mastoid haematoma and one fracture of the humerus occurred in cases delivered by breech extraction. These also recovered.

The average birth-weight of the children of elderly primigravidae has

long been described as being excessive, but most recent authors deny that this is so. In both the present series my findings are in agreement with this latter view. In my personal series, the average weight of the child was 6 lbs. 11 ozs., and in the Liverpool series 6 lbs. 8½ ozs. This compares with an average weight in the control series of five hundred consecutive primigravidae of 6 lbs. 8 ozs.

(f) Maternal Mortality.

Amongst my personal cases no maternal death occurred, but in the Liverpool series five mothers died (1.2%) This is about three times the average in the control series, but is considerably lower than the figures of some authors e.g. Nixon , v. Krehninger-Guggenberger & Leutenmayer. (see Table 6.)

The fatal cases were as follows:

- (1) Act. 37 yrs. Scarlatina in childhood. Signs of severe toxæmia at 34th week, and so admitted to hospital for treatment. Sudden deterioration in condition ten days later, with jaundice and œmuria. Died next day undelivered. Acute hepatic necrosis found at autopsy.
- (2) Act. 38 yrs. Scarlatina in childhood. Severe nephritic toxæmia. Pregnancy terminated at 33 weeks by lower segment Caesarean section, but she died two days later in a state of uræmia.
- (3) Act. 39 yrs. Previous history of several miscarriages. Ventrifixation. Caesarean section with high transverse incision at 38 wks. Died of broncho-pneumonia four days later.
- (4) Act. 35 yrs. Admitted as emergency case after forty-four hours labour. No foetal heart audible on admission. After a further twenty-two hours labour, perforation and cleidotomy of a macerated child weighing

8 lbs. 5 ozs. was carried out. The mother died of broncho-pneumonia on the fourth day.

(5) Act. 38 yrs. Auricular fibrillation at times before pregnancy began. Twin pregnancy. Delivered by forceps (i) and breech extraction (ii) after a long but easy first stage. Condition satisfactory after delivery, but auricular fibrillation recurred and she was transferred to the Royal Infirmary, Liverpool, where she died four weeks later.

(g) Foetal Mortality.

The gross foetal mortality in my personal series was 12% (three cases) Of these, one died in utero at about the twenty-seventh week in the presence of a severe maternal nephritic toxæmia, but the others were true "obstetrical" deaths, one following prolapse of the cord and the other delivered with great difficulty by manual rotation and mid-forceps after seventy hours labour characterised by severe inertia.

In the Liverpool series forty cases died (9.61%) as compared with 8.1% in the control group (Table 6.) The difference would doubtless have been greater but for the high rate of operative intervention. Seven infants died during pregnancy and were born macerated. In one case, the mother died undelivered. In two cases, the child was still-born after prolapse of the cord. In four cases of still-birth, there was maternal toxæmia, whilst three neo-natal deaths occurred in the children of toxic mothers. The child was still-born in a case of concealed accidental hæmorrhage. Three further deaths were associated with prematurity, and there was one in a case of placenta prævia.

Two cases showed anencephaly with other deformities. The child of one chronic nephritic died of broncho-pneumonia. The remaining cases, fifteen in number, were born in cases of prolonged labour, usually due to uterine inertia. In three craniotomy was carried out on a child who was already dead. In four cases, still-birth followed operative vaginal deliveries, and a fifth was delivered spontaneously. Two children, both persistently occipito-posterior, died two hours and two days respectively after manual rotation and mid forceps delivery. In four cases death occurred after Caesarean section had been performed when inert labour had been in progress for some time, and in the last case Caesarean section was carried out even although the child was already dead in a prolonged labour with cephalo-pelvic disproportion. In this connection Polak²⁸ has observed that "the stress of prolonged labour affects the child no matter what the method of delivery", and the figures quoted above afford ample confirmation of this view.

(h) The Significance of the Mortality Figures.

The figures for both foetal and maternal mortality as shown in Table 6 are notably greater than in the control group. This fact is undoubtedly due to the higher incidence of complications and to the necessity for more frequent operative intervention in the elderly primigravidae, but in some series¹² remarkably low mortality figures have been recorded. Thus Roeder in his very actively-treated series (92.9% operative delivery, 24.9% Caesarean section) records a maternal mortality of 1.76%, but a foetal mortality of only 0.86%. Lozell²⁶, in a group treated much more conservatively, had no maternal death, but the foetal mortality was 13.0%. That conservatism does not mean saving the mother

at the expense of the child, however, is shown by Nixon (maternal mortality 4%, foetal mortality 17.0%, in a series where the forceps rate was only 16%)⁸ and v.Krehninger-Guggenberger & Leutenmayer (maternal mortality 2.7%, foetal mortality 18.0%, in their series where spontaneous delivery was allowed in 66.6%)²³ On the other hand, Bromberg & Brzezinski record no maternal death and 7.2% foetal mortality in a group with 71.7% spontaneous delivery, but we have already seen that a racial factor may play an important part in this series and that their figures are therefore in all probability not strictly comparable.

Amongst elderly primigravidae, the life of the child assumes an even greater importance than in the pregnancies of younger women. Nixon notes that "the baby becomes more important as the age of the mother increases", and even Holmes²⁹, who is inclined to regard the elderly primigravida with less apprehension than most obstetricians, concedes "It is of course true that an elderly primigravida may require special management to safeguard her possible last chance of reproduction." In view of the above, it is imperative that every possible step be taken to save the child, even at the cost of a greatly increased incidence of Caesarean section or other operative intervention. Schulze³ points out that "most of the women are willing to assume a slightly increased risk to themselves to assure the safety of their children", and Nixon¹⁸, observing that doubtless some of the infants (in his series) could have been saved by Caesarean section, suggests that "minor degrees of deviation from the normal in an elderly primigravida might legitimately be regarded as indication for Caesarean section". Munro Kerr³⁰ has said "I allow myself considerable

latitude with regard to Caesarean section in the elderly primigravida", and Higgins has stated that, in dystocic cases, "Trauma to the mother is less and the outlook for the child much improved if delivery is accomplished by Caesarean section". There is a very considerable body of opinion, in fact, in favour of the free use of Caesarean section in this group of cases.

(i) Dangers of Caesarean section.

The risks of Caesarean section have recently been considered by several authors. Lull³¹, comparing two series of Caesarean sections in Philadelphia, notes an increased incidence from 1.6% to 2.5% of all deliveries in 1941 as compared with 1931, with a decrease in mortality during the same period from 6.80% in 1931 to 2.46% in 1941. Foetal mortality in 1931 was 12.8%; in 1941 it had been reduced to 3.3%. He states "The decrease in maternal and foetal mortality would indicate that Caesarean section is performed now as a procedure of choice and not so frequently as a last resort when trial labours and attempted vaginal deliveries have failed." Cosgrove and Norton³² describe a series of 637 lower segment operations with a maternal mortality of 0.471% and a foetal of 8.47%, of which more than half were still-births.

Falls³³, in a plea for the early use of Caesarean section observes "It is extremely irritating when timidity is allowed to masquerade as conservatism.

Procrastination and indecision are the cause of mortality, not Caesarean section." Phaneuf³⁴ also stresses the importance of operating early in labour, and advocates careful individualisation - choosing the right method for a given case. Even in "much neglected cases", however, who come under consideration very late in labour, Cosgrove and Norton³¹ using the extra-

peritoneal operation, have reported "extremely good results".

(j) The Place of Caesarean Section in the Treatment of The Elderly Primigravida.

It is clear from the foregoing considerations that Caesarean section has a wide field in the treatment of the elderly primigravida, since, under ideal conditions, where the operation is carried out as an elective procedure by a skilled operator the risk to the mother is very small, and may often in fact, be less than that of vaginal delivery. The outlook for the child is not so clear in view of the high incidence of premature intra-uterine foetal death (1.9% in the Liverpool series,) which, as Falls ³³ has pointed out, is entirely unpredictable in many cases. The exclusion, however, of those infant deaths ²⁸ the result of prolonged labour (Polak ²⁸)(3.6% in the Liverpool Series) by the use of elective Caesarean section in the appropriate case, would go a long way towards solving this very important question of infant mortality.

Let us then consider in what cases we are to carry out Caesarean section at or before the onset of labour. There is a small group where the indication is quite definite - a central placenta praevia, a fibroid or an ovarian tumour lying in the pelvis so as to obstruct labour, definite cephalo-pelvic disproportion and probably breech presentation in a woman of this age-group. Apart from these, however, there is a very large group of cases where the indications are not so clear-cut, especially during the ante-natal period. This is the type of case where labour begins badly, with uterine inertia leading after a prolonged period of labour to a state of half-dilatation of the cervix with complete exhaustion of mother and child. It is at this point that delivery, whether vaginal or by Caesarean

section, may be fraught with such danger to both mother and child, and it is in just such cases that ante-natal recognition of the probable course of labour is of such prime importance if we are to reduce our mortality figures.

Extra-peritoneal Caesarean section, in the hands of an operator skilled in its special technique, may give good results in respect of the mother in these late cases, but it cannot prevent a large proportion of still-births and neo-natal deaths, the result of the stress of prolonged labour.

³
Schulze has observed that "a careful consideration of the patient will enable one to make a fairly accurate prognosis before labour starts",
²⁸
and Polak affirms that "if we are operating in the interest of the child, we should do it as an elective procedure."

What then are to be our criteria in reaching a decision as to whether or not we are to carry out Caesarean section in a given case? We must be prepared in every case to make our decision before the onset of labour, in the realisation that the operation must be truly elective to achieve the best results, but that in many cases, as we have already seen, a rapid delivery without difficulty or danger for either mother or child, may confidently be expected. In an attempt to answer this question let us consider the dystocia-dystrophia syndrome.

2. Evidence that the features of the dystocia-dystrophia syndrome are in many instances identical with the complications encountered amongst elderly primigravidae.

A consideration of the dystocic cases encountered amongst elderly primigravidae soon led to the recognition that they had many features in common with the dystocia-dystrophia syndrome as described by de Lee,⁶ Williams⁷ and others.

De Lee records the following features of the condition:

1. Slight justo-minor or masculine type pelvis, with other signs of dystrophia adiposo-genitalis.
2. Aged primiparity.
3. Prolonged pregnancy.
4. Non-engagement of the foetal head at the onset of labour.
5. Occipito-posterior position.
6. Premature rupture of the membranes.
7. Weak pains with protracted first stage of labour.
8. Familial dystocia.
9. Tendency to eclampsia.

Amongst other writers, Horner¹³ describes a male distribution of hair, heavy pelvic bones with narrowing of the pubic arch, and a tendency to abortion and to toxæmia. Bryan Williams⁷ observes that the syndrome is much commoner than is generally recognised, and describes a series of sixty-two cases of all ages, of whom nine (14.5%) were aged thirty-five years or more. He stresses the high incidence of menstrual irregularity and sterility.

³⁵
Daniels describe the condition as "dystocia dysparpitarism" and considers the cause of the condition to be a dysfunction of the anterior pituitary. ³⁶ Malpas has pointed out the similarity between the features of labour in these cases and in treated diabetics, in whom also there appears to be some abnormality of pituitary function.

A study of a number of cases of the dystocia-dystrophia syndrome has led me to the opinion that the condition is indeed the expression of a hypofunction of the anterior pituitary, and that the features of the syndrome may be described as showing incomplete feminisation of the subject. Thus, in various respects, there is a tendency to a male rather than a female character or a diminution in degree or delayed appearance of the female character. The features of the syndrome, considered chronologically, may be tabulated as follows:

- (1) Late onset of menstruation, sometimes associated with irregular or scanty menstruation and dysmenorrhoea. The pelvic organs show genital hypoplasia and there may be persistence of such infantile characters as acute anteflexion. In association with the genital hypoplasia there may be more or less dyspareunia.
- (2) Male distribution of hair, both in respect of facial hair in the beard and moustache area and in the shape and distribution of pubic and abdominal hair.
- (3) Male type of pelvis, with heavy pelvic bones, small sacro-sciatic notch, short sacro-spinous ligaments and narrow sub-pubic arch with deep symphysis. Funnel-shaped pelvis with minor degree of outlet contraction.

- (4) Build heavy with broad shoulders and thick neck. May be short and obese or tall, mannish "sergeant-major" type.
- (5) Relative sterility. This is a further aspect of the defeminisation of these patients. It is unusual for pregnancy to occur within three or four years of marriage and it may be delayed very much longer.
- (6) Tendency to abortion. This may be associated with anterior pituitary gonadotrophic hormone deficiency, or to the genital hypoplasia noted at (1)
- (7) High incidence of toxæmia of pregnancy and of eclampsia. This may be associated with a further posterior pituitary dysfunction leading to an over-secretion of the anti-diuretic factor.
- (8) Untimely onset of labour, tending in many instances to either pre-maturity or postmaturity. Since the pituitary is believed to be largely responsible for the initiation of labour, (Samson Wright³⁷) this may also be an expression of dysfunction of that gland, but it may be associated with poor apposition of the foetal head and pelvis as a result of (3) above.
- (9) Malpresentation and malposition of the foetus, non-engagement of the foetal head, at the onset of labour and premature rupture of the membranes as described by de Lee ⁶, may all be associated with the characters of the pelvis as noted at (3) This may also explain indirectly,
- (10) Weak uterine contractions with prolongation of the first stage of labour. Here again, however, pituitary dysfunction may play its part (deficiency of oxytocic factor)

TABLE 7. ANALYSIS OF PERSONAL CASES AND ALLOCATION TO EUTROPHIC & DYSTROPHIC GROUPS.

Case No.	Age.	age at marriage.	Age at Menarche.	Menstrual Type.	Dyspar-eunia.	Male Hirs-uties.	Build.	Pelvis.	Pregna
1	35	32	14	$\frac{7}{28}$ N.	Nil	Nil	Feminine.	N.10".11".7 $\frac{1}{2}$ ".PNR. Outlet norm.	Norma
2.	36	34	14	$\frac{5-6}{28}$ N.	Nil	Nil	Feminine.	N.9 $\frac{3}{4}$ ".10 $\frac{3}{4}$ ".7 $\frac{1}{2}$ ".PNR. Outlet norm.	Toxae
3.	35	25	14	$\frac{5-6}{28}$ N.	Nil	Nil	Feminine.	N.10".11".7 $\frac{1}{2}$ ".PNR. Outlet norm.	Norma
4.	38	37	15	$\frac{6-7}{28}$ N.	Nil	Nil	Feminine.	N.10".11".7 $\frac{1}{2}$ ".PNR. Outlet norm.	Norma
5.	37	35	13	$\frac{7}{28}$ N.	Nil	Nil	Feminine.	N.9 $\frac{1}{2}$ ".11".7 $\frac{1}{2}$ ".PNR. Outlet norm.	Norma
6.	35	29	14	$\frac{7}{28}$ N.	Nil	Nil	Feminine.	N.9 $\frac{1}{2}$ ".10 $\frac{3}{4}$ ".7 $\frac{1}{2}$ ".PNR. Outlet norm.	Toxae
7.	35	29	13	$\frac{6}{28}$ N.	Nil	Nil	Feminine.	N.10".11".7 $\frac{3}{4}$ ".PNR. Outlet norm.	Normal
8.	35	32	14	$\frac{7}{28}$ N.	Nil	Nil	Feminine.	N.10".11".7 $\frac{1}{2}$ ".PNR. Outlet norm.	Normal
9.	35	33	12 $\frac{1}{2}$	$\frac{6}{26}$ N.	Nil	Nil	Feminine.	N.11".12".8".PNR. Outlet norm.	Normal
10.	38	34	15	$\frac{4-5}{28}$ N.	Nil	Nil	Feminine.	N.10 $\frac{1}{2}$ ".11 $\frac{1}{2}$ ".7 $\frac{1}{2}$ ".PNR. Outlet norm.	Normal
11.	39	36	13	$\frac{7}{28}$ N.	Nil	Nil	Feminine.	N.10".11".7 $\frac{1}{2}$ ".PNR. Outlet norm.	Normal
12.	38	30	14	$\frac{6}{28}$ N.	Nil	Nil	Feminine.	N.10 $\frac{1}{4}$ ".11 $\frac{1}{2}$ ".7 $\frac{1}{2}$ ".PNR. Outlet norm.	Normal
13.	36	26	15	$\frac{3-4}{28-42}$.Irreg.	Nil	Present.	Obese.	10".11".7 $\frac{1}{2}$ ".PNR. Pubic Angle Cont	Toxaem
14.	36	27	14	$\frac{3}{28}$ N.	Nil.	Present.	Short. Obese.	10".12".8".PNR.4". Pubic Angle Conty Sacro-spinous lig	Nephri. Toxaem

(Cont'd.)

TABLE 7. Cont'd.

COUPS.

	Pregnancy.	Presentation & Position.	Onset of Labour(wks)	Remarks.	Dystrophic or Eutrophic.
.PNR.	Normal.	V.L.O.A.	40		Eutrophic.
" .PNR.	Toxaemia.	V.L.O.A.	40		Eutrophic.
.PNR.	Normal.	V.L.O.A.	40	10 yrs.sterility but no other suggestive feature.	Eutrophic.
.PNR.	Normal.	V.R.O.A.	40		Eutrophic.
.PNR.	Normal.	V.L.O.A.	40+		Eutrophic.
" .PNR.	Toxaemia.	V.R.O.A.	40	Contraception practised for 4 years.	Eutrophic.
.PNR.	Normal.	V.L.O.A.	39+		Eutrophic.
.PNR.	Normal.	V.L.O.P.	40		Eutrophic.
.PNR.	Normal.	V.L.O.A.	40		Eutrophic.
7½" .PNR	Normal.	V.R.O.A.	40+		Eutrophic.
" .PNR.	Normal.	V.L.O.A.	39*		Eutrophic.
7½" .PNR	Normal.	V.R.O.A.	39	8yrs.sterility and 1 wk premature but general development normal.	Eutrophic
PNR. 3¾" Control	Toxaemia	V.L.O.A.	37	Contr.Pelvic Outlet.	Dystrophic.
NR.4". Control s lig's.	Nephritic Toxaemia.	V.L.O.A.	36	Male Type Pelvis	Dystrophic.

d.

TABLE 7. (cont'd.)

Case No.	Age.	Age at marriage.	Age at menarche.	Menstrual Type.	Dyspareunia.	Male Hirsuties.	Build.	Pelvis.	Pre
15.	42	30	17	<u>3</u> .Occ. 28 periods Amenorrhoea	Pres- ent.	Pres- ent.	Tall & Broad.	11".12".8".4 $\frac{1}{2}$ ".4". Contr.pubic arch.	No
16.	35	30	14	<u>5</u> N. 28.	Nil	Pres- ent.	Tall & Broad.	10".11".7 $\frac{1}{2}$ ".4 $\frac{1}{2}$ ".3 $\frac{1}{2}$ ". Pubic arch contr.	Tc
17.	40	-	18	<u>3</u> 28-35. Occ.periods amenorrhoea	Nil	Pres- ent.	Tall & Heavy.	11".13".8 $\frac{1}{2}$ ".PNR.4". Pubic arch contr.	Tc
18.	37	36	14	<u>7</u> N. 28.	Nil	Pres- ent.	Obese.	10".11".7 $\frac{1}{2}$ ".PNR.3 $\frac{1}{2}$ ". Pubic arch contr.	No
19.	38	26	17	<u>2-3</u> Irreg 28-42.Dys- menorrhoea.	Pres- ent.	Pres- ent.	Obese. Broad.	9".11".8 $\frac{1}{2}$ ".4 $\frac{1}{2}$ ".3 $\frac{1}{2}$ ". Pubic arch contr.	Tc
20.	39	20	17	<u>5</u> Slight 28. Dys- menorrhoea	Pres- ent.	Pres- ent.	Tall. Broad.	10".11".8".4 $\frac{1}{2}$ ".3 $\frac{3}{4}$ ". Pubic arch contr.	N
21.	38.	31.	15	<u>4-5</u> N. 28	Nil.	Pres- ent.	Obese.	10".11".8 $\frac{1}{2}$ ".PNR.4". Pubic arch contr.	T
22.	40.	25.	18	<u>2-3</u> N. 28	Nil	Pres- ent.	Obese.	9 $\frac{3}{4}$ ".10 $\frac{3}{4}$ ".8".4 $\frac{1}{4}$ ".3 $\frac{1}{2}$ ". Pubic Arch Contr.	N T
23.	35	25	17	<u>6</u> N. 28	Pres- ent.	Pres- ent.	Tall, Broad.	11".13".8".PNR.3 $\frac{3}{4}$ ". Pubic arch narrow.	P
24.	36	31	16	<u>3</u> 28.Dys- menorrhoea.	Nil	Pres- ent.	Tall, Broad.	10".11".7 $\frac{3}{4}$ ".PNR.3 $\frac{3}{4}$ ". Pubic arch contr.	J 1
25.	35	26	14	<u>7</u> N. 28	Nil	Pres- ent	Obese.	10".11".8".PNR.4". Pubic arch contr.	

Throughout this table the figures for pelvic measurements have been expressed in inches, and been arranged in the following order: Interspinous diameter, intercrystal diameter, external conjugate, diagonal conjugate, inter-tubal-ischial diameter.(if recorded)

TABLE 7. (Cont'd)

	Pregnancy.	Presentation & Position.	Onset of Labour.	Remarks.	Eutrophic or Dystrophic
"4". rch.	Normal	V.R.O.P.	37	Male Type Pelvis	Dystrophic
$\frac{1}{2}$ ". $3\frac{1}{2}$ ". ntr.	Toxaemia	V.L.O.A.	36	Male Type Pelvis	Dystrophic
NR.4". ntr.	Toxaemia	V.R.O.P.	40	Male Type Pelvis Unmarried.	Dystrophic
NR. $3\frac{1}{2}$ ". ntr.	Normal	V.R.O.P.	40	Male Type Pelvis	Dystrophic
" $3\frac{1}{2}$ ". ntr.	Toxaemia	V.R.O.P.	41 $\frac{1}{2}$	Male Type Pelvis	Dystrophic
" $3\frac{3}{4}$ ". ntr.	Normal	V.R.O.P.	40	Male Type Pelvis	Dystrophic
NR.4". ntr.	Toxaemia	V.L.O.P.	40	Male Type Pelvis	Dystrophic
$\frac{1}{4}$ ". $3\frac{1}{2}$ ". ntr.	Nephritic Toxaemia	V.R.O.P.	40	Marked outlet contraction.	Dystrophic.
NR. $3\frac{3}{4}$ ". arrow.	Normal	V.R.O.P.	40	Marked outlet contraction Fibroids	Dystrophic
NR. $3\frac{3}{4}$ ". ntr.	Ante-partum Haemorrhage	V.L.O.A.	38	Male Type Pelvis Placenta praevia	Dystrophic
NR.4". ntr.	Toxaemia	Breech.L.S.A.	39	Male Type Pelvis	Dystrophic.

3. Evidence that series of elderly primigravidae include a considerable proportion of cases corresponding to the dystocia-dystrophia syndrome, and that these cases incur the majority of the increased risks attributed to the higher age-groups.

On the twenty-five cases of my personal series, no less than thirteen showed features of the dystocia-dystrophia syndrome, whilst these were found to be absent in the remaining twelve cases. Details of the cases are shown at Table 7.

This table includes only features of the cases recognisable not later than the onset of labour, and it is my purpose to show that diagnosis of the syndrome can be made during the ante-natal period, and that from this the type of labour can be prognosed with considerable accuracy. In the table, the cases have been arranged arbitrarily so that those conforming to the syndrome as described above are recorded last. The remaining cases (Nos.1-12 in Table 7) do not show the features of the syndrome and for convenience have been termed "eutrophic" as opposed to the other "dystrophic" group.

In compiling Table 7, the following standards have been used. Dysmenorrhoea so slight that it has never caused incapacity nor absence from work has been ignored, as has slight dyspareunia during the first weeks of marriage. Hirsuties has been noted as being present where the pubic hair is continued over the lower abdomen up to the umbilicus; in addition, there has usually been present facial hirsuties, and sometimes it has been marked in the pectoral area also. The measurements of the pelvic outlet, with the exception of the inter-tuber-ischial, were made with two fingers. The

TABLE 8. DYSTROPHIC, EUTROPHIC & CONTROL GROUPS COMPARED. (PERSONAL CASES.)

	DYSTROPHIC.	EUTROPHIC.	CONTROL.
Average Age at Menarche.	15.8 yrs.	13.8 yrs.	13.6 yrs
Av.time bet.marriage & pregnancy.	9.5 yrs.	5.0 yrs.	2.0 yrs
Toxaemia.	61.5 %	16.6%	7.0%
Pelvic Contraction.	100.0%	0.0%	8.5%
Placenta Praevia.	7.7%	0.0%	1.0%
Fibroids.	7.7%	0.0%	5.5%
Premature Labour(Excl.Caes.Sec.)	44.4%	25.0%	18.5%
Postmature Labour.	7.7%	8.3%	4.0%
Uterine Inertia(Excl.Caes.Sec.)	44.4%	8.3%	7.0%
Presentation.			
Occipito-anterior	30.8%	91.7%	89.5%
Occipito-posterior	61.6%	8.3%	8.0%
Breech.	7.7%	0.0%	1.5%
Other.	0.0%	0.0%	1.0%
Delivery.			
Spontaneous	25.0%	50.0%	79.5%
Forceps (Low	7.7%	25.0%	3.5%
(Mid	38.5%	25.0%	7.0%
Caesarean Section.	30.8%	0.0%	2.0%
Av.duration of Labour.	31.8hrs	23.3hrs	17.8hrs.
Maternal Morbidity.	38.5%	16.6%	12.5%
Maternal Mortality.	0.0%	0.0%	0.0%
Foetal Mortality.	23.1%	0.0%	7.0%

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OL. pubic arch was considered normal in configuration if two fingers side by
yrs side and pressing forwards, were accommodated by the arch. Similarly, the
yrs sacro-spinous ligaments were palpated with two fingers pressing postero-
% laterally in the vagina, and were recorded as normal if two fingers could
% be laid over the ligaments without overlapping either the ischial spines or
% the sacrum. No account has been taken of uterine inertia or of any other
% feature not recognisable during the ante-natal period.

5% A comparative study of dystrophic and eutrophic groups of cases has
% been recorded at Table 8, where a series of five hundred consecutive
% primigravidae of all ages has again been used as a control.

5% It will be observed that the incidence of all the complications
% attributed to the elderly primigravida is higher in the dystrophic group,
% in some instances very much higher. Between the eutrophic and the control
% groups, the disparity in the figures is very much less, and sometimes is
% very small indeed. Thus the eutrophic group is relatively little more liable
% to complications than the average woman of the younger age-groups, but the
% dystrophic must carry the burden of almost all the complications so often
% described as features of recorded series of elderly primigravidae.

0% Whilst it would be dangerous to draw conclusions from such a small
8hrs series of cases, none the less the figures are very suggestive. Accordingly
5% it was decided to undertake a further investigation to enable an analysis
% to be made of a larger number of cases, and it was primarily with this end
% in view that the Liverpool series was studied.

0% Forty cases were found in the Liverpool series where the diagnosis

TABLE 9. FORTY CASES OF THE DYSTOCIA DYSTROPHIA SYNDROME IN ELDERLY PRIMIGRAVIDAE.
(LIVERPOOL SERIES)

No.	Duration of Sterility (yrs)	Other Features.	Type of Pelvis	Features of pregnancy.	Presentation & position.	Onset of Labour.	Remarks.	Age at delivery (yrs)
1	16	1 misc.	? Normal.	-	V.R.O.P.	Prem.		9
2	14	-	Male	-	V.R.O.A.	Post.		10
3.	12	-	Male	-	V.L.O.A.	-		7
4.	11	1 misc. D & C.1939	Justo- minor.	-	V.R.O.A.	-	Genital Hypoplasia	8.
5.	17	-	Justo- minor.	Toxaemia.	V.L.O.A.	Prem.		9
6.	5	-	male	-	V.R.O.A.	-		11
7.	15	Fibroids.	Male	-	Breech LSA.	Prem		7
8.	11	-	Male	-	V.R.O.A.	Prem		-
9.	4½	-	Male	Toxaemia.	Breech RSA.	-		-
10.	5	Short, Obese.	Justo- minor.	-	V.R.O.A.	Prem		-
11.	8	-	Male	Toxaemia	V.R.O.A.	Prem		-
12.	11	Tall/Broad.	?Normal.	-	V.R.O.A.	-		-
13.	10	-	Male	-	V.L.O.A.	-		-
14.	10	+	Sacral- isation. L.5.	Plac. Praevia.	Breech.RSA.	Prem.		3
15.	11	-	?Normal.	-	V.L.O.P.	-		12
16.	4	-	Male	-	V.L.O.P.	-		5
17	15	-	Male	Intra- Uterine death.	V.R.O.A.	Post		19
18.	9	Menst.1/28 irreg.	?Normal.	-	V.L.O.A.	-		10

TABLE 9. (Cont'd.)

E. Remarks.	No.	Duration of Sterility. (yrs)	Other features.	Type of Pelvis.	Features of pregnancy.	Presentation & position.	Onset of Labour.	Remarks.
	9	-	-	Male	-	V.L.O.A.	Prem.	
	10	12	Fibroids	Male	Toxaemia.	Breech RSA.	Prem.	
	11	10	Hirsuties 2 Misc.	? Normal	Acc. Haemorrhage	V.L.O.A.	Prem.	
	12	7	-	Male	-	V.L.O.A.		
Genital prolapse	13	-	Obesity. 2 Misc.	Male	-	V.R.O.A.	Post	
	14	9	Dyspareunia.	Male	-	V.R.O.A.		
	15	11	-	? Normal	-	V.R.O.A.	Prem.	
	16	7	Several miscs.	? Normal	Toxaemia	Breech RSA	Prem.	
	17	-	Short, obese	Male	-	V.R.O.A.	Post.	
	18	-	Obesity++	Male	-	V.R.O.A.	-	
	19	-	Short, obese	Male	Intra-uterine death.	V.L.O.A.	Post.	
	20	-	Short obese	Male	-	Breech LSA.		
	21	3	D & C.1942	Male	High head at term	V.L.O.P.	Post	(?Genital
	22	12	D & C.1942	Male	High head at term	V.L.O.A.	Post	(Hypoplasia
	23	5	Fibroids	Male	-	V.R.O.P.	-	
	24	19	-	High assimilation	High head at Term	V.R.O.P.	-	
	25	10	Obesity++	Too fat	High head at Term	V.L.O.P.	Post	

Cont'd...

TABLE 9. Cont'd.

No.	Duration of Sterility. yrs.	Other Features.	Type of Pelvis.	Features of pregnancy.	Presentation & position.	Onset of Labour.	Remarks.
36	6	D & C.1942	? Normal	-	V.L.O.A.		? Genital Hypoplasia
37	12	-	Male	-	V.L.O.P.	Post.	
38.	11	Fibroids	Male	Toxaemia	V.L.O.A.	-	
39.	14	Misc.1938	Male	-	V.R.O.P.	-	
40.	11	Menst.irreg.	? Normal	Toxaemia	V.R.O.A.	-	

of dystocia-dystrophia syndrome seemed reasonably certain. These are shown at Table 9, which records the features in each case which determined the diagnosis. In each of the selected cases several features of the syndrome were present, but in many other cases the diagnosis was doubtful, although the presence of one or two manifestations of the syndrome was suggestive. In the latter group, details such as menstrual history, duration of sterility etc., had not been recorded, and as the diagnosis could not be made with certainty these were omitted from Table 9.

The pelvis has been classed as "normal" in those cases in Table 9 where outlet measurements are lacking but where other features of the syndrome and the subsequent course of labour lead one to believe that there may have been some outlet contraction. In consequence, the figure shown in Table 10 of 75% + for contracted pelvis indicates 75% without the inclusion of any case in which there is doubt. In this connection it is important to note that the contraction found in cases of the syndrome is rarely severe, and that the commonest finding is a slight deformity of the pubic arch, with a consequent diminution of the outlet and especially of the forepelvis. Whilst this may be so slight as to escape notice, since inlet measurements are usually satisfactory, none the less it assumes a very considerable significance in the elderly primigravida in view of the loss of mobility of the pelvic joints and consequent lack of such minor degrees of pelvic adaptation as might be found in younger women (Miller .)

The forty dystrophic cases shown in Table 9 have been further analysed and compared with the whole Liverpool series at Table 10.

TABLE 10. DYSTROPHIC GROUP (LIVERPOOL) COMPARED WITH ALL ELDERLY PRIMIGRAVIDAE.

	DYSTROPHIC.	ALL CASES.
Toxaemia	20%	22.59%
Pelvic Contraction	75% +	35.6%
Placenta Praevia.	2.5%	1.7%
Fibroids	10.0%	10.31%
Premature Labour (excluding elective Caesarean section)	22.5%	34.8%
Postmaturity	20%	9.13%
Uterine Inertia	27.5%	9.6%
Presentation,		
Occipito-Anterior	62.5%	75%
Occipito-Posterior	22.5%	12.5%
Breech	15.0%	11.3%
Other.	0.0%	1.2%
Delivery		
Spontaneous.	37.5%	46.63%
Forceps.	25.0%	21.86%
Caesarean Section.	37.5	27.17%
Average duration of Labour	30 hrs. 25 mins.	20 hrs.
Maternal Morbidity.	22.5%	12.7%
Maternal Mortality.	2.5%	1.2%
Foetal Mortality	7.5%	9.61%

As noted above, pelvic contraction is extremely common in the dystrophic cases included in the table, and is at least twice as frequent as in the whole series. The incidence of toxæmia and fibroids is much the same in both groups, as is that of "untimely" labour, but the inertia rate is three times as great in the dystrophic group. Occipito-posterior positions are almost twice as frequent and there is a slight increase in the incidence of breech presentation. The forceps rate is greater and the frequency of Caesarean section increased by one-third in the dystrophic group. Labour lasted on an average fifty per cent longer in those dystrophic cases which were delivered vaginally. In five cases also, Caesarean section was carried out as a secondary measure after labour had lasted on the average 45 hrs. 40 mins. The figure for foetal mortality is about the same in the two groups, but would doubtless have been higher in the dystrophic were it not for the considerable increase in operative intervention, and especially in elective Caesarean section which was carried out in one case in every four. Both maternal morbidity and mortality are almost doubled in the dystrophic series.

Whilst these figures are less striking than those shown in Table 8 referring to my personal cases, it should be remembered that Table 8 compares dystrophic and entrophic groups, whereas Table 10 compares the dystrophic cases with a total series which doubtless includes a high proportion of dystrophics. Were details available to enable a complete allocation of the Liverpool cases to dystrophic or entrophic groups, doubtless the figures would be as sharply contrasted as in Table 8. Even as it stands, however,

Table 10 does indicate that dystocia can to a large extent be foreseen, and that in fact it is, as the very high incidence of Caesarean sections, of which two thirds were elective, bears witness.

4. Factors of importance in the prognosis of dystocia and their relationship to the dystocia-dystrophia syndrome.

(a) Long sterility.

In trying to assess the type of patient in whom dystocia is to be anticipated, various authors have stressed the importance of long sterility (Greenhill,⁴⁰ Cornell⁴¹) Meyer⁴ propounded the theory that primiparae who marry early and conceive late have more difficulty than those who marry late and conceive early, and Herring² emphasises that genital hypoplasia results in relative sterility and, in the event of pregnancy, inertia and dystocia due to underdevelopment.

"For many years I have taught students that they will have the same ease or difficulty whether the patient be fifteen or forty-five years. The bony structure is fixed by the time the young woman enters the child-bearing period." This doctrine of Holmes²⁹ is dangerous, since although it is true as far as it goes, it completely loses sight of the fact so excellently expressed by Jaroschka⁵ , "The difficulty in the majority of cases of elderly primigravidae is not due to age at all but to the inclusion in this group of women who marry late because of obvious physical defects, or who conceive late because of genital hypoplasia". Further, Schulze³ has pointed out that dystocia is due to complicating factors rather than to age.

The factor of prolonged sterility appeared to play its part in both series examined in this review. Thus, in my personal cases, the average duration of marriage before conception in the dystrophic group was 9.5 years, and in the eutrophic 5.0 years. In the Liverpool series figures are not

TABLE 11. THE EFFECT OF STERILITY ON PREGNANCY IN ELDERLY PRIMIGRAVIDAE.

	<u>Group A.</u>	<u>Group B.</u>
Easy Labour.	60%	20%
Dystocia.	20%	40%
Pelvic Deformity.	25%	65%
Inertia.	15%	40%
Forceps delivery.	20%	20%
Caesarean Section.	20%	35%
Spontaneous Delivery.	60%	45%
Average Duration of Labour.	14 hrs. 30 mins.	24 hrs. 35 mins.
Puerperal Morbidity.	5.0%	20%
Maternal Mortality.	Nil	Nil
Foetal Mortality.	5.0%	15%

Group A.comprises twenty cases married less than two years;

Group B.twenty cases married ten years or over.

usually available, but the average in the dystrophic group was 10.5 years.

In my own series, contraception was practised regularly in only one case, a member of the eutrophic group who was delivered six years after marriage, but only two years after she ceased these precautions. In seven other cases, four eutrophic and three dystrophic, contraception had been practised occasionally during the first year of marriage but not subsequently. No figures are available for the Liverpool series.

Table 11 shows two groups each of twenty cases selected from the Liverpool series, Group A. married less than two years, and Group B. sterile for ten years or more. The table, although the numbers are regrettably small, confirms the increased liability to dystocia in the long-sterile. In this group short easy labours do occur, but they are only one-third as frequent as in the recently-married. That Group A. however, is not strictly comparable to the "eutocic" group is shown by the relatively high incidence of pelvic contraction and of operative delivery.

(b) Build and General Appearance.

In both my personal cases and the Liverpool series, the build of the patient has demanded consideration, and it is interesting to note that in 1926 Järoschka⁵ described two types of elderly primigravida in whom inertia and difficult labour were particularly likely to occur. These were described as follows.

1. Markedly obese with short thick neck, short fat thighs, sparse pubic hair and large breasts with little parenchyma.
2. Asthenic, with delicate bones, pale colouring, poor nutrition and poor musculature.

These are more or less the characters respectively of the secondary (pituitary) and primary (ovarian) hypogonadic types described by Mazer and Israels³⁹ and the association in each case with some basic endocrine fault seems obvious. The second of Jaroschka's types as⁵ described above is in my experience rare amongst elderly primigravidae, but the first type corresponds broadly to the build of women of the dystocia-dystrophia syndrome. Of my personal cases, seven of the thirteen dystrophics were of this build. The remainder (described as "Tall and Broad" in Table 7) were less obviously obese; although bulky, their weight was better distributed. None the less, this type of build is considered to be a masculine feature ("sergeant-major" type) and these women are included in the syndrome. Schulze³ described the short obese type in 12.5% of her cases as showing evidence of endocrine dyscrasia, and records a high incidence amongst them of dystocia. In the Liverpool series, case records rarely indicate the build of the patient, but seven of the dystrophic cases are described as obese, and one as tall and broad.

(c) Pelvic Deformity.

The presence of pelvic deformity usually of the male or "funnel" type has been described as a feature of the dystocia-dystrophia syndrome, and in both series has been established as present in almost all cases classed as dystrophic. By contrast, in the total series of elderly primigravidae, whilst the proportion of contracted pelves was high, there was a large proportion of normal pelves.

It will be noted in Table 9 that the pelvic deformity seen is almost always of the male type, but that in three cases justo-minor pelvis have been recorded. De Lee ⁷ has noted that the pelvis may be of the justo-minor type in the dystocia-dystrophia syndrome. In a further two cases sacralisation and high assimilation pelvis have been present. Obstetrically these pelvis correspond closely to the "funnel" type, and call for much the same management.

There is clearly a need for further radiological research into the question of how far the so-called "male" pelvis is a characteristic of the dystocia-dystrophia syndrome. It is recognised that the android pelvis of Caldwell, Moloy & d'Esopo ²⁷ is not necessarily found in the syndrome and occurs frequently in eutrophic women. Limitations imposed by the war have prevented a full examination of this question and therefore, in the absence of exact radiological data, it has been necessary to rely on the clinical diagnosis of the male pelvis.

(d) Untimely termination of pregnancy.

By this term I mean previous abortion, premature onset of labour and post-maturity. Previous abortion had occurred in six of the dystrophic cases of the Liverpool series (15%). These have been classed as primigravidae although perhaps more correctly they should have been termed primiparae. Both premature and post-mature onset of labour were frequent in both series; here is an important factor in foetal mortality both in respect of the neo-natal death of the premature, and the intra-uterine death attributed to placental senescence in the post-mature babies. This demands particular care in the

last weeks of pregnancy that no extrinsic trauma or other factor be allowed to unbalance the already somewhat unstable pregnancy, and also indicates active measurements in those cases where labour does not ensue at term.

(e) Malpresentation and Malposition.

Malpresentation and malposition are notably more common in the dystrophic groups, and this is what is to be expected in view of the high incidence of pelvic deformity. Table 9 records "high head at term" in four of the dystrophic cases (10%).⁹ Tew & Kuder have described this as a danger signal, and note that dystocia is particularly common when this finding is present at the onset of labour.

With regard to mild or doubtful disproportion which may be present in these cases, Duncan and Gibson¹⁶ recommend that trial labour should never be undertaken after thirty-five years of age. These authors also consider that breech presentation, regardless of the pelvic findings, is best dealt with by Caesarean section.²⁴ This opinion is echoed by Racker who records a maternal mortality of 3.125% and a foetal of 33.5% in his series delivered vaginally, whilst in his cases delivered by Caesarean section all the children survived. In both the present series, all breech presentations occurring in the dystrophic group were delivered by Caesarean section.

(f) Familial Dystocia.

No details as to familial dystocia were obtained in the Liverpool series, and in view of the associated sterility this is never likely to be a prominent factor, as we have already seen. Amongst my personal series,

however, I found one case in the dystrophic group whose sister had been delivered by Caesarean section in her first pregnancy at the age of forty. This woman had been married at the age of twenty-eight and, like her sister had the hirsuties and the masculine build of the dystrophic group, which, as Malpas ²⁰ notes, suggest the possibility of a pelvic malformation. In two other cases of the dystrophic group, sisters had been married for eight and twelve years respectively, without the occurrence of pregnancy.

(g) Uterine Inertia.

This is less a prognostic factor than a feature, possibly the most important single feature, of dystocia. Inertia has been noted as a characteristic of the dystocia-dystrophia syndrome, and as a common feature of all series of elderly primigravidae. In the dystrophic groups, however, the incidence of this complication has been much higher than in the eutrophic and total series. Schulze ³ has noted that "the quality of the uterine contractions is of paramount importance" and this is really the factor in dystocia so difficult to predict. A consideration of whether or not the patient shows other features of the dystocia-dystrophia syndrome may aid ¹⁶ prognosis, here, as is suggested by the statement of Duncan & Gibson that "Sterility following marriage had a direct bearing on inertia particularly as had also a history of late menarche and menstrual irregularity". In the prognosis of dystocia, we must attempt to foresee inertia; when labour has already begun, the presence of inertia together with the other factors considered in this section indicates with even more certainty that severe difficulty is likely to arise.

5. The practical application of the above findings in relation to prognosis and treatment.

A study of two groups of elderly primigravidae, one a small series of twenty-five personal cases and the other a series of four hundred and sixteen cases delivered in the Liverpool Maternity Hospital during the years 1939-43, has led to the conclusion that the most hopeful avenue of approach to the problem of maternal and foetal mortality is by the recognition of characteristics to be observed before the onset of labour which indicate the probability of dystocia. This has been previously stressed by Schulze,³ McMann⁴⁰ and others. A consideration of the special complications which affect primigravidae of these upper-age groups has shown the close relationship between these and the features of the dystocia-dystrophia syndrome. Although de Lee⁶ describes elderly primiparity as a feature of the syndrome, Williams⁷ has shown that it may be seen in all age-groups, and in fact only one-seventh of his cases were over thirty-five years of age.

The conception of the dystocia-dystrophia syndrome as an expression of pituitary dysfunction has been put forward by Daniels³⁵, and this appears to be confirmed by clinical findings. The syndrome may be defined as the end-results of an incomplete development of feminine characteristics, with a resultant tendency towards masculinity in the secondary sex characteristics (pelvis, build, hirsuties, etc.,) and a deficiency in the purely feminine features which normally lead to success in the reproductive function. This deficiency leads to sterility, complicated pregnancy and dystocia, with an abnormally high maternal and foetal mortality. Williams⁷ has pointed out

that the group is much more common than is generally recognised.

For many years writers have remarked on the ease and rapidity of labour in certain elderly primigravidae, and yet they have recorded a high incidence of complications at all stages of pregnancy and labour in the group as a whole. In this review I have tried to divide the patients into two groups, the first, the dystrophic, showing the features of the dystocia-dystrophia syndrome and the second, the eutrophic, showing a normal gynaecological history and normal development of feminine characters.

Comparison of the two groups in my small personal series has shown them to be about equal in size, but that the incidence of all complications is enormously higher in the dystrophic group (Table 8.) The eutrophic group includes women whose pregnancies followed closely upon marriage, in whom labour was rapid and easy and mortality, both maternal and foetal, low. This is the type of woman who has caused various authors to question the anxiety with which most obstetricians regard the elderly primigravida; in this group, indeed, there is no more reason for apprehension than with normal primigravidae of all ages, as is shown by the close similarity between the eutrophic and control group figures in Table 8. The high incidence of complications amongst women of the upper age-groups is due to the inclusion in these groups of a high proportion of women of the dystrophic type. It is in these cases that special care is necessary in the interests of both mother and child, especially as these dystrophic women, much more than the eutrophic, have little chance of a future pregnancy.

The most important factors in the production of dystocia in these

dystrophic women are the so frequent uterine inertia, and the male type of pelvic deformity with its associated outlet contraction. It is interesting at this stage to note that Malpas ²⁰ has stressed the association of the development of the pelvis with that of the whole secondary sex apparatus. Miller's ¹¹ observation of impaired mobility of the pelvic joints in elderly primigravidae suggests that even the slightest departure from the normal should be regarded as significant in these patients, since they cannot achieve the minor degrees of compensation from pelvic movements as can younger women.

While my personal cases are so few that it would be dangerous to draw conclusions from them alone, the figures are in themselves, very striking. Accordingly, the larger Liverpool series has been studied, and forty cases found where the diagnosis of dystocia-dystrophia syndrome appears clear. In many other cases, because of lack of information, the diagnosis was doubtful, but again a comparative analysis revealed that the dystrophic cases incurred an inordinate proportion of the risks and complications found in the whole series.

The practical application of these findings is in the accurate prognosis of the nature of the labour, and the selection at an early stage in each case of the appropriate treatment. The single characteristic of labour most difficult to foresee is the nature and efficiency of the uterine contractions, and the character of these may make all the difference in borderline cases between easy and difficult labour. The extremely high incidence of inertia in the dystrophic group has already been noted, and we have here an important guide to prognosis.

It has already been observed that in elderly primigravidae, as in all other groups, in a proportion of cases the indications for Caesarean section are clear-cut. When these have been excluded, there remains the great majority of elderly primigravidae, in each of whom the question of whether or not she should have vaginal delivery, must arise. The overwhelming consensus of opinion at the present day is in favour of routine hospitalisation of primigravidae, and few will deny that this is more than ever necessary in the older woman. In consequence, there is always a tendency to allow labour to proceed, and in some cases to drag on, in the knowledge that facilities will be available for late Caesarean section should the need arise, without undue risk to the mother. The outlook for the child, however, in cases dealt with in this way, is poor, and foetal mortality is often unnecessarily high, either where an ill-advised vaginal delivery or a too-late Caesarean section has been undertaken. The dire significance of the loss of the child in these cases need not be stressed. Our aim must therefore be to assure the safety of the child, especially where, as seems possible, this can be achieved without the imposition of an even slightly increased risk to the mother, particularly in cases where there has been long sterility.

It has been shown that the diagnosis of the dystocia-dystrophia syndrome can be made before, the onset of labour, and where this is found then the use of elective Caesarean section must be considered. The dangers of induction, especially of surgical induction, in the dystocia-dystrophia syndrome have been pointed out by Williams⁷, and need not be further stressed.

Elective Caesarean section is likely to give the best results for both mother and child, since the operative mortality under modern conditions is certainly less than 1.0% (Racker²⁴) and this is less than the average mortality recorded in all recent series of elderly primigravidae. Various writers (v.Krehninger-Guggenberger & Leutenmayer,⁸ Bromberg and Brzezinski²³) have opposed the use of Caesarean section and have recorded high mortality rates in cases so treated, but there is little doubt that this is due to their reserving Caesarean section for use as a desperate measure "when a serious complication is associated with the age factor". As regards the child, the association with prolonged labour of a considerable proportion of the foetal deaths has been noted in the present series as well as many others, and the removal of this danger to the child must result in a reduction in the foetal mortality.

It may be objected that certain cases, even although showing definite features of the dystocia-dystrophia syndrome, have comparatively rapid and easy labours. This type of labour, however, although common in the eutrophic group, is rare amongst the dystrophic, and it is surely better to achieve a lower maternal and foetal mortality by the free use of elective Caesarean, even at the cost of an occasional unnecessary operation, than to be faced at a later stage of labour with the perils of procrastination as pointed out by Falls.

In dealing with the remaining cases, the eutrophic elderly primigravidae who shows no "evidence of sexual mingling", (Malpas,²⁰) treatment should be based upon the same considerations as in younger women. Here we may look for a high

proportion of normal easy and rapid labours, and a low mortality, both maternal and foetal.

To sum up, it should be possible by ante-natal care to allocate each elderly primigravida either to the dystrophic or the eutrophic group. The best results for both mother and child in the former group will be obtained by the performance of Caesarean section as an elective operation, whilst the eutrophic group may be treated expectantly on the same basis as primigravidae of any age-group.

Summary.

1. Two series of primigravidae of over 35 years of age, one of twenty-five and the other of four hundred and sixteen cases, have been analysed and compared with control groups of all ages.
2. A high incidence of complications which correspond to the features of the dystocia-dystrophia syndrome has been noted in both series.
3. Fifty-three cases of the dystocia-dystrophia syndrome are selected from the two series of elderly primigravidae, and these dystrophic cases are shown to have a much higher incidence of complications and a higher mortality than the remaining "eutrophic" cases.
4. The way to lower foetal and maternal mortality in elderly primigravidae is by accurate prognosis of the type of labour and the institution of the appropriate treatment. This can be based upon the allocation of each case either to "dystrophic" or "eutrophic" groups.
5. A plea is made for the free use of elective Caesarean section in the dystrophic group, whilst expectant treatment is more appropriately reserved for the eutrophic.

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