Successful Treatment of Male and Female Pattern Hair Loss with Low Level Laser Light Administered with a Novel Full Scalp Coverage Laser Delivery Device

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BACKGROUND Options for the treatment of hair loss are limited, and include pharmaceutical management, surgical management, cosmetic management, and low level laser light management. Existing laser delivery devices are hampered by poor compliance and cumbersome designs. A new full coverage device has been introduced to address these shortcomings

OBJECTIVE A series of case studies is presented using the full coverage device using global photography to evaluate efficacy and patient evaluations of convenience and efficacy.

METHODS AND MATERIALS Subjects were each given a LaserCap® with instructions to wear the device for 30 minutes every other day. Standardized baseline photographs were obtained and interval photographs for global photographic evaluations were obtained at 6 months. Patients were interviewed at each visit to assess convenience and efficacy of the device.

RESULTS Global photography revealed both increased density as well as improved hair characteristics such as shine. Patient interviews revealed satisfaction with ease of use and efficacy.

CONCLUSION Low level laser light treatment administered by the LaserCap® device produced objective and subjective clinical improvement, and should be considered a viable treatment option for patients with pattern hair loss.

Treatment alternatives to pharmaceutical management of pattern hair loss are needed for patients who are not candidates for, cannot tolerate, or do not benefit from the use of topical minoxidil or oral finasteride. Females in particular are not candidates for oral finasteride due to lack of FDA approval and lack of evidence for efficacy thus further limiting their therapeutic options. Reported here are three cases of successful treatment of male and female pattern hair loss with a full scalp laser delivery device (LaserCap, LaserCap Company, 938 Chestnut Run, Gates Mills, Ohio.)

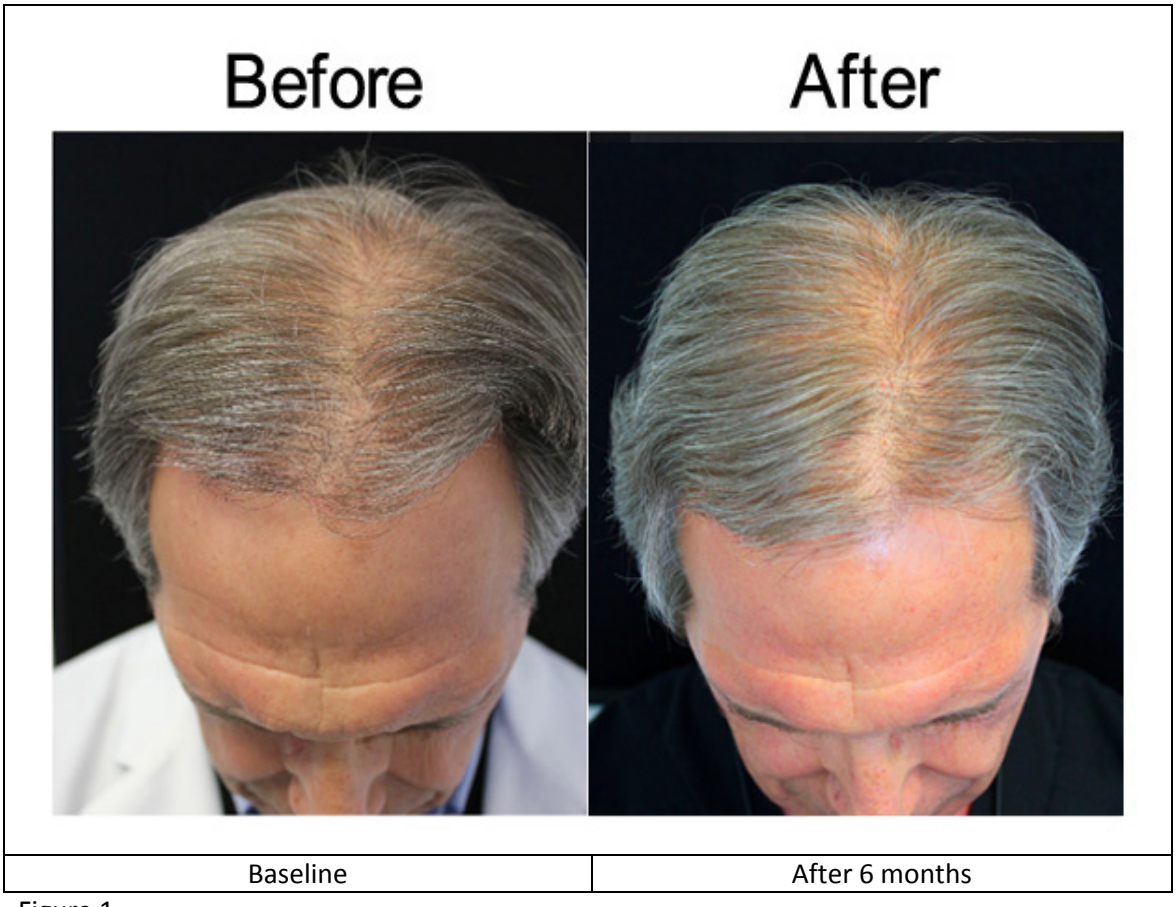
Case 1

Patient is a 71 year-old Caucasian physician with a history of androgenic alopecia for over 40 years. He had a total of #3500 micro-graft hair transplants to the frontal area, approximately 10-15 years ago, and had used no medical treatment to prevent further loss. His hair loss has continued to progress in the non-transplanted areas.

Examination revealed a healthy hair and scalp with a *moderate* (more visible skin than visible hair) hair loss in the frontal area and a *severe* (much more visible skin than visible hair) hair loss in the vertex area. There were two linear scars extending from ear to ear in the occipital area. Findings were consistent with androgenic alopecia -- status post hair transplantation. No inflammation was noted.

Low level laser light therapy was initiated using LaserCap, 30 minutes every other day. No topical or oral hair growth treatments were used. Upon follow up at five months, the patient felt that no significant growth had taken place. He stated that his compliance had been low and he had periods in which he used the device no more than once a week.

On examination the frontal, mid-scalp and vertex hair appeared to be fuller with increased volume. The frontal hairline was better defined than at baseline. Photographs show the comparison between baseline and 6 month appearance.



Baseline	After 6 months

Figure 1

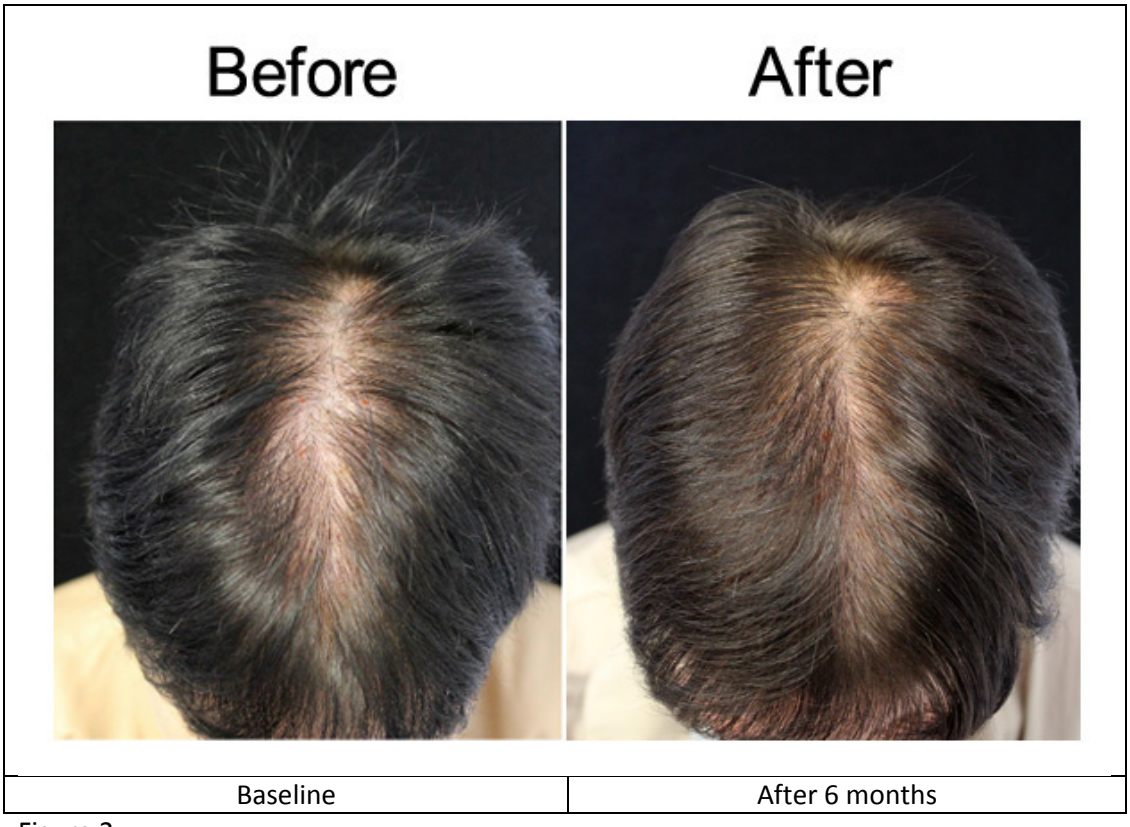
Case 2

Patient is a 70 year-old Caucasian woman with a history of female androgenic alopecia for over 20 years. She had a total of #1200 micro-graft hair transplants to the frontal area, approximately 6 years ago, and has intermittently used medical treatment (minoxidil) to prevent further loss. Patient feels that the hair loss has been stable, and has not worsened. At commencement of laser treatment, she had not used minoxidil for the preceding 7 months.

Examination revealed healthy (dyed) hair and scalp with a *mild* (more visible hair than visible skin) hair loss in the mid-scalp area. There was a barely visible linear scar extending from ear to ear in the occipital area. Findings were consistent with female androgenic alopecia -- status post hair transplantation. No inflammation was noted.

Low level laser light therapy was initiated using LaserCap, 30 minutes every other day. No topical or oral hair growth treatments were used. Upon follow up at five months, the patient felt she was no worse, but also felt that no significant growth had taken place. Her compliance included two 14-day periods in which she was on vacation and did not use the device.

On examination the frontal and mid-scalp hair appeared to be fuller with increased volume. The mid-scalp region showed conspicuous new growth (1.5 inches long) along the central part. The width of the central part was significantly reduced. Photographs show the comparison between baseline and 6 month appearance.



Baseline	After 6 months

Figure 2

Case 3

Patient is a 32 year-old Caucasian female with a history of frontal and mid-scalp hair loss for over 5 years. She delivered a child 18 months ago and feels that the loss might have gotten a bit worse. She continues to take prenatal vitamins and takes Biotin 1gm per day. A video microscopic exam was performed on the mid-scalp and occipital areas. The micro-images revealed significant miniaturization in the mid-scalp but not in the occipital area. On that basis, I made diagnosis of androgenic alopecia (and not telogen effluvium).

Examination revealed generally thinned hair and scalp with a *moderate* (more visible skin than visible hair) hair loss in the frontal and mid-scalp area. Findings were consistent with female androgenic alopecia. No inflammation was noted. A pull test was negative. Blood work revealed a normal free testosterone and DHEAS.

Low level laser light therapy was initiated using LaserCap, 30 minutes every other day. No topical or oral hair growth treatments were used. Biotin and prenatal vitamins were continued. Upon follow up at five months, the patient felt that her hair loss had improved and stated full compliance. She reported she had intermittent headaches (approximately one hour duration, less than twice a month) that she attributed to anxiety and lack of sleep.

On examination the frontal and mid-scalp hair appeared to be fuller with increased volume. The width of the central part had been significantly reduced Photographs show the comparison between baseline and 6 month appearance.

Baseline	After 6 months

Figure 3

DISCUSSION

Options for the treatment of hair loss are limited, and include pharmaceutical management, surgical management, cosmetic management, and low level laser light management. Two FDA approved medications exist for the treatment of pattern hair loss in men and women. Minoxidil is a topical product available for women in a 2% and for men in a 5% liquid, and a 5% foam vehicle. Finasteride 1 mg is an oral medication approved only for men with pattern hair loss. Minoxidil is often poorly tolerated by patients due to sensitivity to the primary ingredient or to a vehicle, and not all patients experience a clinical benefit. The use of finasteride has sometimes been associated with sexual side effects, including loss of libido and impotence.

Alternative treatments are therefore of potential benefit for patients experiencing pattern hair loss who are unable or unwilling to use pharmaceutical products, or for whom these products have provided limited clinical benefit. Low level laser light therapy (LLLT) has been used successfully for the treatment of pattern hair loss, and several light based devices have received FDA 510(k) clearance for this indication. Many users of these devices find them inconvenient, cumbersome, or uncomfortable, thus resulting in diminished compliance.

A new device, the LaserCap®, has been developed to provide the benefits of LLLT while minimizing the disadvantages of existing devices. The LaserCap® fits inside a standard ball type cap, is powered by a belt clip battery pack, and can thus be used in a hands-free manner, dramatically improving compliance. The LaserCap also exposes the entire scalp to light, thereby improving coverage.

These case reports demonstrate efficacy by both global photography as well as by patient self - assessment, and reveal improvements in hair shedding, hair volume, and hair appearance. The current full scalp device offers advantages in scalp coverage as well as compliance due to the discreet design and portable aspect. Longer term use of the device can be expected to maintain hair density and hair shedding at levels satisfactory to the affected patient population.