

## **Efficacy of sub para-neural sciatic nerve catheters for wound care-related procedural pain in hospital ward settings**

Sir,

Patients with deep wounds due to trauma, infection or chronic systemic illness like diabetes mellitus undergo frequent dressing changes and minor debridement

collectively known as wound care procedures (WCP) in the ward. Pain during WCP has been reported to be moderate to severe in 74% of patients with 36% expressing severe pain.<sup>[1]</sup> Inadequate analgesia reduces patient compliance to dressing changes and also leads to depressive symptoms and decreased quality of life.<sup>[2,3]</sup> Hence, we sought to explore the feasibility and efficacy of sciatic nerve catheters for analgesia during wound care procedures in the hospital ward setting.

This prospective observational trial was conducted in a tertiary care teaching university hospital from January 2021 to August 2021. The study was

approved by the institute human ethics committee and was registered with the clinical trial registry of India (CTRI/2021/01/030291).

After informed consent, thirty-five patients suffering moderate to severe pain during wound care procedures were recruited into the study. Catheter insertion was performed in the operating theatre under aseptic precautions. The sub para-neural compartment was initially hydro located with 10 mL of normal saline through a 25-gauge Quincke spinal needle (smaller gauge and shorter bevel) at the bifurcation of the sciatic nerve. Subsequently, a 20 G epidural catheter was introduced into the sub para-neural compartment through the 18-gauge Tuohy epidural needle under ultrasound guidance and fixed by transparent dressing. The patients were shifted to the ward and managed by the hospital acute pain service team [Figure 1a and b]. Thirty minutes prior to dressing, 15 mL bolus of 1.5% lignocaine without adrenaline was administered through the catheter. If the wound extended into saphenous nerve territory, a subcutaneous skin infiltration was performed in the medial aspect of the leg, approximately 5 cm below the tibial tuberosity. Patients expressed the degree of pain during the entire WCP through Verbal Numeric Rating Scale (VNRS). Patients with effective catheter analgesia were instructed to note down the time they regained the normal sensorimotor function as well as the pain at the wound site. The catheter site was inspected every day for signs and symptoms of infection and leak. The catheter was removed when the WCP was

no longer required, when analgesia was ineffective or at signs of catheter site infection.

Demographic data of the patients were recorded [Table 1]. Thirty-five patients received 42 catheters (reinsertion rate 20%) and 173 dressings were performed under the cover of catheter analgesia over a period of eight median catheter days. The catheter analgesia was effective (Median VNRS 2; interquartile range (IQR) 0-4) in 161 dressings (success rate 93%) and the analgesia lasted for a mean duration of  $163 \pm 60$  minutes. All patients regained their sensorimotor function within  $130 \pm 52$  minutes. Catheter tip malposition was the most common cause for ineffective analgesia (8/12). Major complications such as catheter site infection, persistent sensory motor deficit beyond 24 h, and accidental fall due to sensorimotor blockade were not reported.

All patients reported complete sensory motor recovery within 2 to 3 h following every catheter activation; nevertheless, subclinical nerve conduction defects cannot be ruled out.<sup>[4]</sup> However, those patients who were able to ambulate prior to drug administration were able to maintain the same after 4 hours of drug administration without any incidence of accidental fall. Similarly, no incidence of catheter site infection was registered in spite of a septic source being treated on the same lower limb. Catheter tip displacement was the commonest cause for ineffective analgesia and re-insertion. Though catheter tip position at insertion was verified by ultrasound, subsequent patient ambulation in ward could have resulted in changes in tip position in relation to the nerve. None of our patients required more than two catheters for their wound dressings. Patient satisfaction after surgery depends on the adequacy of pain relief and the occurrence of adverse effects of pain management manoeuvres.<sup>[5]</sup> Nevertheless, we conclude that sub para-neural sciatic nerve catheter management is



**Figure 1:** (a) Image of patient's leg with wound in sciatic nerve territory and popliteal sciatic nerve catheter in situ. (b) Image of patient's leg with wound covered and popliteal sciatic nerve catheter in hospital ward setting

**Table 1: Demographic data of patients with sciatic nerve catheter for wound care procedures**

Variable	Data
Age (years)	54 (48-65)
BMI	23.2 (22-25.6)
Gender (M:F)	25:10
Primary cause of the wound	n (%)
Diabetic foot	15 (42.8%)
Trauma	8 (22.8%)
Necrotising fasciitis	7 (20%)
Arterial insufficiency	4 (11.4%)
Burns	1 (2.85%)

Values are represented as Median (Inter- quartile range), and number (proportion). BMI – Body Mass Index, M – Male, F – Female

feasible in the ward settings and offers effective regional analgesia for wound care procedures without any major adverse effects.

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### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

### Conflicts of interest

There are no conflicts of interest.

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