[A joint meeting of the Glasgow Obstetrical Society and the Edinburgh Obstetrical Society was held in Glasgow on 8th June 1938 with Professor James Hendry, President of both Societies, in the Chair. A discussion on "The Management of Labour in Cases of Contracted Pelvis" was opened by Dr Hector R. MacLennan, Glasgow, and Dr Edwin M. Robertson, Edinburgh.]

THE MANAGEMENT OF LABOUR IN CASES OF CONTRACTED PELVIS.*

By HECTOR R. MACLENNAN, M.D., M.C.O.G., Glasgow.

IN considering the question of management of labour in cases of contracted pelvis, we are considering a problem which faces us in Glasgow almost daily. Contracted pelvis, like the poor, is always with us—in fact, the incidence in this hospital varies around 15 per cent. of the total admissions to the hospital for the year. It is well known that the condition is largely a rachitic manifestation, and I have hitherto attempted to show that in Scotland its distribution is centred almost entirely in those areas where rickets are prevalent. The congenital forms of contracted pelvis are so rare that they do not constitute a serious problem.

Public health authorities and pædiatricians tell us that rickets is a disappearing disease. This appears to be the case where one is considering rickets as a syndrome producing such debility or gross deformity as to require hospital treatment for the afflicted child, but the milder forms of rickets, which do not produce gross deformity or an ill child, tend to be overlooked from the public health point of view, and certainly, children with the milder manifestations of rickets are not admitted on this account to children's hospitals.

Dr Chalmers, the late Medical Officer of Health in Glasgow, drew attention to this decline in the severity of rickets in a paper published in the *Glasgow Medical Journal* several years ago, his conclusions being based upon the decline of orthopædic operations at present performed for the condition contrasted with those performed in Macewen's time, and also on the relative measurements in cases of contracted pelvis which had required Cæsarean section in the late Professor Murdoch Cameron's time, as compared with the measurements of cases of contracted pelvis requiring Cæsarean section to-day.

* The work upon which this paper is based was carried out in Glasgow with the aid of a grant from the Medical Research Council.

It might therefore be thought that the problems of the management of labour in cases of contracted pelvis are diminishing with the diminution in seriousness of the disease producing contracted pelvis. In my opinion, this is very far from being the case. If anything, the problem is from the point of view of obstetrics becoming more difficult. At the end of last century and the beginning of this one, the problems that faced the obstetrician were the problems associated with the severe forms of contracted pelvis, and, I understand, chiefly centred around the question of Cæsarean section versus craniotomy. When Cæsarean section ceased to be a novelty, the problem then centred around the so-called border-line case. The relative merits of trial labour and induction of premature labour became an obstetrical bone of contention in cases where there was a moderate degree of contracted pelvis.

In the figures which I am now going to bring before the meeting, it is not to the severe cases of contracted pelvis, nor to the moderate cases of contracted pelvis, to which I would draw attention, but particularly to the slight cases of contracted pelvis. First, because they will tend relatively to increase in number as rickets diminishes in severity, and second, because they are not readily diagnosed, and lastly, because they are frequently attended by obstetrical tragedies. The cases under review total 1042. They are a consecutive series taken in 1934 and 1935. These years were chosen as they were completed at the time my investigation commenced in 1936. As there has been no alteration in the management of labour in the last few years, they may serve as a basis for discussion at this meeting. I have been given access to these figures by Professor Cameron, Dr Lennie, and my own Chief, Professor Hendry, into whose wards the patients were admitted. There were over 500 primigravida, and slightly under 500 multipara. They may be considered a random sample. The cases have been divided into three categories of severity, according to their pelvic measurements. I have considered as "severe" those cases with a true conjugate of $3\frac{1}{4}$ inches or under; as moderate those cases with a true conjugate of over $3\frac{1}{4}$ inches and under $3\frac{3}{4}$ inches; and as "slight" those cases with a true conjugate of $3\frac{3}{4}$ to 4 inches.

The mode of delivery amongst the primigravida in the series is shown in Table I.

TABLE I.

Primigravidæ.

Mode of Delivery.	Severe.		Moderate.		Slight.		Total.	
		Per cent.		Per cent.		Per cent.		Per cent.
Spont. . . .	15	14·2	71	38·4	110	40·9	196	35·0
Section . . .	73	68·9	33	17·8	12	4·5	118	21·1
Craniotomy . .	7	6·6	4	2·2	7	2·6	18	3·2
High forceps . .	3	2·8	5	2·8	9	3·3	17	3·0
Other forceps . .	7	6·6	68	36·7	110	40·9	185	33·0
Others . . .	1	0·9	4	2·2	21	7·8	26	4·6
	106	18·9	185	33·0	269	48·0	560	...

The mode of delivery amongst the multipara is shown in Table II.

TABLE II.

Multiparæ.

Mode of Delivery.	Severe.		Moderate.		Slight.		Total.	
		Per cent.		Per cent.		Per cent.		Per cent.
Spont. . . .	8	6·7	73	41·2	108	56·3	189	38·7
Section . . .	104	86·7	64	36·2	23	12·0	191	39·1
Craniotomy . .	0	0	8	4·5	5	2·6	13	2·7
High forceps . .	4	3·3	16	9·0	16	8·3	36	7·4
Other forceps . .	2	1·7	5	2·8	28	14·6	35	7·2
Others . . .	2	1·7	11	6·2	12	6·3	25	5·1
	120	24·5	177	36·2	192	39·3	489	...

I now draw your attention to the question of fœtal mortality in those cases delivered by the vaginal route (the still-birth rate amongst those delivered by Cæsarean section being negligible). Before presenting the tables of still-births in the present series, I thought it might be of interest to mention the previous obstetric histories in the multiparæ in the series. There had been over 800 previous full-time deliveries by the vaginal route, most of which had taken place outside of hospital. There had been 342 still-births and neonatal deaths, that is to say, 42 per cent. of the previous pregnancies delivered by the vaginal route had resulted in still-birth or neonatal death. This figure is appalling. The still-births in the present series, amongst primigravidæ, are shown in Table III.

TABLE III.

Primigravidæ Still-births.

Mode of Delivery.	Severe.		Moderate.		Slight.		Total.	
		Per cent.		Per cent.		Per cent.		Per cent.
Spont. . . .	1	6·7	5	7·0	6	5·5	12	6·1
Forceps . . .	4	40·0	16	21·9	23	19·3	43	21·3
Breech extractions .	...	0	1	25·0	5	35·7	6	31·6
Craniotomy . .	7	100	4	100	7	100	18	100
	12	37·5	26	17·6	41	17·4	79	19·0

The still-births amongst multiparæ are shown in Table IV.

TABLE IV.

Multiparæ Still-births.

Mode of Delivery.	Severe.		Moderate.		Slight.		Total.	
		Per cent.		Per cent.		Per cent.		Per cent.
Spont. . . .	3	37·5	4	5·5	7	6·5	14	7·4
Forceps . . .	1	16·7	6	28·6	16	36·4	23	32·4
Breech extractions .	...	0	2	12·2	...	0	2	15·4
Craniotomy . .	...	0	8	100	5	0	13	100
	4	28·6	20	19·7	28	17·8	52	19·0

I do not propose to go into the neonatal deaths in detail, as the figures were, to some extent, vitiated by an outbreak of gastro-enteritis in the nursery which fluctuated during a period of two months, but, excluding cases of gastro-enteritis, the corrected figure for neonatal deaths following delivery by the vaginal route in cases of contracted pelvis is 3·4 per cent. As the still-birth rate in such vaginal deliveries is 19 per cent., this gives a total fœtal mortality rate in cases delivered by the vaginal route of 22·4 per cent. If Cæsarean sections and Cæsarean hysterectomies for ruptured uteri are included, the rates become 3·4 and 13·3 per cent. or a fœtal mortality of 16·7 per cent.

Before considering the maternal mortality, I would like to mention the Cæsarean section figures for this series, *i.e.* about 30 per cent. of the cases required Cæsarean section. There

were 309 in all. Seven deaths occurred. The mortality rate for Cæsarean section was thus 2·3 per cent. I have made no attempt here to separate clean sections from possibly contaminated sections, but only one of the deaths could be classified as a bad risk. Three were repeat Cæsarean sections operated on before labour commenced or early in labour, and the comparative figures for the classical operation and lower uterine segment operation were 2·7 per cent. mortality for the classical as against 1·6 per cent. for the lower uterine.

In considering the maternal mortality associated with contracted pelvis, I have found that the maternal mortality in the series of 1042 cases worked out at 2·1 per cent. As there were only 22 cases, I felt that this was hardly a sufficient number from which to draw any accurate conclusions. I therefore took a series of 75 consecutive deaths in cases of contracted pelvis. These cases fell into a series of groups. At first glance it might seem as though I were unnecessarily complicating the issue, but actually the analysis would be completely chaotic unless some form of grouping were adopted, and I have necessarily chosen a wide grouping, the reasons for which I hope to make clear.

Group 1 where the patient dies after dystocia associated with contracted pelvis resulting in *immediate* trauma, shock or hæmorrhage.

Group 2 where the patient dies after dystocia associated with contracted pelvis resulting in trauma, shock or hæmorrhage with *later* sepsis or post-operative pneumonia.

Group 3 where a patient dies after dystocia associated with contracted pelvis resulting in trauma, shock or hæmorrhage, and where a *secondary factor* being present, such as high blood-pressure or pyelonephritis, etc., renders the patient more vulnerable.

Group 4 where a patient dies after dystocia associated with contracted pelvis *without* undue trauma, shock or hæmorrhage, but where delivery is followed by post-operative pneumonia, post-operative peritonitis, or any other unavoidable post-operative complication.

Group 5 where the patient dies as a result of measures taken to *prevent* dystocia, for example, pre-labour Cæsarean section followed by shock, peritonitis, or other post-operative complication.

Group 6 where the patient dies from a condition *unassociated*

with contracted pelvis but where contracted pelvis was present causing *dystocia* which was a contributory factor.

Group 7 where the patient dies from a condition *unassociated* with contracted pelvis but where the presence of *contracted pelvis* contributed in some way to the fatal issue.

Group 8 where the patient died from a condition *unassociated* with contracted pelvis, and where the presence of contracted pelvis *did not in any way affect* the fatal issue.

It will be seen that in the first four groups death follows dystocia. In the fifth group death occurs as a result of measures taken to prevent dystocia. In the sixth, seventh and eighth groups contracted pelvis is either a contributory factor or an incidental. Table V. shows the actual numbers in this series of 75 fatal cases which fall into these eight groups.

TABLE V.

Fatal Cases.

Group.	Severe.	Moderate.	Slight.
1	1	6	10
2	3	8	8
3	1	1	2
4	0	6	2
5	12	5	0
6	0	3	1
7	0	1	2
8	1	0	2
	18	30	27