

Painful scar neuropathy: principles of diagnosis and treatment

Andrea Lisa¹, Matteo Murolo¹, Luca Maione¹, Valeriano Vinci¹, Valeria Bandi¹, Francesco Klinger², Marco Klinger¹

¹Plastic Surgery Unit, Department of Medical Biotechnology and Translational Medicine BIOMETRA, Humanitas Clinical and Research Center, Reconstructive and Aesthetic Plastic Surgery School, University of Milan, Rozzano, 20089 Milan, Italy.

²Reconstructive and Aesthetic Plastic Surgery School, MultiMedica Holding S.p.A., Plastic Surgery Unit, University of Milan Sesto San Giovanni, 20099 Milan, Italy.

Address for correspondence: Dr. Marco Klinger, Plastic Surgery Unit, Department of Medical Biotechnology and Translational Medicine BIOMETRA, Humanitas Clinical and Research Center, Reconstructive and Aesthetic Plastic Surgery School, University of Milan, Rozzano, 20099 Milan, Italy. E-mail: marco.klinger@humanitas.it



Born in Milan, Prof. Marco Klinger graduated in Medicine at Milan University. He subsequently obtained specialization in Plastic Surgery and in Microsurgery. He was Clinical fellow at Harvard Medical School in Boston and at Manuel Gea Gonzales Hospital in Mexico City. Actually he is director of Plastic Reconstructive and Aesthetic Surgery School. His activity is based on skin cancer treatment, breast reconstruction, aesthetic surgery, dimorphism and malformation correction, scar treatment, post bariatric surgery and he is conducting researches on tuberous breast and on autologous fat graft in scars.

Dear Editor,

We read with interest the article entitled “Painful scar neuropathy: principles of diagnosis and treatment” (Plast Aesthet Res Vol 2, Issue 4, Jul 15, 2015) where Tos *et al.*^[1] presented a literature review of treatment approaches to peripheral nerve scar neuropathy and the outcomes of neurolysis-associated procedures.

We would like to contribute our treatment experience of neuropathic pain with autologous fat grafting.

Autologous fat grafting is a safe technique that has been used to treat various pathologic conditions in reconstructive surgery. We applied its regenerative properties to treat burn^[2] and hypertrophic scars^[3] and have achieved issue release and quality improvement.

Using Coleman’s technique, we harvested adipose tissue

from the flank or abdominal region. The fat is then processed by centrifugation at 3,000 rpm for 3 min and re-injected with an 18-gauge hypodermic needle into the scar.

We have used fat grafting for the treatment of neuropathic pain conditions such as post mastectomy pain syndrome.^[4] This is a chronic neuropathic syndrome characterized by persistent pain in the anterior side of the thorax, axilla, and may include the upper half of the arm that begins after mastectomy or quadrantectomy. We observed statistically significant pain reduction when autologous fat grafting was used to treat this, evaluated on a visual analog scale scale.

We also performed autologous fat grafting for the treatment of another neuropathic pain condition, Arnold neuralgia.^[5] Arnold neuralgia is a chronic headache of cervical origin caused by scar entrapment of the great

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occipital nerve.

We postulate that our results are due to the induction of architectural remodeling and regeneration, neovascularization and improved hydration by fat grafting. This leads to the release of scar entrapment and anatomical remodeling.

We further evaluate the effect of autologous fat grafting on nerve function in our recent case report^[6] where we describe the case of a 45-year-old male patient who presented with a retracted and painful scar in the nasolabial fold. This scar of traumatic origin was associated with partial motor impairment of the muscles of the mouth. We observed complete restoration of movement with two cycles of autologous fat grafting at the one year follow-up.

The presence of mesenchymal multipotent stem cells in the adipocyte cell fraction of the graft have been demonstrated histologically. These are cells that are responsible for scar remodeling through engraftment and differentiation. Their presence induces fat and loose connective tissue regeneration that leads to increased scar softness and neurolysis.

Furthermore, we hypothesize that autologous fat graft could induce molecular changes in the microenvironment of the post-traumatic scar. This environment is otherwise hostile to nerve regeneration due to the presence of intrinsic

inhibitory factors expressed by the extracellular matrix.

Based on our experience, we consider autologous fat grafting as an innovative solution for neuropathic pain syndromes that are related to scar retraction. The low complication rate and good results indicate that it should be considered as an effective treatment option.

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Conflicts of interest

There are no conflicts of interest.

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