In conclusion, we believe the intermittent function of the Nellcor N-100 pulse oximeter noted during positive pressure ventilation associated with hypovolaemia in neonates and small children represents an important clinical observation which can help guide intraoperative fluid management. Anaesthetists should use this and other clinical signs to provide appropriate fluid administration, since these patients tolerate intravascular volume excesses and deficits poorly.

Daniel J. James MD
Raeford E. Brown, Jr. MD
Department of Anesthesia
Wake Forest University Medical Center
300 South Hawthorne Rd.
Winston-Salem, NC 27103

REFERENCES

1 *Yelderman M, New W Jr.* Evaluation of pulse oximetry. Anesthesiology 1983; 59: 349–52.
2 *Yoshiya I, Shimada Y, Tanaka K.* Spectrophotometric monitoring of arterial oxygen saturation in the fingertip. Med Biol Eng Comput 1980; 18: 27–32.
3 *Cooper JB, Cullen DJ, Nemeskal R et al.* Effects of information feedback and pulse oximetry on the incidence of anesthesia complications. Anesthesiology 1987; 67: 686–94.
4 *Tyler IL, Tantisira B, Winter PM, Motoyama EK.* Continuous monitoring of arterial oxygen saturation with pulse oximetry during transfer to the recovery room. Anesth Analg 1985; 64: 1108–12.
5 *Leake RD, Zakauddin S, Trygstad CW, Fu P, Oh W.* The effects of large volume intravenous fluid infusion on neonatal renal function. J Pediatr 1976; 89: 968–72.
6 *Dierdorf SF, Krishna G.* Anesthetic management of neonatal surgical emergencies. Anesth Analg 1981; 60: 204–15.
7 *Friedman WF.* The intrinsic physiologic properties of the developing heart. Prog Cardiovasc Dis 1972; 15: 87–111.
8 *Peabody JL, Willis MM, Gregory GA, Tooley WH, Lucey JF.* Clinical limitations and advantages of transcutaneous oxygen electrodes. Acta Anaesthesiol Scand (Suppl.) 1978; 68: 76–82.
9 *Tremper KK.* Transcutaneous PO_2 measurement. Can Anaesth Soc J 1984; 31: 664–77.
10 *Tabata BK, Kirsch JR, Rogers MC.* Diagnostic tests and technology for pediatric intensive care. *In*: Rogers MC (Ed.). Textbook of Pediatric Intensive Care. Baltimore, Williams & Wilkins, 1987; 1424–5.

Reduction of pain on injection caused by propofol

To the Editor:

Propofol often causes pain on injection,[1] which may be diminished by the prior injection of fentanyl.[2] If propofol is the anaesthetic of choice, as in day-cases, alfentanil may be a more appropriate analgesic. We studied 149 ASA physical status I and II patients about to undergo general, gynaecological or orthopaedic operations after informed consent and ethics committee approval.

A vein in the dorsum of the hand was cannulated with a 17G PVC cannula and if the first attempt was unsuccessful a vein in the forearm or antecubital fossa was cannulated.

Patients were randomly allocated in a double-blind fashion to receive two ml of a solution containing either fentanyl 50 $\mu g \cdot ml^{-1}$ (group F), alfentanil 0.5 $mg \cdot ml^{-1}$ (group A) or saline 0.9 per cent (group S). Oxygen was administered for three minutes after propofol 1.5 $mg \cdot kg^{-1}$ was given over 25 sec. Patients were asked if they felt any pain or discomfort on propofol injection (direct pain, Table). One hour after awakening patients were questioned again about pain during the propofol injection and again 24 hr later (both included in late pain, see Table).

Significantly fewer patients complained about pain on injection of propofol if they had received an analgesic but

TABLE Demographic data and results in patients given either fentanyl, alfentanil or saline prior to propofol

	Fentanyl	*Alfentanil*	*Saline*
n	49	50	50
Age yr (± SEM)	37 ± 11 (18–59)	35 ± 11 (19–55)	36 ± 9 (19–49)
Male/female	18/31	15/35	19/31
Injection site			
– hand	40	42	42
– arm	9	8	8
Pain			
– *direct*			
– hand	6*	4†	15
– arm	0	0	1
– total	6*	4†	16
– *late*			
– total	2	4	4
– *overall*			
– hand	8	8	17
– arm	0	0	3
– total	8*	8*	20

*$P < 0.05$, †$P < 0.01$ compared with saline.

there were no statistical differences between the evidence of pain after fentanyl or alfentanil (Table). We conclude that alfentanil is as effective as fentanyl in preventing the pain associated with the intravenous injection of propofol.

We thank ICI Pharmaceuticals for preparing the blinded ampoules, the nurses of the Department of Anaesthesia for their enthusiastic help and Dr. C.D. Hanning for his advice.

J.H.J.H. Helmers,* R.J. Kraaijenhagen,*
L.v. Leeuwen† and W.W.A. Zuurmond†

*Department of Anesthesiology, Hospital "De Lichtenberg," Utrechtseweg 160, 3818 ES Amersfoort, The Netherlands.
†Department of Anesthesiology, Academic Medical Centre, Meibergdreef 9, 1105 AZ Amsterdam, The Netherlands.

REFERENCES

1 *Utting JE, Fahy Lv, Mourik GA.* A comparison of thiopentone and propofol (Diprivan) for induction of anaesthesia. Postgrad Med J 1985; 61 (Suppl 3): 84.
2 *Mundeleer P.* The incidence and avoidance of pain on injection of propofol. Anaesthesia 1988; 43 (Suppl): 115.

The length of the blade is more important than its design in difficult tracheal intubation

To the Editor:

The interesting article by McIntyre[1] about laryngoscope design and difficult adult tracheal intubation did not mention a crucial factor of this subject: the importance of the length of the blade. We would like to describe a case in which a longer blade (in this case a Macintosh blade) changed a difficult into a simple intubation:

A 53-year-old man was admitted to the emergency room after a road accident. He was stable haemodynamically and suffered from fractures in his symphysis pubis, right hand and both legs. Three hours after his admission he was transferred to the operating room. Because the patient had eaten four hours before, a "crash induction" was planned. His weight was 75 kg, blood pressure 140/85 mmHg and heart rate 110 beats $\cdot$ min^{-1}. He was given a defasciculating dose of pancuronium 1 mg IV and 500 mg thiopentone with 150 mg succinylcholine. The usual type of Macintosh blade was used but the epiglottis was not seen. During several unsuccessful attempts the oxygen saturation did not decrease below 93 per cent. Then the usual blade was changed to the longer Macintosh blade and the epiglottis and vocal cords were seen and a tracheal intubation was performed without difficulty.

The longer blade has a "double action" upon the epiglottis: it can lift it directly or indirectly. The shorter blade can only lift the epiglottis indirectly. It is recommended to use the longer blade in every case because difficult intubation is unpredictable.

Joseph Eldor MD
Yaacov Gozal MD
Department of Anesthesia
Hadassah Medical Centre, Ein Karem
Jerusalem, Israel

REFERENCE

1 *McIntyre JWR.* Laryngoscope design and the difficult adult tracheal intubation. Can J Anaesth 1989; 36: 94–8.

REPLY

The Macintosh blade is usually described as curved though the distal third is virtually straight – a particularly noticeable characteristic of the Welch Allyn product. Accordingly, the Macintosh functions as a straight blade that elevates the epiglottis directly or indirectly if the part of the blade in the mouth is that with little or no curve, or as a curved blade if the full length is inserted. The length of the blade selected is clearly important and the authors have provided a valuable example of how analysis of the problem and selection of the most suitable blade can make life easier.

J.W.R. McIntyre MD FRCPC
Department of Anaesthesia
Edmonton

Intercostal nerve block in obese patients

To the Editor:

Intercostal nerve block is useful in the treatment of intercostal neuralgia and for postoperative somatic pain following surgery of thorax and upper abdomen.[1] If the rib margin cannot be palpated due to obesity, satisfactory blockade may be technically difficult to achieve and the development of pneumothorax is a related complication.[2]

We have used disposable 32-gauge, 2-inch acupuncture needles with a glass insertion tube (MIC International Corporation, New York) to locate the ribs (Figure 1). When this needle is in place the regular 22-gauge block hollow needle is inserted beside it then walked off the rib before injection of the local anaesthetic solution (Figure 2). This technique has proved satisfactory for pain-free insertion and less traumatic location of the rib. In a series of 20 intercostal blocks performed in grossly obese patients, no pneumothorax as determined by chest *x*-ray or other complications occurred.