

Histological study on the interactions between an agarose gel filler and the human skin: observations within a year

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At the CRISMENC, Centre for Research and Development in Aesthetic Medicine, Nutraceuticals and Cosmetology of the Department of Biomedical Sciences, the present study has been conducted in order to evaluate the biological interactions between an agarose gel filler and the human skin structures, as there are currently no studies on humans in the indexed scientific literature, where just two histologic studies conducted on rats can be found [1, 2]. The research has been performed through histological observations on biopsies conducted over a 1 year period. 12 healthy female subjects, 35 to 50 y. o., were selected. A 1.5% agarose gel filler was injected in the superficial hypodermis of the upper medial gluteal region by linear retrograde technique. Five biopsies were done: before the implant (T0), after 1 month (T1), 3 months (T2), 6 months (T3) and 1 year (T4) from the implant. Biopsies were fixed in 10% formalin, paraffin embedded, cut, stained and observed by light microscope. After the injection an histiocytic foreign body reaction was observed, basically characterized by macrophage elements and some polynucleated giant cells. The filler at the times T1 and T2 was gradually included in the connective tissue, with an increase of fibroblastic elements and deposition of collagen. No granulomas, fibrotic encapsulation of the implant and lymphocytic infiltrate were observed. At the time T3 a quantitative reduction of the filler was detected, while the cellular and tissue characteristics previously observed remain. After one year (T4) no more filler was present and a marked increase of the collagen fiber bundles remains, which in some areas are not yet well organized. Above all, a complete absence of an immunological reaction is observed. The results of this study confirm the biocompatibility of an agarose gel filler in the human skin until one year after the injection.

References

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Key words

Human skin, agarose gel filler, histology, biopsies.