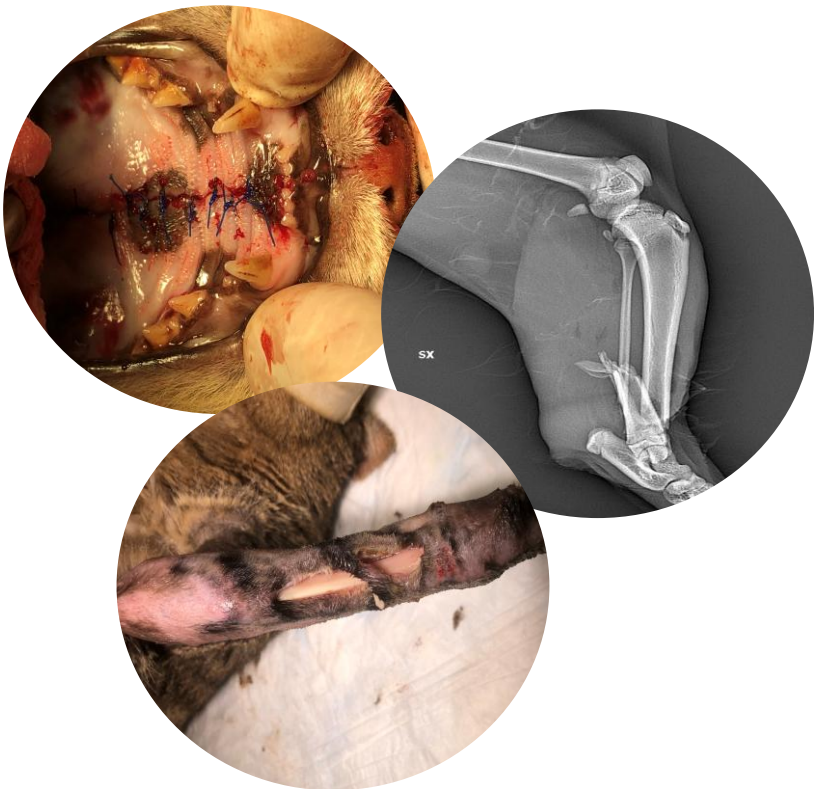


ESACROM R&D DEPT.

PRESENTS

TRAUMATIC WOUND TREATMENT

By Dr. Fabio Bani



INTRODUCTION

The management of **traumatic wounds** is certainly one of the most frequent activities that the veterinary practitioner is forced to deal with in daily small animal practice.

The advent of **technological innovations** such as **Piezoelectric Surgery** has significantly changed the way of approaching both simple and complex procedures, thus providing new tools and new possibilities to deal with them successfully.

The numerous **advantages** of this technology can also be applied in the field of veterinary traumatology:

- 1 Irrigation of tissues** affected by trauma using isotonic solutions, even at refrigerated temperatures, directed precisely to the working area;
- 2 Debridement and removal of devitalized and/or necrotic tissue;**
- 3 Ability of ultrasound to separate solids with different consistencies and densities** (i.e., solid debris from tissues);
- 4 Reduced iatrogenic trauma and greater preservation** of tissue healing compared to other surgical curettage techniques;
- 5 Micro-coagulation and bactericidal effect of the cavitation phenomenon.**

SURGYCAL PROTOCOL

In most clinical cases requiring thorough **cleaning and surgical curettage** of the wound, the **ES007ST insert** (10 mm) is the most suitable, due both to the blade characteristics and its shape.

CASE 1: TRAUMATIC CLEFT PALATE

The patient, a **10-year-old European shorthair cat**, after falling from a height with **secondary facial trauma**, presented a **traumatic cleft palate** involving both soft and hard tissues along the entire length of the palate, creating communication between the nasal cavities and the oral cavity.

After stabilizing the patient and achieving complete resolution of post-traumatic shock, reparative surgical therapy was performed in the following steps:

- 1 **Ultrasound curettage**, of both bone and overlying soft tissue, allowing the removal of necrotic tissue and revitalization of the wound with minimal iatrogenic damage, eliminating only non-vital tissue;



ES007ST TIP

SURGYCAL PROTOCOL

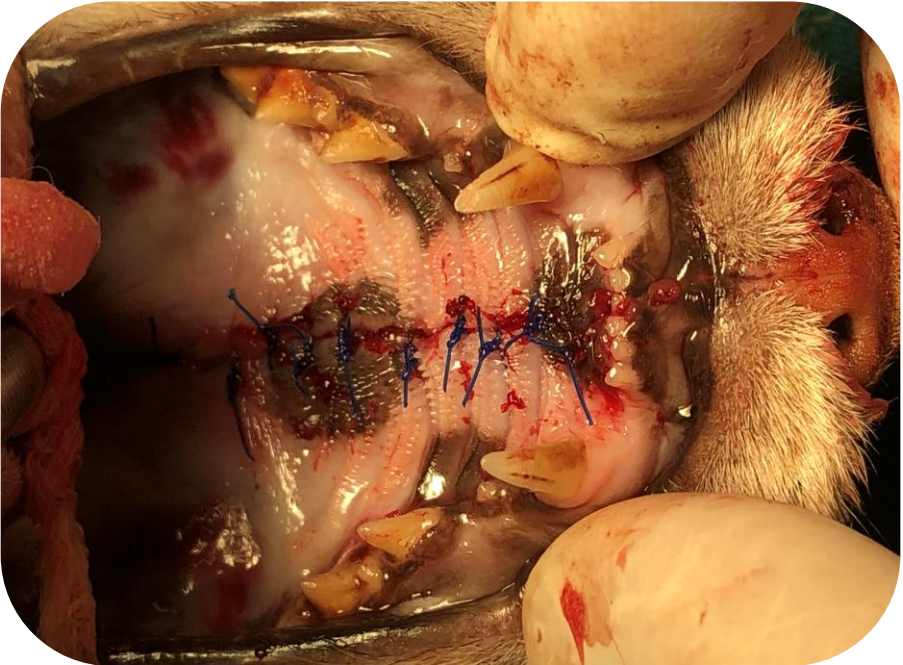
- 2 **Wound decontamination** procedure by cavitation ultrasound in a **non-contact technique**, using an **insert placed without direct contact inside a cavity filled with sterile saline solution**.

The treatment is carried out for 30–60 seconds;



SURGYCAL PROTOCOL

- 3 **Reconstruction of the palatine bone** by simple suture with metallic stitches, applied after pre-drilling performed with ultrasound using a pointed insert (ES030ACT);
- 4 Reconstruction of soft tissues by simple interrupted nylon sutures;
- 5 Placement of an esophagostomy tube for feeding during the first postoperative days, in order to bypass the oral cavity.



POST-OPERATION

CLINICAL OUTCOME

The patient achieved **clinical healing of the soft tissues 10 days** after reparative surgery, and was already **able to feed spontaneously without complications by the sixth day**.

Two weeks after surgery, the esophagostomy tube was also removed.



COMPLETE HEALING

Scan.
See.
Believe.



SURGYCAL PROTOCOL

CASE 2: CHRONIC OPEN COMPLETE DISTAL FRACTURE OF TIBIA AND FIBULA

The patient was a **stray European shorthair cat**, approximately 6–7 months old, found in a colony with a **grade IV lameness of the left hind limb**, caused by a complete open fracture of the tibia and fibula that had occurred several days earlier.

The proximal stump of the tibia protruded from a skin wound and was contaminated with soil and environmental debris. The treatment followed the same steps as in the previous case:

- 1 **Ultrasound curettage**, of both bone and overlying soft tissue, allowed the removal of necrotic parts and all present debris, revitalizing the stumps with minimal iatrogenic damage and eliminating only non-vital tissue;



Scan.
See.
Believe.



SURGYCAL PROTOCOL

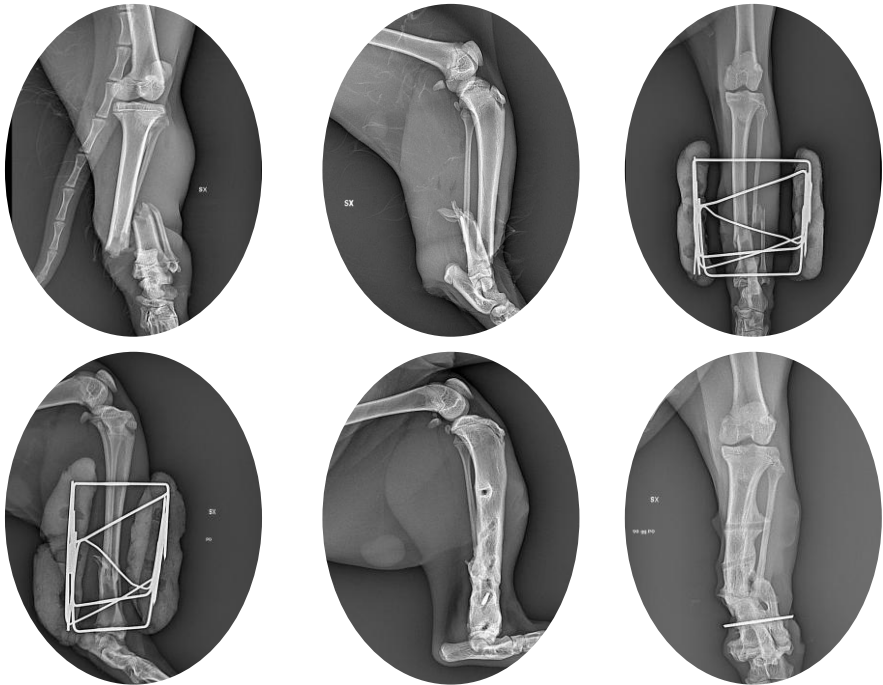
2 **Wound decontamination procedure by non-contact ultrasound cavitation:** after stabilizing the fracture with a bilateral monoplane external fixator, and before soft tissue suturing and reconstruction, the wound was completely flooded with sterile saline solution.

Ultrasound was then applied for 30–60 seconds, activating the cavitation phenomenon to promote deep and atraumatic debridement of the surgical site.



CLINICAL OUTCOME

After a short course of intra and postoperative antibiotic therapy lasting 5 days, complete healing of the surgical wound was achieved by day 7 without complications and/or dehiscence; the suture remained clean and dry at all times. The patient used the limb from the first postoperative day, and implant removal occurred after 90 days depending on the volunteers' availability, although **bone healing was already present at 60 days**.



COMPLETE HEALING

SURGYCAL PROTOCOL

CASE 3: BITE WOUND WITH SEVERE TISSUE LOSS

The patient was a **stray, 14-year-old European shorthair cat, FIV-positive**. After a night out, it presented with a **bite wound in the radial region**, which rapidly evolved into **necrotizing fasciitis, causing extensive tissue loss**.

Subsequently, a **pathogen resistant** to the most common antibiotics was identified, **making ultrasound treatment even more indispensable**.

The procedure followed the same steps as in the previous case:

- 1 **Ultrasound curettage**, of both bone and overlying soft tissue, allowed the removal of necrotic parts and all present debris, revitalizing the wound with minimal iatrogenic damage and eliminating only non-vital tissue;



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- 2** **Wound decontamination** procedure by **non-contact ultrasound cavitation**: after removing all necrotic tissues, the **wound was filled with sterile saline solution and non-contact ultrasound was applied**, exploiting the cavitation process, which enables the detachment of pathogens from tissues.
In this case, ultrasound treatment was prolonged (about 4–5 minutes).



CLINICAL OUTCOME

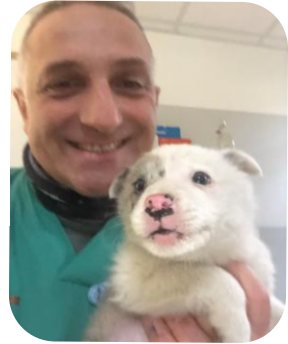
The patient received pain management therapy for one week. Since antibiotic therapy was not an option due to the pathogen's multidrug resistance, a laser therapy protocol was chosen, performed three times a week starting the day after surgery. This approach allowed progressive improvement of the lesion until complete healing, saving the limb within two months from surgery.

One month after the first procedure, a second ultrasound treatment was required to stimulate regeneration in a central area of the wound that, due to marked cicatricial contraction, showed no signs of healing. The combination of laser therapy and ultrasound made it **possible to resolve a wound characterized by extensive tissue loss and complicated by the presence of multidrug-resistant pathogens, thus avoiding limb amputation.**



COMPLETE HEALING

DR. FABIO BANI



Graduated in 1996 from the **Faculty of Veterinary Medicine, University of Milan**, with an experimental thesis in physiology on the role of endothelin and NO in the hemodynamic mechanisms of pulmonary and systemic circulation. In the following two years, he carried out internships and visiting periods at various small animal clinics in the provinces of Bergamo and Brescia.

Since 1998, he has been **Medical Director and co-founder of the Centro Veterinario San Fermo in Cesana Brianza**, where he mainly focuses on soft and hard tissue surgery of companion animals, diagnostic endoscopy, and diagnostic cytology. From 1996 to the present, he has attended numerous continuing education seminars, practical courses, and specialist workshops at both national and international level in his fields of interest. He is an active member of several professional and cultural associations for continuous scientific education: SCIVAC (Italian Small Animal Veterinary Association), SCVI (Italian Society of Veterinary Surgery), SIOVET (Italian Society of Veterinary Orthopedics and Traumatology), SIPACVET (Italian Society of Clinical Pathology and Veterinary Cytology), AОВI (International Veterinary Orthopedic Association), and UNISVET (Italian Union of Veterinary Societies). His main areas of interest are general and oncological surgery, orthopedics, and diagnostic cytology. His favorite pastime is motorcycle touring.

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