THE USE OF PROPANIDID FOR BLIND NASOTRACHEAL INTUBATION

A. O. OYEGUNLE

SUMMARY

Blind nasotracheal intubation has been attempted in 72 patients under light general anaesthesia with propanidid in a one-dose or two-dose technique which provides conditions for up to six attempts. Nasotracheal intubation was achieved in 49 patients with a one-dose technique, and in a further 15 patients with the supplementary dose. It is suggested that this technique with propanidid is safer than other techniques using non-anaesthetic respiratory stimulants with their attendant dangers, and that the success rate with propanidid is similar to that using these other techniques.

Before the advent of muscle relaxants, blind nasotracheal intubation was popular. It was usually quicker than direct-vision orotracheal intubation when only inhalation agents were available for the induction of anaesthesia. The first blind nasotracheal intubation was performed by Sir Ivan Magill in the early 1920s (Sykes, 1961), when he used a curved rubber tube through the nose (Magill, 1930).

Opinions may differ as to whether or not blind nasotracheal intubation is a satisfactory conventional technique for routine practice, but few will disagree about its immense value in certain complicated situations. It may be indicated particularly in patients with oral, pharyngeal or laryngeal tumours, maxillo-facial deformities, cancrum oris with severe trismus, limited neck-movement and temporomandibular disease. Much practice during routine anaesthesia is essential in order to acquire the necessary skill to employ the technique with confidence in situations where it may be a life-saving procedure. Induction of general anaesthesia without first establishing an airway might lead to complete airway obstruction with inability either to see or intubate the larynx or to inflate the lungs.

This study was undertaken to investigate the value of propanidid as an agent for blind nasotracheal intubation.

METHOD

Blind nasotracheal intubation was attempted in 72 patients (39 males and 33 females) scheduled for a variety of surgical operations for which endotracheal intubation was considered necessary. The age range was 9–46 years, and the weight range was 34–78 kg. All the patients, except one, were premedicated with pethidine and atropine in conventional doses.

The patency of the nostrils was examined by listening to the patient's breathing with each nostril occluded alternately so that the clearer nostril could be used for the first attempt. Usually, the initial attempt was made through the right nostril. The nostrils were sprayed with less than 40 mg of 4% cocaine via a crystal spray about 10 min before the induction of anaesthesia. This shrinks the nasal mucosa and reduces the incidence of bleeding.

Patency of the airway was demonstrated prior to induction of anaesthesia by the ability to inflate the lungs with an anaesthetic facemask applied to the patient and compressing the reservoir bag, filled with oxygen, to see if adequate movement of the chest occurred.

Initially, the head and neck were arranged in the “sniffing the morning air” position, with the occiput supported on a bunched-up pillow. Propanidid (5%) 5 mg/kg was then injected intravenously over 15 sec through an indwelling 19 s.w.g. cannula. The lower jaw was slightly elevated and the head inclined to the side on which the nostril was used. The opposite nostril and the mouth were occluded so that all breathing took place through the endotracheal tube on its introduction. When propanidid-induced hyperventilation began, blind nasotracheal intubation was attempted at mid-inspiration with a non-cuffed red mineralized rubber Magill endotracheal tube, well-lubricated with water-soluble jelly. The ear was placed near the proximal end of the tube which was then
advanced until the sound of breathing through the tube was maximal. The external diameter of the endotracheal tubes used ranged from 6.0 to 9.0 mm. When the first attempt failed, two more attempts were made with appropriate adjustment of the head of the patient: extension, flexion, or rotation of the head, or transferring the tube to the other nostril. The period of hyperventilation allowed time for three attempts.

If no success had been achieved, anaesthesia was then maintained with oxygen, nitrous oxide and halothane (1-2%) and half the original dose of propanidid (2.5 mg/kg) was given through the indwelling cannula. A lesser degree of hyperventilation ensued, and a maximum of three further attempts was made, making a maximum of six possible attempts per patient.

RESULTS

Nasotracheal intubation was performed successfully in 64 of the 72 patients (89%). Table I shows the indications for intubation and the success rates.

<table>
<thead>
<tr>
<th>Indication for intubation</th>
<th>Attempted</th>
<th>Successful intubation</th>
<th>Failure to intubate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tonsillectomy</td>
<td>19</td>
<td>17</td>
<td>2</td>
</tr>
<tr>
<td>Multiple dental extraction</td>
<td>16</td>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td>Large goitre</td>
<td>8</td>
<td>8</td>
<td>—</td>
</tr>
<tr>
<td>&quot;Tumour&quot; of mandible</td>
<td>8</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Mastectomy</td>
<td>6</td>
<td>6</td>
<td>—</td>
</tr>
<tr>
<td>Herniorrhaphy</td>
<td>6</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Carcinoma of tongue</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Haematoma of tongue</td>
<td>1</td>
<td>1</td>
<td>—</td>
</tr>
<tr>
<td>Cervical ankylosis</td>
<td>2</td>
<td>2</td>
<td>—</td>
</tr>
<tr>
<td>spondylosis</td>
<td>2</td>
<td>2</td>
<td>—</td>
</tr>
<tr>
<td>Cancrum oris with trismus</td>
<td>2</td>
<td>2</td>
<td>—</td>
</tr>
<tr>
<td>Total</td>
<td>72</td>
<td>64</td>
<td>8</td>
</tr>
</tbody>
</table>

Of the eight failures, one had an impassable right nostril. There were two patients, with large tumours of the tongue filling the entire oral and pharyngeal cavities, in whom an elective tracheostomy had to be performed under anaesthesia administered through a facemask before surgery could commence. In one patient, who received no premedication, the technique had to be abandoned after three attempts because of excessive secretions. Four patients had no unusual features, but the technique was abandoned after the six attempts failed to yield successful blind nasotracheal intubation.

Of the 64 patients in whom intubation was performed successfully, 24 (33.3%) required one attempt, 14 (19.4%) required two attempts, 11 (15.3%) three attempts, and 15 (20.8%) required four to six attempts following a second dose of propanidid.

There was no incidence of laryngospasm, and there was no bleeding severe enough to warrant the use of a suction apparatus.

DISCUSSION

The value of hyperventilation as an aid to blind nasotracheal intubation has been well established (Magill, 1936; Gillespie, 1963; Lee, 1964). Nasotracheal intubation can be performed when respiration is depressed by deep general anaesthesia and during the apnoea produced by a muscle relaxant, but such conditions are often undesirable when the procedure is most strongly indicated. For patients presenting difficult intubation problems, the safest techniques are those which are effective with the patient lightly anaesthetized or even awake (Gillespie, 1963). It is under light general anaesthesia that hyperventilation is most helpful.

Respiratory stimulants such as carbon dioxide or doxapram hydrochloride (Davies, 1968) have been used to produce hyperventilation for blind nasotracheal intubation after induction of anaesthesia with thiopentone. Thiopentone lowers the threshold of laryngeal stimulation (Paton and Payne, 1968), and laryngospasm may result when blind nasotracheal intubation is attempted. A high concentration of carbon dioxide is dangerous, and even small concentrations may exaggerate the ill-effects of other drugs and anaesthetic agents (Price, 1960; Nunn, 1966). Analactics such as doxapram hydrochloride form a precipitate with thiopentone, have vasopressor activity, and may increase muscle tone to the point of convulsions (Ward and Franco, 1962).

Propanidid was employed in the present study for the following reasons:

1. The accompanying initial hyperventilation which facilitates blind nasotracheal intubation; this hyperventilation recurs with a subsequent dose of propanidid after the initial hyperventilation has subsided.

2. The absence of laryngospasm when the vocal cords are stimulated, a danger often present with other induction agents such as thiopentone.

3. The absence of the dangers that may follow the use of carbon dioxide and analeptics, which might otherwise be employed.
In this series, propanidid produced satisfactory hyperventilation necessary for blind nasotracheal intubation when used as a one-dose technique or when a second dose was administered. The initial dose allowed time for three attempts at blind nasotracheal intubation, and a second dose allowed time for a further three attempts. A technique which allows time for six attempts at blind nasotracheal intubation seems reasonable as further attempts might lead to considerable trauma.

No attempt has been made in the present study to make a formal comparison between propanidid and other agents such as carbon dioxide or doxapram hydrochloride, but the degree of success obtained compared favourably with that achieved by other workers using the latter techniques (Gillespie, 1963; Davies, 1968).

REFERENCES


