Atlas of Digital Ulcers and Lesions

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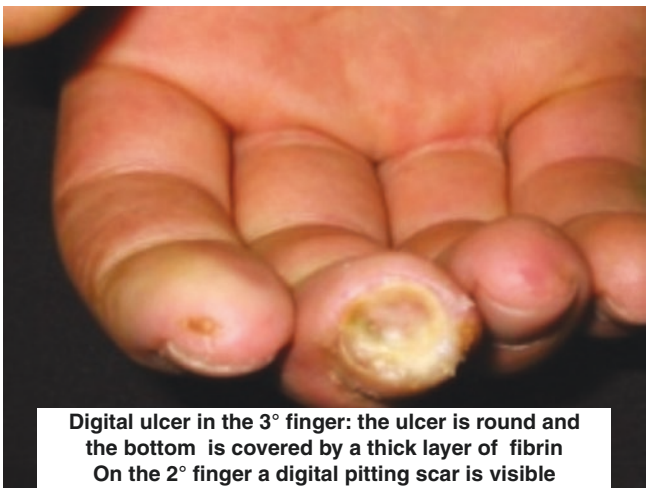
Digital Ulcers

Loss of epidermal covering with a break in the basement membrane (which separates dermis from epidermis). It appears clinically as visible blood vessels, fibrin, granulation tissue and/or underlying deeper structures (e.g., muscle, ligament, fat) or as it would appear on debridement.

(J Scleroderma Relat Disord 2017; 2:115–120)



Digital ulcer in the 3° finger: the ulcer is round and the bottom is covered by a thick layer of fibrin On the 2° finger a digital pitting scar is visible

Digital ulcer in the 3° finger: the ulcer is round and the bottom is covered by areas of fibrin and areas of granulation (arrow)

Ulcer on the 3° fingertip with central part of fibrin On the 2° finger is present a perionichial ulcer with a necrotic part (arrow)

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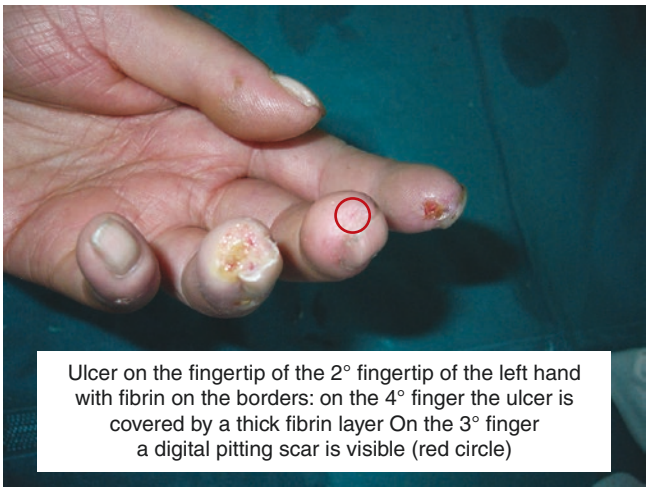
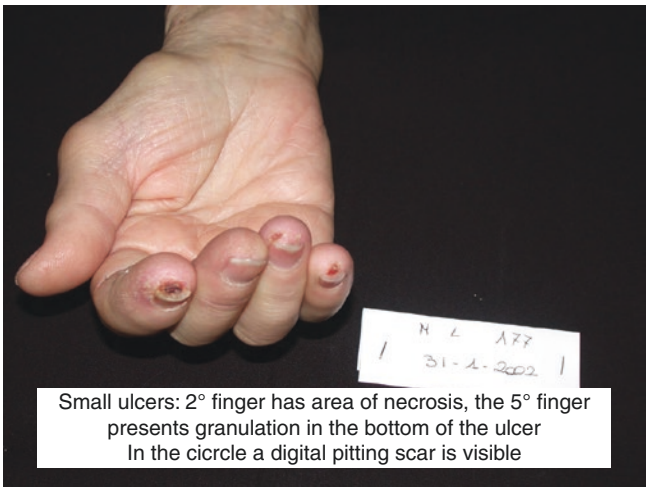
Ulcer on the figertip, riepithelisation is starting from the borders While in the center areas fo fibrin are visible On the 3° finger a digital pitting scar is evolving to ulcer.



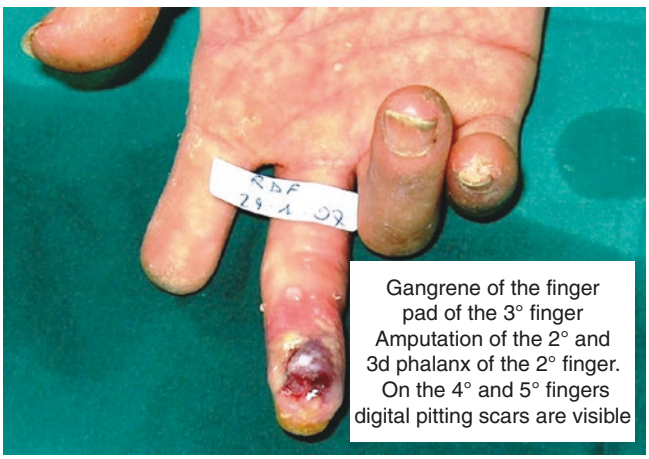
Ulcer on the fingertip of the 2° fingertip of the left hand with fibrin on the borders: on the 4° finger the ulcer is covered by a thick fibrin layer On the 3° finger a digital pitting scar is visible (red circle)



Small ulcers: 2° finger has area of necrosis, the 5° finger presents granulation in the bottom of the ulcer In the cicrcle a digital pitting scar is visible

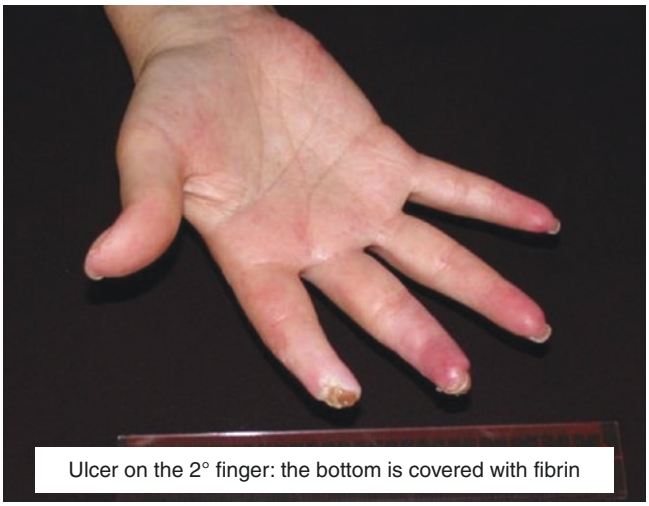
Ulcer almost healed, the riepithelisation starts from the border to the center of the ulcer, dry fibrin, which will evolve likely to a crust, is present in the center of the ulcer

Ulcer of the nail bed: the nail is eroded and the bottom is covered with fibrin



Gangrene of the finger pad of the 3° finger Amputation of the 2° and 3d phalanx of the 2° finger. On the 4° and 5° fingers digital pitting scars are visible

Wet Gangrene of the fingertip with overlap of infection and bone protrusion

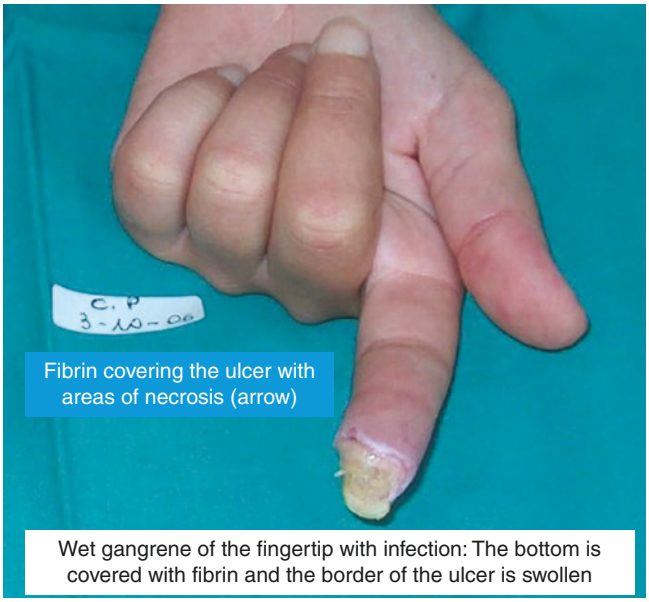


Ulcer on the 2° finger: the bottom is covered with fibrin

Wet Gangrene of the 2° finger, the bone is exposed (to be amputated) The 3° finger shows a perionichial ulcer, the fibrin is dry and likely evolving to a crust

Wet gangrene of the 2°, 3° and 4° fingers, the skin appears like «boiled» and shining: ulcers covered by fibrin on the perionichial area of the 2° finger and on 3° fingertip

Wet gangrene : disepithelisation with exposition of the dermis and area of fibrin



Fibrin covering the ulcer with areas of necrosis (arrow)

Wet gangrene of the fingertip with infection: The bottom is covered with fibrin and the border of the ulcer is swollen

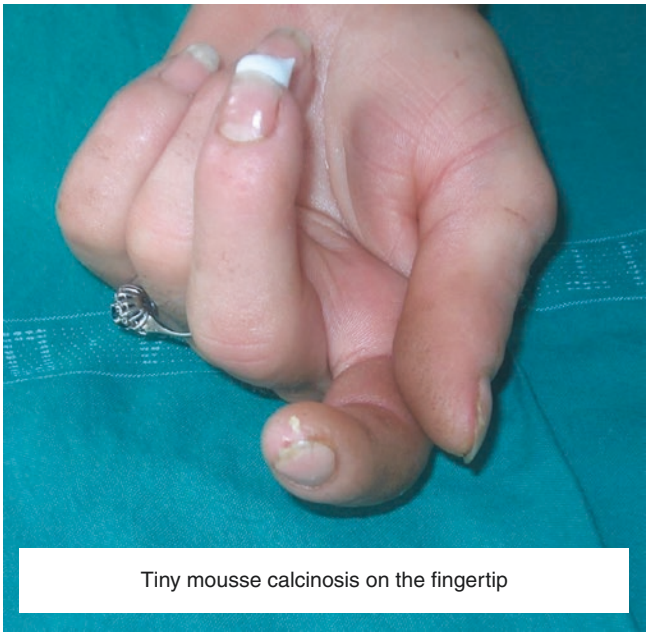
Calcinosis

Detected either clinically or radiographically. Calcinosis is defined as palpable, dermal and/or subcutaneous or intramuscular calcific deposits. It is usually located in digits or over large proximal joints or extensor surfaces of distal extremities

(Ann Rheum Dis. 2013;72:1747)

Small calcinotic stone (arrow) fallen from the fingertip after provoking an ulcer

mousse calcinosis of the finger, above an ulcer due to a previous calcinosis fallen out



Tiny mousse calcinosis on the fingertip

mousse calcinosis of the fingertip

Mousse calcinosis of the fingertip

Digital Pitting Scars

small-sized hyperkeratosis sometimes overlying a cutaneous depression

> Digital pitting scars are depressed areas at the tips *and other areas on the finger* as a result of chronic ischemia, rather than trauma or exogenous causes
>
> (Ann Rheum Dis 2013;72:1747)

Digital pitting scar

Digital pitting scar: the nail bed is suffering and it is likely to evolve to an ulcer

Digital pitting scar: the skin is peeling leaving below a scar

Digital pitting scar: the lesion is evolving with a sufference of the tissue And is likely to evolve to an ulcer if not adequately managed

Necrosis

Pathologic death of tissue resulting from irreversible damage.
End result of infarction of a superficial area, often associated with secondary infection.
It may be classified in wet (frequently linked to infection) or dry necrosis.

Dry necrosis Subungueal lesion, infection and edema

Dry necrosis, inflammation and underlying infection

Dry necrosis, no infection visible

Transition from a wet to a dry necrosis, characterised by infection and edema

Wet gangrene The ulcer has a central part of wet necrosis surrounded by granulation tissue

Wet necrosis evolved with parts in transition to dry necrosis

Wet Necrosis, areas of fibrin and infection

wet necrosis, fibrin and granulation tissue, No infection.

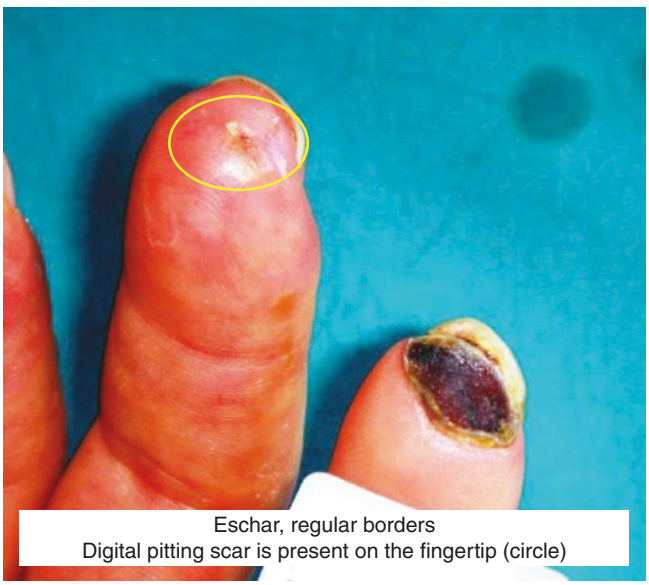
Eschar

A thick, coagulated crust expression of *superficial necrosis*.
May overlie an area of ulceration.


Eschar, no infection


Eschar with irregular borders


Eschar, to be removed and the ulcer below to be cleaned


Eschar, regular borders
Digital pitting scar is present on the fingertip (circle)


multiple eschars, no infection

Gangrene

Deep tissue necrosis due to obstruction or loss of blood supply; it may be localised to a small area or involve an entire finger, and may be wet or dry according to evolution, reflecting the degree of adjacent tissue perfusion, time course of necrosis and presence or type of associated secondary infection.

It usually evolves from a wet phase to a dry phase.

Early Wet gangrene in evolution, with fibrin to be removed

Wet gangrene in transition to dry gangrene with Infection, edema

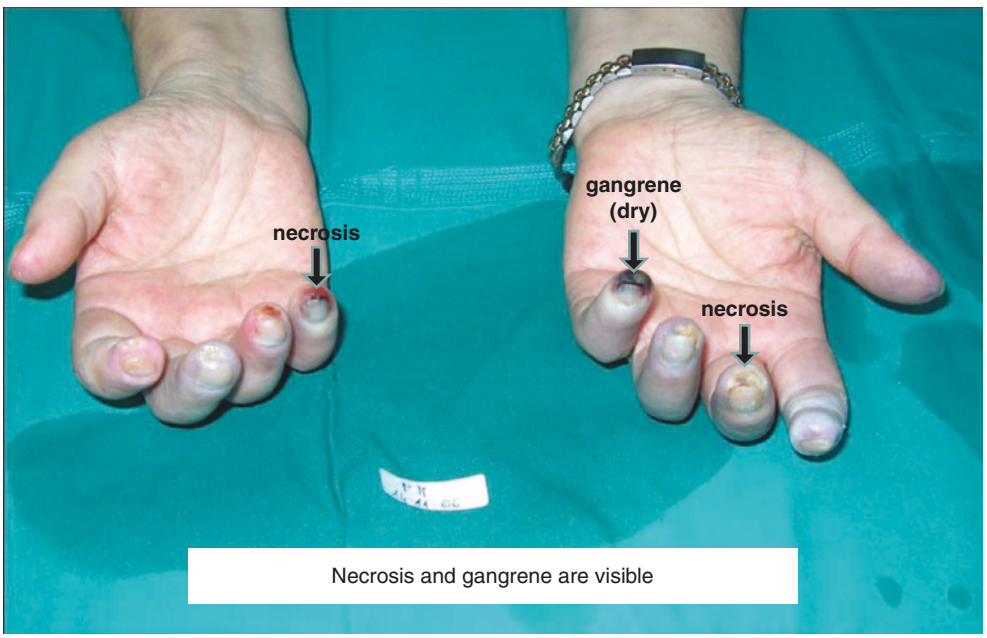
In the 3rd digit, loss of tissue granulation and fibrin are present, in the 4th digit an early phase of wet gangrene is visible (arrow)

Previous wet gangrene which eroded the fingertip now evolved to granulation tissue

dry gangrene in the extremities and an initial wet gangrene in the proximal part of the fingers

Dry gangrene

Surgical amputation due to gangrene
Dry Gangrene in act on the tip of the IV finger



Necrosis and gangrene are visible

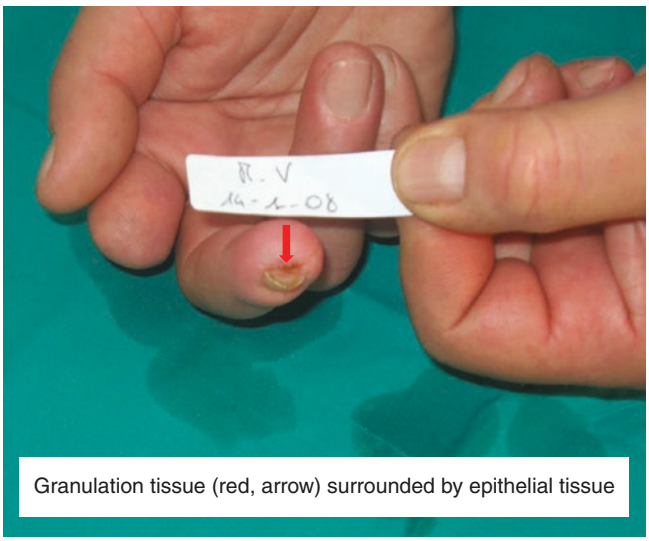
Evolved Gangrene, the bone is exposed,
signs of granulation and riepithelisation are visible
(shiny area close to the bone, arrow)

Autoamputation

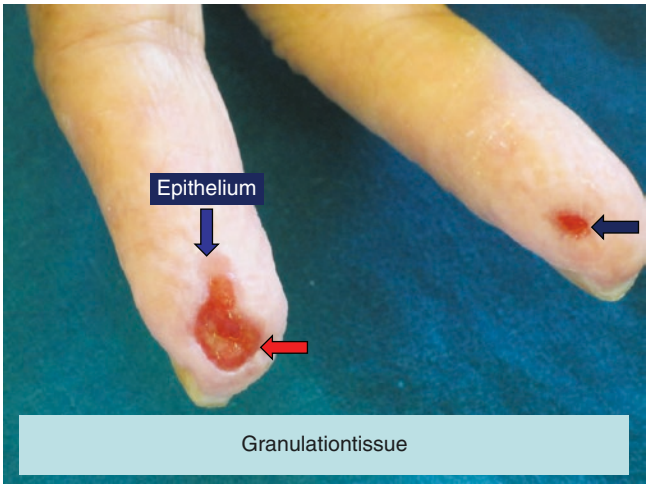
Re-epithelialization

Formation of epithelium over a denuded surface.
This may cover partially or completely the ulcer.
It is always preceded by granulation which leads to progressive healing of the ulcer.

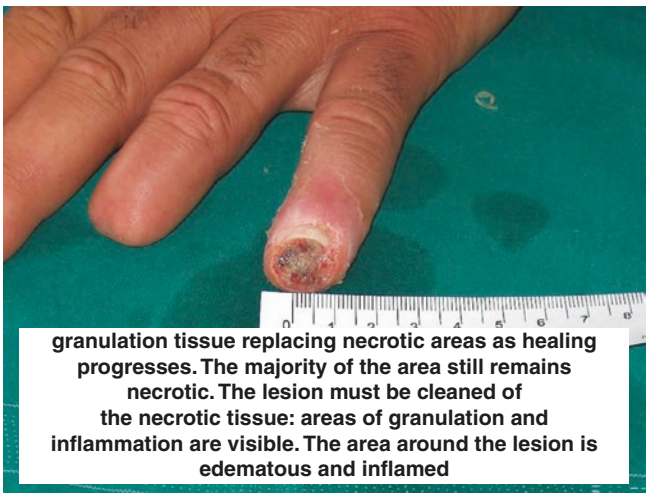
The red area on the ulcer border (arrow) fresh granulating tissue in the bottom of the ulcer.



Granulation tissue (red, arrow) surrounded by epithelial tissue



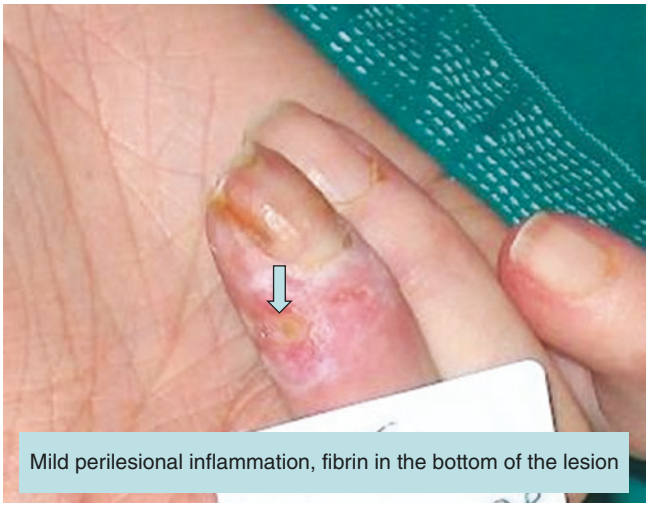
Granulationtissue



granulation tissue replacing necrotic areas as healing progresses. The majority of the area still remains necrotic. The lesion must be cleaned of the necrotic tissue: areas of granulation and inflammation are visible. The area around the lesion is edematous and inflamed

Fibrin

An elastic filamentous protein derived from fibrinogen by the action of thrombin.
It is a component of the inflammatory exudates and usually covers the bottom of the ulcer.



Mild perilesional inflammation, fibrin in the bottom of the lesion

Fibrin covering the bottom of the ulcer, inflammed perilesional area, irregular borders


Granulation and fibrin (arrow)


fibrin covering the ulcer characterised by wet gangrene and bone exposure, granulation areas are visible (red arrow), infection is active (yellow arrow)


fibrin and large part of wet necrosis covering the ulcer, perilesional area inflammed


fibrin and large central part of wet necrosis (arrow) covering the ulcer


Fibrin and Wet Necrosis , edema and infection previous amputation of the III finger