

Anatomy and Applications of the #15 Scalpel Blade and Its Variations

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Abstract

Scalpels have been used to make skin incisions since the advent of “modern” dermatosurgery. #15 Scalpel blade and #3 handle (Bard-Parker handle) are most frequently used by a dermatosurgeon. Besides the proper equipment, appropriate technique is mandatory to ensure a “precise” incision. In this article, we discuss about the anatomy, variations, and different uses of the #15 scalpel blade and the ideal method of making a “precise” skin incision.

Keywords: #15 scalpel blade, dermatosurgeon, method, skin incision

INTRODUCTION

Scalpel is an essential dermatological tool used “for making skin incisions, tissue dissections, and a variety of surgical approaches since the onset of ‘modern’ surgery.”

Scalpel blades come in different sizes, identified by a blade number, and each serving a different purpose. These are almost always made of hardened-tempered stainless or high carbon steel.

In dermatology, #15, #10, and #11 are the most commonly used blades, as they produce precise incisions while maintaining cosmesis—a paramount consideration to a dermatosurgeon.^[1] We present here a review of the #15 blade that is most popularly used worldwide. Structure of the blade is described as follows [Figure 1]:

1. Sharp tip.
2. Cutting edge—small and curved.
3. Slot for scalpel handle—mostly a nonattached and replaceable blade is used. A key-like slot at the angled projecting base securely locks the blade to the handle by sliding the end of the handle in or out of the slot (“arming” or “disarming”), frequently assisted by a stabilizing grasping instrument.
4. Spine of the blade—the unsharpened, rigid edge.

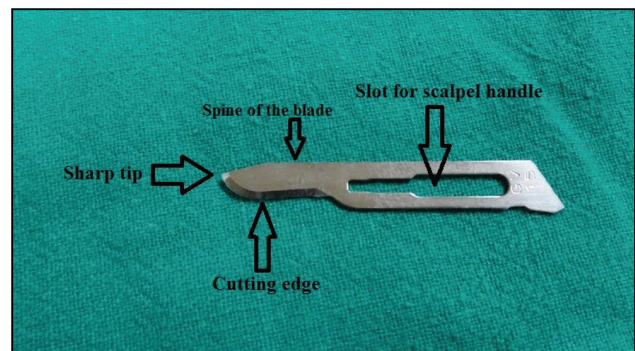


Figure 1: #15 scalpel blade showing its different parts

HOW TO MAKE YOUR “INCISION WITH PRECISION”

Your “incision with precision” requires careful planning and skilled execution. Such an incision can be made if the following steps are strictly followed:

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1. The patient should be sitting or lying in a neutral position with skin undistorted to correctly establish the beginning and ending incision landmarks.
2. When a fusiform skin incision is planned, the long axis of the incision should be along or parallel to the relaxed skin tension lines (RSTLs).
3. The #15 scalpel is held like a pencil with the handle grasped between thumb and third and fourth fingers with the index finger placed over the dorsal blade to establish absolute control [Figure 2].
4. While making the incision, the skin must be stabilized with the nondominant hand to prevent “cattle tracking,” “bird-prints,” and so on.
5. The handle with blade is positioned vertical (90°) to the skin surface. The surgeon must carefully, with absolute control, puncture through to the point where no resistance is felt (loss of resistance indicates the blade has just crossed through the dermis into the hydrodissected subcutaneous space

[N.B: using surgical tumescent anesthesia^[2] and bi-level anesthesia^[3] will accentuate this sensation of suddenly reaching a softer, less-resistant plane, that is, the inferior level of dermis from the superior aspect of the fat layer/subcutaneous space]) to begin the controlled incision [Figure 3]. (Practice is needed to master this precise sensation.)

6. On reaching the proper plane, the scalpel is tilted to an angle of 45°, using the curved cutting edge to make the incision [Figure 4].
7. The incision is continued throughout the planned wound length without removing the blade from the skin.
8. The assisting hand’s thumb and index finger are continued parallel with the blade throughout the incision length, pulling the skin away (outward) from the direction of the blade movement while maintaining a steady tension to prevent “catching” redundant skin and thus a serrated incision [Figure 5].



Figure 2: Proper way of holding the scalpel: pencil-holding manner



Figure 3: Step 1: the blade should be held perpendicular to skin at the start of incision, so the tip penetrates the skin at 90° angle



Figure 4: Step 2: the scalpel blade should be tilted making a 45° angle with skin surface as soon as we start the incision



Figure 5: Step 3: as we make the incision along the RSTL, the skin must be stabilized by stretching perpendicularly, to obtain precision

9. On reaching the end of incision, the blade is again directed vertically (90°) to exit.

4. Rounded Siegel scalpel handle [Figure 9]: A long handle with rounded proximal end for comfort and mobility, and a flat distal end for long, stable, and straight incisions.^[4]

SCALPEL HANDLES FOR #15 BLADE

A number of complementary handles exist that can be used with #15 blade for best results:

1. Bard-Parker handle [Figure 6]: Flattened scalpel handle #3 and #7 are commonly used with the #15 blade. #3 is most frequently used for dermatosurgery whereas #7 for plastic surgery.
2. Bard-Parker Round Knurled handle [Figure 7]: Rounded handle that allows control by twisting rather than rocking motion.
3. Beaver handle [Figure 8]: A small-diameter round handle, resembling a pencil for holding smaller blades (such as #15C). These blades are inserted into a collet and tightened by rotating around the handle. It is most useful for working in concavities and small delicate areas such as the eyes.



Figure 6: Bard-Parker scalpel handle (#3)

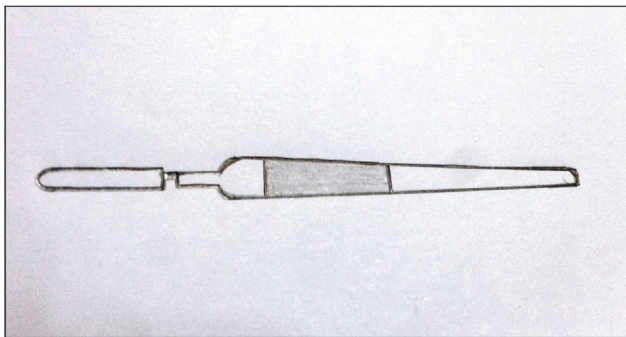


Figure 7: Bard-Parker Round Knurled handle



Figure 8: Beaver handle

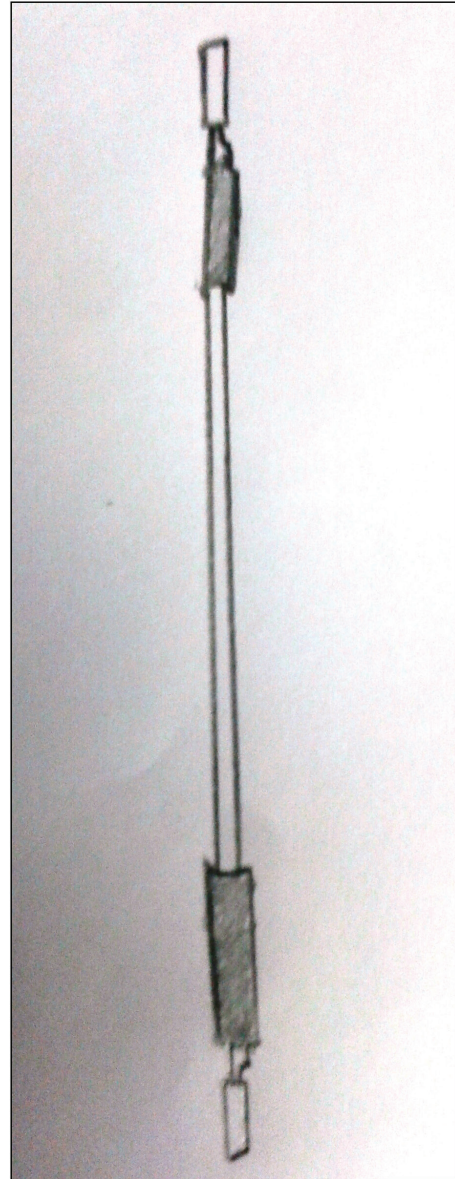


Figure 9: Rounded Siegel scalpel handle



Figure 10: Rounded Field handle

5. Rounded Field handle [Figure 10]: Stainless or aluminum, Padgett instruments; projections on sides prevent blade facing upward.

MODIFIED #15 BLADES

In addition to the conventional #15 blade, several modifications are used in special situations:

1. #15C blade [Figure 11]:
 - Flatter and thinner than the traditional #15 blade, with a longer and more extended cutting edge, rounded belly, and a more acute taper.
 - Effective for small lesions or for delicate areas (alar folds, nose, perioral, periorbital, and auricular areas) where a thinner cutting edge is desired.
 - It may also be useful on nails and hands.
2. #15T blade [Figure 12]:
 - A short rounded cutting edge with an angled point imparts added strength.
 - Ideal for fine procedures in the hand and foot, including debridement and removal of soft corns without surrounding tissue damage.
3. Sabre D/15 blade [Figure 13]:
 - A closed-edged blade with a small cutting edge.
 - Useful for small incisions (<5cm) on delicate areas.

USES OF #15 SCALPEL BLADE

1. To make “precise” skin incisions during dermatosurgery
2. Other surgical purposes (e.g., excision of sebaceous cyst)
3. Select ocular surgical procedures (#15C blade)
4. Select plastic surgery procedures (#15C blade)

We would also like to discuss briefly about two of the other commonly used scalpel blades for operative procedures:

Number 10 scalpel blade: This blade possesses a distinct curved cutting edge and is used generally for making smaller incisions in skin and muscle. It is more favorable for specialized surgeries such as harvesting the radial artery during a coronary artery bypass operation, opening the bronchus during thoracic surgery, and for inguinal hernia repair. This blade is compatible with 3, 3L, 3 Graduated, 5B, 7, 9, B3, and B3L handles.

Number 11 scalpel blade: This blade has an easily recognizable triangular shape sharpened along the hypotenuse edge with a strong pointed tip. This is thicker than a standard #15 blade, thus offering additional rigidity and strength. This blade is ideal for orthopedic procedures, maxillofacial reconstructive surgeries, pediatric pathology, and autopsy procedures and for taking nail clippings and biopsies for the diagnosis of onychomycosis.

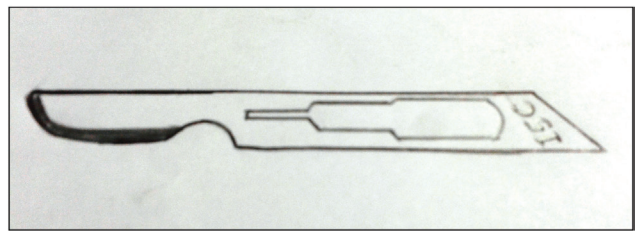


Figure 11: #15C blade

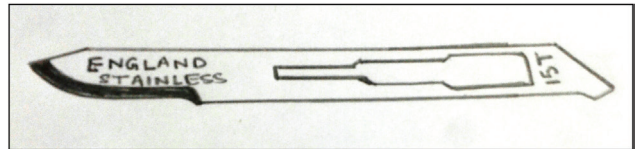


Figure 12: #15T blade



Figure 13: Sabre D/15 scalpel blade

CONCLUSION

We have hereby attempted to discuss the multiple facets of the most commonly used blade by a dermatosurgeon. Knowledge of this blade, its correct usage, and ramifications of its structural modifications would aid the dermatosurgeons to better understand and use this tool toward the betterment of their patients. It may aid some of us to design further modifications for making this versatile blade even more suitable for certain types of cutaneous surgery performed more commonly in this part of the world.

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Conflicts of interest

There are no conflicts of interest.

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