

## Removing a trapped epidural catheter: Concerns

Sir,

We read with interest the article titled "A rare complication of epidural anaesthesia a case report with brief review of literature".<sup>[1]</sup> Such cases are more common on obstetric patients.<sup>[2]</sup> The authors managed a knotted epidural catheter by slow, steady and gentle traction. Although they were successful in getting the catheter intact, this technique may not be advocated as the technique as concluded by the authors. Although the catheter is inert, it may be non-biodegradable and, therefore, any broken catheter is always a concern for the patient, surgeons and anaesthesiologists as well.

The authors took four attempts without any modification, like change on patient position or injection of saline, etc. to remove the catheter.<sup>[3,4]</sup> Although the authors have not mentioned how much the length of the catheter increased with stretching, but excessive stretching could increase the chances of catheter breakage. The force applied during removal of the trapped catheter should be the least, and various manoeuvres have been described to ease the removal of catheter without undue force.<sup>[3]</sup> Patient's position manipulations are the most frequently attempted initial methods to free entrapped catheters.<sup>[4]</sup> The flexion of spine in lateral decubitus position may ease the removal of catheter.<sup>[5]</sup> If it is suspected that a knot has formed, some authors have suggested using a small and steady force for withdrawal (but not multiple

attempts), to stop pulling if the catheter begins to stretch too much (not reported by the authors in this case report), placing the patient in various positions (e.g., the same position as on insertion, the lateral decubitus position and a flexion or extension position) (again not described by the authors) and injecting normal saline through the catheter (not used by the authors).<sup>[1,6,7]</sup> The injection of saline in the catheter could either make it stiff for its easy removal or, at times, if injected in initial attempts, may uncoil the catheter and thus avoid knotting. Although position during removal has not been described by the authors, there is evidence indicating that the withdrawal force is reduced in the lateral decubitus position, and the force required to remove an epidural catheter was 2.5-times more with a patient in the sitting position than in the lateral decubitus position.<sup>[8]</sup> Different patient positions during insertion or removal of the catheter may increase the resistance. For example, excessive force might be applied if the catheter is placed while the patient's back is arched but is removed with the patient in a different position (e.g., sitting position).<sup>[9]</sup> Morris *et al.* recommend that the patient be placed in the same position for insertion and withdrawal of the catheter.<sup>[5]</sup> It becomes prudent that if resistance is encountered then each repeat attempt should be with some manoeuvres as we usually advocate for repeat laryngoscopy in difficult airway.

The catheter could entangle the bony structures or even a nerve. An injection of sterile saline may help determine whether the catheter is knotted, kinked or entangled. It could be more informative if the author could mention the type of the epidural catheter and whether it has a radioopaque marker on it or not. The X-ray may reveal the status of the catheter if it is radioopaque and, if non-radioopaque, then injecting some radiopaque dye may make it possible to visualize it on the X-ray, and status of the catheter can be visualized.<sup>[10]</sup> In the era of evidence medicine and presence of radiological investigations, it will always be advisable to evaluate the status of the catheter before removing a struck catheter in multiple attempts without the use of any adjunct. Also, the characteristics inherent to the materials (not mentioned by the authors) of the epidural catheters could also predict the risk of breakage. The tensile strength of various epidural catheters was evaluated, and the authors concluded that nylon or polyurethane catheters were more resistant than Teflon or polyethylene catheters.<sup>[11]</sup>

We also believe that during insertion of the epidural catheter, the identification of epidural space using the saline technique could have a beneficial effect, probably by creating space, and thus allowing easy insertion of the catheter rather than its coiling and thus the risk of knotting.

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