

Infected twice amputated tail in dog with ischemic dermatopathy

Molossian x Cirneco dell'Etna

Female

4 years old

“Day 0” equals first day of MPPT treatment

A four-year-old female, possibly molossian x Cirneco dell'Etna, diagnosed with “ischemic dermatopathy associated with cell-poor vasculitis” – a dermatological condition which impairs healing and regeneration of peripheral tissues - was scheduled for a third amputation in order to close a chronic non-healing wound on her tail. The wound originated approximately 3 years prior as a self-inflicted trauma from her biting her tail combined with vigorous, happy tail wagging. The distalmost vertebra was amputated in an attempt to heal the wound, 2 years and 9 months prior, but this failed to solve the problem. The dog was treated with niacinamide (Vitamin B3) and the antibiotic, Doxycycline for 6 weeks. She ceased biting her tail but despite innumerable attempts to heal and protect it with all available means, the tail deteriorated further. 2 years and 8 months (pic 1) after the first amputation, a second amputation was performed to promote healing. The day before surgery, the dog was prophylactically started on oral antibiotics of 500 mg Amoxicilline and 125 mg Clavulanic Acid (Augmentin). However, the tissue did become infected and necrotising (pic 2, 3) and 8 days after surgery, the distalmost part of tail holding the stitches fell off (pic 4). The tail was now also treated with a topical ointment containing a collagenase enzyme and the antibiotic, chloramphenicol (Irxol). Because of her dermatopathy, she was also started on several months of Pentoxifylline to increase blood supply. She was furthermore scheduled for a third amputation. The tip of the tail was moderately swollen with a dry necrotic infection which showed the initial signs of proximal spread. On the eve of the third amputation, it was decided to try treatment with MPPT instead. The antibiotics were stopped on the day before starting MPPT, i.e. after 20 days' administration. (pic 5).

After 24 hours, autolytic debridement was clearly ongoing and the skin on the wound edges had regained vitality (pic 6). After 48 hours, the swelling had reduced considerably, the wound bed was granulating, and the edges were epithelializing concomitantly with the continued autolytic debridement (pic 7). These processes all continued in parallel with visible daily improvement (pic 8, 9, 10, 11) over the following 3 weeks until full closure (pic 12). Pigmentation moved into all the newly generated epithelium and hair follicles were gradually restored (pic 13, 14, 15, 16). The latter was seen as noteworthy considering the dermatopathy and the 3 years of constant trouble as hair follicle growth is a sign of regeneration of functional skin and not the typical more rigid fibrotic scar tissue. At a follow-up 3.5 months after start of MPPT (pic 15, 16) the dog was reported able to play and wag as much as she pleased without the tail causing any trouble.

The years the dog lived with the chronic wound, the pain had never seemed severe enough to warrant analgesics but treating the tail would always cause her certain pain. Not long after starting MPPT, this pain seemed no longer present. Furthermore, the protective Elizabethan collar she had been wearing since her second amputation could be removed for increasing periods even when unsupervised as she would no longer try to get to the wound.



1

Day minus-21
Shortly before second
amputation

Old, fibrous, hairless scar tissue on the deformed tail tip display two non-healing wounds



2

Day minus-15
4 days after amputation

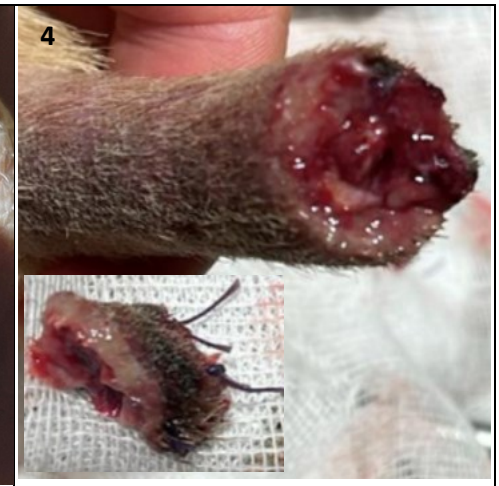
Infection.
Black necrosis around the stitches.
Strong inflammation shows proximal spread.



3

Day minus-15
4 days after amputation

Black necrosis around all stitches and spreading proximally.



4

Day minus-11
8 days after amputation

The non-viable soft tissue has broken off at the level of the underlying tail bone, which is visible right in the centre. The insert shows the broken off part with the stitches.

Inflammation shows that the necrotising infection is spreading further proximally.



**Day 0 – start MPPT
19 days after amputation**

Dry necrosis in the moderately swollen tip of the tail.



Day 1

The elevated centre is the tail bone covered with a thin layer of soft tissue. The surrounding soft tissue form a concave “moat” in which the darker areas are collections of red-pigmented bacterial toxins being expelled onto the wound surface. The skin edges are revitalising.



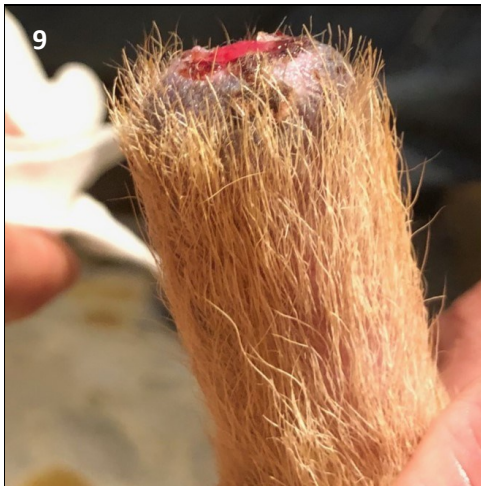
Day 2

The moat is granulating and filling in from the bottom and immature granulation is adding thickness and width to the tissue covering the bone. The wound edges are epithelializing. Debris, including toxins, continue being expelled via the autolytic debridement.



Day 6

The missing tissue has been regenerated and is being covered in skin along the entire periphery. In parallel, autolytic debridement continues. Pigmentation is moving rapidly into the new skin. *White arrow:* A cluster of new hair follicles are appearing in the earliest state of epithelialisation on the wound edge. *Off-white arrow:* Isolated hair follicles are appearing in the recently generated epithelium.



Day 6

The swelling is fully gone.
The lost tissue has been restored and the bone is well cushioned.
Epithelialisation is ongoing.



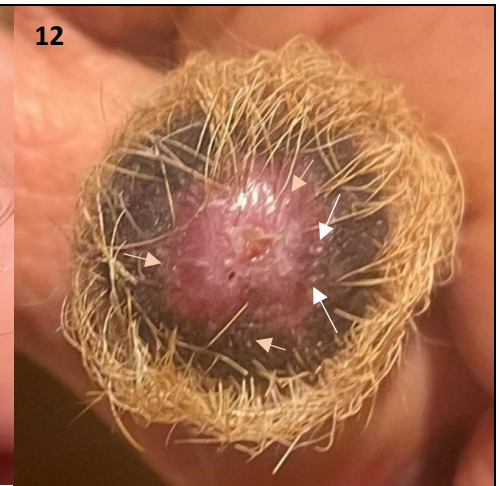
Day 12

Strong epithelialisation along entire wound edges in parallel with autolytic debridement expelling debris.
Pigmentation is moving in fast.
Off-white arrow: Isolated new hair follicles.



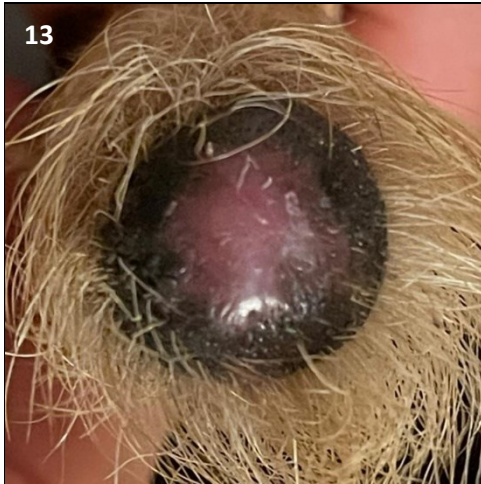
Day 16

A tentative scab is forming over the last small opening overlying the bone.
Only once all debris has been expelled can the last opening be covered in skin.



**Day 22
Closed**

The entire tail tip is covered in new epithelium.
Hair follicle restoration is appearing as very short, scattered hair stumps.
White arrows: Cluster of hair follicles.
Off-white arrows: Isolated new hair follicles.



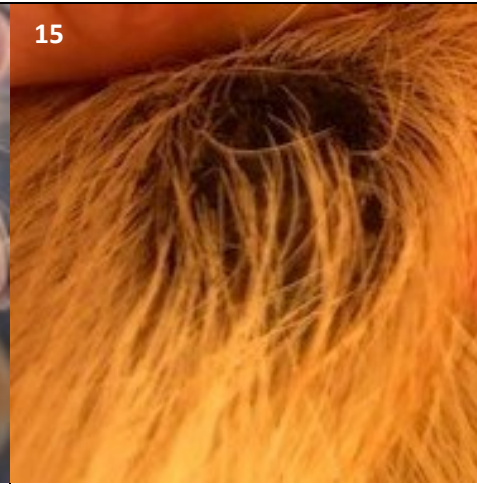
**Day 26
Follow-up**

Pigmentation continues to move in as the scar tissue matures into a more natural structure of functioning skin. Hair follicles are appearing dispersed over the area, including in the yet-to-pigment central part.



**Day 60
Follow-up 2 months after
start MPPT**

Hair is also growing from the sides below the wound providing further protection.



**Day 106
Follow-up 3½ months after start MPPT**

Pigmentation is completed.
Lost hair follicles have been restored.



Day 106