

Anaesthetic and postoperative recovery rooms

Some notes on their early history

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Summary

From time to time questions are asked about the origins and history of anaesthetic and postoperative recovery rooms. Early accounts of the use of these facilities, and their introduction into hospital planning, are reviewed.

Key words

History; anaesthesia, anaesthetic rooms, postoperative recovery rooms.

Anaesthetic rooms

The early examples

It is well known, and a matter of public record, that the first general anaesthetics in hospitals were induced on the table in the operating theatre. The first mention of the use of a separate room for the induction of anaesthesia appears to be that written by Charles Tomes. He was the son of John, later Sir John, Tomes, surgeon–dentist to the Middlesex Hospital, who, on 25 January 1847, had administered the first anaesthetic recorded there [1]. Charles Tomes, himself a distinguished dental surgeon, was invited to the United States early in 1873 to deliver the graduation address to the dental students of Harvard University. At this time, and for the previous 3 years, the *British Medical Journal* had been conducting an energetic campaign to encourage a change-over from chloroform to ether, and in the light of this Tomes wrote to the *Journal* on 24 February 1873 offering the evidence of an eye-witness to its use in America [2].

'It was at the Massachusetts General Hospital, Boston, that ether was first administered for surgical operations, and I cannot do better than describe the course of procedure at this institution . . . The patients are etherised in small anterooms adjoining the operating theatre, the ether being administered by one of the junior house officers, who is, in nine cases out of ten, not yet qualified.' He continued with a description of the standard technique, a 'crash' induction of the most alarming kind. 'Two or three ounces of pure anhydrous ether are poured upon a conical sponge . . . this is at once placed over the patient's mouth and nose. If he struggles, which he generally does, as he experiences the

suffocating sensations produced by the ether, he is held down by main force until he succumbs to its influence. Ether is lavishly poured upon the sponge, so that it often runs down upon the patient's face and neck . . .'

Not uncommonly there was a great deal of stridor, and laryngeal spasm, 'and I have several times seen a degree of asphyxial lividity far transcending that which I have ever observed during the administration of nitrous oxide.' If the asphyxial symptoms became strongly pronounced the sponge would be removed for half or one minute, the blood at once recovered its colour, and the administration would be proceeded with. Not the smallest anxiety was felt by the administrator; long experience had taught that no danger was to be apprehended. When anaesthesia was complete, the patient was picked up and carried into the theatre by a stout attendant. Also, patients were apt to be noisy after recovery, 'so they are, at this hospital, temporarily placed in a small ward, whence, after complete recovery, they are transferred to their own wards. Vomiting, during and after recovery, is common. The impression left on my mind is, that they almost all vomit, though I am informed that this is not the case'. Tomes was very interested in the relative safety of ether, and concluded that if chloroform were given in the same way, and with the same absence of precautions, 'the deaths would count by hundreds.' But no-one would use chloroform in Boston, because in the event of a fatality the support of the profession would not be forthcoming.

Already, then, we have an account of the use of a room for the induction of anaesthesia, and another for postoperative recovery. Tomes actually appears to indicate that more than one room at a time was in use for induction, and mentions

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that the hospital 'almost monopolises the operative surgery of New England, and presents a large weekly list of operations . . .'

Quite possibly, then, separate induction rooms had begun to be used in order to speed up the operating theatre throughput. Similarly, more than one patient could be accommodated in the recovery ward. From Tomes's description of the induction technique, consideration for the patient's feelings did not come into it, unlike in England, as we shall see shortly.

From 1870 on, at about 3-yearly intervals, as part of its campaign to replace chloroform by ether, the *British Medical Journal* had been conducting an enquiry into the anaesthetic agents in use in the hospitals of Great Britain. Information was requested also about the methods of administration, whether any changes of agents or methods had been made during the preceding 4 to 5 years and why, and whether there were any suggestions for increase in safety. At the end of 1875 another questionnaire was sent out [3]. The replies have been analysed by Duncum [4]. From the London Hospital Mr Lewis Mackenzie drew attention to the common fault of unseemly haste. ' . . . everyone seems to want the patient to be under the influence in a minute or two; the operator looks at the chloroformist as much as to say, "When are you going to get the patient under?"' Only one reply mentioned the place of induction. Mr S. Osborn, the surgical registrar at St. Thomas's Hospital, wrote, 'Chloroform should always be administered, as it is at the hospital, in a small room adjoining the theatre, previously to the patient being brought in for operation, as he does not then become excited, and is more quickly brought under the influence. Great objection should be made to the administration of chloroform in the wards, as frequently I have seen more difficulty in bringing the patients round . . . It has, besides, a depressing effect on the other patients' [5].

Here is the other side of the coin; the desire to provide a quiet induction site, pleasant for the patient, and removed both from the other occupants of the ward, and the impatience of the surgeon. Other replies to the questionnaire show the same consideration, but do not mention the use of a room for the induction of anaesthesia. The administration of chloroform in the wards suggests the desire to avoid induction on the operating table, and the absence of suitable accommodation adjacent to the theatre.

While chloroform was still preferred at St Thomas's Hospital for the young and the elderly because of the propensity of ether to cause bronchitis, ether was now used for adults. Although St Thomas's was not the only hospital in the United Kingdom to have made this change, it does raise the question of whether the more widespread use of ether, with its much slower and stormier induction, was a factor in the introduction of anaesthetic rooms, since the two seem to have occurred at the same time.

Purpose-built

The first anaesthetic rooms planned in new hospital building date from this period also. Towards the end of the 1860s Johns Hopkins, a wealthy Quaker merchant and banker of Baltimore, bought a site and set up a foundation for the establishment of a hospital [6]. In 1875, while the hospital was being planned, a collection of five essays addressed to the Trustees was published [7]. Three of these contain proposals for the provision of a room adjacent to the operating theatre

for the induction of anaesthesia. Dr Stephen Smith proposed that 'There should be a private room in which anaesthetics are administered without exposure to the gaze and often ridicule of medical students' [8]. Plans submitted by Dr John S. Billings and Dr Norton Folsom show respectively a chloroform room [9], and an etherizing room and two recovering rooms [10], adjacent to the operating theatre.

Whether these essays had a wider influence I cannot say, but plans of hospitals collected by Henry Burdett in his massive four volume work and additional portfolio of plans [11], show anaesthetic or etherizing or chloroforming rooms in eight hospitals out of some 70 from all over the world. In the United Kingdom these were Derbyshire Royal Infirmary (1889), Liverpool Royal Infirmary (1888–9), University College Hospital, London (1834 but with several additions since), and Sussex County Hospital, Brighton (1828, with additions). Also there were the Prince Alfred Hospital, Sydney, Australia (1893–5), and in the United States, Johns Hopkins, Baltimore (1889), St. Luke's Free Hospital, Chicago, and the Mary Hitchcock Memorial Hospital, Hanover, New Hampshire, (1889). Burdett suggests that in most large hospitals where there is a medical school it is desirable to provide a room for the administration of anaesthetics [12]. The mention of a medical school, together with Dr Smith's comment above, appears to imply that a separate induction room served to protect the patient, and the anaesthetist too, from the unwanted behaviour of the students.

It would appear that there was a spate either of new hospital building or of adaptation to modern standards that began about the late 1880s, and that an anaesthetic room would be provided if someone locally pushed hard enough. The anaesthetic room in the Derbyshire Royal Infirmary, for example, was produced by remodelling the existing theatre to provide for the requirements of aseptic surgery [13]. The original large galleried operating theatre at the Liverpool Royal Infirmary, 'with its four anterooms for chloroforming, instruments, & c.' [14] was, in about 1905, converted into an X ray room. To provide for the needs of antiseptic surgery, 'smooth walls and floors, and no dust-collecting furniture', two medium-sized operating theatres were constructed over it. 'Each theatre has an anaesthetic room attached, and there are four anaesthetists to the hospital. The house-physician on duty gives the anaesthetic in emergency cases' [15]. By 1908, 'in the large general hospitals of London the patients are anaesthetised for operation by one of the hospital anaesthetists, and this is carried out in a room adjoining the operating theatre. The patient is accompanied to the anaesthetic room by the Sister of his ward, and she remains with him until his return to the ward. At all the hospitals great care is taken that the patient is well protected against chill before leaving the operating theatre' [16]. The plans of some other hospitals show anterooms, sometimes labelled as waiting rooms, adjacent to the theatre, and it is possible that these may have been used for the induction of anaesthesia. In those days, when the whole of the anaesthetist's equipment could be accommodated on a small trolley, an anaesthetic room would have no fixed features to distinguish it from any other room.

Postoperative recovery rooms

It is particularly surprising, since we tend to think of it as a recent phenomenon, that a number of hospitals had a

recovery room adjacent to the operating theatre even at this early period. The first recorded provision of this sort, which might equally be described as a high-dependency ward, was built at the Newcastle Infirmary in 1801. Adjacent to the operating theatre were five two-bedded rooms, reserved for patients who were dangerously ill, or who had recently undergone a major operation. Each room was to contain only one patient, the other bed being occupied at night by a nurse [17]. Almost a century later, Burdett mentions that 'a room is sometimes provided in which the patient can be kept until sufficiently recovered to be removed to the ward' [18], and points out that this is particularly so in certain French hospitals, planned on the pavilion system to prevent cross-infection, where the operating theatre is deliberately built away from the ward blocks. This necessitated a journey in the open, so a recovery room was provided 'for grave cases needing rest or warmth after an operation' [19]. Burdett mentions also that, if there was no other provision, the anaesthetic room doubled as a recovery room when necessary. The Liverpool Ear and Eye Hospital is shown as having a recovery room but no anaesthetic room [20]. We have seen also that a recovery ward was in use at the Massachusetts General Hospital in 1873. Obviously it would be a mistake to equate any such provision with the postoperative recovery rooms of today. At best they allowed a patient to regain consciousness, and perhaps body warmth, before the journey back to the ward, and protected the other occupants from the distressing sight and sound of postoperative vomiting.

Few hospitals were built in the United Kingdom between the wars, and the only one of which I have personal knowledge, the Queen Elizabeth Hospital, Birmingham (1938), had very adequate anaesthetic rooms, but no recovery rooms; but each theatre had a very spacious lobby where a patient could be kept if necessary. After the second World War all planning guidelines provided for anaesthetic rooms as a matter of course [21, 22], but usually not for recovery rooms. These were to be found more often in the United States, where their advantages were more quickly appreciated [23]. When provided in the United Kingdom it was at the urging of an individual anaesthetist because of the nature of the surgery, or because of the physical layout of the hospital. Early examples were at the Queen Victoria Hospital, East Grinstead, a regional centre for plastic surgery, where Dr Russell Davies pioneered the setting up of a recovery unit [24], and the Robert Jones and Agnes Hunt Orthopaedic Hospital at Oswestry, where the wards were designed to be permanently open to the weather, and so were quite unsuitable for the immediate postoperative recovery and care of patients [25]. When Barnet General Hospital, at the urging of its anaesthetists, J. Rochford and E. K. Gardner, built a recovery room with four beds towards the end of the 1950s [26], this was regarded as a considerable innovation and aroused much interest; but it was evident to district hospital anaesthetists that widespread provision required more investment than was then forthcoming. An editorial in *Anaesthesia* drew attention to 'the most fantastic differences in standards that exist side by side. For example, there is in London at the present time a hospital the twin theatres of which are served by an 'anaesthetic room' consisting of a narrow ill-lighted landing having five doors, a lift entrance, and two staircases. The only other amenity is a telephone with a particularly raucous bell. Within a short distance is another hospital boasting anaesthetic rooms with

piped gases and suction, air conditioning, sterilizers and, in one case, mural and ceiling paintings.' The editorialist drew attention to the need for recovery rooms too, and to the importance of anaesthetists being represented on planning committees in the light of the extensive hospital building programme announced in 1961 and intended to begin by 1970 [27]. This was followed up by a symposium on recovery wards organised by the Association of Anaesthetists [28]. There were five speakers and a general discussion, and it is clear that ideas about planning, dimensions, layout, services, equipment, staffing, and operational policy were by then well advanced.

Conclusion

If this account seems tentative, it is because experience in historical research has shown the foolhardiness of attributing priorities. Little or nothing was recorded by the early users of anaesthetic and recovery rooms, who did not know what would be of interest in one hundred years time, and only Tomes thought they were doing something worth writing home about. What can be said is that the introduction and spread of anaesthetic rooms coincided with the reintroduction and spread of the use of ether, but that the provision was patchy, and depended very much on local circumstances, even a century later. The early use of recovery rooms had been forgotten to such an extent that when reintroduced in the 1940s they were accepted as a complete novelty. Perhaps local and overseas researchers will be able to provide more information about the early history of anaesthetic and recovery rooms. Earlier examples may possibly exist, because, for the first manifestation of the *spirit* of the anaesthetic room, as with so much else in anaesthesia, we find ourselves going back to the example set by John Snow. As early as 1848, out of consideration for the feelings of patients about to undergo gynaecological surgery, he would induce anaesthesia in the operating theatre behind a screen, or, in private practice, in a room adjoining the one being prepared for the operation [29].

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