

## SKIN GRAFTS USED IN THE RECONSTRUCTIVE SURGERY OF SKIN WOUND WITH SEVERE TEGUMENTARY DAMAGE IN DOG

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### Abstract

*Wound healing is a complex and dynamic process of replacing devitalized and missing cellular structures and tissue layers after injury. Wound healing is achieved through four precisely and highly programmed phases: hemostasis, inflammation, proliferation, and remodeling. For a wound to heal successfully, all four phases must occur in the proper sequence and time frame. After an severe trauma to the extremities of the limbs the skin necrose detaches as flaps remaining in place a large denuded area exposed to infection. The reduced mobility of the skin in these areas cause difficulty in healing process to occur complicating traumatic sequelae and functional impotence.*

*The vicious scars are unsightly and often painful due to connective tissue contractility*

*The purpose in wounds reconstruction using skin grafts is to complement dermal with denuded skin tissue surface and initiate an uniform healing a result of which the affected limb to resume the functionality. In this paper we present modalities ok skin grafts by heterotopic grafting and autografting with cutaneous flap pedicled*

**Key words:** wound healing, skin grafts, tissue remodelling, dogs.

### INTRODUCTION

In plastic skin reconstruction the surgical objectives are to replace the skin tissue of the anatomical position, to restore the continuity of the skin not only to protect the deeper tissues, but also to preserve their functionality.

The problem occurs when wounds are stretched over a large area or affecting the extremities. These deficits are of two types The first one refers to substantial losses resulting from surgical oncology, decubitus or vicious scars.

The second type of deficits relates to the loss of major trauma resulting from the bruises, burns, frostbite. In these circumstances healing can not be achieved by first intention only "per second" (Fossum Welch Theresa, 2007)

In small animals the great elasticity of the skin and the subcutaneous connective tissue existence of a rich, especially in the trunk allows the use of skin flaps to cover the deficit almost the entire body skin.

There are complexes reconstruction techniques in which skin flaps are able to

allow the skin to the place where the loss of cutaneous substance is important.

Axial skin flaps differs from the classical type skin flaps through of vascularity which includes an artery and a vein directly attached in the cutaneous vascular pedicle.

This allows them to have a greater blood supply and thus can cover much larger deficits skin.

Caudal epigastric skin flap axial vascular component is the main artery leaving the caudal epigastric abdominal cavity is oriented in the inguinal ring, cranial epigastric artery anastomoses and ipsilateral cranial parallel to the white line passing through the breast tissue wher give collateral inguinal and abdominal vascular branches . The anastomosis between the two epigastric arteries, caudal and cranial be made between the first and second mammary gland, near the umbilical scar. Caudal epigastric artery females is more developed than the male.

In the male, caudal superficial epigastric artery irrigate the prepuce ( Fowler D. J., Wiliams J. M , 2004).

## MATERIALS AND METHODS

In the Faculty of Veterinary Medicine, Surgical Department was presented a half breed dog aged 6 months with an injury by contusion grade 4 left posterior limb; as a result of this trauma from the hock to the phalanges the muscles was denuded.



Figure 1. Note the large denuded skin area at the left posterior limb

If the skin is free from a traumatic wound is needed that it be properly prepared before applying the skin flap. Necrotic tissue and infection compromise the successful cutaneous plastic surgery, so we considered necessary a waiting period of 20 days during which they were applied wet dressings and cotton wool covered dry dressing. These were changed daily the first week, then every two days until all denuded area was covered with a layer of granulation tissue uniformity. After isotonic saline solution lavage with Betadine, wet dressings we made with sterile gauze pads over which we have applied the product Plagotrat (Hofigal) alternating with honey. The general way we administered broad-spectrum antibiotics (initially celosporine for 7 days, then amoxicillin with clavulanic acid to 20 days) and analgesics (tramadol). After this period was made the reconstructive surgery

## RESULTS AND DISCUSSIONS

We applied general anesthesia (Tanase, Cristescu 2001). The animal was positioned in right lateral decubitus position with the left hand side in suspension.

The cutaneous incision is made in sense caudocranial equals midline and extended on the side to allow rotation flap cranial limit of the flap is the second thoracic mammary

gland. Studies have shown that blood supply does not include the first thoracic mammary gland and that is why if to its inclusion in the extremity flap will be necrosis of. Base flap stands at inguinal ring, side corresponds to the median of midline of the body, and side to side is parallel with the median at equal distance from mammary gland.

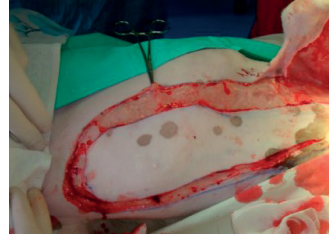


Figure 2. The caudal epigastric skin flap

Cutaneous flap length should not exceed twice the length of the base, the result of its free extremity necrosis of (L. Findji 2011) At the same time cutaneous flap must be long enough to cover the defect of substance without creating areas tension that would lead to necrosis of by peripheral perfusion defect. Flap dissection was performed in the subcutaneous tissue, gradually and included skin, connective tissue, mammary gland, and vascular pedicle.

We have made every branch vascular hemostasis of the edge flap with PDS 3/0 absorbable thread, abdominal muscles I covered it with sterile compresses soaked in warm saline and skin flap was periodically moistened with warm physiological saline to prevent desiccation its



Figure 3. Post-surgery appearance of skin suture

Attaching flap was performed immediately after its detachment by suture wire absorbable 3/0 PDS separate points starting from the distal limb. Cutaneous flap must be handled carefully in order not to compromise the

blood supply that would microlesions at its edges and implicitly their necrosis of. Rotating flap should not be performed excessive because it will cause ischemia followed by necrosis of at the base of the entire flap.



Figure 4. Three days after reconstructive surgery

After attaching the axial skin flap the posterior leg was bandaged again and dry dressings were applied consisting in order from inside to outside in: sterile dressings cover with antibiotic ointment (Asocilin) or Plagotrat, gauze bandage, cotton wool, gauze bandage, pet flex. I noticed a layer of wool provide mechanical protection flap of skin damage by preventing the movement and the support member that you realize the animal. . This type of bandage allows maintaining proper hydration of tissues to absorb serozitatile and protect the wound from contamination. The bandage was changed every 3 days.



Figure 5. Three weeks after surgery

The stitches were extracted starting from the 10th day until the 14 days that it is up last stitches in critical areas where tension was higher flap

## CONCLUSIONS

The major limb trauma to the extremities resulting in the loss of a large area skin that most often require amputation due to complications occurring (infections, vicious scar, functional impotence) as a result of reduced mobility of the skin of these areas.

Axial skin flaps are an optimal choice for such cases, but require a period of time to prepare the area that is to receive the transplant and then another time period necessary to give proper that had a flap of skin graft.

The success of such surgical interventions depends on several factors: proper asepsitisation the wound, skin surgery compliance (easy handling of the flap, using appropriate suture materials, maintaining hydration transplanted tissue), progressive rotation flap vascularization compliance, application protective bandage, resting animal, adequate nutrition, antibiotic therapy and analgesics

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