

StarLock Pressure Mapping (15.5" x 15.5" x 4" StarLock)

Date: Jan 31st, 2014

Patient: Female – Age 25 – Weight 135

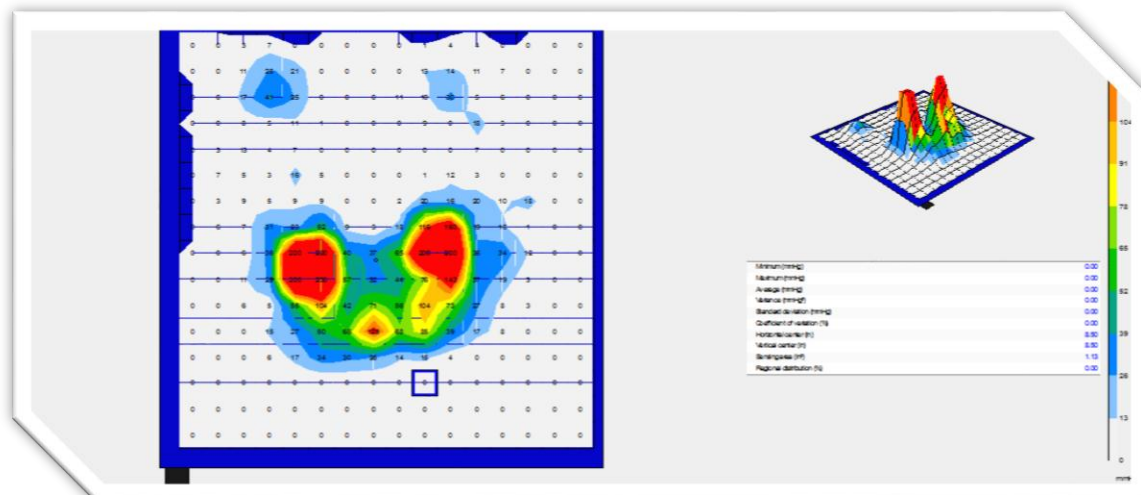
In this study, the StarLock Cushion was pressure mapped using an FSA system manufactured by Vista Medical. <http://www.vista-medical.com/subsite/stretch.php> The StarLock cushion is Star's patented cushion which uses cell lock technology, allowing each individual cell to be locked independently of the other cells. This locking stops the flow of air from cell to cell, allowing the therapist or user to custom shape the air cell cushion to each user's unique needs and body type.

One of the main features of the StarLock cushion is that a therapist or user can create a 'void' or 'no contact area' anywhere in the cushion by deflating cells and then locking the cushion while those cells are deflated. Because the flow of air from cell to cell is stopped once the StarLock cushion is locked, these 'voided' cells will not re-inflate with air and will create a 'no contact area.' Thus, the therapist can create a zone of no pressure directly underneath an existing pressure ulcer, or difficult skin protection area.

The purpose of this pressure mapping is to answer a question that has been posed by some concerned therapists: If a 'void' or 'no contact area' is created in the cushion, will there be additional pressure on the cells immediately surrounding the 'no contact area,' potentially inhibiting blood flow? The answer, as can be seen below, is No.

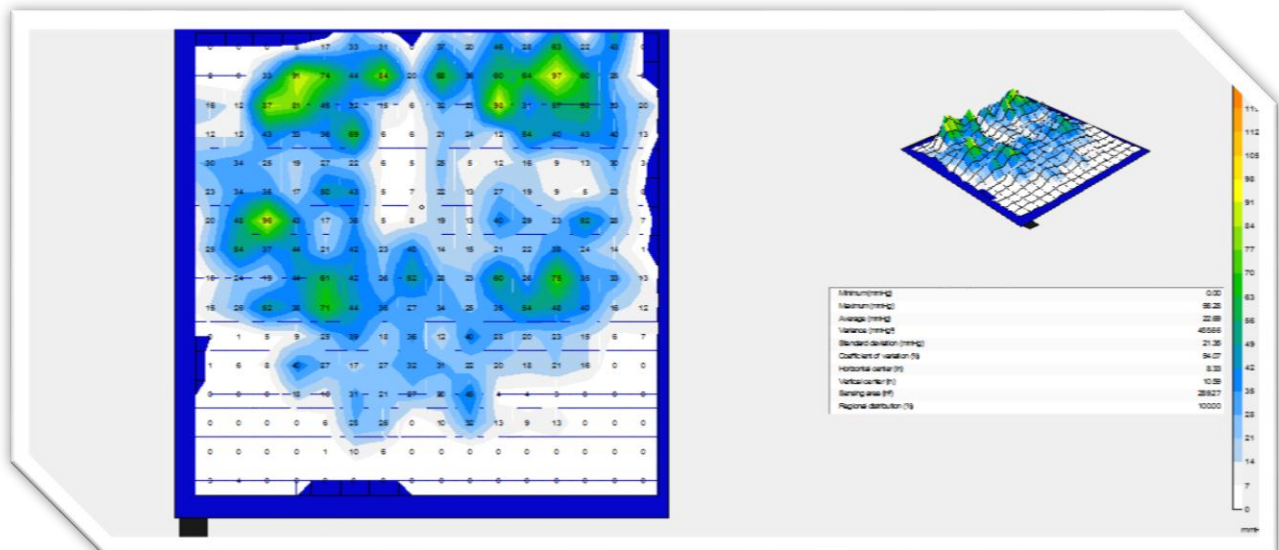
Pressure Mapping #1: Standard foam padded chair.

The first pressure mapping was performed in order to create a baseline comparison. The patient was seated on a padded foam chair, similar to those used in hospitals, long term care facilities, and rehab centers. Without any sort of pressure equalization or redistribution, we can note the pressure is localized in three main areas, indicated in red, directly under the patients' ischial tuberosities and coccyx bone. These areas of the buttocks (ischial tuberosities) are the most frequent locations of pressure ulcers.



Pressure Mapping #2: Female patient was immersed in a Star Lock 16" x 16" while in the unlocked position.

The second pressure mapping was performed by properly immersing in the StarLock cushion. This was done by seating the patient on the StarLock cushion, opening the valve, and immersing the individual to within about 3/4" to 1" from their most bony prominence (the ischial) to the bottom of cushion. The resulting pressure mapping shows that the patient's weight has spread out to a much larger surface area, including the patient's legs and more of the patient's buttocks. In addition, the amount of pressure on any one spot has equalized to a point where there are no longer any red spots of high pressure, showing mainly greens and blue low pressure zones. The large red zones under the ischial tuberosities have turned green, in favor of a larger surface area. Note: The 16" x 16" StarLock Cushion, when in an unlocked position, performs exactly like a Standard 4" Contour, single valve, Star cushion.

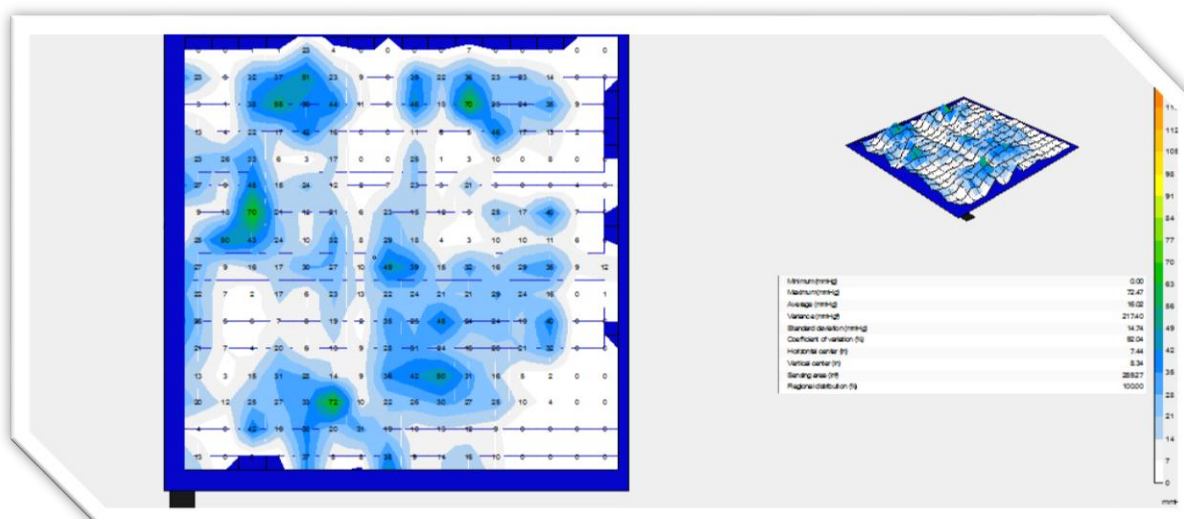


Pressure Mapping #3: Female patient was immersed in a Star Lock 16" x 16" while in the locked position with a void of cells locked out under her left ischial tuberosity.

Although the patient's pressure had now been equalized and distributed over a much larger surface area in the second pressure mapping, we wanted to take the cushion one step further and create a 'void' or 'no contact area' directly underneath the patient's left ischial tuberosity. Although not present in this patient, this would be an ideal place to create a 'no contact area' if the patient had a Stage II, III, or IV pressure ulcer under the left tuberosity.

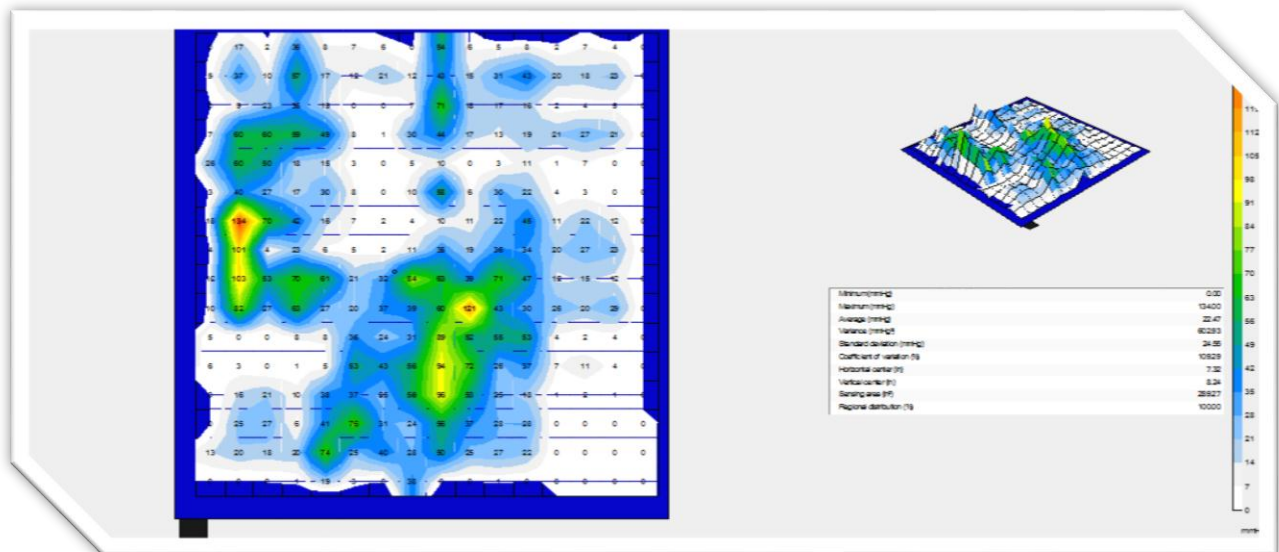
The third pressure mapping was performed by placing compressed or 'rolled up' hand towel on the 4 cells directly underneath the patient's left ischial tuberosity. The purpose of placing the towel here was to hold the air out of the cells while locking the StarLock cushion. In lieu of a towel, a therapist can use anything that will have enough weight to keep air out of the desired cells while the user is seated on the cushion during locking. The patient was then seated on the 16" x 16" StarLock before opening the valve to release air until the patient was immersed to within about ¾" to 1" from their most bony prominence to bottom of cushion. Once immersed, the patient will be seated on the towel (or other weight) and the patient's pressure should be equalized as in pressure mapping #2.

The StarLock mechanism was then engaged by pumping the blue ball pump 10-20x (or until hard to squeeze), which pressurizes the lockpockets in the base of the StarLock cushion and stops the flow of air between each individual cell. The compressed towel can now be removed, creating a 'void' in the cushion and eliminating all contact to the patient's left ischial tuberosity. The resulting pressure mapping shows that elimination of pressure. Because the patient was first immersed into the cushion to within ¾" to 1" from the base, and the patient's pressure was distributed over a larger surface area and **equalized**, you can see that the area surrounding the 'void' does not have any additional pressure than if the 'void' was not present.



Pressure Mapping #4: Female patient was Not Immersed, but sitting on top of a Star Lock 16" x 16" with a void under cells locked out under her left ischial tuberosity.

In the fourth pressure mapping, we performed the same void of air from the 4 cells directly underneath the patient's left ischial tuberosity. However, this time, we only removed the air from those four cells and did not have the patient sit on the cushion to immerse into the cushion and have her pressure first distributed over a larger surface area and equalized. We locked the cushion by again pumping the blue ball pump 10-20x (or until hard to squeeze), which pressurizes the lockpockets in the base of the StarLock cushion and stops the flow of air between each individual cell. Only after voiding the cells and locking the cushion, did we seat the patient on the 16" x 16" StarLock. The amount of air did not change in the cushion (i.e. the patient was not immersed). The resulting pressure mapping now still shows a 'void' under the left ischial tuberosity, but there is still unequalized pressure surrounding the 'void.'



Conclusion: The StarLock cushion can allow a therapist or user to create a 'void' or 'no contact area' anywhere in the cushion, without additional pressure being placed on the area surrounding the 'void.' The key to achieving this result is first properly immersing and equalizing the patient into the cushion while the cells desired to be voided are being kept deflated by a towel, hand, or other weight, and then locking the cushion second. If the therapist or user creates the desired void and locks the cushion first, and then seats the patient second, the ideal conditions are not achieved.