

Evaluation of vascularized graft reconstruction of the mandible with Tc-99m MDP bone scintigraphy

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Aim: The aim of this study was to evaluate the value of bone scintigraphy for the assessment of graft viability following vascularized bone grafts in patients with mandibular reconstruction. **Methods:** We investigated 16 patients with vascularized grafts from the fibula (13 patients) and iliac crest (3 patients) in the last 8 years. For the follow up of all these patients, Tc-99m MDP bone scintigraphy was performed between 2–10 days postoperatively. SPECT study was included in 5 patients. For the evaluation of the grafts, a six-grade scoring system was used. The grading system was based on a comparison of tracer uptake between graft and the cranium. The uptake was defined as increasing from grade 6 to grade 1. **Results:** Thirteen of the 16 grafts had an uncomplicated clinical course. Complications in the graft occurred in three patients. In the analysis of planar scintigrams, patients with uncomplicated healing showed increased uptake in 12 of the 13 grafts (grade 1–3) and 1 showed the same level tracer uptake compared to cranium (grade 4). In the failed 3 grafts, decreased uptake was observed (grade 5 and 6). In 5 patients, SPECT was performed in addition to planar imaging. In these patients, 4 of the 5 grafts had an uncomplicated clinical course and 1 had a complicated one. In the analysis of SPECT images, while all the grafts with an uncomplicated clinical course exhibited increased uptake (grade 1–3), the failed graft showed decreased uptake (grade 6). **Conclusion:** Three-phase bone scintigraphy performed within 10 days after the mandibular reconstruction is a useful tool to monitor the viability and early complications of vascularized mandibular bone grafts. SPECT is also recommended. It may contribute to interpretation of the bone scans and to precise assessment of graft viability.

Key words: bone scintigraphy, viability, vascularized grafts, mandibular reconstruction