Commentary


It is interesting to re-read this classic article, and to appreciate how important it was in shaping our views at that time. Although our approach to anaesthesia for Caesarean section has altered fundamentally in the years since this article was written, the changes in the preceding 20 yr had also been dramatic. General anaesthesia was almost universal; during the 1950s, mask anaesthesia was still used widely; during the early 1960s, intubation, in the sitting or left lateral position, was advocated. In 1961, Sellick described cricoid pressure1 which later came to displace either of these two awkward techniques for avoiding gastric aspiration. Surprisingly, this is not mentioned, and although aortocaval compression was also well described by that time,2 uterine displacement did not enter routine practice until regional techniques became popular.

This article assesses methods of tracheal anaesthesia that were current and, in advance of its time, compares them with regional anaesthesia. Readers nowadays may be surprised to see the use of: atropine premedication, then an accepted routine; the rather long-acting neuromuscular blocking agent tubocurarine; and lidocaine for regional anaesthesia. Bupivacaine, a more suitable agent, did not come into general use until this work was well under way.

The article describes two studies, one of maternal blood loss, arterial pressure and awareness, and the other of neonatal welfare, the latter recruiting only normal elective cases. There is some uncertainty about the numbers of patients studied. The author claims only 265, but if there is no overlap among the women in the two studies, as is implied, the total is 295. (What were the referees, editor and sub-editor doing?) Whether the total is 265 or 295, this represents a formidable amount of work for a single author.

The study of blood loss is admirable. The washing machine method, the gold standard for obstetrics, was used. The finding that blood loss was significantly reduced in the group receiving regional anaesthesia, and that this was not, apparently, related to relative hypotension in the regional anaesthesia group, is fundamental. That by current standards a rather low volume of local anaesthetic was used, with no mention of whether patients were comfortable during surgery or how many required supplementation, is probably immaterial. Today, however, hypotension would require a stricter definition.

Awareness was reported by only two women, one of whom recalled intubation, which would be attributable to an inadequate dose of thiopental rather than inadequate maintenance. Detection of awareness, however, depended only on voluntary reporting by patients. In those days, mothers were less inclined to complain than they are today, and therefore I question if this is a sufficiently sensitive method. Moreover, Tunstall had not yet described his epoch-making isolated forearm technique3 which revealed that amnesic wakefulness can occur in the absence of recall. Nevertheless, this study was instrumental in pointing out the need for supplementation of nitrous oxide.

Dr Moir also demonstrated significantly higher Apgar scores with 50% nitrous oxide and halothane compared with 70% nitrous oxide alone (chi-square = 21, although this was not mentioned), attributing this to increased \( P_{O_2} \). Nowadays, a single estimate of Apgar score would not usually be sufficient to detect differences in neonatal well-being between treatment groups following elective Caesarean section, and funic acid–base status and neurological and adaptive capacity scores are required. In some cases “aspiration of liquor amnii” was blamed. This is unlikely to mean meconium aspiration unless these previously low-risk babies were rendered hypoxic; babies normally breathe amniotic fluid in utero. Aortocaval compression as well as hypoxia may have contributed to the relatively poor outcome of some babies.

It has been regrettably common, from that day to this, to fear anaesthetizing the baby. This is an entirely inappropriate concern. Anaesthesia is normally too brief to have significant fetal effects and is an innocuous and reversible process, whereas maternal stress caused by inadequate anaesthesia is a potential cause of fetal hypoxia, a far more damaging situation. However, it is preferable for the baby to give the mother adequate anaesthesia than sedative premedication, as mooted by Dr Moir, as the latter may cause more prolonged neonatal depression. Babies clearly benefit from good maternal oxygenation, but nowadays the appropriate concentration of oxygen for each individual mother can be determined with the aid of pulse oximetry. The factor that limits the concentration of volatile anaesthetic is not the baby but post-partum uterine relaxation, so between the devil and the deep blue sea most anaesthetists select regional anaesthesia, thereby also avoiding airway problems, hence the current increase in popularity of subarachnoid block.

Readers will note no mention of difficult intubation, gastric aspiration or antacid premedication. Death from aspiration of gastric contents was at its
peak between 1964 and 1970; perhaps the author wisely eschewed the dangerous but then fashionable practice of ladling particulate antacids into all parturients.

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References