



# Specific wound healing complications assessment and intervention: Periwound Dermatitis

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# Defining the periwound

- The periwound has been referred to as ‘the defensive zone that contains the wound’ (Dowsett et al, 2015), and defined as the area within 4 cm. of the wound edge (Thayer et al, 2016).
- The periwound is the area around a wound that may be affected by wound-related factors and/or underlying pathology.

# Periwound Dermatitis

## ผิวหนังรอบแผลอักเสบ





# Factors that increase the risk for periwound dermatitis

- wound pathology, dressing, device, treatment (e.g. radiation)
- other factors (e.g. skin conditions, skin microbiome, hypersensitivity, atopic dermatitis).
  - Amount of exudate
  - Presence bacteria and associated toxins
  - Histamine produced by specific bacteria
  - Proteolytic enzymes such as the matrix metalloproteinase (**MMPs**), and inflammation cytokines (interleukin-1) in wound exudate
    - Chronic wounds, concentration of the proteolytic enzymes (MMPs) in the exudate are increased
      - \*can damage the periwound skin,
      - \*reducing skin barrier function
      - \*increasing the chance of maceration

# Promoting periwound health

- Promoting periwound health can
  - Improve healing
  - Decrease infection risk
  - Reduce dressing frequency and associated cost
  - Reduce pain and discomfort, and improve quality of life.

# Periwound damage is important

- can contribute to
  - Delayed healing
  - Wound deterioration and increased wound size
  - Increased infection risk
  - Pain and discomfort
  - Reduced quality of life
  - Increased treatment time and associated costs



# Wound assessment with a focus on the periwound

- Periwound-specific assessment should also include :
  - Skin integrity
  - General condition of skin – e.g. dry/moist, thinned/thickened, discoloured
  - Size of periwound area – i.e. relating to wound edges
  - Temperature – cool/warm/hot
  - Colour
  - Erythema/cellulitis/ lymphangitis/folliculitis
  - Maceration/erosion/skin stripping
  - Callus/hyperkeratosis/atopic eczema/ xerosis
  - Swelling/ oedema/ induration
  - Sensation (e.g. for foot wounds, spinal cord injury or other conditions reducing sensation) **itching**
  - Cause of damage, including scratching and self-harm.



# Prevention of periwound complications

- **Wound and periwound skin cleansing**
  - Cleanse the surrounding skin thoroughly but gently, without causing undue trauma, avoiding a vigorous rubbing technique.
- **Wound dressing selection and usage**
  - suitable for **extended wear** if undisturbed wound healing is a priority
  - Suitable fluid-handling capacity as per level of exudate, **absorbent material for highly exudative** wounds and lateral movement of fluid
  - Retains fluid-handling capacity under compression therapy, body weight, or off loading device
  - **Atraumatic** and retains integrity on removal
  - **Non-stick dressing for fragile periwound skin**, use the minimum adhesive required, depending on the individual and their wound/skin condition



# Prevention of periwound complications

- **Dressing application and removal**
  - Cleanse the surrounding skin thoroughly but gently, without causing undue trauma, avoiding a vigorous rubbing technique.
- **Managing infection risk**

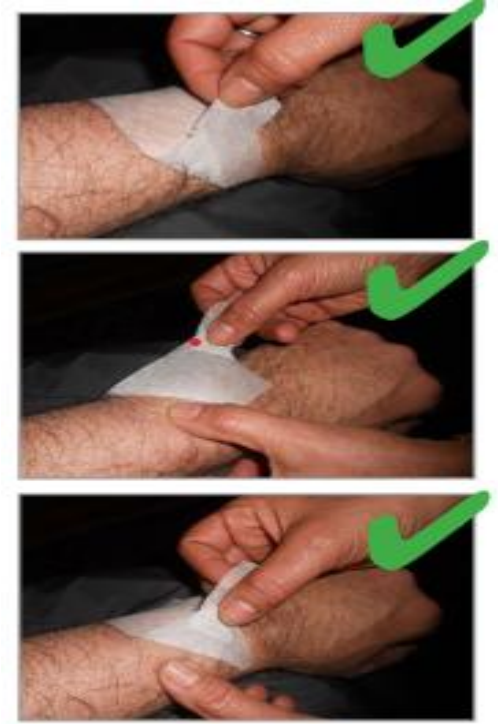


FIGURE 9 | Correct dressing removal technique (courtesy of Heidi Hevia Campos)

# Prevention of periwound complications

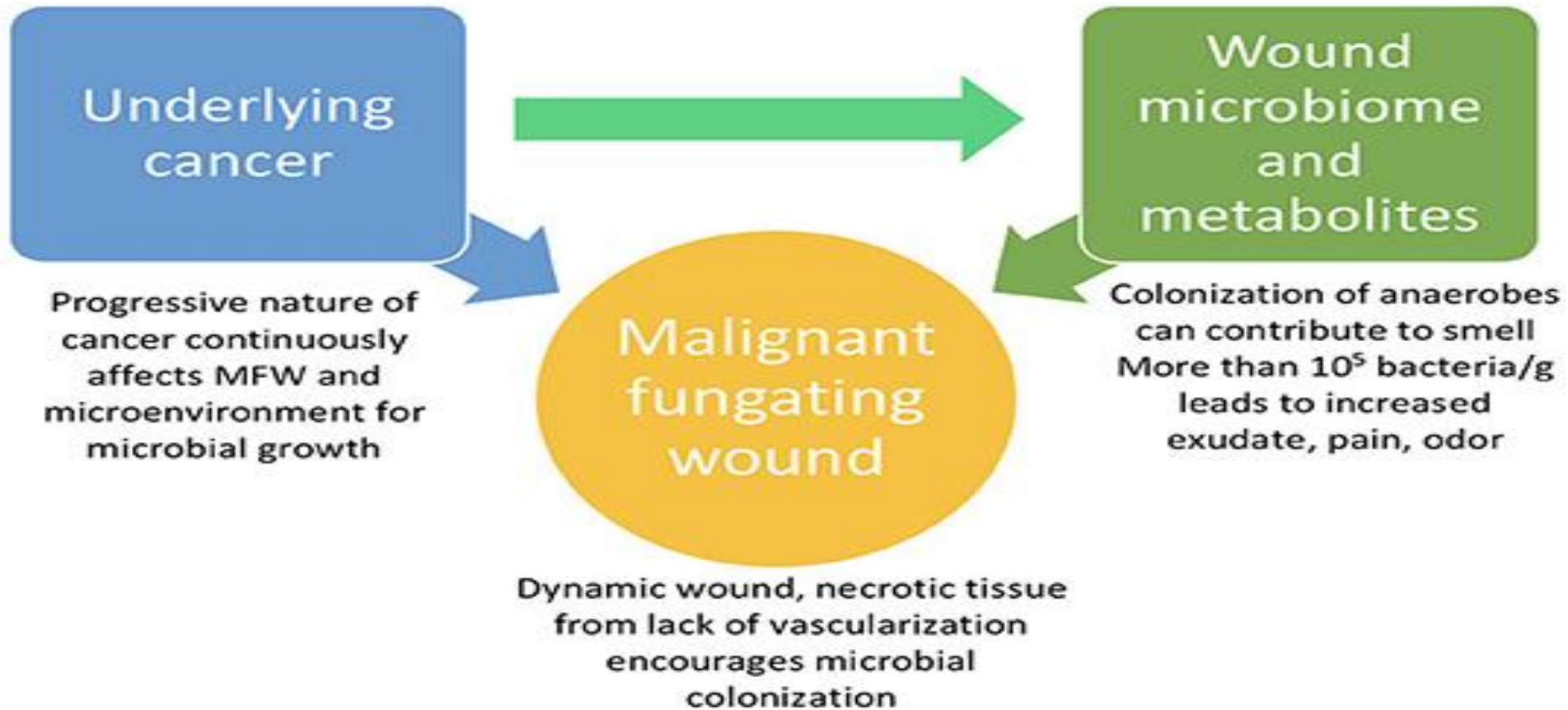
- **Protecting the periwound from adhesive damage**
  - skin barrier
  - Adhesive types and their risk
- **Protecting the periwound from damage from moisture**
  - Select dressing with wound-appropriate absorptive properties, or use secondary pad

Exudate management is key to avoiding periwound damage

# Case study

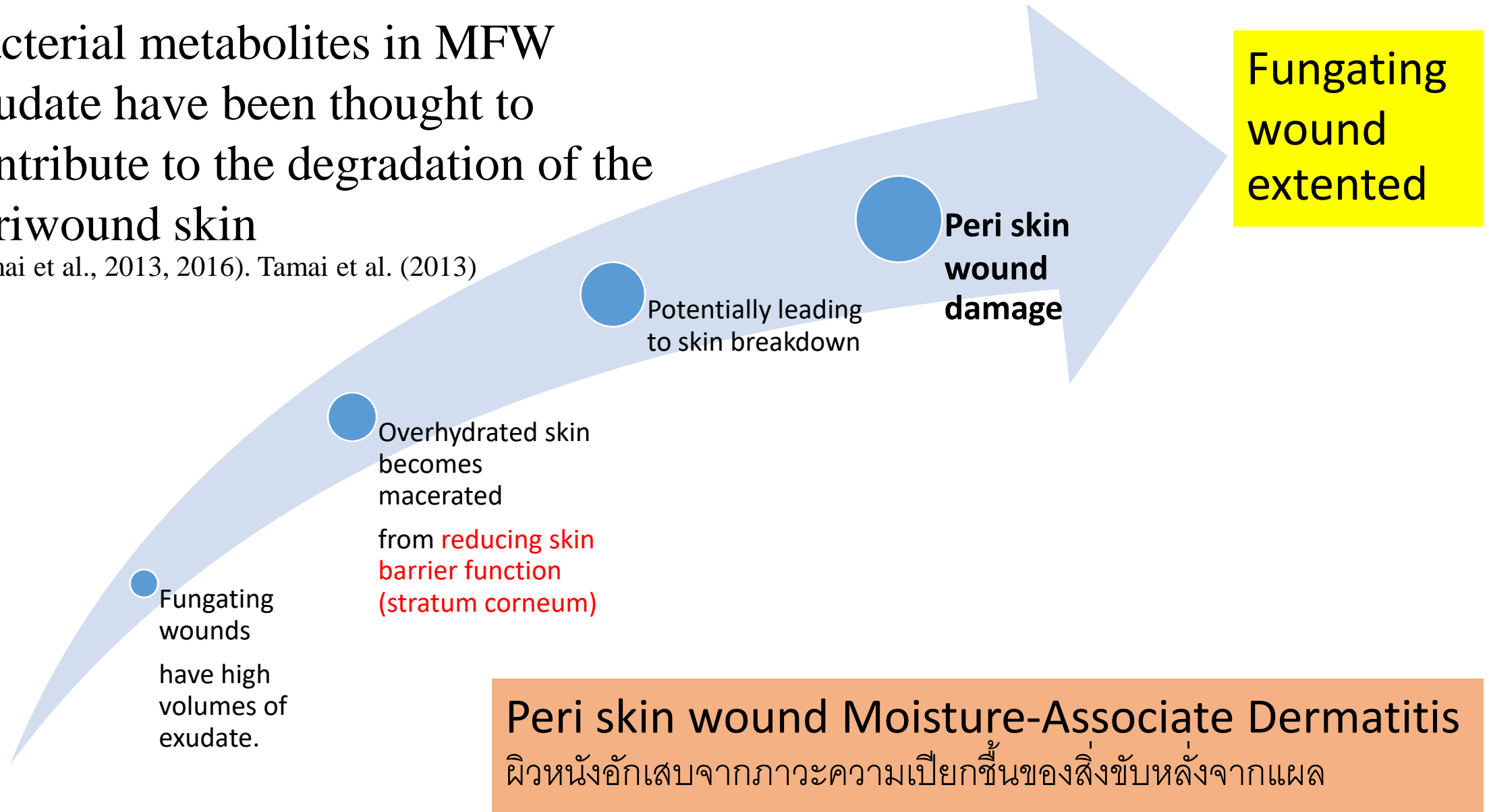
- หญิงไทย 57 ปี สถานภาพ หย่า บุตรชายคนเดียวเสียชีวิต อาศัยอยู่กับ บิดามารดา ไม่มีอาชีพ
- CA Lt. Breast (Invasive ductal CA)
- Hx. คลำพบก้อนที่เต้านมด้านซ้าย ตค. 60 ขนาด 5.5 X 7.5 x 9.5 cm. ได้รับเคมีบำบัด ที่ รพ.สรรพสิทธิประสงค์ สูตร FAC 1 cycle loss FU
- ญาติแนะนำให้มารักษาต่อที่ รพ.มะเร็ง อุดรธานี ได้รับรังสีรักษา 3000 cGy. loss FU
- เดือน กพ. 62 กลับมาด้วยอาการหายใจเหนื่อย ก้อนมะเร็งแตกเป็นแผล ขนาด 7.5 X 16.7 x 15.6 cm Bone Met.
- รักษาด้วยเคมีบำบัด Doxorubicin และ cyclophosphamide 6 cycle แผลเล็กลง ทำแผลกับ ET nurse team
- เดือน มค. 63 มีก้อนเนื้อขึ้น ตำแหน่ง 10 นาฬิกา ปวด แขนซ้ายบวม ส่ง excision ผล CA involve dermal layer รักษาด้วย Docetaxel 6 cycle แผลมะเร็งคงที่ แขนซ้ายบวมลดลง
- เดือน กค. 63 มีก้อนเนื้อขึ้น ตำแหน่ง 1 นาฬิกา แพทย์ให้การรักษาด้วย gemcitabine แผลมะเร็งมี necrotic tissue, exudate เพิ่มขึ้น periwound maceration, edema, pruritus

# Fungating wound is Dynamic wound



# Bacterial metabolites in MFW exudate have been thought to contribute to the degradation of the periwound skin

(Tamai et al., 2013, 2016). Tamai et al. (2013)



# Periwound breakdown prevention and management

- Manage and treat wound infection
- Manage the tissue types at the wound bed;  
necrotic tissue
  - Cleansing with 0.9% NaCl irrigation
  - and/ or polyhexamethyl Biguanide (PHMB) soaking
  - Use silver dressing
- Manage wound exudate
  - Utilize vertical absorbant foam dressings to maintain a balance in moisture and avoid maceration



# Peri wound breakdown prevention and management

- Use barrier creams and/or ointments to prevent and protect the skin from moisture

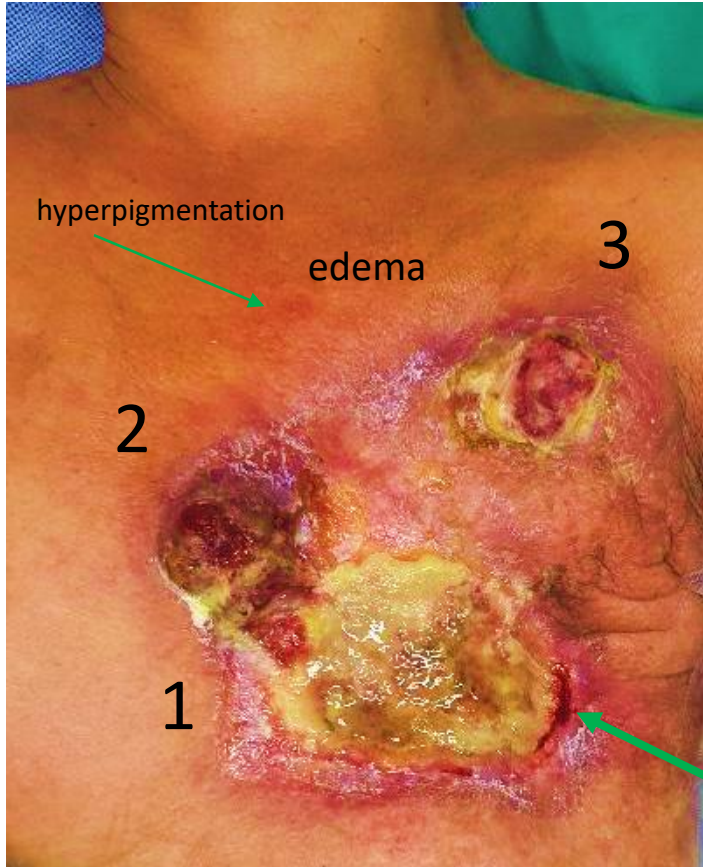


- Use skin sealant dressings (liquid or spray) on the periwound and surrounding skin for protection and to help lessen friction forces.





# Case study

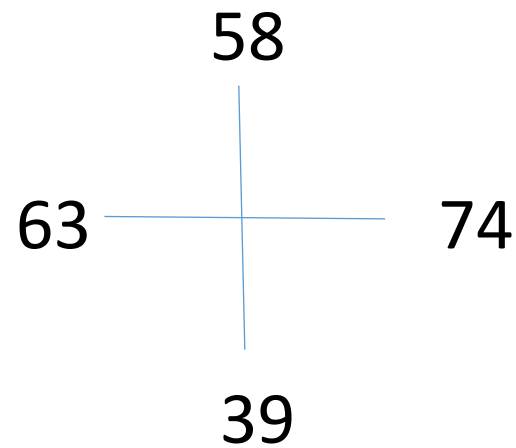


- Wound bed necrotic tissue 100 %
- Size: wound 1 = 7.5 x 4.5 x skin level
- wound 2 = 3 x 3.5 x p 1.5 cm.
- wound 3 = 2 x 2.7 x p 1 cm.
- Exudates: serous, moderate
- peri skin wound maceration around with edema
- pruritus at 11- 1 o'clock
- Bleeding, No Pain, No Odour

# Case study

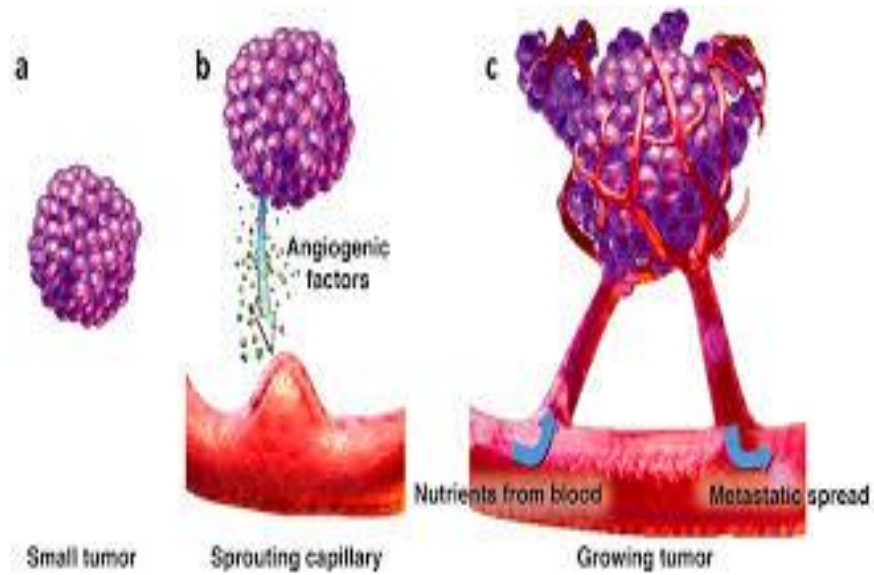


ตรวจวัดความชุ่มชื้นของ peri  
wound ด้วยเครื่อง hydro pen HP  
10 (CK electronic; Germany)  
ความชุ่มชื้นพอดี > 55



Angiogenesis and pseudo-vasculogenesis  
not seen

# Angiogenesis and pseudo-vasculogenesis



การสร้างเส้นเลือดใหม่จากหลอดเลือดเดิม อาจทำให้เกิดการเจริญ  
แพร่กระจายของเซลล์มะเร็ง

# Case study

- Manage moisture and skin integrity of periwound
  - cleansing skin with remoiss clean (silicone)



- **Manage and treat wound infection**
- **Manage the tissue types at the wound bed; necrotic tissue**
  - Cleansing with 0.9% NaCl irrigation
  - polyhexamethyl Biguanide (PHMB) soaking
  - Use silver dressing: Blu ribbon
- **Manage wound exudate**
  - Gauze 3 layers bid.



# Case study



3 สค. 63



17 สค. 63

Angiogenesis



70

# Conclusions

- Healthcare professionals and caregivers/individuals should manage modifiable intrinsic and extrinsic factors to promote and maintain skin integrity in the periwound, minimise damage and support healing.
- Not all periwound damage is avoidable.
- Exudate management is key to avoiding periwound damage.

