

in the development of new equipment. Many modifications are widely accepted, used and even published in the journals [2]. The modification of the ProSeal LMA by connecting an endotracheal tube connector to the drain tube has been reported recently, when the lightwand was used in conjunction, to facilitate the insertion of the ProSeal LMA, as the endotracheal tube connector seats perfectly in the connector lock at the hilt of the lightwand. The author of this article stressed that the endotracheal tube connector must be removed immediately after the procedure to prevent inadvertent connection of the anaesthetic circuit to the drain tube [3].

This ProSeal LMA is an essential item on our difficult airway trolley, as recommended in the Difficult Airway Society guidelines for unanticipated difficult intubation during rapid sequence induction in non-obstetric patient. In our case, the endotracheal tube connector was found to be firmly attached to the drain tube. The reason for this could not be determined: Either the ProSeal LMA was modified to be used with lightwand or an endotracheal tube connector was attached in error before

sending for sterilization. All staff have been made aware of this, to prevent any future incident. This incident highlights the importance of a thorough check of all the equipment before sending for sterilization as well as before use in the theatre. Airway devices should be checked not only for its patency but also for any inadvertent modifications.

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## Spinal anaesthesia for emergency Caesarean section in an achondroplastic patient

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### EDITOR:

Achondroplastic is the most common non-lethal skeletal dysplasia [1]. These patients have a reduced fertility rate and full-term pregnancies, almost invariably leading to Caesarean section due to cephalopelvic disproportion [1–3]. General endotracheal anaesthesia has traditionally been considered the technique of choice in achondroplastic [4]. However, controversy exists as to the ideal anaesthetic for a patient with achondroplastic for urgent Caesarean section. Difficulties with airway management, regional anaesthesia, altered anatomy and the well-documented anaesthetic risks of acid aspiration encountered during the third trimester of pregnancy can create a significant challenge to

the anaesthesiologist whether regional or general anaesthesia is chosen [2–4].

A 37-yr-old female, gravida 1, para 0 patient with achondroplastic presented at 28 weeks gestation with amnionitis for emergency Caesarean section. The patient's past medical history was significant for achondroplastic, allergy to ibuprofen, ethmoidal sinusitis, L<sub>2</sub>–L<sub>3</sub> prolapsed intervertebral disc, thoracolumbar spinal stenosis and kyphoscoliosis. Past surgical history included uneventful tonsillectomy and bilateral limb-lengthening orthopaedic surgery of the tibia under general anaesthesia 15 years back. On physical examination, she was 1.27 m tall and weighted 51 kg, her blood pressure (BP) was 142/84 mmHg, heart rate 97 beats min<sup>-1</sup> and respiratory rate 18 breaths min<sup>-1</sup>. She had a large head with prominent frontal bones, a short upturned nose and disproportionately short limbs. Her mouth opening was limited to three finger breaths with a Mallampati Class III airway and the tongue was large with a limited neck extension. She had received antibiotics for 5 days. Because of her

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short stature and contracted pelvis, the obstetrician planned to deliver the baby by Caesarean section 48 h after the initial steroid dose. However, 40 h after the initial steroid dose, fetal distress was suspected and the obstetricians made the decision of delivering the baby by Caesarean section. Due to the emergency nature of the situation, we elected to use spinal anaesthesia. In the operating room she was placed in the sitting position and using a sterile technique the back was prepared. A midline subarachnoid block was performed at the L<sub>3</sub>–L<sub>4</sub> intervertebral space using a 25-G pencil point spinal needle through a spinal introducer. Palpation of the lumbar interspaces was made without difficulty and, although there was an impaired cerebrospinal flow without blood or paresthesias, 1 mL hyperbaric 0.5% bupivacaine and 10 µg fentanyl (total volume 1.1 mL) was injected over 5 s without complication. She was immediately placed in the 15° Trendelenburg position with left uterine displacement. Supplemental oxygen was given (12 L) via facemask. A bilateral T<sub>4</sub> sensory level to pinprick was obtained after 1 min and she was placed in a 15° anti-Trendelenburg position. After 5 min there was a bilateral T<sub>2</sub> sensory level. A transient decrease in BP to 74/50 mmHg responded to ephedrine 20 mg, atropine 0.5 mg and a colloid fluid bolus of 500 mL, and systolic BP then remained at 100 mmHg or above throughout the procedure. Block height did not extend above T<sub>2</sub>. Surgery proceeded uneventfully and a baby boy was delivered 15 min after skin incision with Apgar scores of 6 and 8 at 1 and 5 min, respectively. Thirty minutes into the surgical procedure, the patient began to move her lower limbs and 10 min later she began to experience pain and discomfort, requiring intravenous sedation. She was given a total of fentanyl 100 µg. The total operative time was 50 min and estimated blood loss was 600 mL. The patient had no complications related to her delivery or anaesthetic and was discharged home 7 days later.

The achondroplastic patient undergoing a Caesarean section presents a challenge for the anaesthetist since there is little information in the literature with respect to the use of epidural or spinal anaesthesia in these patients. Reports on the use of spinal anaesthesia in the gravid achondroplastic are scarce and most relate to elective situations when time necessary for an incremental dosage technique is available [2,3,5]. Crawford and Dutton [5] reported that infusion of 0.5% hyperbaric bupivacaine 0.5 mL intrathecally over 20 min resulted in a bilateral block to T<sub>6</sub> and was associated with significant hypotension. However, Ravenscroft

and colleagues [6] used a subarachnoid injection of 1.3 mL hyperbaric 0.5% bupivacaine and 10 µg fentanyl for emergency Caesarean section in an African achondroplastic patient and De Renzo and colleagues [7] reported a failed spinal anaesthetic with 2 mL hyperbaric bupivacaine 0.5% and morphine 0.2 mg in a parturient with achondroplasia presenting for urgent Caesarean section. We elected to perform a single-shot spinal anaesthetic for her Caesarean section because of the emergency clinical situation and the predictable difficulties with airway management in this patient. Because of unpredictability in neuraxial spread, arbitrarily decreasing the intrathecal dose may be unreliable, but, in contrast, it would be prudent to reduce the dose of spinal anaesthetic in a patient with a reduced stature and a narrow spinal canal. We administered 5 mg bupivacaine (dose decreased by 45%) because of her short stature and spinal stenoses, obtaining a bilateral block to T<sub>2</sub> at 5 min with a transient decrease in BP.

In summary, a single-shot spinal technique proved straightforward in this case and we suggest it would be preferable to general anaesthesia when pressure of time precludes epidural anaesthesia in these patients.

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## Partial airway obstruction caused by dissection of a reinforced endotracheal tube

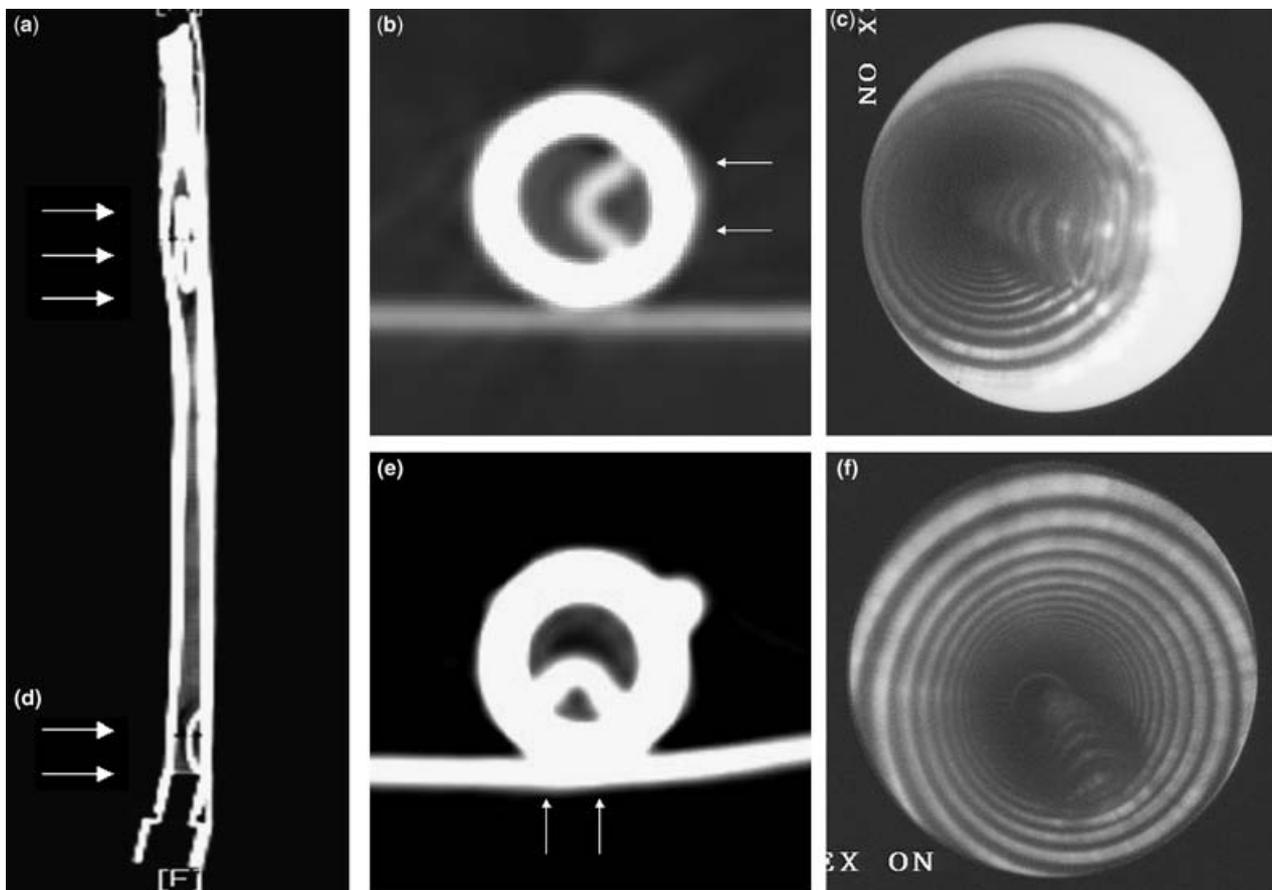
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Ventilatory problems during surgery in the prone position may be a serious complication [1]. We report an incident where there was dissection of a reinforced endotracheal tube that led to its partial obstruction. This case shows an unexpected complication from reusing products intended for single use.

A 62-yr-old female (weight 68 kg) who was scheduled for total laminectomy with posterior lumbar fusion for lumbar stenosis was intubated

with a 7.0-mm reinforced endotracheal tube (Safetyflex; Mallinckrodt<sup>®</sup>, Athlon, Ireland). Her lungs were ventilated with a mixture of sevoflurane 1.5 MAC (minimum alveolar concentration) in oxygen (35%) and nitrous oxide (65%). Her peak airway pressure ( $P_{peak}$ ) was 25 cmH<sub>2</sub>O and end-tidal CO<sub>2</sub> (ETCO<sub>2</sub>) was 36 mmHg at the beginning of anaesthesia without wheezing.  $P_{peak}$  increased to 30 cmH<sub>2</sub>O and ETCO<sub>2</sub> to 40 mmHg in the prone position. Approximately 30 min after prone



**Figure 1.**

*Computed tomographic picture and fibrescopic view of the inside of the endotracheal tube. (a–c) distal part and (d–f) proximal part. Arrows indicate the area of dissection.*

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