

PetCellpen®

cordless
mobile

CASE STUDIES

Direct cold atmospheric plasma
therapy for small animal
medicine



CASE STUDIES

PetCellpen®

DERMATOLOGY AND SKIN INFECTIONS

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BEANS - ANAL GLAND ABSCESS WITH FISTULA

Dr. med. vet. Michael Hiestand

Pomeranian mix. Neutered male. Eight-year-old.

MEDICAL HISTORY

- Recurrent anal gland abscesses for the last year and a half
- Chronic problem with fistula development
- Repeated courses of antibiotics and wound irrigation
- Locally applied antibiotic ointments
- Therapy resistant

TREATMENT

- **PetCellpen®**:
 - 15-minute sessions, twice a week for a week and a half (three sessions)
 - Glass electrode: Curved
 - Pulse frequency: 100 Hz
 - Amplitude: increased from 6 to 9
- Rinsing with policresulen during initial treatment

RESULT

- Healed within three to four weeks



DORO - ABSCESS ON THE FLANK

Dr. med. vet. Michael Hiestand

Small Swiss Hound. Spayed female. Three-year-old.

MEDICAL HISTORY

- Cavernous abscess in the right dorsal thoracolumbar region above the last costal arch, treated surgically and with amoxicillin/clavulanic acid four months ago. A small swelling remains
- Recurrence with renewed swelling

DIAGNOSTIC TESTS

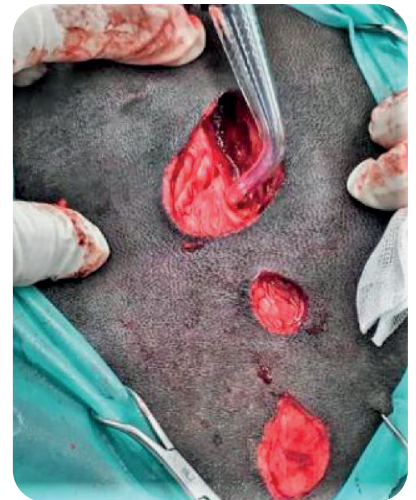
- **Ultrasound:** Diffuse loosening of the structure over the entire right flank, fluid accumulations, no capsule observed
- **Cytology:** Many highly degenerated neutrophils, foreign body giant cells, foamy macrophages with strongly blue coloured granules, no evidence of neoplasia

TREATMENT

- Surgical
- Intra-operative **PetCellpen®** therapy, 15 minutes
- Follow-up treatment with **PetCellpen®**:
 - Two sessions a week for two weeks
 - Glass electrode: Curved
 - Pulse frequency: 100 Hz
 - Amplitude: 8
- Cefalexin, marbofloxacin

RESULT

- Completely healed in two weeks



1 year after surgery

AGE - PERIANAL ABSCESS

Dr. med. vet. Michael Hiestand

Malinois. Male. 11-year-old.

MEDICAL HISTORY

- Perianal abscess adjacent to the anus.
About 0.5cm in diameter

TREATMENT

- Abscess irrigation
- **PetCellpen®**
 - Two 10-minute sessions in a week
 - Glass electrode: Straight
 - Pulse frequency: 100 Hz
 - Amplitude: 8
- Cefalexin for seven days

RESULT

- Healed without complications



LORD - INTERDIGITAL DERMATITIS

Dr. med. vet. Michael Hiestand

Pug. Neutered male. 11-year-old.

MEDICAL HISTORY

- Interdigital dermatitis after a change in diet
- History of repeated antibiotic treatment for respiratory infections
- Goal: to treat without antibiotics

TREATMENT

- **PetCellpen®**
 - Two 90-second sessions per site for one week
 - Glass electrode: Straight
 - Pulse frequency: 100 Hz
 - Amplitude: 4

RESULT

- Completely healed within one week.



LOGAN - FISTULISING ANAL GLAND INFLAMMATION

*Claudia S. Nett-Mettler - Dr. med. vet. Dipl. ACVD & EBVS®
European Specialist in Veterinary Dermatology*

White Shepherd. Male. Six-year-old.

MEDICAL HISTORY

- Chronic fistula persisting for several months following an abscess of the left anal gland

TREATMENT

- **PetCellpen®**
 - Two three- to four-minute sessions for one week
 - Glass electrode: Disc
 - Pulse frequency: 100 Hz
 - Amplitude: 8-9

RESULT

- Fistula almost closed after the first treatment



TORI - NASAL FURUNCULOSIS

Dr. med. vet. Michael Hiestand

St. Bernard. Female. Five-year-old.

MEDICAL HISTORY

- Chronic recurrent furunculosis on the bridge of the nose for two years
- Bilateral otitis externa
- Food allergies

TREATMENT

- Elimination diet
- Bridge of the nose - Treatment with **PetCellpen®**:
 - One 90-second session per spot, once a week for three weeks
 - Glass electrode: Curved and disc
 - Pulse frequency: 100 Hz
 - Amplitude: 8
- Ears - Treatment with **PetCellpen®** under anaesthesia, after ear irrigation
 - Glass electrode: Curved and disc
 - Pulse frequency: 100 Hz
 - Amplitude: 6
- Clotrimazole-dexamethasone marbofloxacin ear drops

RESULTS

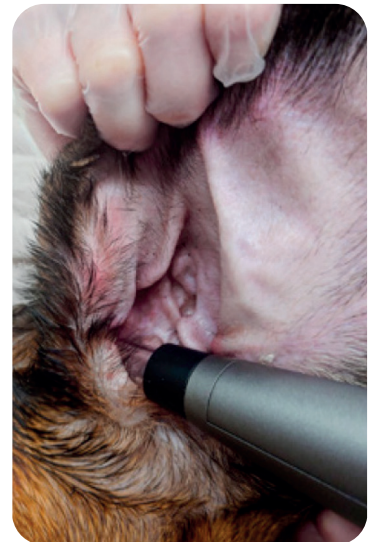
- The bridge of the nose had completely healed after three treatments
- Ears healed after five weeks with a combination of initial **PetCellpen®** therapy and local medication



Before



After



Ear treatment under anaesthesia

MATS - STERILE FURUNCLE ON THE LEFT ELBOW AND THE LEFT TARSUS

Claudia S. Nett-Mettler - Dr. med. vet. Dipl. ACVD & EBVS®
European Specialist in Veterinary Dermatology

Beauçeron. Male. Seven-year-old.

MEDICAL HISTORY

- Chronic, non-healing wounds on the left elbow and tarsus for six months
- No medication at that time, overnight bandage
- Previous treatments: Amoxicillin/clavulanic acid for three weeks and meloxicam, no improvement

TESTS

- Dermatological examination: On the left elbow, the callused skin was alopecic and oedematous, with two superficial wounds. The lateral metatarsal region was severely inflamed and oedematous with multiple fistulas with a large amount of serohemorrhagic exudate, alopecic, oedematous and spongy
- **Cytology:** Severe pyogranulomatous inflammation with eosinophils, no bacteria

Diagnosis: Sterile pyogranulomatous furunculosis.

TREATMENT

- Prednisolone and locally applied phenolsulfonic acid
- **PetCellpen®**
 - Two to three sessions per week, lasting four to five minutes each, for eight weeks
 - Glass electrode: Disc
 - Pulse frequency: 100 Hz
 - Amplitude: 6-8
- Chlorhexidine shampoo once per week

RESULTS

- No more bleeding after the first session, just one active fistula remained
- The owner reported itching
- Check-up after one month: Great improvement, elbow had completely healed, three active fistulas remained on the tarsus
- Allergy assessment: Exclusion diet for possible underlying food allergy



Before



Before



After

NORA - LICK GRANULOMA

Dr. med. vet. Daniel Bösch

Hovawart. Female. 11-year-old.

MEDICAL HISTORY

- Chronic thickened carpus due to licking
- Treated with cefalexin and prednisolone two years ago
- Currently: Leakage of serosanguineous fluid from several openings, cytology revealed predominantly neutrophils, no pain was observed

TREATMENT

- **PetCellpen®:**
 - One 90-second session per spot, twice a week for four weeks
 - Glass electrode: Curved
 - Pulse frequency: 100 Hz
 - Amplitude: 8–9

RESULT

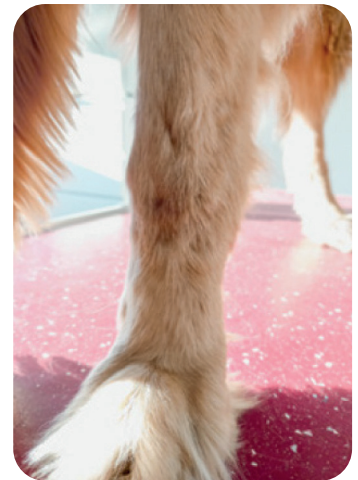
- Healed without complications



Before



Last treatment



7 weeks after

ROXY - HISTIOCYTOMA

Dr. med. vet. Michael Hiestand

Cockapoo. Spayed female. Three-year-old.

MEDICAL HISTORY

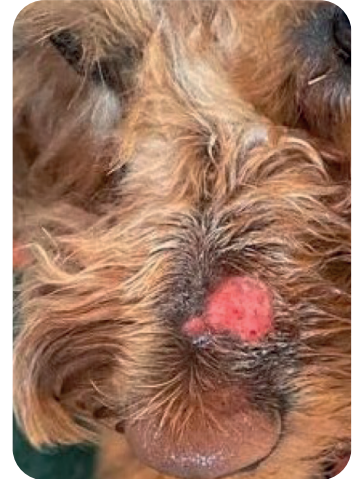
- Exudative ulceration on the bridge of the nose
- Cytology: predominance of histiocytes and granulocytes
- Diagnosis: infected and ulcerated histiocytoma

TREATMENT

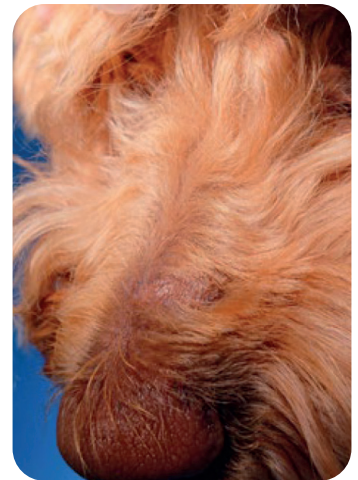
- **PetCellpen®:**
 - One 10-minute treatment
 - Glass electrode: straight
 - Pulse frequency: 100 Hz
 - Amplitude: 9
- Chlorhexidine pads and Policresulen ointment

RESULT

- Completely healed after two weeks



Before



After

FIRRA - HOTSPOT 1

Dr. med. vet. Michael Hiestand

Labrador. Female. Four-year-old.

MEDICAL HISTORY

- Acute exudative dermatitis close to the left ear
- Pre-treatment: Antibiotic and fusidic acid + betamethasone
- The owner wished to avoid antibiotic treatment if possible

TREATMENT

- **PetCellpen®:**
 - Five-minute sessions, twice a week for two weeks
 - Glass electrode: Disc
 - Pulse frequency: 100 Hz
 - Amplitude: 8

RESULTS

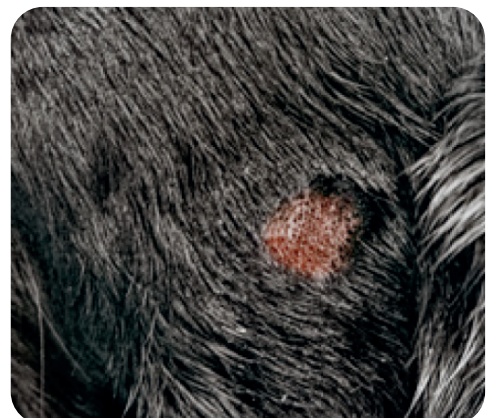
- Itching and inflammation were significantly better after the first treatment
- Healed after two weeks



Before



1 week after



2 weeks after

LUNA - HOTSPOT 4

Dr. med. vet. Juna Gutknecht

German Shepherd. Spayed female.
Five-year-old.

MEDICAL HISTORY

– Large hotspot in the left flank for two days

TREATMENT

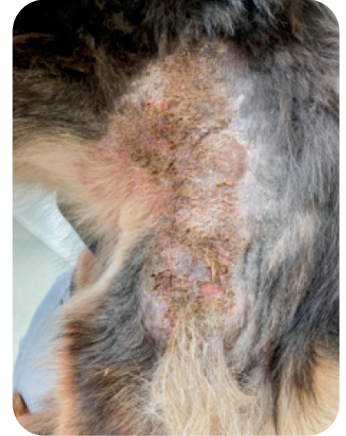
- **PetCellpen®:**
 - Four- to six-minute sessions, three times a week for one week
 - Glass electrode: Curved and disc
 - Pulse frequency: 100 Hz
 - Amplitude: 8-9

RESULTS

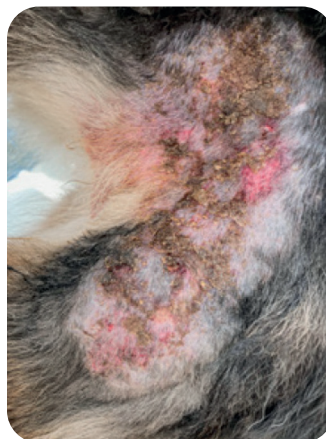
- The lesion had dried completely after the first treatment
- Itching was significantly reduced after the first treatment
- Healed after three sessions



Before 1st session



Before 2nd session



*Before 2nd session,
after crust removal*



Before 3rd session

JECKO - HOTSPOT ON THE TAIL 1

Dr. med. vet. Michael Hiestand

German Wirehair. Male. Nine-year-old.

MEDICAL HISTORY

– Hotspot on the tail

TREATMENT

- **PetCellpen®:**
 - Just one session
 - Glass electrode: Disc
 - Pulse frequency: 100 Hz
 - Amplitude: 8
- Cefalexin for 14 days, polycresulen ointment

RESULT

– Healed without complications



TOBY - HOTSPOT ON THE TAIL 2

*Claudia S. Nett-Mettler - Dr. med. vet. Dipl. ACVD & EBVS®
European Specialist in Veterinary Dermatology*

Springer Spaniel. Male. Nine-year-old.

MEDICAL HISTORY

- Past history of furunculosis over the supracaudal gland, which had healed
- The dog was gnawing at the tail, around the supracaudal gland, there were papules, crusts and erosions on the lesion
- Previous treatments: Local therapy with hydrocortisone spray, shampoo with chlorhexidine and miconazole, zinc and copper-sulfate-zinc-oxide ointment
- Elizabethan collar at night, bandage during the day

TREATMENT

- **PetCellpen®:**
 - Three-minute sessions, once a week for two weeks
 - Glass electrode: Disc
 - Amplitude: 9
- Continue with the chlorhexidine shampoo every two days

RESULT

- Healed after two weeks



Before



4 days after



1 week after

NIAMH - INFLAMMATION OF THE TAIL GLAND (SUPRACAUDAL GLAND)

Dr. med. vet. Leslie Wohlgroth

Labradoodle. Spayed female. 11-year-old.

MEDICAL HISTORY

- Painful chronic inflammation of the tail gland
- Abscess
- Local comedone formation and generalised comedones elsewhere on the body
- Had surgery in this area two years ago
- The owner does not want another surgery

TREATMENT

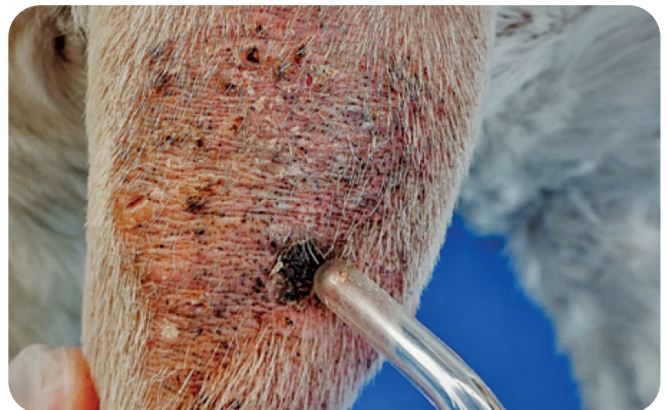
- Emptying of the largest comedones during initial treatment
- **PetCellpen®**: as the sole therapy
 - 20-minute sessions, twice a week for two weeks
 - Glass electrode: Curved
 - Pulse frequency: 100 Hz
 - Amplitude: 6-9
- Therapy very well tolerated

RESULT

- Healed within two weeks



Initial treatment



After initial therapy



After 2 weeks

KYLE - SCROTUM PYODERMA

*Dr. med. vet. Daniel Bösch and
Dr. med. vet. Fabienne Veillard*

American Collie. Male. 11-month-old.

MEDICAL HISTORY

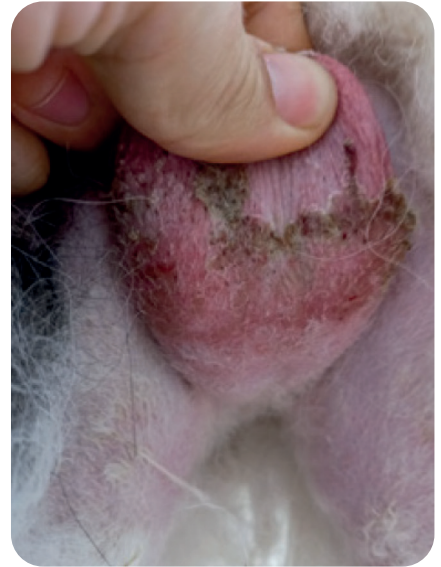
– The scrotum was inflamed and painful due to licking

TREATMENT

- Cefalexin, carprofen and topical chlorhexidine
- Due to vomiting, antibiotic therapy was discontinued prematurely. Treatment was switched to **PetCellpen®** only
- **PetCellpen®**: as sole therapy
 - One 90-second session daily per spot for three days
 - Glass electrode: Disc
 - Pulse frequency: 80-100 Hz
 - Amplitude: 8-9

RESULT

– Healed without complications



Before



After

JARA - TRICHOPHYTOSIS OF THE LIPS AND EAR

Dr. med. vet. Daniel Bösch

Bergamosco x Bernese Mountain Dog.
Spayed female. 18-month-old.

MEDICAL HISTORY

- Farm dog
- The condition was resistant to treatment. There were haemorrhagic crusts on both ears, with circular areas of alopecia without itching as well as ulcerated areas on the lips on both sides
- Previous treatment: Miconazole-nitrate, polymyxin B-prednisolone ointment for several weeks
- PCR-positive for Trichophyton

TREATMENT

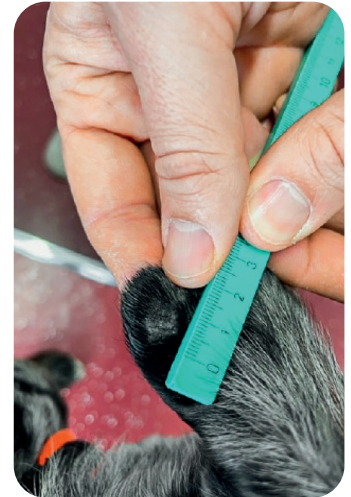
- **PetCellpen®:**
 - Three- to five-minute sessions per site, twice a week for two weeks
 - Glass electrode: Disc
 - Pulse frequency: 100 Hz
 - Amplitude: 4-6

RESULT

- Completely healed after two weeks



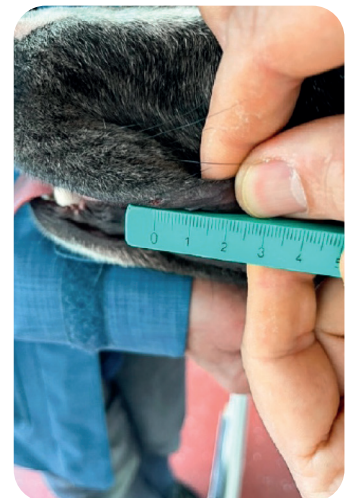
Ear before



Ear after



Lips before



Lips after

GUINNESS - VASCULOPATHY OF THE PINNAE

Claudia S. Nett-Mettler - Dr. med. vet. Dipl. ACVD & EBVS®
European Specialist in Veterinary Dermatology

Beauçeron. Neutered male. Nine-year-old

MEDICAL HISTORY

- Resistant idiopathic thrombovascular necrosis of the pinnae for one year
- Previous treatments: Prednisolone, pentoxifylline
- Dermatological findings: bilateral necrosis of the ear margin with tissue loss at the tips of the pinnae, erosions, ulceration and thick crusts

TREATMENT

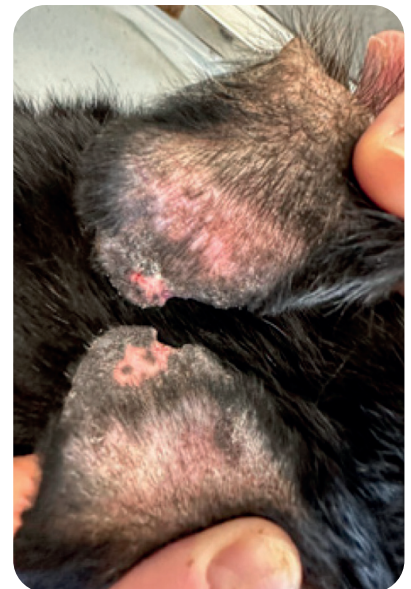
- Pentoxifylline dose increased
- **PetCellpen®**:
 - One-minute sessions, once a week for three weeks
 - Glass electrode: Disc
 - Pulse frequency: 100 Hz
 - Amplitude: 4-6

RESULTS

- The lesions healed after three weeks and the pentoxifylline dose was reduced. Recurrence after 10 days with renewed bleeding, scabs and ulceration
- **PetCellpen®** treatment was restarted using the disc electrode at 100 Hz and an amplitude of 6–8. The pentoxifylline dose was increased, and local treatment with colloidal silver and an essential-oil ointment was added
- The condition subsequently healed; however, continued treatment with pentoxifylline was still required



Before



After

MIA - FACIAL FISTULA

*Claudia S. Nett-Mettler - Dr. med. vet. Dipl. ACVD & EBVS®
European Specialist in Veterinary Dermatology*

DSH. Spayed female. 18-year-old

MEDICAL HISTORY

- Hyperthyroidism and presumably CKD
- Referred for a fistulous wound about 0.5cm in diameter on the left cheek with a hemorrhagic-purulent crust about 1cm thick for six months
- Current medication: Thiamazole

TREATMENT

- Topical local therapy with black tea to remove the crusts
- **PetCellpen®**:
 - Two sessions a week for three weeks
 - Glass electrode: Straight
 - Pulse frequency: 100 Hz
 - Amplitude: 6-8

RESULTS

- Fistula diameter smaller, the wound appeared less inflamed, crust less purulent and thinner
- Significant reduction in the amount of secretions
- A CT scan was planned to determine the cause



Before



After

ROBIN - CHIN FURUNCULOSIS

*Claudia S. Nett-Mettler - Dr. med. vet. Dipl. ACVD & EBVS®
European Specialist in Veterinary Dermatology*

DSH. Spayed female. 10-year-old

MEDICAL HISTORY

- Previous treatment:
 - Twice-weekly cefovecin and prednisolone for three weeks
 - Cleavage of microabscesses
 - Cefovecin and prednisolone for one month
- The condition improved, but relapsed within a few days after prednisolone was tapered
- Dermatological findings:
 - Swelling, erythema and hypotrichosis
 - Three active furuncles with serosanguineous exudate

DIAGNOSTIC TESTS

- Trichogram: Negative
- Cytology: Pyogranulomatous inflammation, eosinophils and many cocci

TREATMENT

- Topical black-tea treatment once daily
- **PetCellpen®**:
 - Twice weekly for two weeks
 - Glass electrode: Disc
 - Pulse frequency: 100 Hz
 - Amplitude: 2-4

RESULT

- Healed without complications after two weeks



Before



After

ZORRO - EOSINOPHILIC GRANULOMA

Dr. med. vet. Sabine Huber

Maine Coon. Neutered male. Four-year-old.

MEDICAL HISTORY

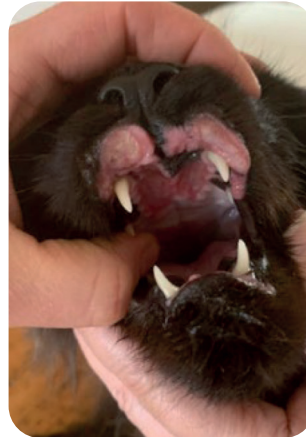
- Eosinophilic granuloma in the oral cavity, forelimb and hindlimb for two and a half years
- Indolent ulcer on both upper lips for nine months, ulcerated wounds on both tarsi, several digits were also swollen and ulcerated
- Conventional treatment methods have led to partial cure. The chronic-intermittent course is partly due to poor owner compliance
- Started **PetCellpen®** therapy in parallel with cyclosporin treatment

TREATMENT

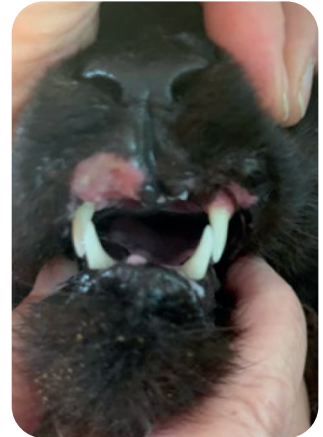
- **PetCellpen®**:
 - One to two times per week for three weeks (two- to five-minute sessions). After that, once every two weeks
 - Glass electrode: Curved and straight
 - Pulse frequency: 100 Hz
 - Amplitude: 9

RESULTS

- Skin lesions on limbs healed after four sessions
- Lips were significantly better, although healing took longer



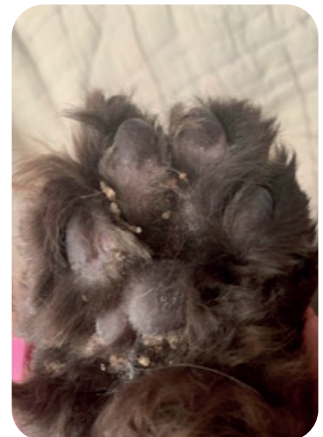
Before



After



Before



After

MELODIE - PYODERMA ABOVE THE EYE

Dr. med. vet. Michael Hiestand

DSH. Spayed female. One-year-old.

MEDICAL HISTORY

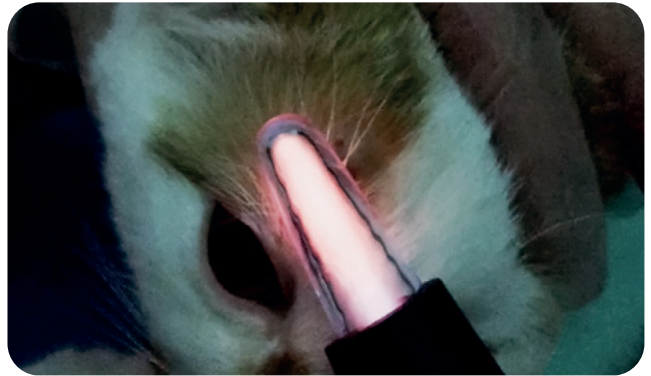
- Exudative pyoderma above the eye
- The patient had received several courses of antibiotics due to infected bite injuries
- Topical treatment with ointments was difficult due to location (close to eye)
- Goal: To treat without antibiotics

TREATMENT

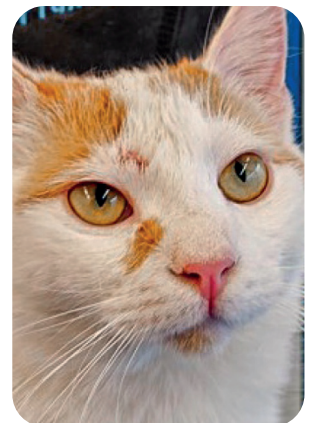
- **PetCellpen®:**
 - Five- to 10-minute sessions, twice over three days
 - Glass electrode: Straight
 - Pulse frequency: 80 Hz
 - Amplitude: 4-6
- The therapy was very well tolerated

RESULT

- Completely healed after 10 days



After one session



7 days after

TEMPERANILLO - PYODERMA AT THE BASE OF THE EAR

Dr. med. vet. Leslie Wohlgroth

Maine Coon. Neutered male. 12-year-old.

MEDICAL HISTORY

- Deep pyoderma at the base of the ear
- Previous treatment: cefovecin

TREATMENT

- **PetCellpen®:**
 - Four- to five-minute sessions, once a week for three weeks
 - Glass electrode: Straight
 - Pulse frequency: 100 Hz
 - Amplitude: 6-8
- Cefovecin and betamethasone-florfenicol-terbinafine ear gel

RESULT

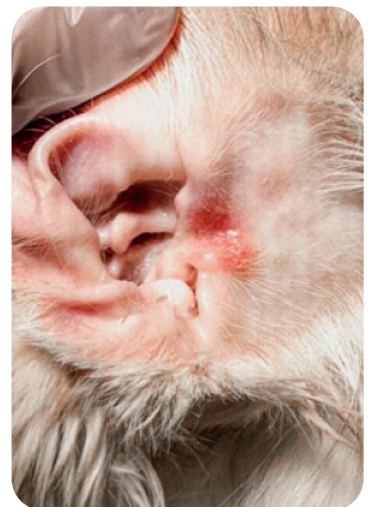
- At the two-week follow-up examination, a persistent foreign body was identified in front of the ear and subsequently removed. The site healed without complications within one week



Before



Control after 2 weeks, foreign body extraction.



1 week after therapy

AMIRIS - PAPILLOMAVIRUS-INDUCED FOCAL FELINE PLAQUE

Dr. med. vet. Michael Hiestand

Maine Coon. Spayed female. Nine-year-old.

MEDICAL HISTORY

- Papillomavirus-induced focal feline plaque on the ear pinna

TREATMENT

- **PetCellpen®**:
 - Ten-minute sessions, once a week for four weeks
 - Glass electrode: Straight and curved
 - Pulse frequency: 100 Hz
 - Amplitude: 6-8
- Chloramphenicol-nitrofurazone-prednisolone spray

RESULT

- Completely healed after five weeks



Before



After

JIMMI - PLASMA CELL PODODERMATITIS

Dr. med. vet. Michael Hiestand

DSH. Neutered male. Nine-year-old.

MEDICAL HISTORY

- Plasma cell pododermatitis, on cortisone for years
- FeLV/FIV negative
- Chronic recurrent abscess on one paw
- The condition was resistant to treatment despite the use of various antibiotics selected according to the antibiogram
- Long-term therapy with tetracycline is underway

TREATMENT

- **PetCellpen®:**
 - Ten minutes during surgery and ten minutes at each dressing change
 - Glass electrode: Curved
 - Pulse frequency: 100 Hz
 - Amplitude: 8
- Tetracycline

RESULTS

- A significant improvement was evident after just five days
- Wound healing progressed well, fully healed after two weeks
- No new abscess developed



Before



Before



After

MOMO - IMPAIRED WOUND HEALING AFTER AMPUTATION

Dr. med. vet. Michael Hiestand

Cross-breed. Neutered male.
Six-year-old.

MEDICAL HISTORY

- Traumatic amputation
- Wound healing problems due to multidrug-resistant bacteria (MRSA) and chronic pressure ulcers caused by the prosthesis
- All antibiotics were discontinued due to multidrug resistance

TREATMENT

- Surgical debridement and cleansing
- **PetCellpen®**:
 - Ten-minute sessions, once or twice a week for four weeks
 - Glass electrode: Curved and disc
 - Pulse frequency: 100 Hz
 - Amplitude: 6-8
- Hypochlorous acid cleansers, policresulen, honey ointment pads and meloxicam

RESULTS

- Completely healed in four weeks



Pressure ulcers before



Amputation stump before



Pressure ulcers after



Amputation stump after

PEEWEE - TARSUS POLYTRAUMA

Dr. med. vet. Claudia Hagemann-Krull

Whippet. Male. Seven-year-old.

MEDICAL HISTORY

- Severe polytrauma of the right tarsus while playing (fracture, ligament damage and dislocation)
- Partial arthrodesis and bandage
- Conventional treatment with doxycycline and carprofen
- Necrosis due to decubitus. Arthrodesis implants, tendons and nerves exposed
- The wound had not healed despite three months of conventional therapy

TREATMENT

- **PetCellpen®** as sole therapy:
 - Five-minute sessions, every day for two weeks
 - Glass electrode: straight
 - Pulse frequency: 60 Hz
 - Amplitude: 4
- Covered with sterile bandages and a long sock

RESULT

- Completely healed in two weeks



2 weeks post-surgery



After 2 PetCellpen® sessions



2 weeks after treatment

SAYA - TORN CLAW

*Claudia S. Nett-Mettler - Dr. med. vet. Dipl. ACVD & EBVS®
European Specialist in Veterinary Dermatology*

Great Dane. Spayed female. Five-year-old.

MEDICAL HISTORY

- Torn claw
- Complete claw removal
- Wound was not healing properly
- No medication, only bandage

TREATMENT

- **PetCellpen®:**
 - One-time session
 - Glass electrode: Straight
 - Pulse frequency: 100 Hz
 - Amplitude: 4-6
- Bandage

RESULT

- Completely healed in three days



Before



Healing after treatment with the PetCellpen®

CLARISSA - MULTIPLE TOE FRACTURES WITH SOFT TISSUE INJURY

Dr. med. vet. Vanessa Schifferle

Schnauzer. Spayed female. 10-year-old.

MEDICAL HISTORY

- Multiple toe fractures with soft tissue injury on both hind paws after being hit by a car
- Goal: Avoid toe amputation, rapid wound healing

TREATMENT

- Stabilisation of the patient and immediate surgical treatment of the wounds
- Bandages were applied to both hind paws
- **PetCellpen®** treatment at each dressing change:
 - Five- to 10-minute sessions, three times a week for four weeks
 - Glass electrode: Straight and disc
 - Pulse frequency: 70 Hz
 - Amplitude: 5

RESULTS

- Soft tissue injury healed after one month
- After seven weeks, the injuries had completely healed



Before



After

AMY - GINGIVECTOMY

Dr. med. vet. Anne Dowidat

Labrador. Spayed female. Eight-year-old.

MEDICAL HISTORY

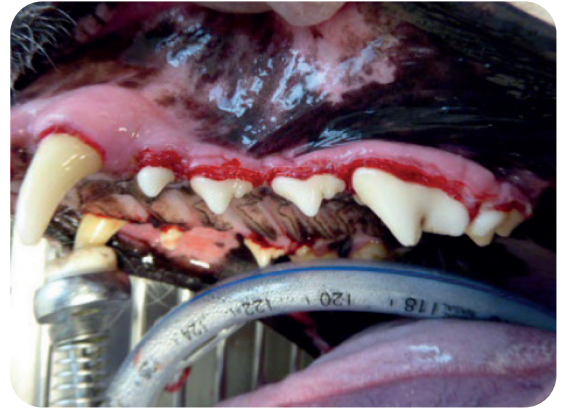
- Dental plaque, tartar and gingivitis
- Periodontitis, gingival hyperplasia, especially in molars

TREATMENT

- Dental scaling and polishing and excision of gingival tissue
- One dose of meloxicam
- **PetCellpen®:**
 - One session after gingivectomy
 - Glass electrode: straight
 - Pulse frequency: 100 Hz
 - Amplitude: 8

RESULT

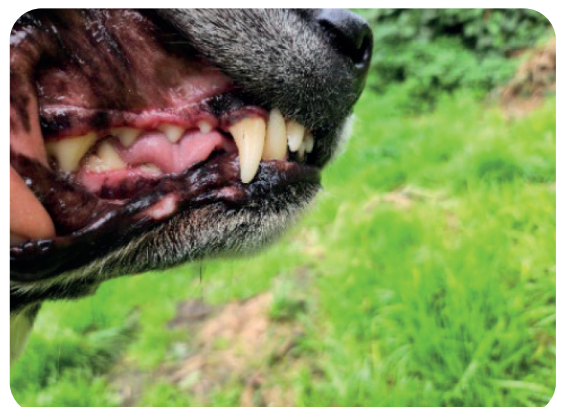
- Completely healed without any complications or use of antibiotics



During surgery



1 day post-surgery



2 days post-surgery

ONYX - BITE INJURY ON THE EAR

Dr. med. vet. Michael Hiestand

Cross-breed. Neutered male. Three-month-old.

MEDICAL HISTORY

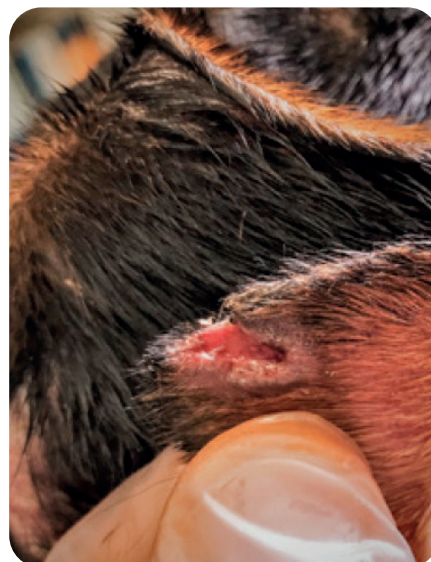
- A bite injury to the right ear had occurred ten days previously (edge of the ear and on the pinna)
- Previous treatment: chlorhexidine ointment

TREATMENT

- **PetCellpen®**:
 - Six-minute sessions, once a week for two weeks
 - Glass electrode: Straight
 - Pulse frequency: 100 Hz
 - Amplitude: 8

RESULTS

- The pinna injury healed after two PetCellpen® sessions
- The ear margin wounds were significantly smaller after one week, were treated again and then healed completely



Before



After

CORA - DECUBITUS ULCER ON THE ELBOW WITH ABSCESS

Dr. med. vet. Leslie Wohlgroth

Labrador. Spayed female. 11-year-old.

MEDICAL HISTORY

- A painful abscess on a decubitus ulcer
- A granuloma had been surgically removed from the same site two years ago
- The lesion recurred and was treated with cefalexin
- The owner did not want another surgery or more antibiotics

TREATMENT

- **PetCellpen®:**
 - Three- to four-minute sessions, twice a week for a week and a half
 - Glass electrode: Straight and disc
 - Pulse frequency: 100 Hz
 - Amplitude: 6-9

RESULT

- Clear regression after one week



SHERRY - INFECTED BITE INJURY, ABSCESS, TISSUE NECROSIS

Dr. med. vet. Michael Hiestand

DSH. Spayed female. Three-year-old.

MEDICAL HISTORY

- A cat-bite abscess had developed ten days previously
- Surgical drainage and irrigation
- Previous antibiotics: Amoxicillin, cefovecin, pradofloxacin, chloramphenicol
- Fever and spreading swelling, hard and painful
- Multidrug resistance
- Tissue necrosis started

TREATMENT

- **PetCellpen®**:
 - Ten-minute sessions, twice on the first day and once again two days later
 - Glass electrode: Straight
 - Pulse frequency: 40 and 80 Hz
 - Amplitude: 4-8

RESULT

- Completely healed, no further treatments required



NALA - BITE WOUND

Med. vet. Larissa von Scotti

Maine Coon. Spayed female. Four-year-old.

MEDICAL HISTORY

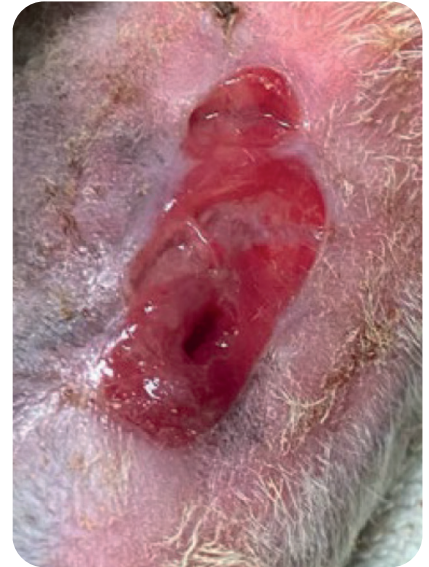
- Suture dehiscence three weeks ago at the elbow
- Infected wound
- Antibiotics: amoxicillin-clavulanic acid, lincomycin
- Euthanasia was considered, **PetCellpen®** therapy was used as a final option

TREATMENT

- **PetCellpen®**:
 - Five- to six-minute sessions, twice weekly for two weeks
 - Glass electrode: disc
 - Pulse frequency: 100 Hz
 - Amplitude: 6

RESULT

- Completely healed after two weeks



Before



After

VERITY - IMPAIRED WOUND HEALING OF THE TARSUS

*Claudia S. Nett-Mettler - Dr. med. vet. Dipl. ACVD & EBVS®
European Specialist in Veterinary Dermatology*

Devon Rex. Spayed female. 12-year-old.

MEDICAL HISTORY

- Referred for cold plasma therapy because of a non-healing wound on the left tarsus due to an abscess two months ago
- Previous systemic treatment: several antibiotics
- Topical pre-treatment: ointments, dressings
- Dermatological findings: An approximately 2cm wound with healthy granulation tissue, no evidence of infection, no active wound edges, cranial necrosis due to bandage pressure

TREATMENT

- **PetCellpen®**:
 - Two-minute sessions, three times a week for 12 weeks
 - Glass electrode: disc
 - Pulse frequency: 100 Hz
 - Amplitude: 6-9

RESULT

- Healed without complications



Before



After 2 months of therapy

ASCHEI - POSTOPERATIVE SCARS AND LAMENESS

Dr. med. vet. Michael Hiestand

Pitbull. Spayed female. Eight-year-old.

MEDICAL HISTORY

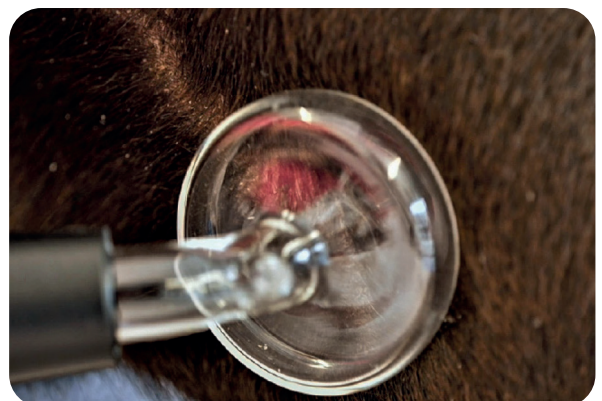
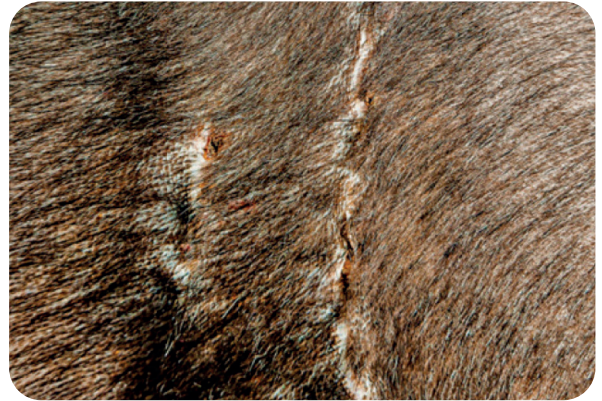
- A tumour had been excised from the right shoulder one year earlier
- Partial suture dehiscence with secondary healing
- Keloid formation along a 30cm-long scar
- Adhesions of the cutaneous keloid with fascia muscles
- Chronic intermittent lameness as a result
- Patient avoids normal movements
- Patient no longer plays with other dogs

TREATMENT

- **PetCellpen®:**
 - Two sessions a week for two weeks
 - One session a week for three weeks
 - Glass electrode: Disc and curved
 - Pulse frequency: 40 Hz
 - Amplitude: 6-9

RESULTS

- Visible reduction in lameness after two to three weeks
- After three weeks, the keloid was softer, excess keratin was shed, more vital colour
- After five weeks, no more lameness, normal mobility, playing normally as before



CHILI - NEUROPATHIC PAIN AT THE THORACOLUMBAR JUNCTION

Dr. med. vet. Michael Hiestand

DSH. Neutered male. Eight-year-old.

MEDICAL HISTORY

- Post-traumatic, unclear genesis
- Extreme pain at thoracolumbar junction
- Bites when touched
- Hyperesthesia of the skin
- Radiographs were unremarkable
- Treatment-resistant despite NSAIDs, dexamethasone, metamizole and butorphanol administration

TREATMENT

- **PetCellpen®:**
 - 10-minute sessions, every day for seven days
 - Glass electrode: Curved
 - Modulation programme for nerve desensitisation at pulse frequency: 10 Hz

RESULTS

- Therapy acceptance achieved after a few minutes
- The patient tolerated touch after the first treatment
- Stopped after seven days of therapy
- Symptom-free for one year



AMIRIS - DORSAL PAIN AND HYPERALGESIA

Dr. med. vet. Michael Hiestand

Maine Coon. Spayed female. Nine-year-old.

MEDICAL HISTORY

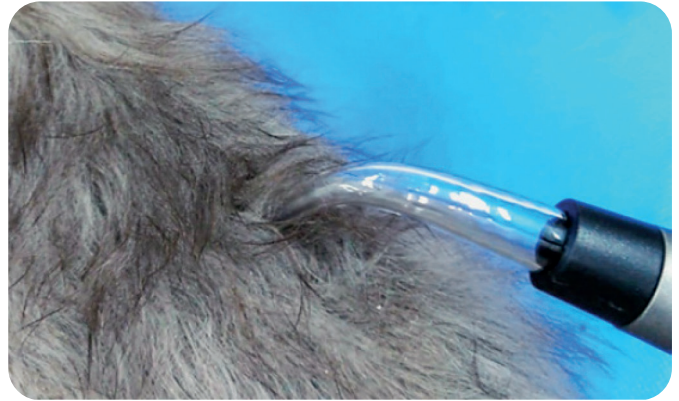
- Severe dorsal pain, incipient spondylosis of the lumbar spine

TREATMENT

- **PetCellpen®:**
 - Once weekly for three weeks, followed two weeks later by a final 15-minute session distributed over three painful spots
 - Glass electrode: Curved
- Frunevetmab, gabapentin

RESULTS

- The cat could be stroked normally again after the first treatment
- Significant and progressive improvement in gait pattern over four weeks



HOLLY - SPONDYLOSIS OF THE LUMBAR SPINE

Dr. med. vet. Michael Hiestand

Boxer. Spayed female. Seven-year-old.

MEDICAL HISTORY

- Severe spondylosis of the lumbar spine
- Despite NSAID treatment, the dog continued to hold her back in an arched position

TREATMENT

- **PetCellpen®:**
 - Fifteen-minute sessions, once a week for two weeks
 - Glass electrode: Curved
 - Pulse frequency: 20 Hz
 - Amplitude: 8

RESULTS

- Immediate visible reduction of pain
- General improvement in symptoms after one to two weeks



BESSY - LIMBER TAIL

Dr. med. vet. Michael Hiestand

Airedale Terrier. Spayed female.
Eight-year-old.

MEDICAL HISTORY

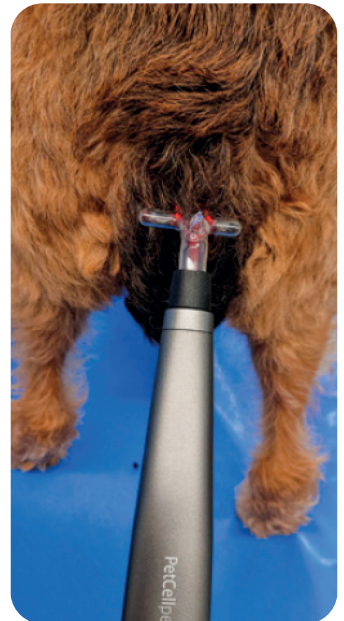
- Unable to lift the tail
- Severe pain

TREATMENT

- Meloxicam and metamizole
- **PetCellpen®:**
 - One 10-minute session
 - Glass electrode: Comb
 - Pulse frequency: 40 Hz
 - Amplitude: 8

RESULT

- No follow-up treatment was necessary.
The dog could lift her tail immediately after treatment and maintained normal tail carriage when leaving the clinic



EYWA - SUTURE DEHISCENCE

Dr. med. vet. Michael Hiestand

Chinchilla. Female.

MEDICAL HISTORY

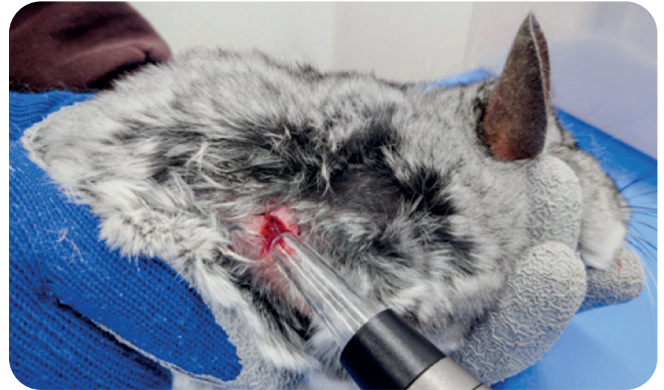
- Multiple bite wounds, several centimetres long
- Two episodes of suture dehiscence in 11 days, severe wound secretion
- Previous treatment: Cefovecin and meloxicam

TREATMENT

- Surgery
- **PetCellpen®**:
 - Six-minute sessions per site, twice a week for one week
 - Glass electrode: Straight
 - Pulse frequency: 100 Hz
 - Amplitude: 8
- Chloramphenicol

RESULT

- The wounds appeared drier and improved after three days



BAT N/N - INFLAMMATION OF THE WING

Dr. med. vet. Katja Schönbächler

Bat. Adult male.

MEDICAL HISTORY

- Found in poor general condition, with an abrasion injury to the right wing. Suspected to have been attacked by a cat
- Previous treatment: Chloramphenicol, meloxicam and ointments

Diagnosis: Wing's disease following contact with a cat. Wing cachexia is characterised by the appearance of areas of necrosis of the wing skin. It is probably caused by ubiquitous bacteria and fungi.

TREATMENT

- Meloxicam on the first day of treatment
- **PetCellpen®:**
 - 30- to 60-second sessions twice a week for three weeks (treat the entire wing surface initially, then the affected area only)
 - Glass electrode: straight
 - Pulse frequency: 20-60 Hz
 - Amplitude: 2

RESULTS

- Upper layers of wing skin and black deposits began to peel off, a sign of regeneration
- Blood vessels in the skin of the arm and wing were more visible after the first treatment
- Healed after three weeks of cold plasma therapy and subsequent release back into the wild



Initiation of plasma therapy. Non-elastic skin with black deposits.



2 days later. More dilated blood vessels and deposits peel off.



5 sessions after



Last day

POOH - LIMB WOUNDS

Dr. med. vet. Carolin Bunert (Duisburg Zoo, Germany)

Amazonian Anteater Bear. Female. 10-year-old.

MEDICAL HISTORY

- Recent bite wounds

TREATMENT

- Wound cleaning and irrigation
- Meloxicam
- **PetCellpen®**:
 - One four-minute session
 - Glass electrode: curved
 - Pulse frequency: 100 Hz
 - Amplitude: 8

RESULT

- The wounds had healed by the following day without further therapy



RABBIT - FLYSTRIKE

Med. vet. Larissa von Scotti

Rabbit. Miniature Lop. Neutered male.
Four-year-old.

MEDICAL HISTORY

- Severe myiasis
- Surgical treatment

TREATMENT

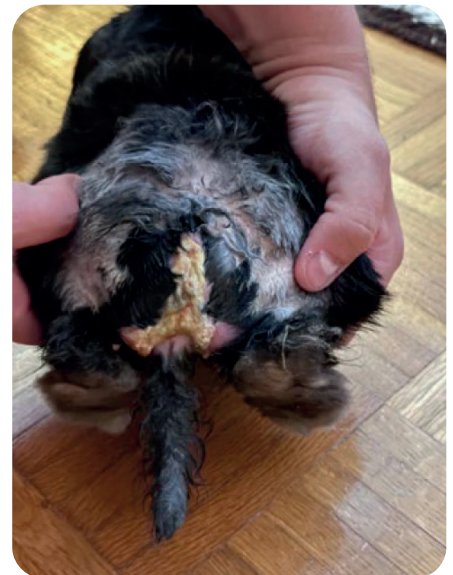
- **PetCellpen®:**
 - Just once during surgery
 - Fifteen-minute sessions, twice a week for four weeks
 - Glass electrode: Straight and disc
 - Pulse frequency: 100 Hz
 - Amplitude: 4-6

RESULT

- Completely healed in five weeks



Before



After

BIBI - CLAW AMPUTATION

Dr. med. vet. Carolin Bunert (Duisburg Zoo, Germany)

Wallaby. Female. Two-year-old.

MEDICAL HISTORY

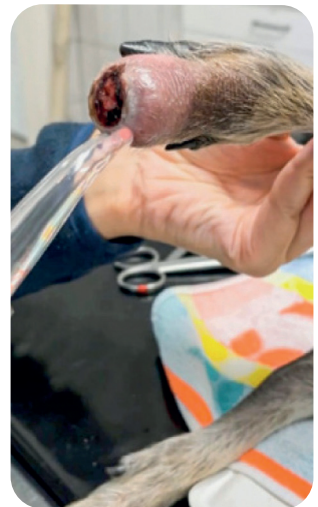
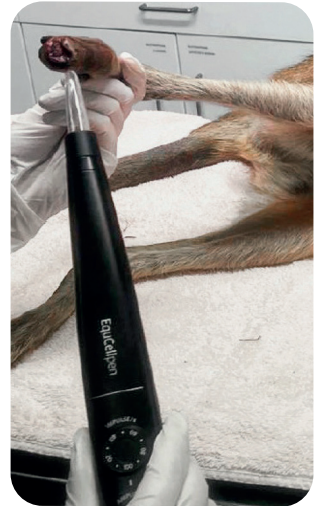
- Traumatic injury to the right claw
- The claw was torn, with partial loss of the underlying bone, swelling of soft tissue

TREATMENT

- Surgical care: Amputation of the remaining claw bone fragments
- The wound was left open and dressings were applied for two weeks
- Medication in the first two weeks: Enrofloxacin and meloxicam
- **PetCellpen®:**
 - Four- to five-minute sessions, twice a week for three weeks
 - Glass electrode: Curved
 - Pulse frequency: 100 Hz
 - Amplitude: 8

RESULT

- Wound healed within three weeks



AFRICAN ELEPHANT - EAR INJURY

*Dr. med. vet. Carolin Bunert
Zoo veterinarian. Zoo Duisburg gGmbH, Germany*

African Elephant. Female. 32-year-old.

MEDICAL HISTORY

- Pre-treated wound on the back of the right ear
- Wound healing had come to a standstill after three months of treatment with daily cleaning and ammonium sulphate wound ointment

TREATMENT

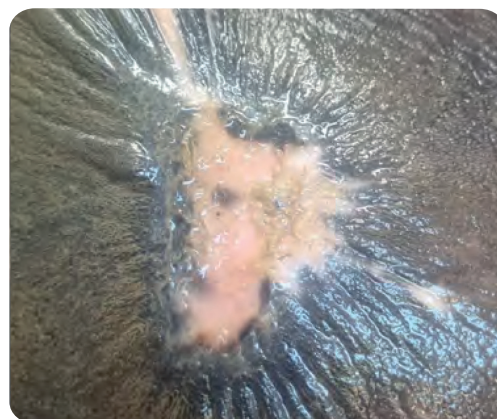
- **PetCellpen®:**
 - Five- to nine-minute sessions, three times a week for six weeks
 - Glass electrode: Disc
 - Frequency: 100 Hz
 - Amplitude: 9
- Continuous daily cleaning of the wound

RESULT

- Tissue perfusion improved significantly
- Completely healed in six weeks



Before



After



Treatment application

BARON - STOMATITIS GRADE IV

Dr. med. vet. Anna Misztal-Kunecka
Gabinet weterynaryjny DentalVet, Poland

Mixed breed. Neutered male. Eight-year-old.

MEDICAL HISTORY

- Grade IV stomatitis
- Periapical lesions
- Vertical bone recession
- Pathological pockets
- Grade I-III furcation involvement

TREATMENT

- Multiple tooth extractions
- **PetCellpen®:**
 - Treatment was applied only to the right side of the mouth on the day of surgery and one week later
 - Two- to four-minute sessions
 - Glass electrode: curved and disc
 - Frequency: 100 Hz
 - Amplitude: 8
- Amoxicillin-clavulanic acid for seven days
- Meloxicam for three days

RESULT

- The gingiva on the right side healed substantially better than that on the untreated left side. No pain or swelling was observed on the right side



Right side: one week after treatment with PetCellpen®. The gums have healed better on the right side (treated with CAP) than on the left side (without CAP).



Left side: no treatment.

AMY - GINGIVECTOMY

Med. vet. Anne Dowidat

Labrador. Spayed female. Eight-year-old.

MEDICAL HISTORY

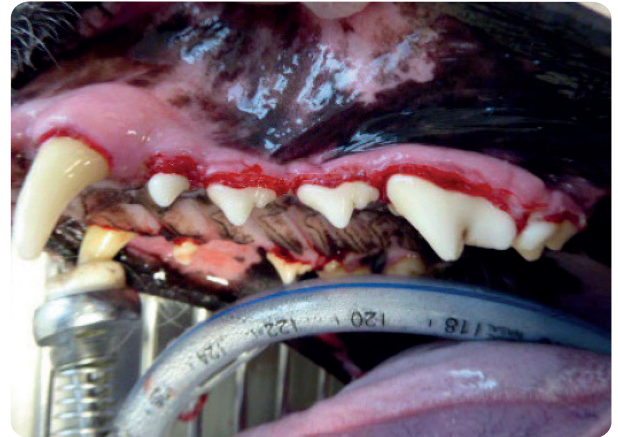
- Presence of untreated dental plaque, tartar and gingivitis
- Periodontitis, gingival hyperplasia, especially in the molar area

TREATMENT

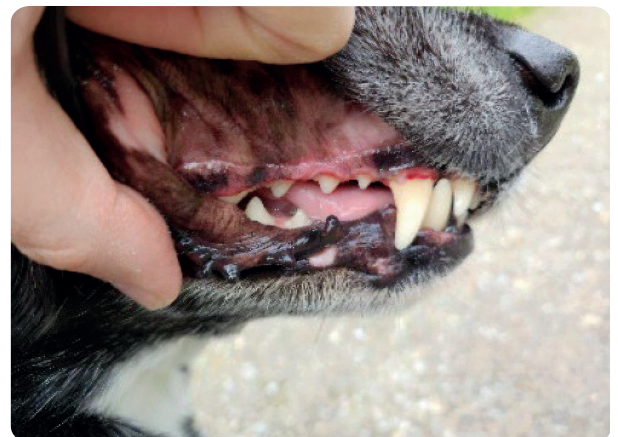
- Dental scaling and polishing and surgical removal of gingival hyperplasia
- Meloxicam (one dose)
- **PetCellpen®:**
 - A single post-surgery session
 - Glass electrode: Curved
 - Frequency: 100 Hz
 - Amplitude: 8

RESULT

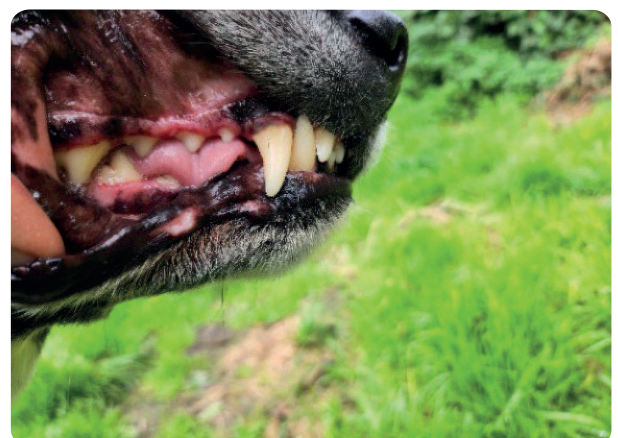
- Completely healed without complications or the need for antibiotics



Surgery



1 day after surgery



2 days after surgery

LUCKY - IMPAIRED WOUND HEALING

*Dr. med. vet. Anna Misztal-Kunecka
Gabinet weterynaryjny DentalVet, Poland*

DSH. Neutered male. Six-year-old.

MEDICAL HISTORY

- Suture dehiscence following extraction of tooth 204
- Delayed wound healing with inflammation of the alveolar area
- The socket was covered with some granulation tissue

TREATMENT

- Cleaning of the area
- **PetCellpen®**:
 - Two- to four-minute sessions administered on the day of surgery, and then once weekly for two weeks
 - Glass electrode: Curved and disc
 - Frequency: 100 Hz
 - Amplitude: 8
- Meloxicam for three days

RESULT

- The site healed without complications within two weeks



First day of treatment



14 days after treatment

LUNA - FELINE STOMATITIS

Dr. med. vet. Anna Misztal-Kunecka
Gabinet weterynaryjny DentalVet, Poland

DSH. Spayed female. Nine-year-old.

MEDICAL HISTORY

- Redness and inflammation along the gum line

TREATMENT

- Radiographs indicated that teeth 307 and 206 required extraction. An attempt was made to save teeth 308 and 309 (mandibular premolars and molars), 207 to 209 (maxillary premolars and molars) and the maxillary and mandibular canines
- **PetCellpen®:**
 - Two- to four-minute sessions administered on the day of surgery, and then once every two weeks thereafter
 - Glass electrode: Curved and disc
 - Frequency: 100 Hz
 - Amplitude: 8

RESULT

- The inflammation had disappeared and there was no longer any indication for further extractions



Before



After



PINKY - CHRONIC HYPERTROPHIC GINGIVITIS

Dr. med. vet. Anna Misztal-Kunecka
Gabinet weterynaryjny DentalVet, Poland

DSH. Spayed female. Nine-year-old.

MEDICAL HISTORY

- Severe gum hypertrophy
- Grade IV stomatitis with multiple resorptions

TREATMENT

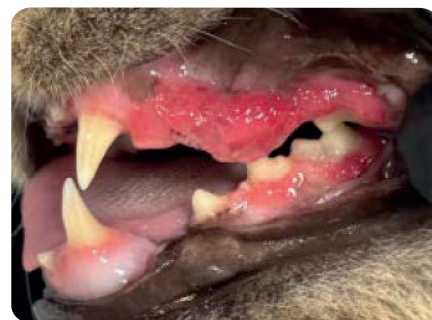
- Multiple tooth extractions
- Laser treatment of the gingiva
- **PetCellpen®:**
 - Two- to four-minute sessions administered on the day of surgery, and then once weekly afterwards
 - Glass electrode: Curved and disc
 - Frequency: 100 Hz
 - Amplitude: 8
- Chlorhexidine gel
- Meloxicam for five days

RESULT

- Healed without complications

*NOTE

- Cold plasma was used to obtain as much healthy mucosa as possible, enabling the extraction wounds to be sutured. After surgery, it was applied transcutaneously to promote tissue healing



Before surgery



After surgery + cold plasma

RADEK - FELINE STOMATITIS

*Dr. med. vet. Anna Misztal-Kunecka
Gabinet weterynaryjny DentalVet, Poland*

DSH. Neutered male. Six-year-old.

MEDICAL HISTORY

– Grade IV stomatitis with multiple resorptions

TREATMENT

- Extraction of all teeth
- Laser treatment of the gingiva
- **PetCellpen®**:
 - Two- to four-minute sessions administered on the day of surgery, and then once weekly for four weeks
 - Glass electrode: Curved and disc
 - Frequency: 100 Hz
 - Amplitude: 8
- Chlorhexidine gel
- Meloxicam

RESULT

– Healed without complications



Before surgery



2 weeks after surgery



4 weeks after surgery

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