

FIG. 1. Epidural catheter following removal with knot in the tip.

showed a tight distal knot of the spring wire tip. We suspected that the knot was spontaneously produced as the catheter doubled back upon itself during threading.

Three cases of knotted catheters have been reported in the literature, all occurring in the caudal canal.¹⁻³ None of the knots involved the spring wire tip of the epidural catheter.

Non-distal tip catheter knots can generally be avoided by inserting the catheter tip no more than 4 cm into the epidural space. Tight distal knots, as shown in figure 1, are probably a complication of local anatomy.

We recognize that approximation of the catheter length may be difficult because of catheter stretching. Therefore, an ultrasound or

an x-ray may be useful in identifying whether the catheter is retained in the epidural space.

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Masseter Muscle Spasm, Succinylcholine, and Strabismus Surgery

To the Editor:—Carroll¹ recently described an increased incidence of masseter muscle rigidity (MMR) in children with strabismus who were anesthetized with halothane and paralyzed with succinylcholine. Based upon a retrospective chart review, she reported an incidence of MMR of 2.8% among the 211 patients with strabismus compared with 0.72% among 1257 patients without strabismus. Several authors have reported that the results of contracture testing show malignant hyperthermia susceptibility (MHS) in more than 50% of patients who had an episode of MMR.^{2,3}

We have reviewed our most recent experience of 755 cases of strabismus surgery at The Mount Sinai Hospital, all of which were performed by the same surgeon (E.L.R.) over the period 1981-1987. In virtually all of the cases, the children were anesthetized using an inhalation induction with halothane, followed by intravenous atropine and a non-depolarizing neuromuscular blocker prior to tracheal intubation. Anesthesia and relaxation were then maintained using halothane or isoflurane and incremental doses of the non-depolarizing relaxant, as indicated. The average duration of surgery was 60 min. There were no cases of suspected or confirmed malignant hyperthermia among our 755 patients anesthetized, as described, with the avoidance of succinylcholine.

Schwartz *et al.*⁴ observed that the incidence of MMR in their pediatric surgical population was 0.12% (of 12,169 anesthetics) and that all incidents of MMR occurred in patients who had received both halothane

and succinylcholine. In the latter subgroup of 1466 patients, the incidence of MMR was 1.03%.⁴

These findings deserve further comment:

1. If the incidence of MMR among patients with strabismus is 2.8%,¹ then in our population of 755 patients, had succinylcholine been used, we would expect to have seen 22 cases, of whom 11 would have been MHS.

2. The absence of malignant hyperthermia in our patients suggests that the margin of safety was increased by using a non-depolarizing neuromuscular relaxant, rather than succinylcholine, to facilitate tracheal intubation and subsequent relaxation. The avoidance of succinylcholine in our patients was also related to surgical preference. Thus, we have found that operating conditions for strabismus surgery are much improved in the absence of the tonic ocular muscle contraction that would otherwise occur following the administration of succinylcholine.^{5,6}

3. Carroll's reported incidence of 2.8% for MMR among patients with strabismus is based upon six episodes occurring in a retrospective review of 211 patients.¹ In her study, MMR was defined as "jaw tightness interfering with tracheal intubation that occurred despite adequate doses of succinylcholine. Its occurrence was the clinical judgement of the anesthesiologist."¹ Since the diagnosis of MMR is somewhat subjective, before accepting the validity of her data, it would be of interest

to know the doses of succinylcholine used in the MMR patients as compared with the "normals," the time interval between the administration of succinylcholine and attempted intubation, and whether jaw tightness was confirmed by a second anesthesiologist.

Because in all but one of the cases in her series the surgery continued, it would appear that jaw relaxation did occur and that intubation was possible. The duration of MMR, therefore, would also be of interest.

While the associations between strabismus surgery, MMR, and MHS remain to be fully elucidated, we agree with the opinion expressed by Rosenberg that (certainly in the strabismus surgical population) succinylcholine is a drug that should now be reserved for specific indications.⁷

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In Reply:—In our patients with masseter muscle spasm, the average dose of succinylcholine was 1.17 mg/kg, and no patient received more than 1.6 mg/kg. This is a conservative dose, consistent with a dose of 1–2 mg/kg in use in our department at the time. Unfortunately, we cannot report the interval between succinylcholine administration and onset of masseter spasm. Finally, jaw tightness was not consistently confirmed by a second anesthesiologist. The old records are unclear on this point which, of course, is a problem with retrospective chart review.

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Modified Anesthetic Screen for Pediatric Surgery

To the Editor:—The conventional anesthetic screen divides the operating table into two areas; i.e., a clean working area for the surgeon

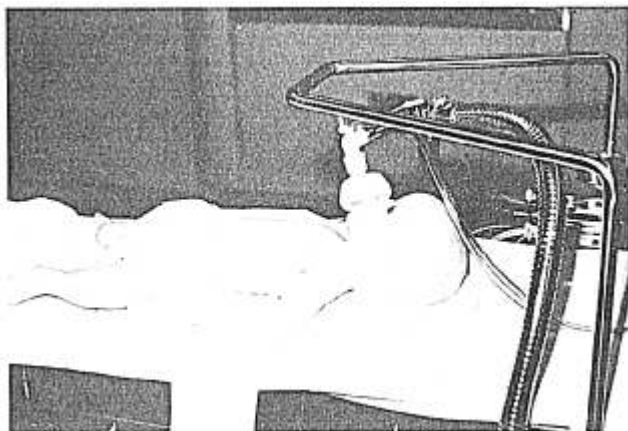


FIG. 1. Modified anesthetic screen positioned on the table.

and a working area for the anesthesiologist. The position of the screen is critical when we are working on small infants, especially during tho-

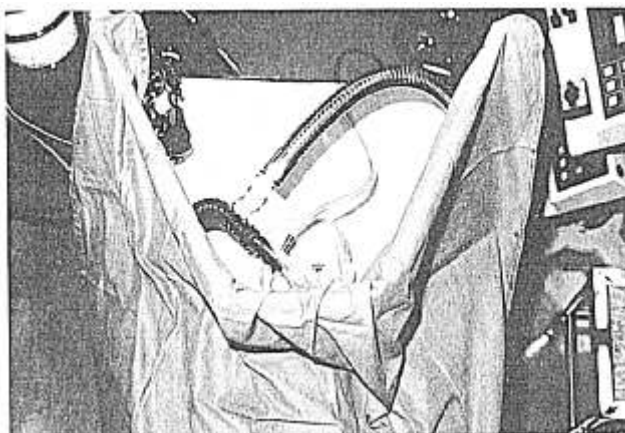


FIG. 2. Draped screen.

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