

SIZE AND PROFILE OF ACTIVE MECHANICAL SECUREMENT DEVICES

Background

Catheter Securement Devices used to secure Peripherally Inserted Central Catheters and Central Venous Catheters are often scrutinized for their size and profile. The general school of thought is that a device that is low profile may help minimize the risk of site disturbances from bumping or jostling and a small surface area is better because it is less cumbersome. The problem is that general school of thought is not necessarily true. In clinical applications, it is well known that the larger the surface area for adhesive placement, the better the adhesion. Catheter securement aimed at reducing dislodgement, micro-movements within the intima of the vein and micropistoning at the insertion site must secure and hold the catheter well and many of the currently marketed low profile tape-based securement systems are lacking in that respect.

Purpose

To present the actual difference in profile and surface area of a commonly used PICC and Central Catheter Securement Device to a new innovative active mechanical securement device.

Methods

Samples of the Bard® StatLock® (PIC0220) Catheter Securement Device with moving posts – hereinafter “Device 1” and the Starboard Medical™ Clik-FIX™ (WCS-1000) Catheter Securement Device were each measured in nine (9) specific locations with a digital caliper. The measurements were recorded and compared.

Measurement Sites

The measurement sites are described in the list below and depicted in Figures 1-4 below.

1. Height of device when locked from skin surface to highest point.
2. Height of device when locked from skin surface to top of cover.
3. Length of device footprint.
4. Width of adhesive pad.
5. Length of adhesive pad.
6. Length of locking device
7. Width of locking device
8. Height of top of catheter hub to skin when the catheter's positioned at zero insertion point and secured in the catheter securement device
9. Height of angle from hub/catheter junction to skin when the catheter's positioned at zero insertion point and secured in the catheter securement device.

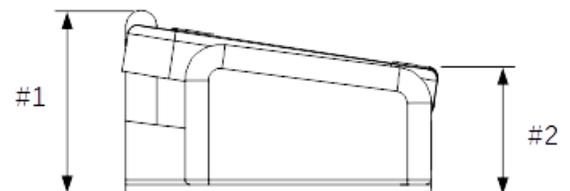


Figure 1. Measurements 1 & 2

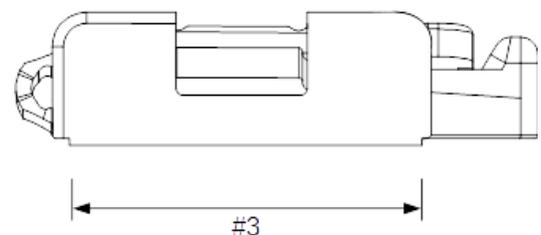


Figure 2. Measurement 3

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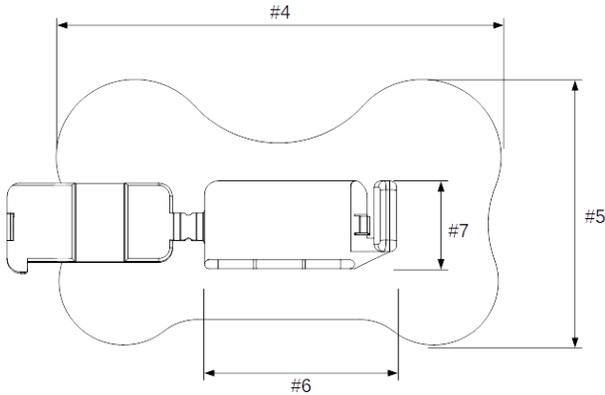


Figure 3. Measurements 4, 5, 6 & 7

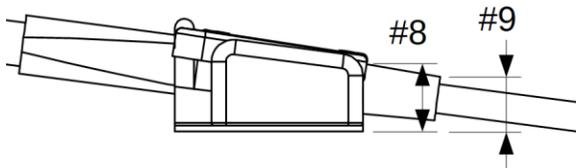


Figure 4. Measurements 8 & 9

Results

Profile, Foot Print and Catheter Height- In Millimeters			
Measured Location	Clik-FIX	Device 1	Variance
1	10	9	+1
2	7	9	-2
3	26	29	-3
4	79	78	+1
5	46	34	+12
6	36	29	+7
7	16	20	-4
8	6	8	-2
9	5	7	-2

The measurements reveal that the differences in profile and foot print of the two devices are minimal. The highest point on the Clik-FIX device is at the location where the posts raise to anchor the catheter wings to accommodate a variety of catheters. At this point, the Clik-FIX device is only 1mm taller than the Device 1; yet at the lowest

point the Clik-FIX device is 2mm shorter than Device 1, demonstrating the profile of the Clik-FIX and Device 1 are nearly the same. The securement pad of each device is very similar in width, but the length of the Clik-FIX device is larger to maximize the surface area on the skin, allowing the use of a less aggressive adhesive.

Measurement 6 and 7, the length and width of the locking device, also show minor differences between the two devices. The Clik-FIX base is 7mm longer, but 4mm shorter in width than Device 1's base. However, the length of the device footprint at measurement 3 shows that the Clik-FIX is actually 3mm shorter. The most important profile measurement with a catheter securement device is the height of the angle from the skin to the top of the catheter. While secured in the device at a simulated zero insertion point, the space created between the skin surface and top of catheter was measured in two locations. Location 8 was the height between the skin and the top of the catheter hub. Measurement 9 consisted of the height between the skin surface and the top of the catheter/hub junction. The Clik-FIX device was measured to be 2mm lower at both positions.

Conclusion

The difference in profile and surface area of the two securement devices are minimal. The adhesive pad on the Clik-FIX offers a slightly larger surface area in order to provide a better adhesion. A smaller surface area version is available for patients with sensitivities. The measurements taken at Location 8 and 9 also show that the Clik-FIX Catheter Securement Device secures the catheter closer to the skin, minimizing the gap between the catheter and skin surface to reduce the risk of inadvertent snagging or dislodgement.

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