be seen, however, if this is the same phenomenon of burst suppression seen during anesthesia in older children, or if it is some other induced discontinuous EEG pattern. Lastly, there are two caveats that must be borne in mind when interpreting these studies. First, the CSI and BIS are different algorithms and studies using one may not always be comparable to the other, and secondly the population undergoing spinal anesthesia in our previous study included younger infants with some ex premature babies. The EEG in these infants is not always the same as older term babies, with more discontinuous EEG likely to occur during normal sleep wake patterns in the young ex premature baby.

In conclusion, there is still much to be learnt about both the sedation induced by regional anesthesia in infants and the behavior of EEG-derived depth monitors in infants.

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Tourniquet cuff pressures in pediatric patients: urgent need to device guidelines?

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Sir—Pneumatic tourniquets are routinely used to reduce intraoperative blood loss and provide a reasonably bloodless operative field during limb surgeries in children. It is recommended that the least effective pressures be used to minimize tissue microstructure and biochemical damage from tourniquet application (1,2). We report two cases of pediatric orthopedic surgery wherein increased tourniquet pressure caused undesirable hemodynamic fluctuations intraoperatively, which resolved following reduction in the tourniquet pressure.

Case 1

A 3-year-old male child was booked for Ilizarov's repair of the left lower limb. Baseline blood pressure was 85/40 mmHg. General anesthesia was induced with the airway being managed using ProSeal LMA. Caudal block was given at the beginning of surgery for the supplementation of general anesthesia (GA) as well as postoperative pain relief. An appropriate size tourniquet was applied, and the cuff pressure was set at 185 mmHg (100 mms > systolic BP). A gradual rise in heart rate and blood pressure was noted 30 min after tourniquet inflation. Increasing the depth of anesthesia using higher percentage of inhalational agent proved ineffective. No other cause for the rise in baseline vitals was evident. Considering the tourniquet pressure to be high, the pressure was reduced by 50–135 mmHg. The patient responded dramatically with return to normal vitals. The 60-min-long surgery was completed uneventfully thereafter.

Case 2

A 4-year-old female child was operated for repair of extensor carpi ulnaris tendon under general anesthesia. Her baseline blood pressure was 100/42 mmHg. Axillary nerve block was given after induction for the supplementation of GA along with postoperative pain relief. Appropriate size tourniquet was applied in the upper arm, and the cuff pressure was set at 150 mmHg (50 mms > systolic BP). After 20 min of tourniquet inflation, her heart rate and blood pressure shoot up, and no reason other than the increased tourniquet pressure could be conceived of. The cuff pressure was decreased by 25–125 mmHg following which the patient responded dramatically. The tourniquet time for the case was 60 min, and the surgery was completed uneventfully.

A number of different tourniquet-related injuries and hazards have been reported in the literature including over pressurization that may cause pain at the tourniquet cuff site (3–5), muscle weakness (6), compression injuries to blood vessels, nerve, muscle, or skin (7–10), or extremity paralysis. A recent study showed that setting tourniquet cuff pressures to a level equal to limb

occlusion pressure plus a predetermined margin of safety maintains a similar quality of bloodless surgical field (11). However, this study was not adequately powered to conclude noninferiority. Further studies are needed to confirm these results.

Tourniquet cuff pressures in pediatric patients are commonly set at standard pressures based on experience or on heuristic formulations such as systolic blood pressure plus a standard margin or multiple. In comparison to adults, there are no standard guidelines on the proper use of tourniquets in pediatric patients (8,10). Because the mass of the muscle and other soft tissues is considerably less in children, which varies with age, the extrapolation of technique used in adults may not be appropriate. Increasing depth of anesthesia to decrease the hemodynamic stimulation helps only to mask the signs of tourniquet over-inflation, which also may fail often. This may in fact increase the chances of neurovascular damage if the tourniquet pressure is not decreased timely.

In view of the widespread inconsistency and lack of specific guidelines regarding the use of tourniquet, children worldwide appear to be at risk of tourniquet-related complications. So, we feel that guidelines should be formulated as quickly as possible for safer use of pneumatic tourniquet in pediatric patients.

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Malpuech syndrome: implications for anesthetic management

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Sir—Malpuech syndrome is a very rare multiple congenital anomaly syndrome, first reported in 1983, with a diverse range of physical malformations which could present difficulties during general anesthesia (1).

We report the case of a patient with this syndrome who underwent an uneventful intubation and general anesthetic. The anesthetic implications and management of this syndrome has not been reported in the literature before.

A 4-year-old girl weighing 12.6 kg, presented to our department for tonsillectomy and adenoidectomy. She was a premature delivery, born at 33 weeks by emergency cesarean section for intra-uterine growth retardation, and she received nasal CPAP for 48 hours post delivery.

On admission to our hospital she had a known diagnosis of Malpuech syndrome, with deep small wide-set eyes, a deep cleft on her chin, a small mouth, prominent pointed upper incisors, a low hairline, hirsutism and global mental retardation. In the anesthetic room, standard monitors were applied and she underwent an inhaled induction with O_2/N_2O/sevoflurane.

She was easy to mask ventilate. Intravenous access was obtained with a 22-g cannula on the dorsum of the left hand. There was difficulty in introducing the size 2 curved blade of the laryngoscope into her mouth because of the small size of the mouth and the teeth, so the blade was changed to a lubricated size 2 straight blade. Subsequent laryngoscopy showed a grade 2 view.

She was intubated with a size 5 uncuffed endotracheal tube, but there was no leak at 25cmH2O, so it was downsized to a 4.5 endotracheal tube south facing RAE. This was secured in place and she continued to breathe