

# POST-INTUBATION SORE THROAT\*

## A NEW ASPECT

A. L. BURMAN, M.B., CH.B., M.MED.(ANAES.), *Department of Anaesthetics, Groote Schuur Hospital, Cape Town*

Sore throat is undoubtedly the commonest complication of endotracheal intubation.<sup>1-13</sup> The incidence has been found to range between 2%<sup>1</sup> and 100%<sup>2</sup> in various studies. Numerous aetiological factors have been considered and analysed, but comparison between the various series is difficult because of the different aspects studied, the different criteria used, and the subjective nature of the observations made. The possible effect of different methods of sterilizing the tubes has not been reported, although the subject of asepsis has been fully dealt with in the literature.<sup>14-22</sup> It is an undeniable fact that clean equipment is essential and all methods of rendering a tube sterile should be equally effective in controlling the incidence of complications. If this were not so, it would be of great practical importance in places where central sterilizing units are rare, e.g. autoclaves are not always available in smaller institutions.

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Because of these facts, a pilot study was undertaken on the incidence of post-intubation sore throat to compare the effect of using autoclaved tubes with that of using boiled tubes.

### MATERIAL AND METHODS

In this study, patients from general surgical, gynaecological, urological and orthopaedic operating theatres were investigated. Methods of cleaning endotracheal tubes varied from one theatre to another. Some theatres clean their tubes after use by washing and brushing inside and out with a detergent and water. The tubes are then boiled, left to dry and then placed in clean glass containers or cupboards until they are required for use. When needed, they are fitted with a connection and left in a kidney dish on the anaesthetic table. Here they may lie exposed for varying lengths of time before use. At no stage in this processing are they handled with any regard to asepsis. Swabs have been taken from random samples of these tubes and put up for culture on serum broths, 2% blood agar, and on McConkey plate. No growth was obtained from any of these.

In other theatres the tubes are cleaned, and then packaged and autoclaved with or without the connections and left in their packages until needed.

The patients all had atropine sulphate included in their premedication. Thiopentone was used for induction, followed by succinylcholine, ventilation with oxygen, spraying with 4% Xylocaine, and then intubation. Macintosh laryngoscope blades were used and standard Magill cuffed tubes were lubricated with 2% Xylocaine jelly. Size 9 tubes were used for females and size 10 for males.

The tubes were either boiled or autoclaved as described above. When the autoclaved tubes were used, the packets were opened at the last possible moment and the tube held by the connection and lubricated on the way from the packet to the patient's mouth by using the jelly on a sterile swab. When the connection had not been fitted before autoclaving, the tube was held by the proximal end and the connection fitted immediately before the tube was lubricated, as described above. For maintenance anaesthesia, nitrous oxide, oxygen and ether, or occasionally halothane was used. When muscle relaxation was needed, gallamine or curare was used, and neostigmine preceded by atropine was given for reversal. A metal sucker and/or a soft rubber catheter was used for toilette of the mouth and throat.

Only patients in whom oral intubation was indicated were investigated, and because the object was only to distinguish between the effects of boiled, as opposed to autoclaved tubes, an attempt was made to eliminate as many variables as possible. Thus patients undergoing operations on the head and neck, those with nasogastric tubes, those in the prone position, and those requiring excessive head movements, were excluded, since such patients are known to have a higher incidence of sore throats.

Patients were spoken to pre-operatively so that hoarseness could be noted, and the pharynx and larynx were examined for abnormalities. All patients were seen on the first, second and fourth postoperative days and were asked the following questions: 'Have you any pain?' If the answer was in the affirmative they were asked 'where is it sore?' If the answer was negative, or if the throat was not mentioned in reply to the second question, they were asked 'is your throat sore?' In addition to being questioned, all the patients had their pharynges inspected at each visit.

#### RESULTS AND CONCLUSIONS

Ninety patients were included in this study (Table I). Their ages ranged from 9 to 86 years (Table II), with a mean age of 44.5 years. The duration of anaesthesia ranged from 25 to 300 minutes with a mean of 86 minutes (Table III). Of the 90 patients, 21 had sore throats (23%). These were made up of

TABLE I. NUMBER OF PATIENTS

	Autoclaved tubes		Boiled tubes		Total	
	Number	%	Number	%	Number	%
Males ..	16	48.5	17	51.5	33	100
Females ..	31	54.4	26	45.6	57	100
Total ..	47	52	43	48	90	100

TABLE II. AGE IN YEARS

	Autoclaved tubes		Boiled tubes		Total	
	Range	Mean	Range	Mean	Range	Mean
All patients	16-83	46.6	9-86	42.1	9-86	44.5
With sore throats ..	16-60	42	24-77	44	16-77	42.6

TABLE III. DURATION OF ANAESTHETICS IN MINUTES

	Autoclaved tubes		Boiled tubes		Total	
	Range	Mean	Range	Mean	Range	Mean
All cases ..	25-150	80	30-300	92.5	25-300	86.4
With sore throats ..	25-145	72	50-215	92	25-215	80

TABLE IV. INCIDENCE OF SORE THROATS

	Autoclaved tubes		Boiled tubes		Total	
	Number	%	Number	%	Number	%
Without sore throats ..	35	74.5	34	79.1	69	77
With sore throats ..	12	25.5	9	20.9	21	23
Total ..	47	100	43	100	90	100

$$\chi^2=0.162 \quad P>0.5$$

12 (25.5%) where autoclaved tubes had been used, and 9 (20.9%) where boiled tubes had been used. This difference is not statistically significant (Table IV). No attempt was made to divide the sore throats into degrees of severity; all cases who admitted to any degree of discomfort were regarded as positive. In response to the question 'where is it sore?', only 2 patients mentioned their throats on the first postoperative day. The other positive results were elicited by direct questioning. Only 4 patients (2 with each type of tube) had sore throats lasting more than 24 hours.

In the essay from which this paper has been abstracted, the results are analysed in greater detail, and compared where possible, with those of other studies.<sup>2,7,12</sup>

This study has demonstrated that in 2 groups of patients, where the ages and duration of anaesthesia were similar, the incidence of sore throat was not significantly different, whether autoclaved or boiled tubes were used for intubation.

#### SUMMARY

A pilot study has been undertaken to test for the first time the difference between 2 methods of sterilizing endotracheal tubes, with regard to the incidence of post-intubation sore throat. Autoclaved and boiled tubes were used and compared. The results show no significant difference between them.

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