Pressure Injury on Mucous Membrane

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Anatomy of Mucous Membrane

Epithelium covered by mucus

Columnar cells producing mucus

Laminar layer of support
NPUAP’s position on MM pressure ulcer

• 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.
• Pressure applied to this tissue can render it ischemic and lead to ulceration.
• Mucosal tissues are especially vulnerable to pressure from medical devices
  – oxygen tubing, endotracheal tubes, bite blocks, orogastric and nasogastric tubes, urinary catheters, fecal containment devices
Mucosal Membrane Pressure Injury

Mucosal membrane pressure injury is found on mucous membranes with a history of a medical device in use at the location of the injury. Due to the anatomy of the tissue these ulcers cannot be staged.

There is no epidermis or dermis in this tissue

- Upper layer is epithelium
- Columnar cells produce mucus
- Laminar layer provides support
Histology of mucous membrane differs from skin

Skin

Mucous Membrane

Surface squamous cells being shed

Note that cells are nucleated all the way to the apical surface in non-keratinized tissue.
Appearance of Injured MM

- Inflammed
  - Occurs, may not be visible
- Tenderness and edematous
- Soft coagulum forms
  - Remains loosely attached
  - Not to be classified as slough
Lip histology and ulceration
Oral Mucosal Pressure Ulcers

- **Issues**
  - Airway is priority #1
  - Severity underappreciated
    - May not be seen as serious since scar seldom develops

- **Prevention**
  - Rotate device
    - RT to help with ET tubes
    - Move with each position change
      - Check length before securing
  - Use securement devices that can be loosened
ET tube ulcers from surgery

- Lip ulceration following a 45 minute appendectomy
- Required 3 weeks to heal
NG tube ulcers

- Visible injury of both skin and mucous membrane

- Prevention
  - Check placement of NG daily
    - Can coil in posterior pharynx
  - Change to soft feeding tubes when able
  - Securement to be free floating in nare
  - Move tube when head turned to the side
When both skin and mucous membrane are involved – stage the skin injury

Stage 2 of the nose

Mucosal injury inside the nare
Genital MDR PrU

• Issues
  – Tubing too short

• Prevention
  – Use indwelling for urinary monitoring only
  – Intermittent cath preferred
  – Check location of tubing with each reposition
    • Leave slack in tubing
  – Tape Foley to lower abdomen in males
    • Prevents penile shaft tears
Perineal ulcers

• Issues
  – Often from fecal containment devices
    • Too taught when pulled to edge of bed
    • Fairly rigid support in tubing
    • Leakage of stool

• Prevention
  – Move tubing often
When both skin and mucous membrane are involved – stage the skin injury

Stage 2 of the nose

Mucosal injury inside the nare
Healing Mucous Membrane

- Wound healing process unchanged
  - except for the formation of scar
- Fibroblasts in the oral mucosa
  - phenotypically different from those in the skin
  - more closely resemble fetal fibroblasts.
- Scar tissue of the mucosa is remodeled and most injuries heal without scar formation.
More people are reporting them

- Lip ulcer as a complication of intubation
- Scar remains after 6 months….is our assumption of scarless healing flawed?

Yamashita, 2014
Conclusions

- Nonblanchable erythema cannot be seen in mucous membranes, shallow open ulcers indicating superficial tissue loss of the nonkeratinized epithelium are so shallow that the naked eye cannot distinguish them from deeper, full thickness ulcers.

- Even though they cannot be staged, MM PI must be identified and prevented through a multidisciplinary approach.
Conclusions

• If ulceration includes 2 surfaces, skin and mucous membrane, report the skin injury. This is consistent with epidemiologic formats of disease reporting.

• Extensive ulceration into muscle layers is being reported. This trend will need to be followed.