

Bilddatengestützte Navigation zur Steuerung der interstitiellen Lasertherapie von vaskulären Malformationen im Kopf-Hals-Bereich

Image-guided navigation for interstitial laser treatment in vascular malformations of the head and neck

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Purpose

Laser-induced interstitial thermal therapy (LITT) is a minimally invasive surgical technique for the treatment of haemangioma and vascular malformations. As the technique is interstitially applied, the placement of the laser fibre occurs remotely from the operator/surgeon and is not visible as would be the case in an open surgical procedure or by percutaneous laser application. Image guided navigation-controlled LITT offers a non-invasive safe treatment option.

Material and Methods

Multiple image data navigation guided LITT was performed in patients (five procedures) with giant venous malformations of the maxillofacial area. The system consisted of a special new developed Nd:YAG laser fibre introducer set in conjunction with fused computed tomography and magnetic resonance based surgical navigation.

Results

As a result of the 3-D reconstruction for laser surgical planning and the defined target areas for laser probe navigation, the application of the interstitial laser treatment could be performed exactly. In all cases, control examination clearly showed a diminished tumour volume and all patients reported subjective amelioration.

Conclusion: The results suggest that navigation-guided LITT can be performed safely with preserving of vital structures and can be effective in the treatment of complex vascular malformations.