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Topic: Biomaterials for Plastic and Aesthetic Surgery

Biomaterials for facial aging

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Fountain of youth has always been the dream of mortals since the ancient time. Since ages ago, mortals have always been searching for ways to stay and look young. In the new millennia, retaining a youthful appearance is no longer a dream beyond reach. The advancement in medical technology, especially in the dermatological technology, has made the dream of youth possible.

The signs of aging often begin with the largest organ of human body, i.e. the skin. Facial wrinkles are the prominent sign of aging caused by facial volume loss under the skin, which will lead to skin sagging. The key to retain youth rely thus on prevention and treatment of wrinkles. As minimally invasive treatment, the emergence of intradermal fillers has excited the plastic surgeons. The injectable dermal fillers can be injected into the sagging skin to fill in the lost volume to rejuvenate facial appearance.

These intradermal fillers are divided into three categories which are biodegradable/non-permanent fillers, semi-permanent fillers, and permanent fillers. Biodegradable/non-permanent fillers include bovine collagen, porcine collagen, human collagen, hyaluronic acid and autologous fat and are often used to treat nasolabial folds. They are mainly from animal source and will degrade upon time (3-12 months) and thus can only be used as temporary filler. Semi-permanent fillers include poly-l-lactic acid and calcium hydroxylapatite. These fillers are biocompatible and do not show significant adverse effect when tested on patients. They will gradually degrade *in vivo* upon the formation of replacement tissues. Permanent fillers, e.g. the most frequently used silicone, is often used to treat severe facial volume loss. They are very advantageous for prosthetic reconstruction that requires excessive surgical intervention and low maintenance.

With the increase in demand for non-surgical dermatological enhancement, the world has placed a lot of focus in search of various intradermal fillers that can suite the patients' demand. Young adult need it for youthful feature enhancement, middle aged adult need it for early prevention or volume restoration, while the mature need it for the delay and maintenance of aging related syndrome.

Access this article online

Quick Response Code:

Website: http://parjournal.net

DOI: 10.20517/2347-9264.2016.5

How to cite this article: Cui WG, Zhao X, Zhang YG. Biomaterials for facial aging. Plast Aesthet Res 2016;3:70-1.

Received: *10-02-2016*; **Accepted:** *15-02-2016*

Research is carried on progressively to search for optimal fillers that fulfil the requirement in effectiveness in treating facial aging, durability, no adverse effect on human body and cost effectiveness. Due to this ever increasing demand for better fillers, new formulation are created from time to time in short interval. Hybrid formulation that combines two or more fillers from different categories seems to be the trend of near future owing to its synergistic effects upon combination. Extra gadget such as radiofrequency devices also beneficial in enhancing the treatment efficiency, by prolonging the duration and reduce the number of injection. Minimally invasive treatment of facial aging using intradermal fillers is on its way!

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.