Case report: Inadvertent intra-arterial injection during sclerotherapy may not be the disaster you think

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Objectives: Inadvertent intra-arterial injection is a rare and serious complication of sclerotherapy. Multiple treatments have been used in reported cases, with varying levels of success. We report a rare case of intra-arterial injection being treated with steroids and pulsed dye laser therapy and present a plan for future incidences.

Method/Case: A 52-year-old woman presented to the clinic looking for aesthetic improvement to telangiectatic veins on the anterior aspect of the right leg. She developed cutaneous necrosis after sclerotherapy injection with 4 mL of 0.5% liquid polidocanol.

Results: After 23 months of pulsed dye laser therapy and a course of oral prednisolone, the patient made a good recovery and is left with minimal lasting tissue damage.

Conclusions: More research is needed into the area of treating cutaneous necrosis with a pulsed dye laser, but this case report indicates a possible future therapeutic use after a successful outcome. (J Vasc Nurs 2016;34:12-16)

Inadvertent intra-arterial injection during venous microsclerotherapy is rare, often unavoidable, and can be devastating for patient and practitioner. It is not clear what management is required after such a complication, and given the increasing range of health professionals performing sclerotherapy, it is vital to be fully aware of potential risks and to manage these safely. This is an issue relevant to all advanced nurse practitioners, surgeons, and all other professionals involved in the treatment and postoperative care. We present a case of inadvertent intra-arterial injection of polidocanol, the effects, and the further management including the use of laser therapy.

CASE REPORT

A 52-year-old woman, concerned about the visual appearance of her legs, presented with a request for an aesthetic improvement to otherwise asymptomatic telangiectasias on their right leg. Some 10 years before presentation, she had sclerotherapy treatment for varicose veins on the same leg. She was fit and well and denied hypersensitivity to any substances. She was taking hormone replacement therapy with a combination of conjugated estrogen and medroxyprogesterone acetate.

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The procedure was carried out by a practitioner with 16-year experience of over 3,000 sclerotherapy treatments, none of which resulted in an intra-arterial injection to the author's knowledge. This compares to a reported rate of between 0.2% and 1.2% of intra-arterial injection in previous studies.[1] A total of 4 mL of liquid polidocanol 0.5% was injected into the telangiectasia on the anterior aspect of the patient's right shin using a 1-mL diabetic syringe. The patient left the clinic in no pain.

The following day, the patient discovered that her leg was painful, swollen, and had areas of both light and dark discoloration surrounding one of the injection sites. The patient consulted an emergency medical practitioner who suspected an infection and prescribed a course of oral antibiotics–flucloxacillin 500-mg QDS.[2]

After 24 hours of oral antibiotics, the patient was reviewed by a consultant vascular surgeon. The initial pain had settled, but the area of dark discoloration was more evident, consistent with necrosis of the skin and shown in Figure 1. The surgeon suspected that a small amount of polidocanol had been inadvertently injected into an artery. The patient was then prescribed high-dose oral steroids (30-mg prednisolone) for 5 days. She was advised that she should expect to wait many months before the skin would heal, and it was important not to pick at the skin as this would lead to scarring.

It was suggested by the sclerotherapist that the skin damage might benefit from treatment with an NLite (Chromogenex Technologies Ltd, Llanelli, UK) pulsed dye laser; common practice in this clinic after a painful or problematic treatment. The patient agreed to the plan and received 19 sessions of pulsed dye laser therapy, over a course of 7 months. Treatment involved the laser set to an energy level of 2.5 J/cm^2 and a wavelength of 585 nm, with the patient receiving treatment for 30 minutes at a time, equivalent to between 542 and 571 pulses of 0.45 ms with a fixed 7-mm spot. For the first month, treatment was every 2–5 days, but

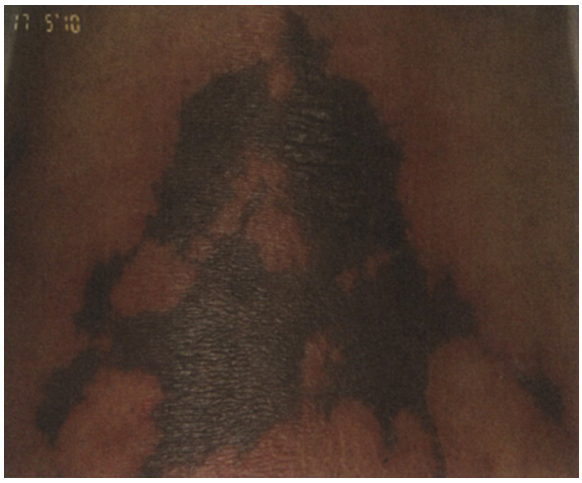

Figure 1. *The patient's leg 48 hours following the initial sclerotherapy injection.*

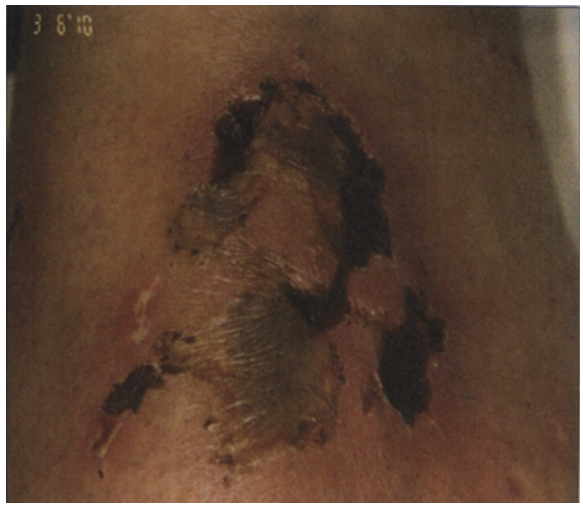

Figure 2. *The same area of the patient's leg, 17 days post-injection.*

this was extended to weekly or biweekly treatments for the remaining sessions. After a year of treatment with the pulsed dye laser, the patient then received a glycolic acid peel product treatment to lighten the area of pigmentation[3] and a further 4 Q-Switch (QS) Ruby (Lambda SpA, Brendola, Italy) laser treatments over the course of 1 year, with the aim of reducing hyperpigmentation further. The QS Ruby laser has a wavelength of 694 nm, with an energy level of 4.3 J/cm^2 and pulse duration of 25 ns. The glycolic acid peel was a relatively safe adjuvant therapy due to its anti-inflammatory properties and the potential to reduce pigmentation.[4] Throughout the treatment, no specific dressing regime was recommended to the patient.

One year after the original injection, the patient was diagnosed with polycythemia rubra vera (PRV) and was prescribed hydroxycarbamide (500-mg daily) and low-dose aspirin (75-mg daily). The implications of this are considered in detail in the Discussion section of this article.

One year on from the second QS ruby treatment (a total of 23 months from the initial sclerotherapy incident), treatment was ceased. Figures 2–8 demonstrate the wound progress over 23 months, during which time the patient was receiving regular treatments from the pulsed dye laser. The figures also show how the skin necrosis improved over the total course of treatment. The final picture (Figure 8) in the timeline of laser treatment shows the improvement in the patient's skin condition; she was left with a minimal area of hyperpigmentation on the central region of the calf, with no raised skin. Since the incident, the patient has had no further issues and continues to lead a normal life, with no long-term effects being reported.

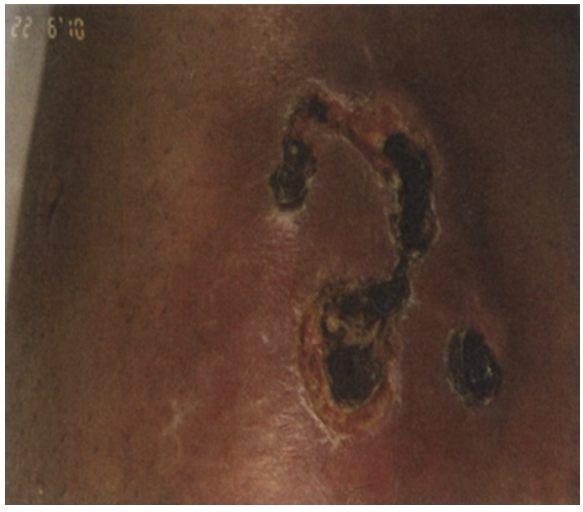

Figure 3. *1 month post-injection.*

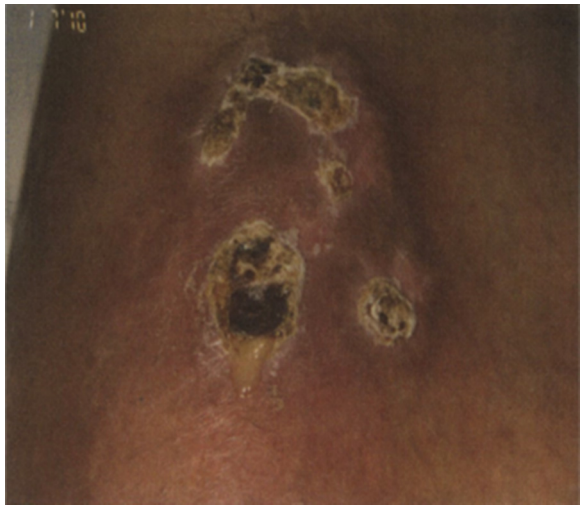

Figure 4. *6 weeks post-injection.*

DISCUSSION

Sclerotherapy for the treatment of varicose veins is safe, with serious adverse events only occurring in between 0.2% and 2% of cases[5] after some major clinical trials involving 1,000s of patients. Examples of these serious side effects and risks include transient neurologic issues,[6] tissue necrosis,[7] deep vein thrombosis,[8] and intra-arterial injection.[9] Intra-arterial injection is one of the more catastrophic of these issues, with a recent