Reply to 'Use of hydrogel pad in laser treatment of tattoos'

The use of a hydrogel pad during the laser treatment of tattoos, to relieve patient discomfort and trap laser plume, was described recently by Govindan et al.[1] Whilst we share the authors' view that this device may often achieve both these goals, we believe that it may be helpful to note a further consequence of its use, namely that the hydrogel pad may reduce the transmission of the incident laser light by around 30%.

The selection of a clinically appropriate laser energy level is an essential prerequisite for safe and effective use. Disproportionately high levels may cause adverse reactions, whereas low levels may lead to suboptimal treatment.[2] We carried out a short study to investigate the effects of a LaserAid® hydrogel pad on laser energy output. Ten 5-mm-diameter pulses of laser light from an Aesculap ruby laser operating in Q-switched mode were delivered to an Ophir Optronics Nova external energy meter with the tip of the laser end piece resting on the external energy meter detector head. Ten similar pulses were delivered via a section of cooled LaserAid® hydrogel pad placed over the external energy meter detector head, as the tip of the laser end piece spacer compressed the hydrogel pad against the detector head. The laser was set at a nominal output energy of 0.5 J. Data collected illustrated that the energy incident on the detector head dropped by an average of 29% (two-tailed paired t-test, $P < 0.01$) after transmission through the hydrogel pad (Table 1).

This energy drop may be accounted for by reflection of laser light from either surface of the hydrogel pad, as well as by absorption and scattering within it. Accordingly, the proportion of energy lost to absorption and scattering within the hydrogel pad may be reduced if a thinner hydrogel pad was developed. Higher laser output energies are therefore likely to be required when using the Aesculap Q-switched ruby laser with a hydrogel pad than would be necessary with the laser alone. Some tattoos that may best be treated with the maximum Q-switched output of this laser may be treated less effectively through a hydrogel pad.

The hydrogel pad is also effective in decreasing the laser plume in the immediate vicinity of the treated area. However, we believe the current literature does not support the hypothesis that this necessarily reduces any microbiological hazard from a Q-switched laser tattoo removal procedure. Whilst various viral and bacterial contents of laser plume have been reported following resurfacing procedures, it is difficult to find similar evidence regarding the microbiological content of laser plume following Q-switched laser tattoo removal.

Although we agree with the use of the hydrogel pad in principle, we would advise that caution should be exercised during its use with lasers for tattoo removal.

Table 1 Average energy recorded from 10 nominal 0.5 J Q-switched pulses from Aesculap ruby laser delivered directly to an Ophir Optronics external energy meter compared to similar pulses delivered through a LaserAid® hydrogel pad

	No LaserAid®	LaserAid®
Average energy of 10 Q-switched pulses	0.42 J	0.30 J
Standard deviation	0.024 J	0.030 J

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Locoregional silicone spread after high cohesive gel silicone implant rupture

We read with interest the case report 'Locoregional silicone spread after high cohesive gel silicone implant rupture'.[1] The authors raise concerns about the manufacturer's claim of safety of the mentioned implants after rupture and leakage of silicone into the tissue. However, they claim that they had not come across any published report of cohesive gel implant rupture resulting in silicone spread to axillary lymph nodes. We would like to highlight that an identical case report was published in the *British Journal of Plastic Surgery* in 2003.[2] The recently published article by Lahiri and Waters[1] supports the safety concern raised in the original case report by Shaaban et al.[2] The conclusion of the two articles challenges the commonly accepted claim that the cohesive gel silicone does not spread into the tissue. We recommend that the risk of rupture of implant and spread of silicone into the tissue should be explained to all patients before surgery.

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Giant basal cell carcinoma on the lower leg: MRI findings

Giant basal cell carcinomas (BCCs) are rare tumours representing less than 0.1% of skin tumours. This report describes the MRI findings of a giant BCC on the lower leg. MRI revealed a huge cutaneous tumour hypointense on T1-weighted images and heterogeneous with intermediate to high signal intensity in T2-weighted images. This tumour showed marked enhancement after contrast administration. MRI accurately demonstrated deep local invasion with muscle and bone involvement. The type of surgical technique, a below-knee amputation, was based on MR findings. To our knowledge, this is the first MRI description of a giant BCC.

A 73-year-old woman was admitted to our hospital presenting with a huge cutaneous, exophytic tumour on the left lower leg. This lesion was well-demarcated, cerebriform, ulcerated, and involved almost all the distal lower leg diameter. The lesion measured $17 \times 26 \times 1.5$ cm (Fig. 1). She reported a 'varicose' ulcer, on the distal segment of the left leg that appeared about 2 years before. More recently, the lesion began to grow rapidly and became haemorrhagic. The patient did not have referred pain, gait disturbance, or any other symptoms. A biopsy of the lesion diagnosed the tumour as an infiltrative basal cell carcinoma (metatypical type).

Figure 1 Photograph of the large exophytic and ulcerated mass on the lower leg as seen on the first visit.

She was referred to our MR unit to assess local extension and deep invasion. MR study was performed at a 1.5T scanner (Signa, GE Medical Systems, Milwaukee, WI, USA) using an extremity coil. T1-weighted (T1-W) Fast Spin Echo (FSE) and T2-weighted (T2-W) FSE sequences of the left leg were acquired on the sagittal, axial and coronal planes using the following parameters: T1-W FSE: TR 500; TE 11; FOV 26×19.5; matrix 512×192; section thickness/gap = 3/0.5 mm. T2-W FSE: TR 3000; TE 131; FOV 24×18; matrix 320×256; section thickness/gap = 3/0.5 mm. MRI study was also completed with a Magnetic Resonance Angiography (MRA) with 3D spoiled gradient echo (SPGR) sequence after contrast agent injection (0.2 ml/kg).

The MRI study demonstrated a big, cutaneous mass that showed equal signal intensity on T1-weighted images and heterogeneous, intermediate to high signal intensity on T2-weighted images related to muscle. On the anterolateral side MRI revealed tumour invasion into the subcutaneous tissue, anterolateral muscle compartments and bone involvement of tibial anterior cortex and distal fibular bone (Fig. 2). The lesion showed marked enhancement after contrast administration and MRA demonstrated vascular encasement without occlusion of main arterial branches.

Taking into account the MRI findings, a below-knee amputation was decided upon. An excellent surgical result on the lower limb was obtained. Six months postoperatively, our patient had a good recovery, tolerated the standing position and was able to walk with the aid of a prosthesis.

Basal cell carcinoma (BCC) is the most common skin neoplasm. It arises from the basal layer of the epidermis and its appendages. They predominantly appear on sun-exposed and sun-damaged skin because exposure to ultraviolet radiation is the most important risk factor in BCC. Accordingly, about 80% of BCCs occur on the head and neck,10% are found on the non-sun-exposed trunk, and only 8% of all BCCs are located in the lower limb.[1,2]

These tumours have been considered benign because they present a very low rate of metastatic lesions ($< 0.1\%$).[3] Although the mortality rate is very low in BCC, these cancers may result in significant morbidity because they are locally invasive with slow and progressive growth. Untreated advanced lesions reach a large size and display a more aggressive behaviour resulting in considerable disfigurement, with local destruction of skin, surrounding muscle, cartilage and bone.

Giant BCC is defined by the American Joint Committee on Cancer as a tumour larger than 5 cm in diameter. Less than 1% of all BCCs reach this size.[4] Reports of giant BCCs greater than 10 cm in diameter are scarce, and they frequently occur on the back because tumours in this location often go unnoticed by the patient. Skin malignancies, especially BCCs, rarely develop to enormous size in the lower limb.[5]

Our patient presented with a giant BCC of 26 cm on her lower leg. She admitted to neglecting attention to the lesion because, originally, it was diagnosed as a venous ulcer. Squamous cell and basal cell carcinomas can arise and ulcerate in the setting of stasis or as a complication of a venous ulcer. Thus, it is often difficult to ascertain whether the malignancy arises de novo or results from the ulcer. Therefore, biopsy is recommended in nonhealing or in atypical chronic venous ulcers.[6]