

Longevity of Hair Follicles after Follicular Unit Transplant Surgery

Muthuvel Kumaresan, Deepa M. Subburathinam

Cutis Skin Clinic & Hair Transplant Center, Coimbatore, Tamil Nadu, India

Abstract

Background: The longevity of the grafted hair follicles is still debated and there are limited literature available on this topic. **Aim:** To assess the longevity of transplanted hairs after follicular unit transfer (FUT). **Materials and Methods:** A total of 112 patients who had undergone FUT were included in the study and their results at the end of 4 years were compared with the 1 year post surgery results by standardized images. The reduction in the density of the grafted hair follicles was graded by a blinded observer in a grading scale. **Results:** Among 112 subjects 50.89% had grade 4, 46.42% had grade 5, 2.67% had grade 6 alopecia respectfully. The 4 year follow up grading of hair loss showed moderate reduction in transplanted hair density in 55.35%, slightly reduced density in 27.67% greatly reduced in 8.03% and no change in the density in 8.92% subjects. **Conclusion:** The hair grafts transplanted may not last permanently for all the subjects. Recipient site influence might affect the growth and long-term survival of the transplanted hairs.

Keywords: Follicular unit transplant, follow up, hair transplant

BACKGROUND

A common question among the hair transplant enquiry is how long does the transplanted hair last. There is a paucity of research on this subject. This study was designed to assess retrospectively the longevity of the transplanted hairs after follicular unit transplant (FUT).

AIM

The aim of this study was to assess the longevity of transplanted hairs after FUT.

MATERIALS AND METHODS

Study group comprises male subjects who underwent single session FUT for Norwood Grade 4 and above androgenetic alopecia. Those subjects who had completed 4 years from the date of surgery were selected and followed up for their images and were compared with their images 1-year post surgery. The images were taken in the standard format of five angles—frontal, chin to chest, right and left oblique, and vertex views. The results were graded as good and poor based on the photographic comparison at baseline and at the end of 1-year post surgery. The subjects' images at the

end of 4 years post surgery were compared with the 1-year follow-up images to grade the hair loss in the transplanted area, if any, at the end of 4 years in the following scale:

- No change in the density of grafted hairs
- Slightly reduced density of grafted hairs
- Moderately reduced density of grafted hairs
- Greatly reduced density of grafted hairs

The grading was done by a dermatologist who was not in the surgical team. The surgery for all the subjects

Table 1: Distribution of various grades of AGA in the study group

Grade	Number	%
4	57	50.89
5	52	46.42
6	3	2.67

Address for correspondence: Dr. Kumaresan M,
43/20 Third Cross, Om Ganesh Nagar, Vadavalli, Coimbatore 641041,
Tamil Nadu, India.
E-mail: dr_kumaresan@yahoo.co.in

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was performed at the same center by the same team of surgeons. Slivering and dissection was done under video microscopes, and implantation was done by stick and place method. Chilled ringer lactate was used as the storage solution. Details regarding age, duration of the disease, family history of androgenetic alopecia, and the usage of minoxidil and finasteride post surgery were obtained from the case sheet retrospectively.

RESULTS

A total of 112 subjects were included in the study group. Age-group ranged from 25 to 58 years with mean age

of 33.59 years. The mean duration of the disease was 6.66 years. Among 112 subjects, 57 (50.89%) had Grade 4, 52 (46.42%) had Grade 5, 3 (2.67%) had Grade 6 alopecia [Table 1]. Good results [Figures 1 and 2] were observed in 91 (81.25%) subjects, and poor results [Figures 3 and 4] in 21 (18.75%) subjects at 1-year post surgery follow-up. The 4-year follow-up grading of hair loss showed moderate reduction in transplanted hair density [Figure 5A–O] in 62 (55.35%), slightly reduced density [Figure 6A–O] in 31 (27.67%), greatly reduced [Figure 7A–O] in 9 (8.03%), and no change [Figure 8A–O] in the density in 10 (8.92%) subjects [Table 2]. Family history of androgenetic alopecia was documented in 101 (90.17%) subjects. Among 112

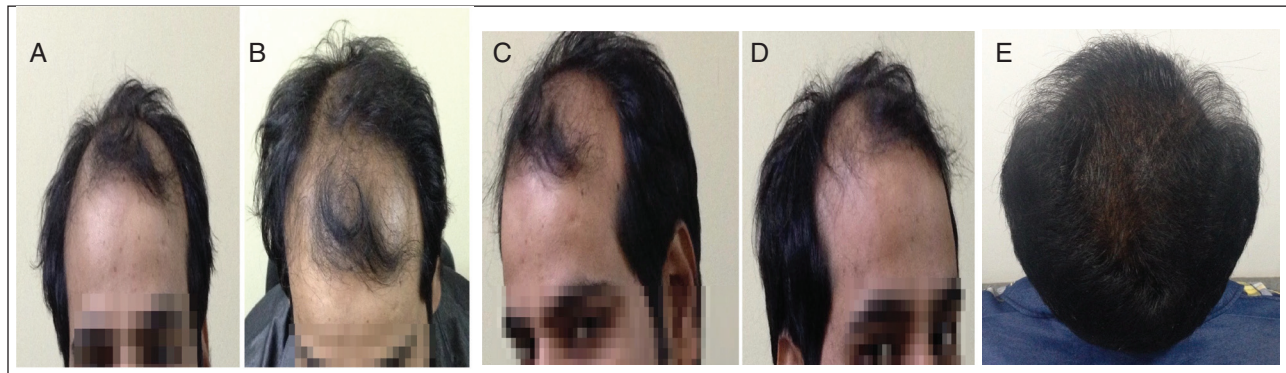


Figure 1: (A, B, C, D, E) Baseline image (for good result)



Figure 2: (A, B, C, D, E) 1-year post hair transplantation (good result)

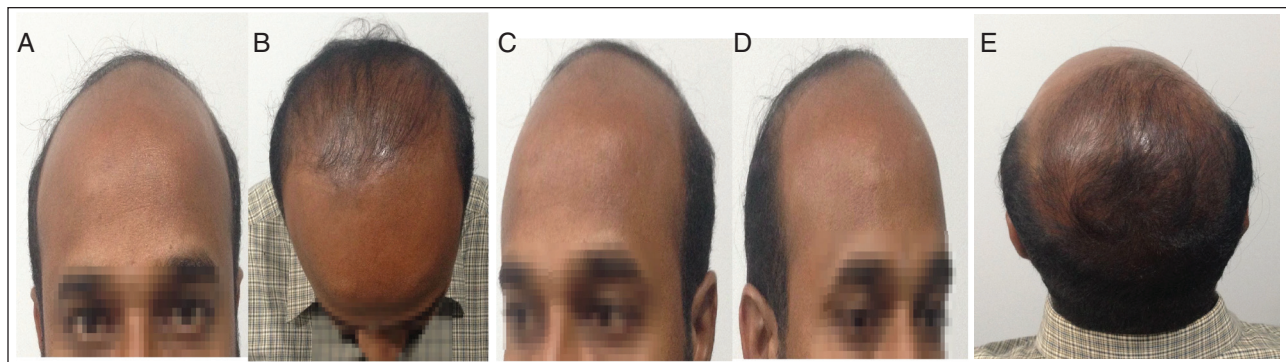


Figure 3: (A, B, C, D, E) Baseline image (for poor result)

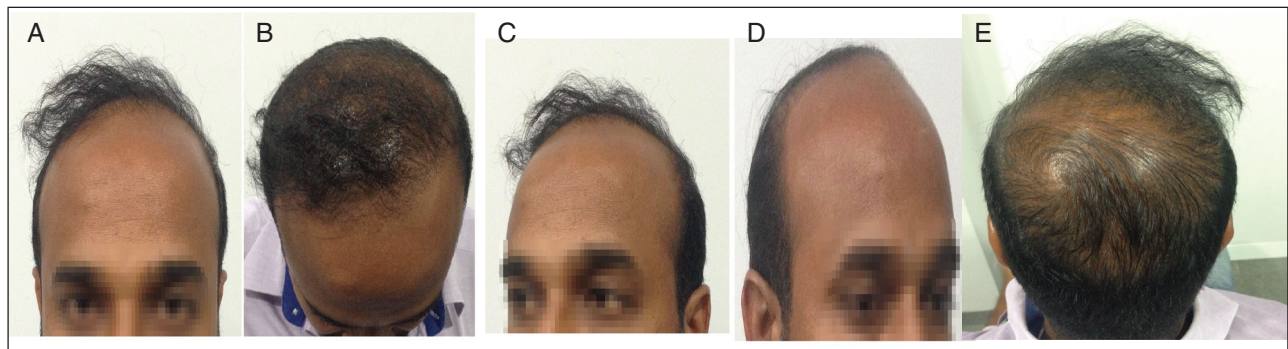


Figure 4: (A, B, C, D, E) 1-year post hair transplantation (poor result)

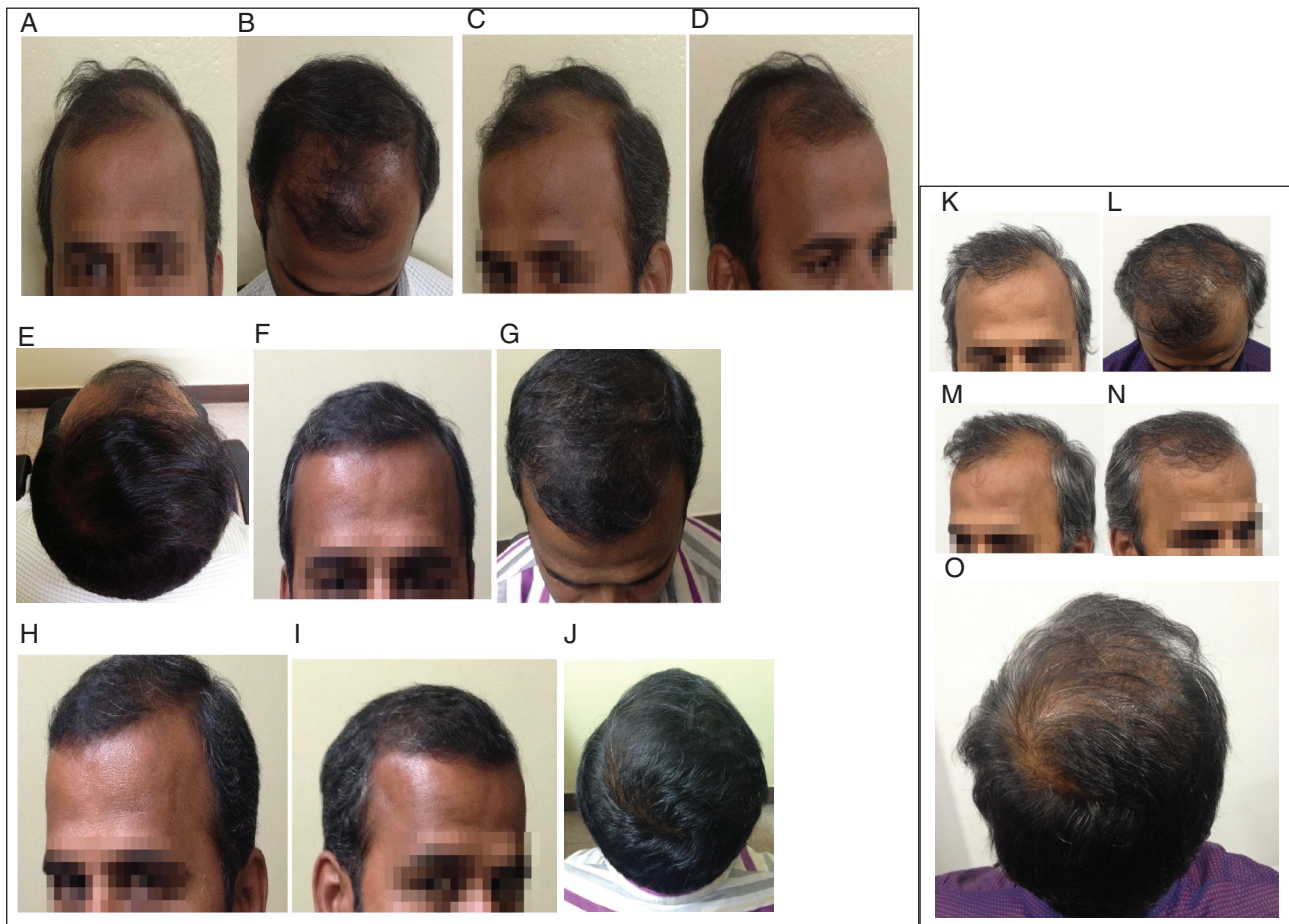


Figure 5: (A, B, C, D, E) Baseline image (for moderate reduction in density 4-year post hair transplantation). (F, G, H, I, J) 1-year post surgery results (for moderate reduction in density 4-year post hair transplantation). (K, L, M, N, O) 4-year post surgery results (moderate reduction in density of transplanted hairs)

subjects, 82 (73.21%) continued using minoxidil and 40 (35.71%) continued using finasteride at the end of 4 years of surgery.

DISCUSSION

The longevity of the hair follicles after FUT is still debated; there are no studies to document the life term of

the transplanted follicles. To date, this study represents the largest reported uncontrolled study for documenting the long-term results of hair transplant. Our results denote that although good results were observed in majority (81%), poor results were seen in 18.75% of cases at the end of 1 year following a single session of FUT. The percentage of poor results is higher although the same team performed the surgeries. Recipient area

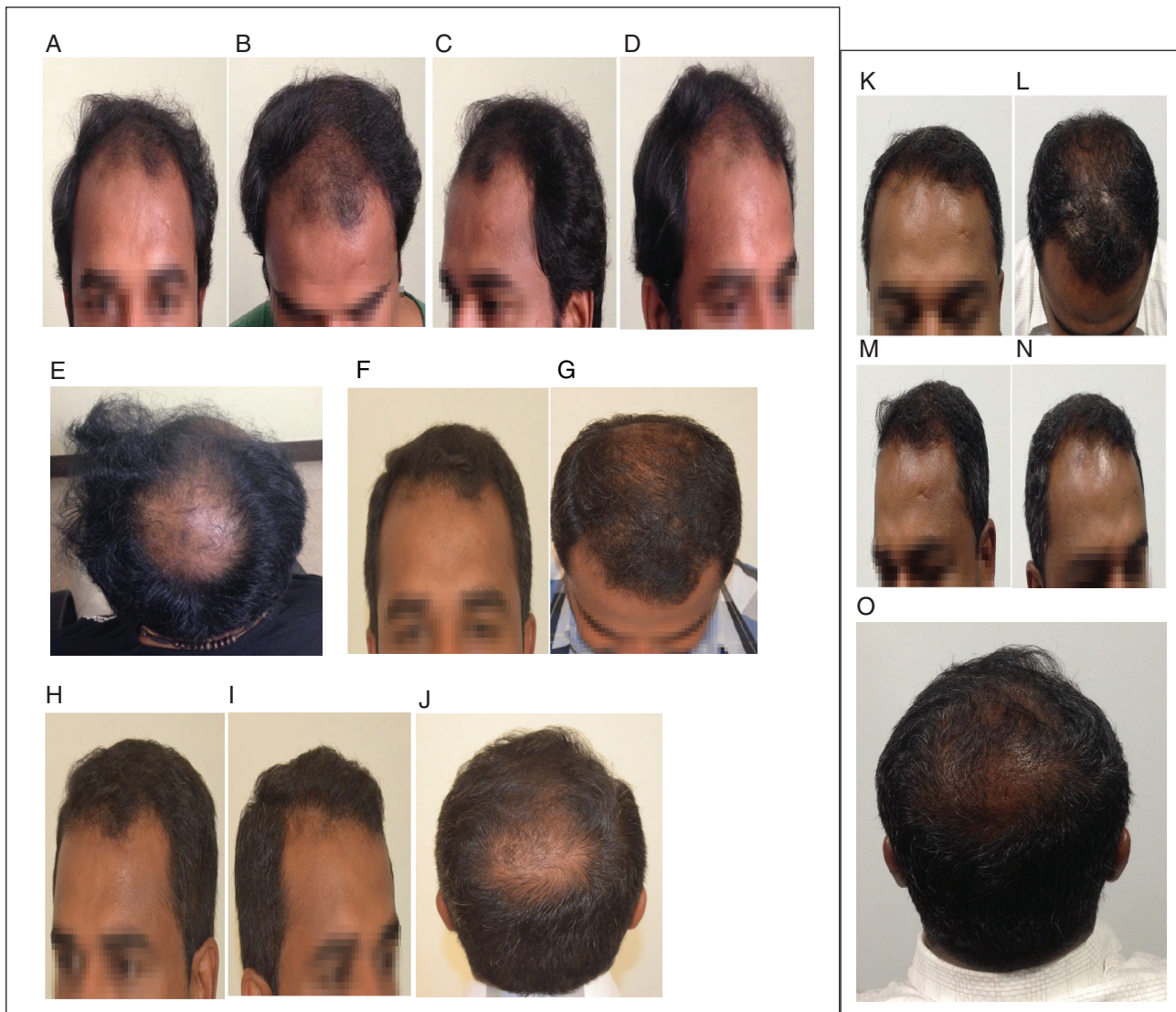


Figure 6: (A, B, C, D, E) Baseline image (for slight reduction in density 4 years post hair transplantation). (F, G, H, I, J) 1 year post surgery results (for slight reduction in density 4 years post hair transplantation). (K, L, M, N, O) 4 years post surgery result (slight reduction in density of transplanted hairs)

characteristics such as vascularity, dermal thickness, and androgenetic influence might have resulted in poor results in these cases. The study group included Grade 4 and above hair loss, subjects with Grade 3 and below might have natural progression of androgenetic alopecia of the baseline hairs, and this might interfere with the interpretation of results post hair transplantation, and hence this group was excluded from the study. At the end of 4-year follow-up post surgery, only 8.92% of subjects had retained the same density of transplanted hairs, and the rest (91.08%) had various grades of reduction in the density of transplanted hairs. The reductions in the density of transplanted hairs were observed subjectively by the study group as well as the observer who graded the hair loss. These findings

of the reduction in the density of the transplanted hair, even though they were harvested from safe donor area, question the theory of donor dominance. The influence of recipient area on the transplanted hairs has been documented in Hwang's^[1] study of grafting the scalp hair to the leg and vice versa. These findings raise the following questions: Does the theory of donor dominance hold ground? Will the recipient site influence the transplanted hairs? Is there any genetic variation in the results of hair transplantation among various races? Another possibility for the reduction in the density of the transplanted hairs could be due to synchronization of the hair cycle post surgery. Synchronization is not clearly documented in the literature and is known to occur at the end of 2 years, and these follicles regrow

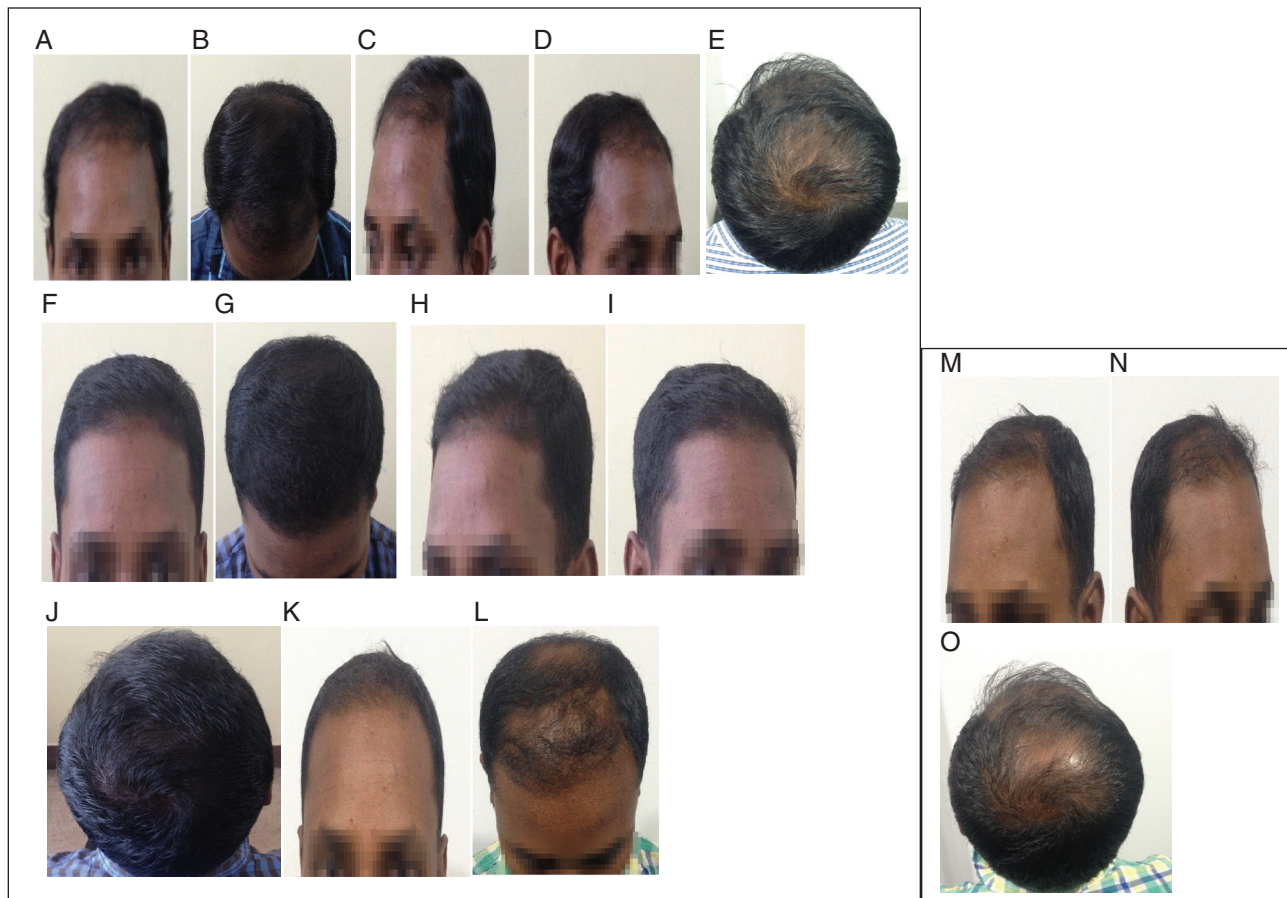


Figure 7: (A, B, C, D, E) Baseline image (for greatly reduced density 4 years post hair transplantation). (F, G, H, I, J) 1-year post surgery results (for greatly reduced density 4 years post hair transplantation). (K, L, M, N, O) 4 years post surgery result (greatly reduced density of transplanted hairs)

after a lag period.^[2] The findings in our study do not seem to be correlating with synchronization. It has been found that the miniaturization does affect the occipital donor hair, and this may be the cause of reduction in the density of the transplanted hairs. Usage of minoxidil and finasteride and their influence in the longevity of the hair follicles in our study were not statistically significant. The limitation of this study was that the hair density counts could not be done in the subjects as this was a retrospective study.

CONCLUSION

The hair grafts transplanted may not last permanently for all the subjects, there is a chance of poor result, even though the surgery was performed with utmost care. Recipient-site influence might affect the growth and survival of the transplanted hairs. These factors

should be discussed with the subjects before the surgery.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/ have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

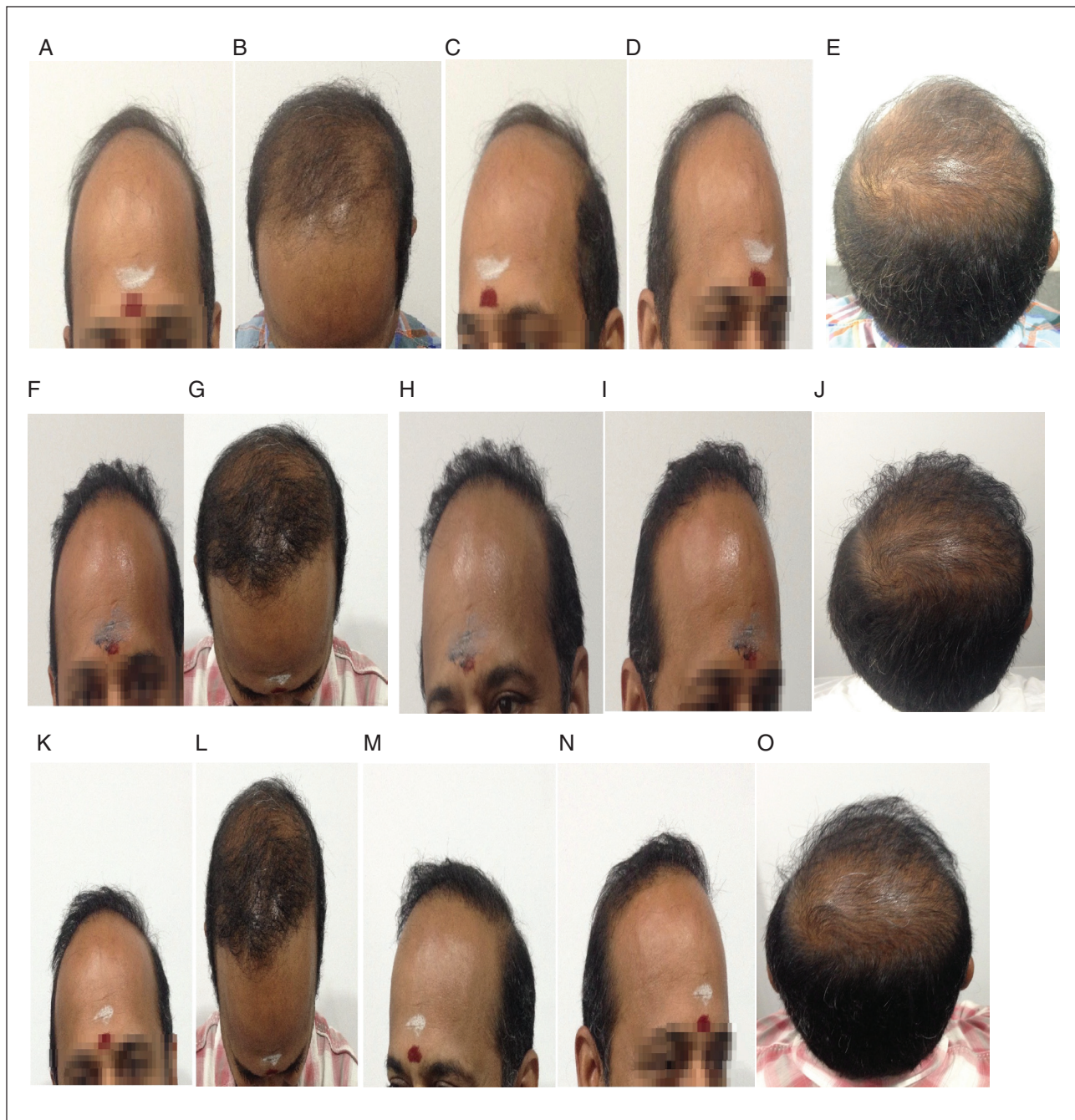


Figure 8: (A, B, C, D, E) Baseline image (for no change in density 4 years post hair transplantation). (F, G, H, I, J) 1 year post surgery results (for no change in density 4 years post hair transplantation). (K, L, M, N, O) 4 years post surgery result (no change in density of transplanted hairs)

Table 2: Grades of reduction in the transplanted hairs at the end of 4 years

Grade of reduction in grafted area	Number	%
Slight reduction	31	27.67
Moderate reduction	62	35.35
Greatly reduced density	9	8.03
No change in density	10	8.92

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