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White Paper: Microfield Guard

As a board-certified foot and ankle surgeon with more than 40 years of clinical experience, I have likely been involved in all aspects of a foot and ankle surgery. Over the last ten years I have also served in various administrative positions such as Chairman of the surgery department and Chief of Staff of a non-profit community hospital in Los Angeles County with approximately 200 beds.

Throughout my many decades as a surgeon I have given continuous focus to maintaining a proper aseptic environment for both my individual safety as well as my team's. These efforts are an essential part of providing quality surgical outcomes and reducing the incidences of postoperative infections.

Over the years we have become increasingly aware of the ever-changing landscape of potential pathogens that we face in the hospital environment. Reflecting to the 1970s, as a surgeon, I recall the efforts that we practiced minimizing various potential avenues for transmission of diseases such as gonorrhea and syphilis. As time went on, hepatitis and HIV-AIDS epidemics became global concerns to people due to their exposure to blood and other fluids. In the last two years, the landscape has changed again, and healthcare workers are still having to adapt to the COVID-19 pandemic. As a foot and ankle surgeon, I have noticed an increased number of complications in the extremities, with ischemic and infected regions that are secondary to multiple combinations of organisms. Furthermore, many surgeons have needed to perform surgeries on patients who were COVID-19 positive. I have had to perform complicated limb salvage procedures on patients who are both COVID-19 positive and severely infected. acute complicated limbs of patients who have tested positive for COVID-19.

As a surgeon, an important part of all lower extremity surgeries involves wound irrigation. Appropriate irrigation removes debris, hydrates the wound, removes potential surface pathogens that can negatively affect wound healing and thus alter the desired outcome. The complications we face with wound irrigation are varied, splatter, spillage, slippage. Generally, most wounds are irrigated with either a bulb syringe or a pulse lavage. However, the irrigation fluid that we are introducing to the wound can easily splatter and can make contact with the surgeon or other operating room staff. The fluids can also spill from the operating table or a basin onto the floor, which can

create a dangerous environment. These pathogens can have significantly harmful effect on staff and patients by negatively impacting the surgical result and the health outcome. Potentially infected fluids can spill on an individual's skin and directly cause an additional incident. Furthermore, these fluids that can end up on the operating floor additionally require operating room personnel to be exposed to potential pathogens even once the surgery is completed and sanitation procedures are being implemented.

Surgeons have attempted to reduce splatter in various ways in the past. We would attempt to employ surgical towels around the irrigation device to prevent this splatter from occurring, however it was difficult to literally observe the wound because of the towels blocking visibility of the wound and altering the ideal limb position. Also, this technique caused water to accumulate and sometimes spill on the floor which added risk of potential slippage and further complications. I have also attempted to utilize a C-ARM cover by placing it over the limb with a large basin placed under the limb to retrieve the excess fluids. We would create a small portal in the cover as an access point for the irrigation device. Though it allowed for visibility, it was costly and less efficient as it caused water to accumulate in the basin which subsequently overflowed to the floor.

Dr. David Novicki of Yale University provided me with 30 **Microfield guards** to be used on my patients for evaluation. This device was created to protect the surgeon as well as the personnel during a surgical procedure without interfering or adding challenges to already complicated surgeries. The device is intuitive, economical, simple to use, self-contained, and has been uniformly supported by all the individuals involved with my evaluations. The **Microfield guard** is a one-piece device that easily covers and maintains a full view of the affected limb, so that high pressure irrigation can be implemented while also allowing for drainage of these fluids to be retrieved in an uncomplicated and safe manner.

Over the last few months my hospital has been involved in clinical trials involving the **Microfield guard** and this device has been found to be extremely simple to use, efficient, and economical. It involves an appropriately shaped clear plastic bag that acts as a receptacle for active irrigation to take place within a wound. It also allows for the surgeon to observe the wound throughout the irrigation process while all drainage and irrigation is retrieved through a suction system that is attached to the inferior portion of the receptacle. The more proximal portion of the device allows for a secure closure to the affected part in a nonrestrictive fashion. The **Microfield guard** allows the surgeon to operate with minimal additional challenges or concerns for safety of the patient and the operating room personnel.

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My operating room personnel and I have found the **Microfield guard** to be an important asset to our health and the health of our patients.