Results: All flaps were successfully transferred, the results of facial aesthetics were satisfactory in all patients. There was one partial necrosis in the region most to the pedicle of the FRF and one wound dehiscence. The complications were treated with local conservative methods, the wuom s were delayed healing. Follow-up periods varied between 9 and 20 months (mean follow up 13.2 months) and all of the patients are survival during which there was one recurrence.
Conclusion: The TMF and the FRF are easy to harvest and low morbidity, and compatible with the principles of oncologic resection, which should be considered the method of choice in repair of large orbito-maxillofacial surface defects after resection of the tumors.

PD.236 Reconstruction of fronto-orbital defects with biomaterials

K. Aitasalo, I. Kinnunen, M. Peltola. *Turku University Central Hospital, Dept. of Otorhinolaryngology, Finland*

Introduction: Bioactive glasses are capable of chemically bonding to bone tissue. There materials have osteoconductive properties. The composites of bioactive glass with biodegradable materials have been tested to increase the ability to shape the skull.
Materials and Methods: A retrospective review was conducted of the results of 150 patients. 62 patients were reconstructed with frontal sinus obliteration after chronic inflammations, 65 patients were operated for fronto-orbital traumas and 23 patients were reconstructed after fronto-orbital tumor resections from 1991–2004 in our ENT Department. Tumors and traumas involved the nasopharyngeus, the skull and/or the orbits. For dura reconstruction we used fascial lata and fibrin glue to seal the entire defect. In extensive defects in the skull base and orbit we used bone substitutes such as bioactive glass (65), hydroxyapatite (6) and calcium phosphate (5). The frontal sinus was obliterated with bioactive glass granules. 10 of the patients were preoperatively irradiated to a dose of 60–65 Gy.
Results: In all cases the tumor resections and reconstructions, sinus obliterations and trauma reconstructions were well tolerated with a good functional and cosmetic results. Three of the 62 frontal sinus occlusion were re-operated (5%) during the follow-up of 5 years. The re-operations were caused by a new mucocele. In fronto-orbital reconstructions we have re-operated orbital floor in four cases (7%), when the patients have postoperative diplopia or enophthalmos. All 12 benign and 6 of 11 patients (55%) with malignant tumors are alive with a follow-up of 38 mo. Two of 23 (9%) the complicate tumor and trauma cases were re-operated due to local mucocele.
Conclusion: The biomaterials have been a safe, stabile and osteoconductive material in follow-ups. The reconstructions with bioactive glass, hydroxyapatite and calcium phosphate are associated with a low morbidity and have given a good functional result.

PD.237 Leech therapy for the salvage of revascularized free tissue transfer with surgically unsalvageable venous obstruction

D.B. Chepeha, T.N. Teknos, A.R. Rudzik, M.E. Prince, J. Kim, K. Fung, J.S. Moyer, C.R. Bradford. *University of Michigan Medical Center, Ann Arbor, MI, USA*

Introduction: While excellent success rates for free tissue transfer have been reported, flap failures do occur. The most common cause of these failures is venous obstruction. Leeches can be used as an alternative method for re-establishing venous outflow until inosculation occurs. We wished to assess the efficacy and associated complications of leech therapy for head and neck free tissue transfer patients with surgically unsalvageable venous obstruction.
Materials and Methods: 16 patients received leech therapy between January 1995 and March 2004. Mean age 51.3 (21–73); M:F, 9:7. Inclusion criteria were surgically unsalvageable venous obstruction, evidence of good arterial inflow, and an accessible flap site for leech application. Patients were placed on a protocol consisting of continuous leech (Hirudo medicinalis) placement until inosculation, intensive care unit monitoring, arterial line placement, frequent blood testing, antithrombotic pharmacotherapy, blood transfusions, and antibiotic prophylaxis. Outcome variables were successful salvage of free tissue transfer and associated morbidity, including intensive care unit monitoring length, blood transfusion requirement, complications arising during leech therapy, and long term flap survival, assessed on patients surviving more than one year after surgery.
Results: All 16 flaps survived in the acute phase. 7/8 (88%) flaps survived long-term. On average, 270 leeches were required for each patient, and mean time until inosculation was 6.9 days. The average intensive care unit monitoring was 9.9 days. An average of 20 units packed red blood cells per patient was necessary. Intensive care unit psychosis and pre-renal azotemia were the most frequent complications
Conclusion: Aggressive application of the leech therapy protocol can salvage free tissue transfers with venous obstruction that are otherwise unsalvageable. The associated morbidity can be significant, therefore, close monitoring is advised and the risks associated with losing the free tissue transfer must be weighed against the risks of leech therapy.

PD.238 Free flap salvage. Surgical experience in 6 patients

S. Stavrianos, C. Assimomitis, G. Lagogiannis, G. Papadimitriou, G. Kokkalis, A.D. Rapidis. *Departments of Plastic and Maxillofacial Surgery, Greek Anticancer Institute, Saint Savvas Hospital, Athens, Greece*

Introduction: Free tissue transfer with microvascular anastomoses is considered today to be the most sound and widely used reconstructive technique in the treatment of surgical defects in the head and neck area. The purpose of this study is to report on our experience regarding free flap reexploration due to vascular compromise. Free flap loss and free flap salvage are reported to range between 3–5% and 42–68% respectively.
Materials and Methods: During the years 1999–2004, 71 free flap reconstructions on 70 patients were performed in our Department. Six patients were reexplored due to vascular pedicle thrombosis (8%). Vascular compromise was evident between the first and fifth postoperative day (mean time 3.25 days). Free flap monitoring included clinical observation, handheld Doppler ultrasonography and pinprick testing, according to our protocol. The venous anastomosis of 4 fasciocutaneous and 2 osseofasciocutaneous radial forearm flap were revised either directly or with the use of vein grafts. Two arterial anastomosis were revised using a vein graft. Four patients had received preoperative radiotherapy for head and neck cancer. We have used angioplasty in two patients and streptokinase infusion in one patient.
Results: Five patients were operated in addition one to three times after the initial procedure (mean two times). Free flap salvage was achieved in 5 out of 6 patients (85%). Arterial thrombosis and delayed exploration resulted in complete flap loss in one case (no-reflow phenomenon).