Materials and Methods: Perimed 5000 Laser Doppler flowmetry was used to measure the perfusion (perfusion unit, PU) of skin in the temporal (A) and lower arm (NA) regions. The temporal artery or the upper arm was occluded for 2 min, then released, which was followed by reactive hyperemia. Also the effects of 25 IU BT injected under the forehead skin on PU were observed.

Results: In the skin of temporal region PU changed from control PU: 73,01±15,4 to occlusion: 51,64±7,16, then after release to 110,76±22,56. In the skin of upper arm, PU changed from control PU: 10,4±1,2, to occlusion: 1.9±05, then after release to 48,8±25,5. In the forehead skin BT elicited a biphasic response then PU returned close to control, whereas BT inhibited reactive hyperemia; PU changed from 70,63 ±16,08 to occlusion 55,73 ± 6,75 and after release to 71,37±29,22.

Conclusion: Thus there is 1) a higher level of microcirculation in the temporal region of the forehead skin than that of the forearm, 2) ischemia/reperfusion elicited greater reactive hyperemia (RH) in the forearm skin then in the temporal skin 3) BT interferes with the mechanisms eliciting reactive hyperemia.

THE ORIGIN AND COURSE OF THE INFRAPATELLAR BRANCH OF THE SAPHENOUS NERVE: AN ANATOMICAL STUDY

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Introduction: Nerve injury of the saphenous nerve or infrapatellar branch seems to be a frequent complication following knee surgery or trauma. Denervation results vary and in some cases no pain relief is achieved. This might be due to anatomic variation. The purpose of this anatomical study is to identify variation in the course of the infrapatellar branch and saphenous nerve.

Materials and Methods: We dissected 18 cadavers from adult donors. Medial to the knee, the saphenous nerve and infrapatellar branch were identified and followed proximally to the point where the infrapatellar branch branched from the saphenous nerve. The location where the infrapatellar branch came off from the saphenous nerve relative to the knee joint and where the branch and nerve passed the knee joint were measured.

Results: A total of 23 infrapatellar branches were found. We identified 10 branches that came off the saphenous nerve between 0-10 cm proximal to the knee joint, 3 branches at 10-20 cm, and 9 branches at >20 cm. Between the patella and semitendinosus tendon, the knee joint was crossed by 5 branches in the anterior, 15 in the middle, and 2 in the posterior one-third. 13 of the 18 saphenous nerves crossed the knee joint in the posterior one-third and 5 in the middle one-third of the line.

Conclusion: The origin of the infrapatellar branch and the location at which it passes the knee are highly variable. This, in addition to people having multiple branches, might explain why denervation is frequently unsuccessful. Based on the anatomical findings, we propose a more proximal diagnostic nerve block to help differentiate between a distal-middle, or proximal origin of the infrapatellar branch. Appropriate placement of the nerve block might help identify people who benefit from denervation.

EVIDENCE-BASED CONSIDERATIONS ON DONOR NERVE SELECTION AND IDEAL MUSCLE WEIGHT IN LONG-STANDING FACIAL PARALYSIS – THE FREIBURG ALGORITHM

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Introduction: Free functional muscle transfer (FMT) is the standard for smile reconstruction in long-standing facial paralysis. Using the contralateral NVII for innervation of the transferred muscle frequently produces satisfying results. However, axon counts of facial nerve branches used as donor nerves for cross-face nerve grafts
(CFNG) generally decrease with age resulting in insufficient muscle contraction. Also, the volume of the transferred muscle segment necessary for symmetric oral excursion depends on the donor nerve. This study presents our algorithm for donor nerve selection and ideal muscle weight in long-standing facial paralysis.

**Materials and Methods:** In a prospective cohort study, we evaluated facial palsy patients scheduled for dynamic smile reanimation preoperatively via EMG for involuntary masseter muscle activation upon smiling. Six months after noting the first muscle contraction, we assessed smile synchronicity and correlated the results with the EMG results. Furthermore, we correlated oral commissure amplitude with the weight of the muscle segment and the donor nerve used.

**Results:** We recruited 30 patients for the prospective study and included 22 patients in the retrospective analysis. Postoperatively, all patients demonstrated a voluntary smile. The preoperative coactivation of the masseter muscle predicted the outcome regarding synchronicity of the smile with high sensitivity and specificity. Also, we observed a significant increase in oral commissure excursion with increasing muscle weight when using the NV.

**Conclusion:** The lack of masseter coactivation upon smiling predicts the absence of a synchronous, involuntary smile after FMT using the masseteric nerve. The ideal muscle weight depends on the donor nerve and should be smaller for the NV.

**The Prevalence of Residual Limb Pain and Symptomatic Neuromas Following Lower Extremity Amputation: A Systematic Review and Meta-Analysis**

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**Introduction:** Residual Limb Pain (RLP) is associated with (partial) extremity amputations and is defined as pain felt in the remaining part of the amputated limb. A common cause of RLP is neuroma formation after nerve transections. Neuromas can turn into very painful and severely debilitating pathologies, preventing prosthetic use, reducing quality of life and requiring medication. RLP and symptomatic neuromas are often not properly recognized by physicians explaining the varying prevalence in literature. This systematic review and meta-analysis aim to provide a comprehensive overview of published literature on prevalence of RLP and symptomatic neuroma following lower extremity amputation.

**Materials and Methods:** Studies reporting the prevalence of RLP and symptomatic neuroma pain in patients who have had a lower extremity amputation published between 2000 and 2020, were identified in PubMed and Embase. Random-effects meta-analyses of proportions were performed to quantify the prevalence of RLP and symptomatic neuroma. Subgroups were identified and analysed.

**Results:** Twenty-four articles were selected for this meta-analysis including data of 6716 patients in 13 different countries: 17 studies reported RLP prevalence, 4 studies reported symptomatic neuromas prevalence, and 3 studies reported both. For RLP, the pooled prevalence was 59% (95% CI: 51-67). For symptomatic neuromas, the pooled prevalence was 15% (95% CI: 7-28). RLP subgroup analysis showed statistically significant higher prevalence in patients aged >50 years, with geographic location within the United States, follow up >2 years, and in studies using a self-administered questionnaire for data collection.

**Conclusion:** RLP occurs in 59% of patients who have had a lower extremity amputation and symptomatic neuromas among 15%. Physicians should be aware that a higher prevalence of RLP may occur among older patients, American populations, and after longer follow-up. Knowledge of their high prevalence may result in better awareness among physicians, in turn providing timely and adequate treatment.