

## Introduction to the use of the implanter: part II

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In the last issue of the *Forum*, we described how the implanter has become an indispensable part of our practice (July/August 2011; 21(4):121-122.). Here we describe what the surgeon does at our clinic. When I first saw the implanter technique being used, the surgeon pre-designed the receptor site with incisions and the assistant, with the aid of an implanter, then filled these incisions. While this is a valid way of working, we will review the advantages to the surgeon placing the units directly without the use of pre-designed incisions. We base our point of view on the following assumptions:

- **Surgical skill:** A surgeon is a professional with the greatest of surgical skill. Operating daily augments a surgeon's skill, ultimately shortening the length of time for each insertion and thereby maximizing chances for the graft's survival. Equally important is a highly experienced assistant who is able to reduce trauma to the follicles and to shorten the time needed to load the implanters.
- **Positioning of the units:** We know that strategic positioning of the units, depending on the number of hairs, gives a sensation of greater coverage. It is essential to tell your assistants to load the implanters with the units you require for each part of the receptor site, including double units, depending on your criteria and experience.
- **Incisions:** When we pre-design the receptor site, we normally use needles of greater diameter than required by the follicle. Without pre-made incisions, the incision made by the implanter is always 0.8-1.0mm. The entrance angle is easily managed for either parallel or perpendicular slits.
- **Trauma:** We believe that the direct insertion using a good technique "dissects" (separates) the tissues rather than "cuts" (as we would do with a needle during the pre-design). We sense there is always an avascular angle of entrance that minimizes bleeding and reduces shock in cases where we have to work in-between native hair.

### Positioning in the Surgeon's Hand

The implanter should be held with the index finger, middle finger and back part of the ring finger equidistant from one another on the upper part, middle, and lower, respectively. The thumb is placed in the middle front part opposing the fingers to facilitate the holding of the implanter during introduction. The index finger should not be placed on top of the shooter during introduction as this would lessen stability. The index finger depresses the button when the needle has been introduced into the dermis. The wrist should be at an internal angle of 45 degrees to facilitate the introduction (Figure 1).

To insert the needle into the skin, we can either place the bevel facing up, laterally, or straight down (Figure 2). In the easiest of cases,



Figure 1. Correct hand position.

the posture is not important. When just learning the technique and/or in difficult cases, we advise that the bevel always be placed downwards



Figure 2. Bevel looking up (left), laterally (middle), and downwards (right).

for the following reasons:

- The use of the bevel facing down inserts the unit further into the skin and leaves the unit in its correct position as it passes. If we insert with the bevel facing upwards, the unit can get stuck halfway and will require a second effort with the tip of the needle to lower it into its ideal position.
- When we place the needle with the bevel facing downwards and lower the angle of insertion, we see that there is a point at which the needle slips easily into the dermis and without force. This is the avascular plane that we commented on before, and it is especially important for patients with popping.
- There is no need to turn the needle as we penetrate the dermis; however, there are cases where inserting with the bevel anteriorly or laterally and then turning it after inserting helps.

### Insertion into the Skin

We do not use tumescence in the receptor site, just apply local anesthetic. Thus, we have to create firmness in the skin to ease the insertion and diminish popping by other means, such as the following:

- **In the anterior scalp:** We pull downwards with two fingers on the forehead. This is essential when creating the front hairline. The traction applied to the skin depends on the elasticity of the skin, bleeding, and popping. It is important to feel the traction necessary for each insertion; we change the position of our fingers in each moment as required. When popping results in the need to apply greater traction, we protect the skin with a plaster so that our fingers don't slip and cause trauma to the patient's forehead.
- **In the posterior scalp:** For insertions in the posterior area, with one or two fingers we press the skin backwards (to tense it) and downwards (which permits us to diminish the angle of insertion). In posterior areas, the popping is usually not so frequent so it requires less traction (Figure 3).

Once the left hand is in position (or the opposite for the left-hand dominant practitioner), the right hand positions the point of the needle with the bevel facing downwards onto the skin. The ring finger is placed in the lower part of the implanter and the skin, the pinky finger is on the skin to increase stability. The index finger is placed on the upper back part of the button; we never insert with the finger placed on top



Figure 3. Anterior and posterior traction of the skin.

of the shooter. In this position, we perform a forward movement, decreasing the angle between the implanter and the skin; with little pressure the bevel should slip easily through the dermis. The movement must be “defined” but not forced, and we must be sure to go completely through the dermis. We always seek the avascular plane, which facilitates a smooth insertion, avoiding popping and excessive bleeding. A slight decrease in traction by the left hand while inserting the needle can also help (Figure 4).



Figure 4. Movement of the second finger over the shooter.

When the needle has penetrated to the required depth (normally the length of the follicle is approximately 0.6-1.0cm), the index finger changes its position to the upper part of the shooter and shoots while at the same time we retract the needle from the scalp (Figure 5). It is a rapid and coordinated movement where the position of the finger is changed. After shooting, we immediately retract the needle so that the follicle is left in the correct position. In cases where the follicle remains a little elevated, we use the point of the needle (with the bevel facing downwards) to re-insert the unit to the correct depth (Figure 6). The dermis of the follicle must always be 50% inserted into the skin. If the epidermis remains too deep, this may cause folliculitis postoperatively. In cases of follicles without the epidermis, the movement of insertion must be slower and more controlled to avoid positioning the unit at an incorrect depth. Because of this, we advise leaving skeletonized units until the end of the procedure or combining them with other follicles with dermis to make multiple units (1 + 2 or 2 + 2).

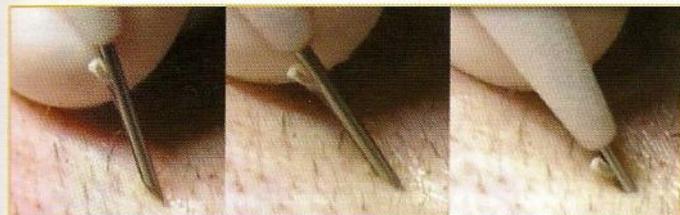


Figure 5. Decreasing the angle between the needle and the skin, the avascular plane is found.



Figure 6. If the follicle remains a little elevated, re-insert using the point of the needle.

### Strategy for Positioning of Units

We always begin the positioning of 1-hair units from the forehead and move backwards; and from the centre point towards the sides. Depending on the experience of the surgeon and the ease of insertion, there should be no difference between going backwards or forwards. In posterior areas, we usually invert the process, from forwards to backwards. For the crown, we start from the central swirl and proceed in a centrifugal manner. We empty the Petri dishes in the same order as the extraction. We usually extract 1,000 units in each series, collected in two groups of 500 units with an extraction time of 3-4 hours (for FUE). We

insert all of the units from the first dish and then we move on to the second dish, in this way respecting the time of hypoxia, with a maximum time of being outside of the body of 4-5 hours. The positioning of the 1,000 units varies between 1-1.5 hours, because we don't lose time making the sites before insertion. Our goal is an average time of 5-6 hours for the extraction and insertion of 1,000 units.

The implanter gives us the technical ability to re-create normal densities, and the only limitation comes from the patient's characteristics including his or her hair and skin. Achieving appropriate density and correct angle is a question of practice (Figure 7; [www.youtube.com/watch?v=oJ-LiM\\_rBRM](http://www.youtube.com/watch?v=oJ-LiM_rBRM)).



Figure 7. With practice you can achieve good densities (example of 80 FU/cm<sup>2</sup>).

### Complications

Complications can include the following:

- **Bleeding:** We normally work in a seated posture with the patient at an angle of 45 degrees or less for the frontal area and 60 degrees or more for the crown area. When there is more bleeding than desired, we must first check that the patient is not hyper-extending the neck backwards or excessively tilting (a situation that can compress the venous blood flow). The second measure is to elevate the patient as close as possible to a position of 90 degrees, even though we may have to operate standing up. The third measure is to seek an adequate angle of insertion of the needle to find the avascular plane, which minimizes the trauma from insertion. We also can try increasing the traction applied with the left hand to the patient's forehead, placing the point of the needle with the bevel facing downwards, and then releasing the traction slowly until we find the point where the needle slips easily into the dermis. All of this coupled with the adequate dosage of epinephrine should give us the required result.
- **Popping:** This is the most undesirable complication. When it occurs, our best defense is the traction movement carried out by the left hand. We must first see which of the two types of traction, anterior (most frequent) or posterior, is the most appropriate. Maximizing the angle of insertion and looking for the avascular plane (as noted before), help to avoid “placing pressure” when inserting. Increasing the distance between the grafts may also be necessary. The maximum pressure is applied in the moment that the needle perforates the skin. To compensate for this, try to rest the needle in a vertical position over the skin until the needle punctures skin and then seek the desired angle of the bevel with a rapid forward movement so that it slips slightly. Doing the same with sideways movements also helps.

There are different methods and tricks for successfully using implanters. With practice and patience, implanters can become an indispensable part of your hair transplant practice. ♦