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Intensive Care Medicine

Correspondence

Complications of minitracheotomy

Dear Sir,

Reports of inadvertently placed minitracheotomy tubes appear increasingly in the literature, as do recommendations for preventing them [1, 2]. Since the reproduction of their illustration (Fig. 1) in the paper of Ryan et al. is not very convincing to me, I wish to propose two other anesthesiological safety measurements. Lateral neck radiographs of ICU patients are sometimes difficult to interpret due to the fact that they are taken supine and therefore incomplete. Certainly less expensive and more obvious as routine precautions are direct laryngoscopy and monitoring end-tidal CO_2. A capnograph should be available in every hospital where minitracheotomies are performed and is generally recognised as one of the most reliable ways of avoiding oesophageal intubation.

The use of a Seldinger technique [2] implies the blind insertion of a rather stiff, inflexible introducer a long distance into the trachea, as opposed to the soft, curled and less traumatising end of a guidewire designed for central venous catheterisation. A "peripheral venous catheter" technique which allows only the tip of the introducer penetrating the cricothyroid membrane in order to slide the actual tube sitting on it, gently over that tip, make causing a false route less likely. Insertion of introducer and tube at once, followed by withdrawal leaving the latter in the trachea, should all be done in a single smooth movement.

Finally the point most worthy of note is the indication for elective use of minitracheotomies. Shouldn't it be revised if the patient continues to make satisfactory progress despite an unspotted misplacement of his tube [1]?

Yours faithfully,

P. R. Martens

References

1. Ryan DW, Dark JH, Misra U, Pridie AK (1989) Intraoesophageal placement of minitracheostomy tube. Intensive Care Med 15:538–539
2. Allen PW, Thornton M (1989) Oesophageal perforation with minitracheostomy. Intensive Care Med 15:543

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Response

Dear Sir,

We believe our patient, referred to by Dr. Martens in his letter, had correct initial intra-tracheal placement of the tube, with subsequent migration of the tip through the membraneous trachea into the oesophagus as shown by the original slide of the lateral X-ray, which convincingly shows intra-oesophageal placement. None of the techniques suggested by Dr. Martens for verifying initial position would prevent this migration.

We agree that elective minitracheotomies should only be placed in carefully selected patients. In this instance formal tracheostomy, which would otherwise have been essential for wearing, was avoided.

Yours faithfully,

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Sir Robert Macintosh and intensive care

Dear Sir,

The death of Sir Robert Macintosh, the first Nuffield Professor of Anaesthetics at the University of Oxford (1937–1965) on 28th August, 1989 at the age of 91 has prompted me to remind your readers of Sir Robert's place in the development of Intensive Care.

Shortly after Professor Macintosh was appointed to the Chair, Lord Nuffield (previously William Morris, the founder of the Morris Motor Company and a great benefactor to medicine) asked him to advise on the provision of apparatus for the support of ventilation in patients suffering from severe paralytic poliomyelitis. Sir Robert Macintosh reviewed all the methods then in vogue and he and Dr. C. L. G. Pratt made a film showing these devices in action. This was shown to Lord Nuffield who was so impressed by the possibilities of the iron lung that he offered to build and donate tank ventilators to any hospital in the British Commonwealth which requested a machine. Nuffield employed both, a young Australian engineer, to design a simple plywood version of the original Drinker machine. Over 800 of these ventilators were built in the Morris workshops at Cowley and distributed to hospitals, the professor and his co-workers provided short courses of instruction for doctors and nurses using the machine.

In 1940, Sir Robert Macintosh recognised that a tank ventilator could be used to provide respiratory support in other circumstances and reported that he had used the Both ventilator to support the ventilation of two patients after a major abdominal operation [1]. In 1944, two of his assistants, Drs. Mushin and Faux [2], reported a trial in which they had nursed 24 patients in a Both ventilator for 24 h after major abdominal operations, in order to try and prevent respiratory complications. They reported that 14 out of the 24 patients had no detectable pulmonary complication whilst the remaining 10 patients had minor respiratory complications only. However, in their article, Mushin and Faux state "It would be incorrect to say that the patients enjoyed their brief spell in the Both respirator. They were not apprehensive but owing to the physical constraint were glad to be taken out at the end of 24 hours". When I later discussed this use of the Both ventilator with Professor Macintosh he said: "I still think the idea is an excellent one but at that time it was badly flawed through no fault of my own. Perhaps I should have realised that in those days only patients helplessly ill were put in iron lungs. The idea of research was unknown and the sound of iron was pretty sinister. It soon went round the City of Oxford that Mr. Blank's patient who went into the Radcliffe to have his gall bladder out, woke up in an iron lung! The surgeon's reputation could not stand for it. Remember that this was over 40 years ago".

Although there is no further record of the use of the Both ventilator for this purpose, Sir Robert Macintosh subsequently provided strong support for the development of a respiratory unit for treating respiratory paralysis. In 1953, Drs. W. Ritchie Russell and J. M. K. Spalding (neurologists) and Alex Crampton Smith (anaesthetist) set up the Respiration Unit in Oxford [3]. Members of this unit contributed greatly to the long-term use of intermittent positive pressure ventilation by designing ventilators, humidifiers and other equipment, defining the basic principles of treatment and elucidating much of the fundamental physiology of this highly successful form of treatment.

Sir Robert Macintosh was a kindly, gentle, modest, unassuming person with an absolute lack of pretentiousness and a complete and searing honesty. He had an enormous impact on the development of anaesthesia, both in the UK and worldwide and many academic departments owe their origins to his persuasive eloquence. It is appropriate that we should also remember his early contribution to the development of intensive care.

Yours sincerely,
R. Trubuhovich