Sir,

Laryngeal mask airway (LMA) ProsealTM is available as a reusable device made up of medical grade silicone that can be autoclaved 40 times.\cite{1,2} Its life span depends on the number, temperature and duration of the autoclave cycles. However, these devices can also be damaged during clinical use from biting,\cite{3} surgical instruments, accidental introduction of fluid into the cuff,\cite{4} and during cleaning and disinfection.\cite{2}

A size 3 LMA ProsealTM was discovered with a damaged inflation line during routine morning inspection before use. The damage was incurred as the inflation line was caught between the lid and the metal box during storage. The cuff and shaft of the LMA were intact, as confirmed by close visual inspection and by placing it under water after full inflation. Because it was an isolated damage to the inflation line, the possibilities of repairing the inflation line were explored to put it back to use without jeopardizing patient safety. A 4-cm cut-segment of the inflation line of a 9-mm (internal diameter) polyvinyl chloride (PVC), disposable, cuffed endotracheal tube was used as an internal stent to oppose the transected ends of the inflation line of the ProsealTM LMA. The internal diameter of the ProsealTM LMA inflation line (1.5 mm) provided a snug fit on the cut segment of the endotracheal tube pilot balloon inflation line with an external diameter of 1.7 mm without the use of an adhesive [Figure 1]. The ProsealTM LMA was autoclaved and its integrity was confirmed to ensure there was no leak before putting it to clinical use. Since repair, the ProsealTM LMA has already been put to use 12 times, and it has withstood autoclaving satisfactorily.

Given the expensive capital cost of reusable ProsealTM LMA (Rs. 12,000 per piece approximately), a repair can be attempted if an isolated damage to the inflation line is discovered. However, care must be taken to ascertain that other components are intact and a preuse safety test should be performed before using them on patients.

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REFERENCES
1. Doneley S, Brimacombe J, Keller C, von Goedecke A. The prosealTM has a shorter life span than the classicTM laryngeal mask airway. Anesth Analg 2005;100:590-3.
2. Wong DT, McGuire GP. Fractured LMA. Can J Anesth 2000;47:716.
3. Woods K. Pilot tube of the laryngeal mask airway. Anaesthesia 2007;49:450-1.
4. Jolly DT, Escalona A, Clarke D. Destruction of the LMA ProsealTM with the red plug during steam autoclaving. Can J Anesth 2004;51:193.

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Estimation of the dose of hyperbaric bupivacaine for spinal anaesthesia for emergency caesarean section in an achondroplastic dwarf

DOI: 10.4103/0019-5049.71030

Sir,

Achondroplasia is the most common condition associated with short-limbed dwarfism. Anaesthetic management is challenging as patients are at increased risk of airway complications if administered general anaesthesia due to limited neck extension, large head, large tongue and narrowed nasal, oral, tracheal and
pharyngeal airway, failure of neuraxial anaesthesia because of thoracolumbar deformity and spinal canal stenosis[1] leading to controversy over the dose requirement for spinal anaesthesia. We describe the successful administration of spinal anaesthesia and the rationale for the dose of hyperbaric bupivacaine injected in an obese achondroplasic parturient.

A 24-year-old primigravida with cephalopelvic disproportion underwent emergency caesarean section at 38 + 2 weeks of gestation in view of foetal distress. Her height was 126 cm, weight was 64 kg (prepregnancy weight of 55 kg) and her body mass index (BMI) was 34.6 kg/m² with lumbar lordosis but normal thoracic spine. Her Malampatti score was 3, with normal interincisor and thyromental distance.

Antacid prophylaxis was administered, preloading with 500 ml of normal saline done and pulse oximetry, electrocardiogram (ECG) and an automatic blood pressure cuff attached for monitoring. 1.6 ml of 0.5% of hyperbaric bupivacaine (8 mg) was administered in the L3-L4 intervertebral space using a 26 G Quinckes needle. Sensory blockade extended to T4 and the patient maintained haemodynamic stability intraoperatively.

The factors considered when calculating the dose of hyperbaric bupivacaine in our patient were height, weight, spinal anatomy and pregnancy, as these are important determinants of intensity and duration of spinal block. The minimum effective dose of intrathecal bupivacaine providing effective spinal block in 95% of the women undergoing caesarean section is 0.06 mg/cm height[2] and, based on this for our patient (height 126 cm), the dose of bupivacaine was 7.56 mg or, approximately, 8 mg (1.6 ml of 0.5%). Achondroplasia is associated with spinal canal stenosis and, as proposed in a similar case report by Ravenscroft et al.,[3] a 30% reduction in the dose of intrathecal drugs should be carried out in parturients with achondroplasia. But, in our case, no reduction in dose was performed as a magnetic resonance imaging of the spine did not show any evidence of spinal canal stenosis. It has been suggested by imaging that the lumbosacral cerebrospinal fluid volume varies inversely with BMI. But, in spite of this, clinical studies by Norris[4] demonstrated that the dose of intrathecal bupivacaine for caesarean delivery is similar in obese and normal weight women.

Previous studies have used 1.3 ml of 0.5% hyperbaric bupivacaine with 10 μg of fentanyl,[3] but these studies reported a transient decrease in blood pressure, or 1 ml of 0.5% hyperbaric bupivacaine with 10 μg of fentanyl.[5] But, none of the studies gave any rationale for drug dosage of intrathecal bupivacaine used.

The probability of failed spinal is higher in achondroplastic patients but, still, parturients undergoing caesarean section should not be denied regional anaesthesia. The dose of intrathecal bupivacaine injected must be based on the height of the patient, with corrections made for the presence of spinal canal stenosis. However, no reduction in the dose is needed for obesity.

REFERENCES

1. Berkowitz ID, Raja SN, Bender KS, Kopits SE. Dwarfs: pathophysiology and anesthetic implications. Anesthesiology 1990;73:739-59.
2. Danelli G, Zangrillo A, Nucera D, Giorgi E, Fanelli G, Senatore R, et al. The minimum effective dose of 0.5% hyperbaric spinal bupivacaine for cesarean section. Minerva Anestesiol 2001;67:573-7.
3. Ravenscroft A, Govender T, Rout C. Spinal anaesthesia for emergency caesarean section in an achondroplastic dwarf. Anaesthesia 1998;53:1236-7.
4. Norris MC. Patient variables and the subarachnoid spread of hyperbaric bupivacaine in the term parturient. Anesthesiology 1990;72:478-82.
5. Mitra S, Dey N, Gombar KK. Emergency caesarean section in a patient with achondroplasia: an anesthetic dilemma. J Anesth Clin Pharmacol 2007;23:315-8.