

# The Use of Analgesia and Anaesthesia During Labour at St. Luke's Hospital, Malta

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## Introduction

Although the use of analgesia to relieve the pain of labour soon ceased to be considered immoral, it has been a technically controversial topic since 1853. Having inhaled chloroform during the birth of her eighth child, Queen Victoria expressed herself as grateful for the discovery of this means of alleviating and preventing pain. The acknowledged skill of the physicians who sanctioned the inhalation of chloroform was contested by the rest of the medical profession who recorded intense astonishment at this use of chloroform.<sup>1</sup> There still exists a lack of general agreement as to which drugs are ideal analgesics during labour. The reasons for this are that requirements are stringent, and much depends on the skill with which they are used.<sup>2</sup>

The amount of pain experienced during labour varies from one patient to another, being directly related to the pain threshold of each particular patient. Pain-free labour sometimes occurs spontaneously, but rightly or wrongly, most women in western countries anticipate pain and demand relief. Innumerable schemes have been proposed and good results can be obtained with many, the results being related to the experience of the physicians.<sup>3</sup> The scheme in general use at St. Luke's Hospital, Malta is based on that described by Bonica.<sup>2</sup> It starts with the psychological preparation of the gravida during the antenatal period. During antenatal classes, the patient is informed about the various types of analgesia available routinely during labour, while the process of labour is simply explained to the patients. Instruction on breathing exercises to be used at the height of contractions and during the second stage is also given. When the patient is admitted in labour, the psychological preparation is supported with good nursing care and reassurance. During the latent phase of labour pharmacological analgesia is rarely required, although sedation with promazine, diazepam or nitrazepam may be required. A small dose of narcotic such as pethidine or pethilofan is only given at this stage if the discomfort is very severe.

When labour progresses into the active phase, a narcotic-sedative combination, usually pethilofan with promazine, is administered. The dose is only repeated when the effect of the first administration wears off and the patient's progress in labour has been slow. If the patient reaches about 7 cm cervical dilatation and requests analgesia, a repeat dose of promazine is administered. Inhalation triline analgesia or paracervical block are alternatives at this stage. During the second stage of labour, perineal analgesia is administered before an episiotomy is performed. Pudendal block is generally used for operative vaginal deliveries. Regional analgesia in the form of epidural analgesia is very rarely used, while general anaesthesia is generally used for Caesarean sections and manual removal of placenta during the third stage of labour.

The choice and timing of analgesia used in a particular patient is left to the discretion of the attending physicians within the broad plan outlined above. This study attempts to analyse for the presence of any relationship between the type of analgesia used to patient characteristics, antenatal course during this pregnancy, the type of labour and delivery, and the delivery outcome.

## Material and Methods

All the deliveries which occurred in St. Luke's Hospital during the period January – May 1983 were included in the study. This included a total patient population of 2089. The data was made available from a current computer study being undertaken by the Department of Obstetrics and Gynaecology. This study includes all deliveries which take place in the hospital. Before the patient is discharged from the hospital, a standard Obstetric Coding Sheet is filled up on standard guidelines by the Senior Assistant responsible for the case. The data is then fed into a computer programme from which information could be extracted.

The analgesia in use in this pregnant population was broadly subdivided into three main groups:

- a. those patients in whom no form of analgesia was used;
- b. those patients who required regional analgesia, generally including local infiltration, pudendal block, and two patients who had epidural analgesia; and
- c. those patients who received a form of analgesia or sedation during any stage of labour, and included those patients who received general anaesthesia alone or in combination to other regimes.

Comparisons between the sub-groups were made for various patient characteristics.

### Maternal Characteristics

A number of biological characteristics of the mother have been shown to adversely effect the course of pregnancy. Thus the elderly multiparous patient is known to have an increased risk of pregnancy complications and a higher perinatal and maternal mortality rate.<sup>4,5</sup> Table 1 shows the type of analgesia used in the various maternal age groups. The table suggests that there is no significant difference between the age groups in the systematic use of drugs for analgesia and anaesthesia during labour. Further analysis shows however that while general anaesthesia alone was used in 10.1 percent of the total population, general anaesthesia alone was used in 19.0 percent in the patients aged more than 35 years and 31.8 percent in the patients above the age of 40 years. It would appear therefore that the elderly patients were more likely to require elective general anaesthesia than the younger patients. This correlates to the increased risk of obstetric complications necessitating elective Caesarean section in the elderly. Table 1 also suggests that the elderly patient was less likely to require regional anaesthesia, probably resulting from the higher parity and more lax perineums in this group of patients who deliver vaginally.

The multiparous patient is less likely to require systemic or regional analgesia, so that 52.0 percent of all multipare delivered required no analgesia. Conversely, the primigravid patients required the systemic use of drugs more frequently (Table 2). A previous history of stillbirths did not markedly influence the use of analgesia, though the systemic use of drugs was less likely to be used in those women who had a previous stillbirth (Table 3). These patients were more likely to require general anaesthesia alone (21.9 percent) than the total population (10.4 percent), reflecting policies of obstetric management.

Table 4 shows the influence of antenatal disorders on the use of analgesia. It would appear that cases of hypertensive disease and antepartum haemorrhage were more likely to require systemic use of drugs, probably reflecting the management of these cases. Thus for example 41.2 percent of cases with hypertensive disease required general anaesthesia alone as compared to 10.1 percent in the total population. Bleeding disorders during pregnancy were similarly associated though at a lower level (18.4 percent).

### Intrapartum Correlations

The use of analgesia during labour reflects the patient's preparation for partuition, and the strength and frequency of the contractions. The use of syntocinon during labour for induction or augmentation influences uterine contractions. Table 5 correlates the analgesia used to the type of labour. No labour should include only those patients who have an elective Caesarean section, and it is difficult to account for the 18 patients reported to have required no systemic drugs. Table 5 suggests that those with an induced labour were more likely to require systemic drugs than those with a spontaneous onset. The augmented group correlated with the mean.

The mode of delivery would also be expected to influence the use of analgesia and anaesthesia. Table 6 suggests that Caesarean sections and operative vaginal deliveries, including forceps and ventouse deliveries, were more likely to require the systemic use of drugs than the spontaneous vaginal deliveries and the assisted breech deliveries. The regional use of drugs was similar in all groups except the Caesarean section group. Related to the mode of delivery is the fetal presentation at the onset of labour. Table 7 suggests that systemic use of drugs was more likely in the abnormal presentations than in those infants presenting the occipito-anterior position.

Complications of labour may also influence the use of analgesia and anaesthesia during labour. Table 8 suggests that systemic drugs are more widely used in those labours complicated by a prolonged first stage, though these labours are less likely to require regional blocks, probably through the more frequent necessity of an eventual Caesarean section. Duration of labour therefore influences the use of analgesia and anaesthesia, though any relationships may be related to the effects of systemic drugs on uterine activity. Table 9 shows that labours lasting more than seven hours are more frequently associated with the systemic use of drugs. Those labours lasting more than 12 hours required less regional analgesia, probably due to the higher use of Caesarean section in this group.

**TABLE 1: Anaesthetic administered according to Maternal age**

MATERNAL AGE (years)	ANAESTHETIC ADMINISTERED							
	None		Regional		Systemic		Total	
	No	%	No	%	No	%	No	%
under 20	11	18.3	18	30.0	31	51.7	60	22.9
20 – 24	50	10.3	129	26.5	326	63.2	485	23.3
25 – 29	116	15.4	222	29.5	415	55.1	753	36.0
30 – 34	86	16.7	151	29.4	277	53.9	514	24.6
35 – 39	55	23.8	38	16.5	138	59.7	231	11.1
over 40	13	29.5	5	11.4	26	59.1	44	2.1
Total	331	15.8	563	26.9	1195	57.2	2089	100.0

**TABLE 2: Anaesthetic administered according to previous parity**

PREVIOUS PARITY	ANAESTHETIC ADMINISTERED							
	None		Regional		Systemic		Total	
	No	%	No	%	No	%	No	%
nil	45	5.3	243	28.6	563	66.1	851	40.7
1 – 4	273	22.5	319	26.3	621	51.2	1213	26.9
over 4	13	52.0	1	4.0	11	44.0	25	57.2
Total	331	15.8	563	26.9	1195	57.2	2089	100.0

**Table 3: Anaesthetic administered according to previous stillbirths**

PREVIOUS STILLBIRTHS	ANAESTHETIC ADMINISTERED							
	None		Regional		Systemic		Total	
	No	%	No	%	No	%	No	%
none	320	15.6	551	26.9	1177	57.5	2048	98.0
one or more	11	26.8	12	29.3	18	43.9	41	2.0
Total	331	15.8	563	26.9	1195	57.2	2089	100.0

**TABLE 4: Anaesthetic administered according to primary antenatal condition**

PRIMARY ANTENATAL CONDITION	ANAESTHETIC ADMINISTERED							
	None		Regional		Systemic		Total	
	No	%	No	%	No	%	No	%
Threatened abortion	5	10.0	11	22.0	34	68.0	50	2.4
Atepartum haemorrhage	22	10.7	35	17.0	149	72.3	206	9.9
Hypertensive disease	11	7.2	18	11.8	124	81.0	153	7.2
Other disorders	6	11.8	9	17.7	36	70.6	51	2.3
None	287	17.6	490	30.1	852	52.3	1629	78.0
Total	331	15.8	563	26.9	1195	57.2	2089	100.0

**TABLE 5: Anaesthetic administered according to type of labour**

TYPE OF LABOUR	ANAESTHETIC ADMINISTERED							
	None		Regional		Systemic		Total	
	No	%	No	%	No	%	No	%
No labour	11	6.7	7	4.2	148	89.1	166	8.0
Spontaneous	160	29.7	187	34.8	191	35.5	538	25.8
Augmented	130	12.1	310	28.7	638	59.2	1078	51.5
Induced	30	9.8	59	19.2	242	71.0	307	14.7
Total	331	15.8	563	26.9	1195	57.2	2089	100.0

**TABLE 6: Anaesthetic administered according to type of delivery**

TYPE OF DELIVERY	ANAESTHETIC ADMINISTERED							
	None		Regional		Systemic		Total	
	No	%	No	%	No	%	No	%
Spontaneous	322	18.8	515	30.1	1519	51.2	1712	82.0
Operative vaginal	3	2.9	34	32.4	68	64.7	105	5.0
Breech delivery	4	11.1	12	33.3	20	55.6	36	1.7
Caesarean section	1	0.4	0	—	230	99.6	231	11.0
Other	1	20.0	2	40.0	2	40.0	5	0.2
Total	331	15.8	563	26.9	1195	57.2	2089	100.0

**TABLE 7: Anaesthetic administered according to type of presentation**

PRESENTATION	ANAESTHETIC ADMINISTERED							
	None		Regional		Systemic		Total	
	No	%	No	%	No	%	No	%
Vertex OA	314	16.9	526	28.3	1020	54.9	1860	89.0
Vertex OP/OT	12	8.1	23	15.4	114	76.4	149	7.1
Breech	3	4.8	13	20.6	47	74.6	63	3.0
Other	2	11.8	1	5.9	14	82.4	17	0.7
Total	331	15.8	563	26.9	1195	57.2	2089	100.0

**TABLE 8: Anaesthetic administered according to complications of Labour/Delivery**

COMPLICATION OF LABOUR/DELIVERY	ANAESTHETIC ADMINISTERED							
	None		Regional		Systemic		Total	
	No	%	No	%	No	%	No	%
None	324	16.3	537	28.0	1063	55.2	1924	92.1
Prolonged 1st stage	2	1.7	14	11.8	102	86.4	118	5.7
PPH/Retained products	4	13.3	12	40.0	14	46.6	30	1.4
Other	1	5.9	0	—	16	94.1	17	0.8
Total	331	15.8	563	26.9	1195	57.2	2089	100.0

**TABLE 9: Anaesthetic administered according to duration of labour**

DURATION OF LABOUR (hours)	ANAESTHETIC ADMINISTERED							
	None		Regional		Systemic		Total	
	No	%	No	%	No	%	No	%
None	5	6.1	0	—	77	93.9	82	3.9
under 2	42	22.8	42	22.8	100	54.3	184	8.8
2 – 6	230	18.6	373	30.2	633	51.2	1236	59.2
7 – 12	50	9.5	138	26.3	336	64.2	524	25.1
more than 12	4	6.4	10	15.9	49	77.8	63	3.0
Total	331	15.8	563	26.9	1195	57.2	2089	100.0

**Infant Characteristics**

The condition of the fetus in part reflects the trends in the use of analgesia and anaesthesia during labour, and in part reflects the drug effects on the infant. Premature infants, particularly under 34 weeks gestation, were more likely to have received no form of analgesia than the more mature infants. A corresponding decrease in the use of systemic drugs can also be noted. Regional analgesia was used at similar rates irrespective of the gestational age of the infant (Table 10). The presence of fetal distress during labour promotes the use of systemic analgesia, and no cases with fetal heart rate abnormalities were allowed to continue labour without receiving some form of analgesia (Table 11).

Systemic analgesia and anaesthesia has been reported to depress the respiratory and neuromotor functions of the infant at birth. Table 12 shows the Apgar score of the infants broken down according to the type of analgesia received. It would appear that infants born with an Apgar score at 1 minute of 4–6 were most likely to have received systemic drugs. The increased use of systemic drugs with infants born with an Apgar score of 0 is very probably related to the more generous use of systemic drugs in patients known to have antepartum fetal deaths.

**Conclusions**

It would appear that at St. Luke's Hospital more than half of the patients receive a systemic form of analgesia during labour. The use of systemic drugs during labour is more likely in primigravid patients aged 20–26 years particularly if an antenatal disorder complicates the pregnancy. The use of drugs during labour is more likely if labour had been induced; and if complicated by a prolonged first stage with a total duration of labour lasting more than 7 hours. Labour is known to be delayed in patients who receive sedatives and narcotics in moderate to large doses during the latent phase.<sup>6</sup> It is difficult to establish whether the prolonged labour was a result of the analgesia used or a result of the uterine dysfunction which necessitated early analgesia.

Patients receiving systemic drugs were more likely to terminate by an operative vaginal delivery or a Caesarean section, since malpresentation and fetal distress were often complicating features. Patients with premature labour were less likely to receive systemic drugs. The use of systemic analgesia and anaesthesia appears to depress the Apgar score of the infants. The effects of obstetric anaesthesia and analgesia on the newborn have been the subject of a number of studies recently reviewed by

**TABLE 10: Anaesthetic administered according to gestational age**

GESTATIONAL AGE (weeks)	ANAESTHETIC ADMINISTERED							
	None		Regional		Systemic		Total	
	No	%	No	%	No	%	No	%
under 34	12	41.4	8	27.6	9	31.0	29	1.4
34 – 36	14	19.7	16	22.5	41	57.8	71	3.4
37 – 39	157	15.5	289	28.6	565	55.8	1011	48.4
over 40	148	15.1	250	25.6	580	59.2	978	46.0
Total	331	15.8	563	26.9	1195	57.2	2089	100.0

**TABLE 11: Anaesthetic administered according to fetal distress**

FETAL DISTRESS	ANAESTHETIC ADMINISTERED							
	None		Regional		Systemic		Total	
	No	%	No	%	No	%	No	%
None	314	16.5	536	28.1	1055	55.4	1905	91.2
Meconium liquor	17	13.5	17	13.5	92	73.0	126	6.0
Early decelerations	0	—	8	26.7	22	73.3	30	1.4
Late decelerations	0	—	1	5.0	19	95.0	30	1.0
Unrelated decelerations	0	—	1	12.5	7	87.5	8	0.4
Total	331	15.8	563	26.9	1195	57.2	2089	100.0

**TABLE 12: Anaesthetic administered according to Apgar score**

APGAR SCORE	ANAESTHETIC ADMINISTERED							
	None		Regional		Systemic		Total	
	No	%	No	%	No	%	No	%
0	5	21.7	2	8.7	16	69.5	23	1.1
1 —	7	23.3	7	23.3	16	53.3	30	1.4
4 — 6	8	7.8	17	16.5	78	75.8	103	5.0
over 7	298	16.2	516	28.1	1026	55.7	1840	88.1
unknown	13	14.0	21	22.6	59	63.4	93	4.5
Total	331	15.8	563	26.9	1195	57.2	2089	100.0

Scanlon.<sup>7</sup> The general view is that while there can be subtle interruptions in fetal or neonatal physiology even from the judicious use of modern obstetric anaesthesia techniques, the more important effects are those that influence neonatal neurobehavior or the infant's ability to interact with its mother. The depression of the Apgar score in infants receiving systemic drugs may be a direct result of neonatal depression. However the fetal depression may be partly due to any associated intrapartum fetal distress and operative delivery.

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