



## **Mucosal Pressure Ulcers An NPUAP Position Statement**

Mucous membrane is the moist lining of body cavities that communicate with the exterior. These tissues line the tongue, gastrointestinal (GI) tract, nasal passages, urinary tract and vaginal canal. Pressure applied to this tissue can render it ischemic and lead to ulceration. Mucosal tissues are especially vulnerable to pressure from medical devices, such as oxygen tubing, endotracheal tubes, bite blocks, orogastric and nasogastric tubes, urinary catheters and fecal containment devices.

Definition: Mucosal Pressure Ulcers (MPrU) are pressure ulcers found on mucous membranes with a history of a medical device in use at the location of the ulcer.

Anatomy of Mucous Membrane: Two types of tissue are present in mucous membranes: a nonkeratinized stratified squamous epithelium and an underlying connective tissue layer; the lamina propria. These two layers are analogous to the epidermis and dermis and likewise are connected via rete pegs. There is also a basal laminal layer at the interface of the two tissue layers. The epithelial layer is continuously renewed through migration of lower layers of epithelium to the surface. However, unlike the epithelium of the skin, the epithelium of mucosa is not keratinized. The lamina propria structure varies depending on the location but generally contains blood vessels and elastic and collagen fibers.

Injury to Mucous Membrane: Injury to mucous membrane can occur from direct trauma (burns, bites, pinching, radiation, pressure or infection). The injured tissue bleeds and forms a clot within minutes. However, because of the moist environment and mucus, the clot does not resemble the hard, dry clots seen on the skin. The clot on mucous membrane is soft and then becomes coagulum, which is easily shed.

Appearance of Injured Mucous Membrane: Injured mucous membrane responds to injury with inflammation, however due to their underlying color, an inflammatory response may not be visible, but none the less still occurs. Tenderness and edema of injured tissues does occur. Injury that leads to bleeding creates a soft clot (or coagulum) that remains flat and loosely attached to the wounded area. This coagulum is not to be classified as slough, even though both tissues can appear yellow and shiny. Tissue injury to mucous membranes of the mouth can occur from misfitting dentures and lead to exposed bone, but these ulcers are beyond the scope of this position statement.

Healing Mucosal Pressure Ulcers: Wound healing is the same in mucosa as it is in the skin, except for the formation of scar. There is increasing evidence that fibroblasts in the oral mucosa are phenotypically different from those in the skin and more closely resemble fetal fibroblasts. Scar tissue of the mucosa is remodeled and most injuries heal without scar formation.

Describing Mucosal Pressure Ulcers: The staging system for pressure ulcers of the skin cannot be used to stage mucosal pressure ulcers. Nonblanchable erythema cannot be seen in mucous membranes, as shallow open ulcers indicating superficial tissue loss of the nonkeratinized epithelium are so shallow that they are visually indistinguishable from deeper, full thickness ulcers. Soft coagulum seen in mucosal pressure ulcers, which resembles like slough in Stage III pressure ulcers, is actually soft blood clot. Exposed muscle would seldom be seen and bone is not present in these soft tissues.

The position of the NPUAP is that pressure ulcers on mucosal surfaces are not to be staged using the pressure ulcer staging system. It is understood that these ulcers may indeed be due to pressure, however anatomically analogous tissue comparisons cannot be made. Further, it is NPUAP's position that mucosal pressure ulcers not be classified as partial or full thickness, because the clinical assessment of the tissue does not allow the distinction. Therefore, the position of NPUAP is that pressure ulcers on mucous membranes be labeled as mucosal pressure ulcers without a stage identified.

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