

amniotic membrane manufactured by the patented technology AMNIPUR, preserving regenerative properties of the amniotic membrane. AM is already applied on a Santyl carrier, so it is easily applied on wound bed covered by secondary sterile gauze.

RESULTS: We observed excellent biocompatibility and rapid acceleration of epithelialization and wound healing together with outstanding long-term results within all patients with burns and toxic epidermal necrolysis treated with Amnioderm at our department.

CONCLUSION: Successful therapy of various types of wounds with AM opens further wide possibilities for clinical application with superior outcomes for our patients.

OP9

Collagen/Chitosan Dermal Substitute Enriched by Hyperstable FGF2: 4 Years of Development

Martin Knoz, B. Lipovy, L. Vojtova, J. Holoubek, J. Zidek, J. Babrnakova, V. Pavlinakova, L. Vistejnova, V. Stepankova, E. Filova, Z. Pavlovsky, M. Faldyna, E. Göpfert J. Damborsky, V. Hearnden

*Dept. of Burns and Plastic Surgery,
University Hospital Brno, Brno, Czech
Republic*

Email: martinknoz@gmail.com

INTRODUCTION: Dermal substitutes play an important role in the treatment of full-thickness skin loss defects. Process of prothesis neovascularization is crucial for so-called neodermis formation, improves metabolic and oxygenation conditions of the healing tissue, allows the migration of growth factors, etc.

MATERIALS AND METHODS: The unique bilaminar skin prosthesis consists of a porous biopolymer foam enriched with stable FGF2 and a layer of polymeric nanofibers. Two different models were used to measure dermal prosthesis neovascularization. The first was the Chick Chorioallantoic Membrane (CAM) assay, the second was a pig animal model and subsequent mathematical analysis of capillary density in histological samples stained with markers of neovascularization, α -SMA (α -smooth

muscle actin) and anti-FVIII. The cutometry and clinical image assessment according to Yeong were performed.

RESULTS: Full biocompatibility of the dermal matrix was demonstrated in both parts of the experiment. Increased neovascularization and fibroproliferation with autologous collagen production were demonstrated by CAM assay and experiment on an animal model.

CONCLUSION: Bilaminar skin replacement in conjunction with hyperstable FGF2 demonstrated biological activity by neovascularization in both the CAM assay and the animal model. Samples of dermal matrix containing hyperstable FGF2 showed clinical superiority.

VP3

Pelvic Reconstruction After Large Sacral Chordoma Resection Using Acellular Dermal Matrix and Double Pedicled Gracilis Muscle Flap Combined with Gluteal Fasciocutaneous Rotation Flap

Julie Triolo, N.C. Buchs, E. Tessitore, D. Hannouche, D. Dominguez, D.F. Kalbermatten, C.M. Oranges

*Department of Plastic Surgery, Hôpitaux
Universitaires Genève, Geneva,
Switzerland*

Email: julie.triolo@hcuge.ch

INTRODUCTION: Sacral chordomas are rare, malignant primary bone tumors. Surgical resection with wide margins, combined or not with radiotherapy, is the only effective treatment with near 50% remission at 10 years. Surgery results in large three dimensional defects, as total or subtotal sacrectomy is often required. The treatment is challenging and requires a multidisciplinary approach. Several reconstructive approaches have been described, classically including rectus abdominis or gluteus musculocutaneous flap and omental flap. We aim at presenting an innovative method of pelvic floor reconstruction using acellular dermal matrix and double pedicled Gracilis muscle flap combined with gluteal fasciocutaneous rotation flap.

MATERIALS AND METHODS: We report the case of a 70 yo patient affected by locally invasive sacral chordoma. The oncological treatment included neuronavigation-assisted

subtotal sacrectomy with en bloc resection at the level of S1-S2 intervertebral disc and laparoscopic abdomino-perineal amputation with terminal colostomy. After the R0 resection was confirmed, pelvic floor was reconstructed with an acellular dermal matrix and a double-breasted pedicled muscle Gracilis flap to avoid herniation of the abdominal cavity organs. The overlying soft tissue defect was reconstructed with an unilateral gluteal fasciocutaneous rotation flap partially deepithelialized to fill the dead space. The donor sites were closed directly.

RESULTS: No surgical complications were observed, with flaps and donor sites healing uneventfully. After 3 days in intermediate intensive care and 22 days in plastic surgery department, he was transferred to rehabilitation center. Walking was reassumed after 2 weeks, sitting after 4 weeks. Satisfying outcomes both functionally and cosmetically for both patient and surgeons were observed at 3 months follow-up.

CONCLUSION: Large sacral defect can successfully be reconstructed with double pedicled muscle Gracilis flap combined with gluteal rotation flap. The association with acellular dermal matrix is recommended to avoid abdominal cavity organs herniation. The oncological, functional results at 3 months are satisfying with minimal donor site morbidity. Presentation Type

OP10

Elucidating the Reasons Behind Hydrogel Induced Cell Elongation and Directed Migration in Schwann Cells

Flavia Millesi, Sascha Mero, Lorenz Semmler, Anda Mann, Paul Supper, Maximilian Haertinger, Sarah Stadlmayr, Ursula Windberger, Harald Rennhofer, Leon Ploszczanski, Tamara Weiss, Aida Naghilou, Christine Radtke

Division of Plastic and Reconstructive Surgery (Department of Surgery), Medical University of Vienna, Vienna, Austria

Email: flavia.millesi@meduniwien.ac.at

INTRODUCTION: Hydrogel fillings have been successful in enhancing artificial conduits, but the ideal hydrogel is yet to be found. Its discovery is impeded by an overflow of available products as well as a lack of in vitro experiments that fully analyse the effects of these hydrogels on cells crucial for nerve regeneration.

MATERIALS AND METHODS: This study investigated various hydrogels advertised for peripheral nerve regeneration. Neurons, Schwann cells and fibroblasts were seeded into the hydrogels and live cell imaging as well as multicolour immunofluorescence panels were performed.

RESULTS: We found prominent differences in morphology and migratory behaviour of cells seeded on the gels. To elucidate the possible reasons behind this, we conducted detailed material characterizations of the hydrogels and found that the hydrogel responsible for increased Schwann cell elongation and directionality consists of highly connected bundles of fibres that promote strain-stiffening, a crucial feature in many biological tissues.

CONCLUSION: These experiments provide a unique systematic assessment of various hydrogels in respect to their material properties and their effect on cells. Our results improve our understanding of cell-material interactions and thereby facilitate tailored fabrication of hydrogels in the future.

VP4

Elucidating the Reasons Behind the Success of Spider Silk in Nerve Regeneration

Aida Naghilou, Karolina Peter, Lena Pöttschacher, Flavia Millesi, Anda Mann, Leon Ploszczanski, Paul Supper, Lorenz Semmler, Tamara Weiss, Ellen H.G. Backus, Helga Lichstenecker, Christine Radtke

Division of Plastic and Reconstructive Surgery (Department of Surgery), Medical University of Vienna, Vienna, Austria

Email: aida.naghilou@meduniwien.ac.at

INTRODUCTION: Spider silk has been established as one of nature's most fascinating materials and has attracted vivid attention due to its unique strength, toughness, and elasticity. The application of the dragline silk of spider genus *Nephila* as a filament for nerve guidance conduits has led to promising results in nerve regeneration. However, the use of spider silk has been phenomenological so far and the reasons for its success are still not identified. This renders a targeted production of synthetic fibrous luminal fillings such as recombinant silk out of reach.