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## **Hair miniaturization evaluation before hair transplant in female pattern hair loss**

### **ABSTRACT**

The androgenic alopecia (AGA) of the woman is defined by a diffuse thinning and a progressive reduction in the density of the hair of the frontal part of the scalp and vertex with the respect of a frontal hair-line. This evolution is done by a process of transformation of the terminal hair into vellus-like hair, called miniaturized hair, under the influence of hereditary and androgenic factors.

Until now, the main used to specify the evolutionary stage of the AGA were primarily based on the clinical classification of Ludwig or that of Norwood-Hamilton in case of male pattern alopecia type. However these classifications bring only one evaluation partial and late of the evolution, because it is known that alopecia starts to be visible only when the density of the hair is already decreased by 50%. It is to say the delay of these classifications compared to the beginning of the development of the process alopecic.

Other methods such as phototrichogram, hair weight, and trichogram have been also proposed to assess the degree of alopecia and hair cycle duration with the anagen-telogen ratio.

The phenomenon of miniaturization of the hair is marked by the reduction in the diameter of the hair, the reduction of their speed of linear growth, the reduction in the total number of hair and thus of their density on the scalp at a later stage.

New methods of measurement were recently reported, based on the quantification of the miniaturization of the hair, allowing a classification which takes into account the "primumovens" of the AGA.

These quantifications of the miniaturization of the hair reveal the major interest of the size of the hair in the early assumption of responsibility of the AGA.

The method of scoring per macrophotography of the androgenic alopecia of the woman is a simple examination procedure which is done in a single shot after shaving a small hairy zone on the donor and receipt area.

It has the advantage of confirming the diagnosis of AGA by the identification of miniaturized hair and quantifying them by a report/ratio with the terminal hair by giving the Rate of miniaturization. This predictive index makes it possible to evaluate the evolutionary risk of the AGA. Before even the appearance of the first visible signs of the alopecia, it allows to specify the topographic zones reached and to follow the evolution of the alopecia.

Within the framework of the hair transplant surgery, the macrophotograph scoring brings invaluable arguments in favour or counters an operational indication, in particular by measuring the rate of miniaturization of the donor area which, if it exceeds 20%, means that this zone is also reached by the process of miniaturization, which generally contra-indicates an occipital harvesting and thus hair transplant surgery.

The method of scoring per macrophotography is a simple examination easily accepted by the patients, they see there a reliable examination of exploration of their androgenic alopecia, specifying the many evolutionary criteria of the AGA, as well as an objective help when with the operational decision.