Dear Editor,

Superficial thrombophlebitis usually affects the superficial veins of lower extremities. Women with intravenous (iv) cannulation lasting more than 48 hours are prone to develop this complication.[1] We present an unusual case of superficial thrombophlebitis of the left upper limb in a young woman immediately after a lower abdominal surgery.

A 34-year-old woman with carcinoma endometrium and ovary was scheduled for total abdominal hysterectomy with bilateral salpingo-oophorectomy. The preoperative investigations and vital signs were within normal limits. An 18G iv cannula was placed in the dorsum of the left hand. General anesthesia was administered using morphine, propofol and vecuronium for induction, and oxygen, nitrous oxide and sevoflurane for maintenance. At the end of the 3.5-hour surgery, residual neuromuscular blockade were reversed with neostigmine and glycopyrrolate and the patient was transferred to the post-anesthesia care unit (PACU).

On arrival in the PACU, the patient was conscious, hemodynamically stable and pain-free. About 90 minutes later she was given cefuroxime (1.5 g) through the iv cannula followed by metronidazole (500 mg) infusion. Within 10 minutes the cannula was found occluded. Another cannula was placed in the right upper limb. It was discovered that cefuroxime was reconstituted with 5 ml solvent instead of the standard 10 ml; 2 hours later the patient complained of pain in the left hand. The hand was cyanosed [Figure 1]. The forearm circumference at the boundary of the cyanosed and non-cyanosed areas was 19 cm compared to 15 cm in the right forearm. The distal arterial pulses were palpable. \( \text{SpO}_2 \) was 40% and 98% in the left and right hands, respectively. A Doppler study showed thickened echogenic walls and a collection in the lumen of the superficial veins of the left hand, without any internal flow. The deep venous system was unaffected. A bolus of 4000 IU heparin was given intravenously, followed by an infusion at the rate of 800 IU/hour. An infusion of glyceryl trinitrate (NTG) was administered for 6 hours at 3-5 mcg/minute, titrated to maintain a mean BP of 70 mmHg. Morphine (1.5 mg) and paracetamol (1 g) were given iv for analgesia. After 24 hour of heparin infusion the cyanosis disappeared [Figure 2], capillary refilling in digits became normal, with no progression of swelling. The heparin infusion was stopped and low molecular weight heparin (Enoxaparine 4000 IU subcutaneous t.i.d.) was started for prevention of DVT. The patient was discharged on post-operative day 7.

Patients with tumors of the ovary, pancreas, and lung, and hematological malignancies have a high incidence of...
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venous thromboembolism. Mechanical irritation of the vessel walls by the stiff canula material, and/or infusion of hypertonic solutions can injure the vascular endothelium. The duration of cannulation is related to the incidence of thrombophlebitis. Infusions in distal veins and areas of slower venous return are prone for it. Dicloxacillin, erythromycin, benzylpenicillin, and cefuroxime are associated with a greater risk than ampicillin, imipenem/cilastatin, clindamycin, netilmicin and vancomycin. A recent meta-analysis showed that topical NTG may achieve faster pain relief compared to heparinoid gel. However, the evidence was not conclusive due to small number of studies (2), small sample size, and an increased risk of bias due to improper concealment of allocation and attrition bias. No study has evaluated the use of iv NTG in superficial venous thrombophlebitis.

Administration of improperly reconstituted cefuroxime may have precipitated the phenomenon in our case. The primary goal of management is pain relief. In view of edema, decreased circulation and tissue hypoxemia, we administered heparin for thrombolysis and NTG as a venodilator, leading to prompt recovery with minimal use of opioids. Anesthetists should be aware of this complication, particularly in women with intra-abdominal malignancies. Proper reconstitution of antibiotics should be practised in all cases.

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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Conflicts of interest
There are no conflicts of interest.

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Figure 1: At the onset, marked cyanosis in left upper limb

Figure 2: Disappearance of cyanosis after 24 hours
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Dear Editor,

Cardiac surgery-associated acute kidney injury (CSA-AKI) is widespread in open-heart surgeries, and even off-pump coronary artery bypass graft (OP-CABG) is not an exception.[1,2] It also has a significant impact on mortality and morbidity.[3] We appreciate the work of Kanchi et al where the authors appraise intraoperative sodium bicarbonate (NaHCO₃) infusion for prevention of acute kidney injury (AKI) in patients with preoperative renal dysfunction undergoing OP-CABG.[4] However, a few concerns need to be addressed before accepting the strategy in clinical practice; firstly, while the authors have already taken one placebo group (i.e., NaCl) to compare the effect of NaHCO₃ infusion, the use of another control group with preoperative normal renal function is misleading or unwarranted as per the primary objective of the study which indicates that the effect needs to be evaluated in patients with preexisting renal dysfunction first. Although the new group may provide another subset of data, the comparison of the patients with preexisting renal dysfunction with normal renal function deviates away from the main objective of the study. For this, the authors should have also presented a separate comparison of only NaCl and NaHCO3 groups in the said study. When data provided by Kanchi et al.[4] in their, were analyzed using online QuickCalc (Graphpad Prism Software, Inc; La Jolla, CA, USA) and t-test was applied; the differences were mostly found as insignificant [Table 1 of the present manuscript].

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