

## Opening snap off ampoules – a safer and uncomplicated method

### Abertura de ampolas de vidro – Um método mais simples e seguro

Dear Editor,

Anaesthetic drugs are often available in glass ampoules which need to be 'snapped open' along the coloured bands or dot around the neck. Different manoeuvres can be employed for opening these ampoules like snapping with thumb and index finger (with or without using gauze pieces), scratching the neck of the vial with file or base of another vial and snapping open,<sup>1</sup> using scissors<sup>2</sup> or knife. If done properly, the neck of the ampoules snap open cleanly without producing spikes or glass shards. However, quite often serious cuts can occur on the fingers, ensuing lacerations necessitating suturing, infection susceptibility, loss of work days, rehabilitation, and residual pain.<sup>3</sup> Ampoule opening is classified as a high risk event<sup>4</sup> with broken ampoules causing 54% of the reported incidents in anaesthesia personnel.<sup>5</sup> Ampoule cuts are known to occur in 6% anaesthetic sessions.<sup>6</sup> Even though specialized ampoule opening devices exist, they may not be always available, which can prove dangerous during emergencies. We describe a simple, inexpensive and safe method of opening ampoules, using the barrel of a syringe which is being routinely practiced in our institution thereby preventing possible sharp injuries.

The barrel of a syringe (plunger removed from the syringe) is taken in the dominant hand and inverted and with the non-dominant hand. The conical tip of the ampoule is inserted inside the hollow cylindrical space inside the barrel (Fig. 1). The depth of insertion of the ampoule inside the hollow is so adjusted that the constricted neck of the ampoule having the coloured marking is in close proximity to the lower circumferential edge of the barrel's hollow. Holding the base of the ampoule steady with the non-dominant hand, a steady pull is applied towards the clinician while the barrel is pushed away with dominant hand (with the conical head inside it) with continuous and even pressure, keeping the edge in contact with the



**Figure 1** Inserting the conical tip of the ampoule inside the hollow cylindrical space of the barrel



**Figure 2** The sharp broken conical tip of the ampoule and the glass shards remaining inside the hollow barrel after a clean break for which can tapping out and discarding without bringing them in contact with the fingers

neck. A light pressure applied correctly will cleanly crack the ampoule open along the coloured line. The sharp broken conical tip of the ampoule and the glass shards remain inside the hollow barrel which can be tapped out and discarded safely without bringing them in contact with the fingers (Fig. 2).

Advantage of this technique includes low cost, easy availability of syringes in the hospital, utilization of a single barrel for multiple ampoules and keeping fingers clear of glass shards and slivers. However, limitation of this method is that only those ampoules which have volumes less than 5 mL with etched rings on the neck can be opened easily. It is not feasible to open larger ampoules (greater than 5 mL volume) with this method. For bigger ampoules, a larger syringe (of 10 mL) can be possibly used. A slightly higher degree of pressure may be required for snapping off the ampoule by this method as compared to manual snapping of the neck with fingers which more than compensates for the advantage of averting sharp injuries.

## References

1. Cohen Y, Glantz L, Ezri T. Breaking glass vials. *Anaesthesiology*. 1997;86:1215.
2. Koga K, Hirose M. Scissors as a propofol ampoule 'snapper'? *Anaesthesia*. 1999;54:919–20.
3. Bajwa SJ, Kaur J. Risk and safety concerns in anaesthesiology practice: the present perspective. *Anesth Essays Res*. 2012;6:14–20.
4. Smith DR, Leggat PA. Needlestick and sharps injuries among nursing students. *J Adv Nurs*. 2005;51:449–55.
5. Pulnitiporn A, Chau-in W, Klanarong S, et al. The Thai Anesthesia. Incidents Study (THAI Study) of anesthesia personnel hazard. *J Med Assoc Thai*. 2005;88: S141–4.
6. Parker MR. The use of protective gloves, the incidence of ampoule injury and the prevalence of hand laceration amongst anaesthetic personnel. *Anaesthesia*. 1995;50: 726–9.

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## Importance of maternal body temperature recording after injection of meperidine during spinal anesthesia in patients undergoing cesarean section: an offering for conducting clinical studies

### A importância do controle da temperatura corporal materna após injeção de meperidina durante a raquianestesia em pacientes submetidas à cesariana: uma sugestão para conduzir estudos clínicos

Dear Editor,

Shivering related to spinal and epidural anesthesia is distressing to parturient women as it may cause cardiovascular and metabolic disturbances. Shivering increases cardiac output and causes tachycardia; also, hypothermia-induced shivering increases total body oxygen consumption and could cause hypoxemia. These effects may place mothers and the fetuses at the greatest risk during delivery.<sup>1</sup> The rate of shivering varied from 36% to 55% in different studies.<sup>2</sup> Meperidine is a  $\kappa$  (Kappa)-receptor agonist and opioid  $\mu$  (Mu) receptor that reduces the threshold of vascular constriction and is known to treat shivering effectively.<sup>3</sup> Here we provide comments on three points on the importance of body temperature recording after injection of meperidine, based on clinical research conducted on patients undergoing spinal anesthesia for cesarean section.

First, intra-operative shivering is a particular feature of thermoregulation in awake patients undergoing regional anesthesia (in response to sympatholysis, vasodilatation and increased heat loss). Intra-operative shivering is inhibited during general anesthesia; accordingly patients are more prone to hypothermia and post-operative shivering. Hence, there are two important elements to regional anesthesia-induced shivering: (1) the desired effect of shivering, i.e., heat preservation by increased basal metabolic rate and (2) the unwanted effects of shivering (increased venous O<sub>2</sub>, desaturation, myocardial O<sub>2</sub> extraction, discomfort and anxiety for patient, and possibly movement for surgeon and monitoring artifacts for the anesthesiologist (e.g., systolic pO<sub>2</sub>, noninvasive blood pressure and ECG artifacts in intra-operative shivering).<sup>4,5</sup> Therefore, the authors should measure maternal body temperature to assess the desired effects.

Second, whenever volume pre-loading with 10 mL/kg or 15 mL/kg of room temperature crystalloid is employed, the

maternal hypothermia could reasonably be expected to alter shivering prevalence. Therefore, maternal temperature recording is very important.

Third, if meperidine suppresses shivering, it may lead to lower body temperature following regional anesthesia and this may lead to more hypothermia and also to more shivering later on. Accordingly, appropriate body temperature recording after injection of meperidine during spinal anesthesia in patients undergoing cesarean section should be considered by authors in future studies for more accurate and reliable findings.

## References

1. Khaw KS, Kee WDN, Lee SWY. Hypotension during spinal anaesthesia for caesarean section: implications, detection prevention and treatment. *Fetal Mater Med Rev.* 2006;17:69.
2. Bhukal I, Solanki SL, Kumar S, et al. Pre-induction low dose pethidine does not decrease incidence of postoperative shivering in laparoscopic gynecological surgeries. *J Anaesthesiol Clin Pharmacol.* 2011;27:349.
3. Delaunay L, Bonnet F, Liu N, et al. Clonidine comparably decreases the thermoregulatory thresholds for vasoconstriction and shivering in humans. *Anesthesiology.* 1993;79:470–4.
4. Chun DH, Kil HK, Kim HJ, et al. Intrathecal meperidine reduces intraoperative shivering during transurethral prostatectomy in elderly patients. *Korean J Anesthesiol.* 2010;59:389–93.
5. Khan ZH, Zanjani AP, Makarem J, et al. Antishivering effects of two different doses of intrathecal meperidine in caesarean section: a prospective randomised blinded study. *Eur J Anaesthesiol.* 2011;28:202–6.

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