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ORIGINAL ARTICLE

Urinary cotinine testing as pre-operative assessment of patients undergoing free flap surgery

Évaluation d'un test de dépistage préopératoire du tabac par dosage de la cotininurie dans la chirurgie des lambeaux libres

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Summary
Background. — The identified risks of smoking with regard to operated tissues are so elevated that it is clearly dangerous to operate a smoker when the proposed intervention is neither vital nor urgent.
Materials and methods. — The aim of this prospective study was to evaluate a simple method of screening patients who smoke, with the evaluation carried out before agreeing to carry out free tissue transfer. The purpose of the testing was to hold the patient responsible for his actions and minimize smoking-related complications by canceling or postponing the planned operation if the patient continued to smoke. Screening included use of a standardized questionnaire at the first consultation and detection of cotinine using a urine test strip 7 days before the scheduled surgery. Patients were informed that in the event of positive results, the operation would not take place. A six-week preoperative smoking cessation period was mandatory.
Results. — Seventy-six patients were included in this study. Among them, 25 (32.9%) reported being former smokers and 11 (14.5%) admitted in the initial questionnaire to being active smokers. Six patients (7.9%), including one self-reported non-smoker, tested positive for cotinine, and their operations were cancelled.
Conclusion. — Screening using a questionnaire and cotinine detection appeared to constitute a simple, inexpensive, rapid and reliable test. It allowed us to refuse to operate 6 non-compliant patients and was thereby likely to diminish morbidity in the free tissue transfers carried out in our ward.

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Résumé
Introduction. — Les risques établis du tabagisme sur les tissus opérés sont tels qu'il est clairement dangereux d'opérer une personne fumeuse lorsque l'intervention envisagée n'est ni vitale ni urgente.
Matériel et méthodes. — Le but de cette étude prospective était d'évaluer une méthode de dépistage simple des patients fumeurs avant un transfert tissulaire libre. L'objectif de ce dépistage était de responsabiliser le patient et de réduire au maximum les complications liées au tabagisme en récusant ou en reportant l'intervention prévue en cas de poursuite du tabagisme. Le dépistage comprenait un questionnaire standardisé lors de la première consultation et une détection par bandelette urinaire de la cotinine 7 jours avant l'intervention. Les patients étaient informés de l'annulation de l'intervention en cas de test positif. Un délai de 6 semaines de sevrage préopératoire devait être respecté.
Résultats. — Soixante-seize patients ont été inclus dans cette étude. Parmi eux, 25 (32,9 %) ont déclaré être d'anciens fumeurs et 11 (14,5 %) ont admis être fumeurs actifs lors du questionnaire initial. Six patients (7,9 %) dont un qui se disait non-fumeur ont été contrôlés positifs au test de cotininurie et leur intervention a été annulée.
Discussion. — Ce dépistage associant un questionnaire et un test de cotininurie nous a paru être un test simple, fiable, rapide, peu coûteux qui aura permis de récuser 6 patients non observants, et par là de diminuer probablement la morbidité de nos transferts tissulaires libres.

Introduction

In addition to their obvious surgical and psychological consequences, postoperative cutaneous necroses have forensic implications and complications that are to be avoided at any cost. Fortunately, preventive measures are relatively easy to take when planned surgical interventions are non-vital and/or non-urgent, which is quite often the case in plastic, reconstructive and cosmetic surgery. Among the most noteworthy risk factors for cutaneous necrosis, smoking has maintained role of prime importance.

Numerous studies have demonstrated the deleterious effects of smoking, particularly its contribution to hyperviscosity, tissue hypoxia, cutaneous vasoconstriction and diminished digital blood flow leading to peripheral thrombus and limb ischemia [1,2].

These pathophysiological effects have been observed during clinical practice, particularly in would healing [3], abdominoplasty [4], breast reconstruction [5], digital replantation [6], face lifting [7,8] and breast reduction [9]. In free tissue transfer operations, tobacco accounts for an increased morbidity of donor sites at considerable social cost [10].

Since the relevant data are widely recognized, it is clearly dangerous to operate a smoker when the planned intervention is neither vital nor urgent. The risk benefit ratio is likely to become unacceptable from the standpoint of a judge.

When these types of cases arise, during the initial consultation it is important not only to inform smokers about the risks related to tobacco consumption, but also, in accordance with the French SFAR and the OFTA recommendations (2005 experts conference), to ask them to totally discontinue smoking 6 to 8 weeks before the surgery, and to remain abstinent until scarring is complete. In actual practice, however, many patients keep on smoking regardless of the potential risks, and it is well-known that a substantial proportion underestimate the number of cigarettes they smoke, at times going so far as to deny the fact of their smoking [11].

The goal of this prospective study is to evaluate a simple screening test tailored to patients who smoke and are planning on undergoing free tissue transfer. The objectives of the screening are to hold patients responsible for their action and to maximally reduce tobacco-related complications by canceling or at least postponing their operations in the event that they continue to smoke.

Patients and methods

All of the patients due to undergo tissue transfer microsurgery were included in this prospective study from which, for obvious reasons, emergency interventions were excluded. The questionnaire in Appendix A was submitted to all patients during the initial consultation.

Given the potential risks incurred by smokers in this type of operation, they were asked to completely stop smoking six weeks before surgery, for which they would not qualify were they to continue. All of them reiterated their commitment to accept and respect this constraint. In order to prove that they had indeed discontinued, a qualitative test (Drug-Screen Cotinine Rapid Test-nal von Minden GmbH) designed to detect the presence of cotinine in urine was carried out one week before the scheduled interventions, at the same time as the pre-anesthesia consultation.

The patients were told that were they to test positive during the consultation, the scheduled operation could be called off. A tobaccology consultation and initiation of pharmacological or non-pharmacological therapy was proposed to all of those who smoked. When they were using nicotine replacement products, they were systematically obliged to stop doing so, 5 days before urinary cotinine testing, in order to avoid any false positive result.