

LASERs In Hair Transplantation Help or Hype?

by David Seager, M.D.

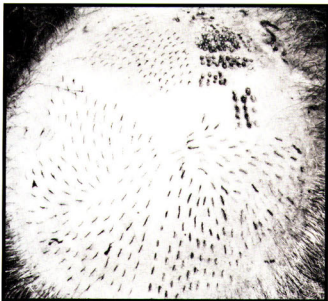
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With hair transplantation, a LASER is simply a tool with which to make "holes" and "slits" in the recipient area - a sort of glorified scalpel. At the cost of \$80,000 to \$120,000 U.S. dollars for a suitable Carbon Dioxide (CO₂) LASER, one has to ask whether there are any material advantages to using a LASER as opposed to cold steel.

The main advantages that I have found so far are:

1) *An almost bloodless operative field in the recipient area.** As the LASER vaporizes tissue, it sears the lateral walls of the "holes" or "slits" that it is producing, and achieves excellent hemostasis. The depth of the

Fig. 1. After incisions. Before planting.
Right - LASER, Left - conventional.



"hole" or "slit" can be precisely pre-determined by varying the power and exposure time on the LASER. The more power used and the longer the exposure time, the deeper the LASER will penetrate. Thus, with experience and a few test holes performed on each patient, one can tailor the depth of the "slits" or "holes" so that the incision remains superficial to the plexus of blood vessels above the galea, yet deep enough to accept the grafts.

In my own experience, less than 1% of the "holes" or "slits" made with suitable LASER settings bleed at all, and even in this small proportion, the bleeding is usually minimal.

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2) *Easy Planting*. Technically, it is much easier to plant grafts into "holes" and "slits" that are made with the LASER rather than with "cold steel". When I first started using the LASER for Hair Transplantation, I used the Coherent Ultrapulse 5000 which is mainly used for making slits. I assumed that the reason I thought the planting after LASER use was so easy, was because the LASER vaporizes a "slit-shaped" defect which produced an elongated "hole" in which to insert the grafts. This differs from the previous method of creating incisions with a scalpel, with no tissue being removed from the slit. I thought that was the only reason why planting grafts into the LASER recipient sites was easier. However, I have since obtained a new LASER made by Sharplan which makes "holes" with the Sharplan Silk-Touch Scanner. Grafts planted into LASER "holes" are also inserted more easily and stay in better, than when planted into identically sized holes made with "cold steel" punches.

I have demonstrated this by using 1.5 mm steel punches and drilling 1.5 mm diameter "holes" with steel punches, in one part of the scalp and then in the similar area of the contra-lateral side drilling 1.5 mm "holes" using a LASER with the same spacing. It was noted that while planting the conventional "cold steel" side, when a central graft was pushed further below the skin with forceps, the grafts planted around it tended to pop up. However, on the LASER side, this did not happen. The walls of the "holes" made with the "cold steel" punch seemed to be smooth and slippery, having been cut with sharp steel then lubricate with blood. But, on the LASER side, the "holes", generally were "dry" and the lateral walls of the "holes" seem serrated or ridged. This, plus the change in elasticity of the lateral walls of the "hole" caused by the lateral thermal damage effect seemed to cause much less tendency for the grafts to "pop".

In other words, difficult planting cases should be very rare with LASER prepared sites.

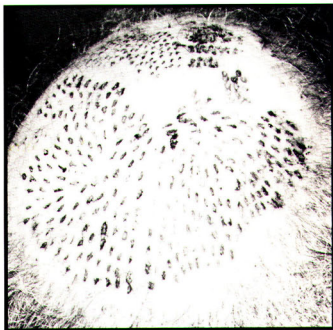
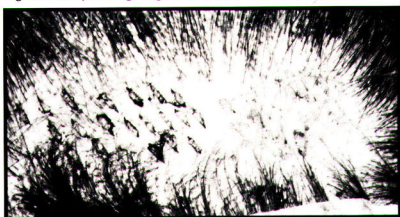


Fig. 2. After planting. Right - LASER, Left - conventional.

Fig. 3. After planting. Right - LASER, Left - conventional.



3) *One can make any number of holes without having to sharpen or sterilize punches.*

4) *A number of doctors report better growth, and more natural looking hair from the LASER side than the control side. I*

Fig. 4.
23 days
post-op.
Right -
LASER,
Left -
conventional.



have heard one well known pioneer in LASER hair transplantation say that he thinks that two sessions of LASER may be equivalent to three sessions of conventional hair transplantation surgery as volume of hair and naturalness of appearance go.

The Disadvantages of LASER Hair Transplantation are:

1) *The tremendous cost* of the LASER machines plus the belief that whatever machine one buys today, may be obsolete a few month later. Just after I had purchased my Coherent Ultrapulse 5000 LASER, which is the very latest Carbon Dioxide LASER, Sharplan had brought out their Silk Touch Scanner, which has many more advantages appropriate to hair transplantation. However, Coherent assures me that they are now developing their own scanner which they claim will be much better than Sharplan's present scanner for hair transplantation. It may be difficult to decide which LASER to purchase. It is also possible that with newer developments being marketed, one may regret not purchasing the other LASER.

2) *Strict requirements and safety measures.* Fire hazards, electrical hazards and potential eye injury must be addressed. One cannot have anything flammable around the operation site such as dry gauze, drapes, oxygen etc. Water and fire extinguishers must be readily available. Those who use intravenous sedation may have additional considerations as far as supplying oxygen to their sedated patients. Everyone in the room including the patient must wear special eye protection, while lasing is going on.

3) *Making the incisions and holes with the LASER is slower than with punches and scalpels.* However, when Co-

Fig. 5. 10 days post-op.
Right - LASER, Left - conventional.



herent makes their new Scanner to attach to their present LASER, we may be able to make several “holes” or “slits” at once. This may actually speed up making the recipient sites.

4) *Making the recipient holes and slits during a second session may be problematic.* Doctors that I have spoken with share my view that when one uses the scalpel or punch, follicles and vital parts of the pilosebaceous unit may either bounce out of the way or be bisected but still regenerate. However, when using a Carbon Dioxide LASER, if one doesn't go exactly adjacent to a previous graft and one's LASER beam transects, I feel that the previous graft is more likely to be irreversibly damaged if it is vaporized. This problem may be reduced by a scanner that makes a set pattern of multiple “holes” or “slits” at one time, and using a matching pattern during subsequent sessions.

5) *Prolonged crusting.** Crusting that forms on grafts after hair transplantation usually remain adherent for a longer period than those formed after conventional hair transplantation. This is especially so when I make slits with my Coherent Ultrapulse LASER, but also true to a lesser extent with “holes” from my Sharplan LASER. A photograph of a patient's crown taken ten days after transplantation with the Coherent Ultrapulse 5000 LASER on one side, and conventional scalpel slits on the other side demonstrates this. Crusts are much larger, more adherent, more heavily blood stained, and stay on longer with LASER hair transplantation.

The next 6-18 months will show us whether or not the extra trouble and expense of incorporating lasers into a hair transplantation practice is worth while. We will then know exactly how completed LASER hair transplants look compared to conventional hair transplantation, as well as gaining experience regarding difficulties encountered during second and third sessions.

* Persistent crusting and redness implies increased damage, which may result in poor growth.editor