

Table 3: Percentages of different types of FU (%)

	1-hair FUs	2-hair FUs	3-hair FUs	4-hair FUs	5-hair FUs
Vertex	27.65	53.72	17.23	1.23	0.17
Occipital	29.24	51.31	17.96	1.25	0.24
Temporal	28.26	52.84	17.25	1.43	0.22
Overall	28.38	52.62	17.48	1.30	0.21

FU: follicular unit

Table 4: Correlation analysis between density of follicular units and age

	<i>r</i>	<i>P</i>
Vertex	-0.897	0.000
Occipital	-0.876	0.000
Temporal	-0.788	0.000

r: Spearman correlation coefficient

As the Chinese population is predominantly Han, it is necessary to investigate and study FU and hair density in Han Chinese.

Our study found that the mean FU density in 146 healthy Han Chinese was 74.36 ± 13.33 units/cm². This is lower than the results obtained by Bernstein and Rassman^[3] and similar to the result by Tsai et al.^[8] (71.78 units/cm²). There were no statistical differences between males and females ($P = 0.553$). The mean hair density in healthy Han Chinese was 143.33 ± 28.08 hairs/cm², which is lower than that in whites and Africans^[7]. There were no statistical differences between males and females ($P = 0.464$). The mean FU densities of the vertex, occipital, and temporal regions were 83.32 ± 7.75 units/cm², 82.66 ± 4.12 units/cm², and 57.10 ± 2.97 units/cm², respectively. The mean hair densities were 160.95 ± 20.66 units/cm², 158.90 ± 13.41 units/cm², and 110.14 ± 10.17 units/cm², respectively. These results indicate that there are differences in the FU density and hair density among the different scalp sites of Han Chinese. There was no statistical difference between the vertex and occipital regions, but both had significantly higher values than in the temporal region^[7-9]. This provides us with strong data for the theoretical support of temporal hair transplantation.

The results on the 41 AGA patients indicate that the mean FU density of the occipital region was 77.78 ± 2.99 units/cm² and the mean hair count was 148.12 ± 6.98 hairs/cm². Both results were lower than those in the occipital regions of healthy Han Chinese, and the differences were statistically significant ($P < 0.001$). Orentreich^[10] successfully transplanted non-hormone sensitive hair follicles from the occipital region into the bald area and proposed the donor dominance theory, which has become the theoretical basis of hair transplantation surgery for patients with alopecia. Our research data provide a reference to evaluate the area of donor site that should be transplanted in Han

Chinese AGA patients.

Our research on the distribution of FU types in healthy Han Chinese found that 1-hair FUs accounted for 28.38%, 2-hair FUs accounted for 52.62%, 3-hair FUs accounted for 17.48%, 4-hair FUs accounted for 1.30%, and 5-hair FUs accounted for 0.21%. No FUs comprising more than 5 hairs were observed in our study. The proportions of FU types are different for different races^[3]. Our research indicates that the FU types found in healthy Han Chinese are dominated by 2-hair FUs. The result is consistent with the FU types of whites, whereas the FU types of Africans are dominated by 3-hair FUs.

The result of correlation analysis indicated that FU density decreased with an increase in age; therefore, the FU density at the vertex can be used as an indicator to evaluate the degree of aging in healthy Han Chinese.

Our research findings have provided some theoretical data on the hair distribution characteristics of Han Chinese. These data can contribute to preoperative evaluation, surgery planning, and postoperative outcome evaluation performed by hair transplantation surgeons. The required amount of hair transplantation, area of donor site excision or extraction, postoperative density, and cost may be estimated, depending on the area of recipient site during the preoperative consultation^[11,12]. For example in a male patient with vertex hair loss with a recipient site measuring 2 cm × 2 cm, assuming that all the transplanted FUs survive, the transplantation of 200 FUs can achieve 60% of the normal density of vertex hair. By mean of FUT, this requires a scalp area of about 2.4 cm² to be excised from the occipital region. By mean of FUE, according the theory that it will be not significantly affect the occipital region appearance after the extraction of 40% the occipital hair follicles^[3], this requires a scalp area of about 6 cm² to be extracted from the occipital region. The transplantation of 300 FUs can achieve 90% of the normal density of vertex hair. This requires a scalp area of about 3.6 or 9 cm² to be excised or extracted from the occipital region.

We hope that our results can serve as a reference for clinical practice. In addition, we will continue to collect clinical cases to establish a database for hair distribution of Han Chinese for further research.

DECLARATIONS

Authors' contributions

Images' analysis and wrote the article: Z.H. Guo

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