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Frequency and treatment of deep wounds on the head and neck of dogs in private veterinary clinics in Lubumbashi

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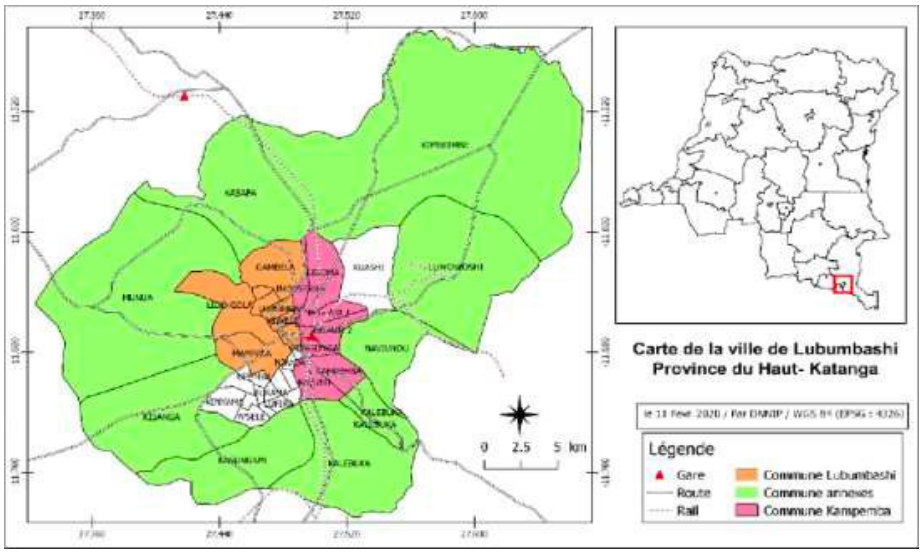
ABSTRACT
Objective: Aimed at assessing the prevalence, causes, and treatment protocols for deep wounds in dogs, particularly focusing on the head and neck regions, within private veterinary clinics in Lubumbashi, Democratic Republic of Congo.
Methodology and Results: Conducted between March 1 and September 3, 2023, the research was both prospective and retrospective. It involved visits to seven private veterinary practices and centres in Lubumbashi. Data collection was facilitated through structured questionnaires and the review of clinical records from the participating institutions. The study encompassed 321 dogs of various breeds, ages, and sex.
Conclusion and Application of results: The study highlighted the significant prevalence of deep wounds in dogs, especially in the head and neck regions, within private veterinary clinics in Lubumbashi. It emphasized the need for standardized treatment protocols and further research to enhance wound management and healing outcomes in canine patients.

INTRODUCTION
Wounds are lesions characterized by a break in the continuity of the skin and mucous membranes. They account for a large proportion of veterinary consultations. Cutaneous wounds and their treatment are an important part of veterinary practice: it is therefore essential to know how to manage them. Skin wounds are one of the main reasons for veterinary consultations in domestic carnivores (dogs and cats). (Bexfield *et al.,* 2004). Because of the diversity of etiologies and lesion types, a precise description of wounds is essential for clinicians in order to establish a correct diagnosis, implement appropriate treatment and prevent any complications (Aquino, 2007; Canapp *et al.,* 2008). In other words, wounds differ in terms of etiology, location, age, shape and many other criteria. They all evolve differently, and treatments need to be adapted to each type of wound (Lamberechts *et al.,* 2004). This objective can only be achieved if the practitioner has a sound knowledge of the following areas:

Skin anatomy;
The characteristics of wounds (origin, type of lesion, location);
Mechanisms of wound healing;
The principles of wound treatment (steps, products, dressings) (Afset *et al.,* 2003).
The most remarkable developments have been in wound treatment. Firstly, the development of high-level surgical practices has made it possible to extend the number of techniques available for treating wounds (suture techniques, development of flaps.). As a result, many wounds can be sutured and heal in the first instance. (Baranyiova *et al.,* 2003). Healing is the physiological phenomenon that re-establishes the continuity of structures and their functions. It is a complex phenomenon whose understanding has evolved considerably since the development of molecular biology techniques. At the same time, treatments are constantly evolving and represent a vast and varied field. Wound management can be complex for the practitioner, who encounters many different types of wound and cannot use a single treatment for all of them. In veterinary medicine, the aim of wound treatment is to avoid complications and to achieve the best possible healing as quickly as possible. To ensure that wounds are treated appropriately and that the final scar is both functional and aesthetically pleasing, it is important to be aware of the physiological development of wound healing, the possible complications and the factors that promote them (Bohling *et al.,* 2004). Over the last 20 years, progress has been made both in our knowledge of the physiology of wound healing and in the field of wound treatment. New topicals and techniques have made it possible to optimize healing and functional, as well as aesthetic, recovery, which can be important (Fayolle, 2004). Despite these advances, there are still situations where it is not possible to treat the wound and return it to normal. It is also important to acknowledge that the care required can, at times, be prohibitively costly or burdensome for certain owners. In extreme cases, amputation of a limb or euthanasia may be considered (Fayolle, 2004). In the present study, particular interest was in the treatment of deep wounds affecting the head and neck in dogs with the following research questions serving as a guide:":
What is the frequency of deep wounds on the head and neck of dogs seen in various veterinary practices and centres in the city of Lubumbashi?
What are the causes and risk factors for this type of wound in these 2 specific areas of the body?
What treatments are applied for these lesions in the various veterinary medical institutions where our investigations are being carried out?

MATERIALS AND METHODS



This research was carried out in the Democratic Republic of Congo (R D Congo), in the city of Lubumbashi, capital of the province of Haut-Katanga, in the commune of Lubumbashi.

Animals: The study involved 321 dogs: the data relating to the reporting of animals treated during this study are presented in Table 1 below:

Table 1: Data relating to the reporting of animals treated during the study

Breeds	**Sexe**		**Total**
	Males	**Females**	
German shepherd	20	37	57
Boer Boël	19	27	46
Labrador	13	10	23
Pit Bull	42	26	68
Bullmastiff	17	14	31
Rottweiler	7	5	12
Malinois	3	5	8
Bull dog	11	6	17
Doberman	15	11	26
Poodle	8	3	11
Bichon	4	5	9
Great Dane	6	7	13
Total	165	156	321

METHODS

This prospective and retrospective study was carried out between 1 March and 3 September 2023. It was based on visits to private veterinary practices and centres in the city. A duly prepared questionnaire facilitated discussions with the vets responsible for consulting and caring for the animals. The lack of clinical data was remedied by using the archives held by the seven veterinary medical institutions selected for the study. Reportage and photography were used to illustrate certain real-life cases, as this study is intended to be more qualitative than quantitative.

RESULTS AND DISCUSSION

Number of dogs with skin wounds: The data relating to these results are shown in Table 2 below.

Table 2: Numbers of dogs seen for consultation and dogs treated for wounds in seven veterinary facilities in Lubumbashi

Cabinets	**Start of activities**	**Dogs received**	**Dogs treated for wounds**	**Observations**
Animal rescue	2022	46	21 (7%)	The number of dogs seen for consultation and the number of dogs treated depends on the years the institutions and their clientele have been in operation.
Seth enterprise	2022	68	19 (6%)	
Labrador	2021	73	25 (8%)	
Veterinary action	2014	98	27 (8%)	
Kenos	2021	117	43 (13%)	
Nasa	2019	180	39 (12 %)	
Zoo veterinary center	2013	716	147 (46%)	
Total				

This table shows that the number of dogs seen for consultation and the number of dogs treated for wounds at the Zoo veterinary centre (CVZ) are higher than those recorded in the seven other veterinary medical institutions in Lubumbashi. The results of this study showed that 1,298 dogs were seen for consultation in all 7 private veterinary medical institutions in the city of Lubumbashi (Table 1), the largest number of which was attributed to the Lubumbashi Zoo veterinary medical centre because the number of dogs seen and the number of dogs treated for wounds depends on the year in which the centre began its activities, and this centre is an institution that began its activities in 2013; hence the justification for the number of dogs seen and treated in this institution (46%). Of these animals received, 25% presented with wounds in all of these institutions while 75% were received for various pathologies. According to Dillie and Dillie (2005), wounds represent a significant proportion of consultations in veterinary practices and medical centres. These observations corroborate (Moissonier, 2002) that, because of the diversity of aetiologies and lesion types, it is essential to describe wounds accurately in order to establish a correct diagnosis. Their management can prove complex for the patrician, who encounters numerous types of wound and cannot use a single treatment for all of them.

frequency and distribution of deep wounds on the head and neck : The numbers and distribution of dogs with deep wounds are shown in tables 2, 2 and 4 below.

Table 3: Distribution and numbers of dogs treated for deep wounds according to breed and sex

Breeds	**Sex**		**Total**
	Males	**Females**	
German shepherd	20	37	57 (17%)
Boer Boël	19	27	46 (14%)
Labrador	13	10	23 (7%)
Pit bull	42 (27%)	26	68 (21%)
Bullmastiff	17 (10%)	14	31 (9%)
Rottweiler	7	5	12 (3%)
Malinois	3	5	8 (2%)
Bull dog	11	6	17 (5%)
Doberman	15 (9%)	11	26 (8%)
Poodle	8 (4%)	3	11 (3%)
Bichon	4	5	9 (2%)
Great Dane	6	7	13 (4%)
Total	165	156	321 (1005)

This table shows that deep wounds were diagnosed in dogs of various breeds, and that the pit bull (21%), followed by the German shepherd (17%) and the Boer Boël (14%) were the breeds most affected by deep wounds in the city of Lubumbashi. In all breeds, females were affected more than males, with the exception of the pit bull (27%), bull mastiff (10%), Dobermann (9%) and poodle (4%).

Table 4: Distribution and numbers of dogs treated for deep wounds according to the location of the various wounds

Lesions location	Number	Observations
Head	117 (36%)	The head and the neck are the most affected body parts by deep wounds.
Neck	82 (25%)	
Thorax	33 (10%)	
Abdomen	18 (5%)	
Pelvis	47 (14%)	
Members	24 (7%)	
Total	321 (100%)	

This table shows that the majority of wounds treated were located on the head (36%) and the neck (25%).

Table 5: Distribution and numbers of dogs treated for deep wounds according to breed and age

Breeds	Age				Total
	≤ 3 months	4-12 months	13-23 months	≥24 months	
Boer Boël	2	10	26	8	46
Labrador	0	3	5	15	23
Pit Bull	3	15	27	23	68
Bullmastiff	6	7	5	13	31
Rottweiler	5	0	3	4	12
Malinois	0	0	5	3	8
Bull dog	8	5	4	0	17
Doberman	7	12	0	7	26
Poodle	0	3	8	0	11
Bichon	1	5	3	0	9
Great Dane	4	2	1	6	13
German Shepherd	8	22	11	16	57
Total	44	62	98 (30%)	95	321

From this table, the deep wounds were diagnosed in dogs of different age groups, particularly those aged between 13 and 23 months. Our investigations revealed that the deep wounds affected dogs of various breeds. Among the latter, the pit bull (21%), followed by the German Shepherd (17%) and the Boer Boel (14%) were more affected than the others. According to (Jackson *et al.,* 2003), the thickness of the skin, the properties of the hypodermis and therefore of the skin (mobility and elasticity) are different from one breed to another. When the connective tissue is thick, skin mobility is high but elasticity is moderate. When it is thin, skin mobility is low but elasticity is high. As for Jongh (2008), a deficiency in the essential fatty acids zinc, vitamin A, B6, iodine or biotin causes kerato-seborrheic disorders and could, to some extent, account for this difference. Furthermore, females were more affected in the majority of breeds with the exception of Pitbull (27%), Bull mastiff (10%), Dobermann (9%), and Poodle (4%) Table 2. In our opinion, we can only justify this difference between males and females belonging to these breeds by the fact that these breeds have been rare in Lubumbashi over the last ten (10) years, and that they are currently becoming more and more common. In addition, the majority of wounds were located on the head (36%) and neck (25%) (table 3). In fact, these two areas are the most exposed. In all breeds, all age groups were affected, particularly subjects aged between 13 and 23 months (Table 6.

Carnivores naturally use their teeth to attack and to defend themselves, depending on whether they are dominant or docile (Deneuche and Fayolle, 2002), thus exposing these 2 parts of the body to bites. In terms of lesion age and characteristics, the majority of deep wounds diagnosed were recent (60%), represented by bite wounds (50%), followed by cuts (21%) and contused wounds (14%) (Table 5).

Causes and characteristics of deep wounds diagnosed and treated: Tables 5 and 6 show the causes and characteristics of deep wounds diagnosed and treated on dogs in private institutions in Lubumbashi.

Table 6: Distribution and number of dogs treated for deep wounds, according to the appearance and age of the wounds' lesions

Aspects	**Recent wounds**	**Old wounds**	**Total**
Contusion wounds	28	23	43
Sting wounds	11	19	47
Cut wounds	41	32	73
Surgical extirpation	16	17	33
Bite	96 (50%)	38	134
Total	192 (60%)	129	321

This table shows that most deep wounds diagnosed were fresh wounds (60%), represented in particular by bites (50%), followed by cuts (21%) and contused wounds (14%).

Table 7: Causes of head and neck deep wounds diagnosed in various veterinary practices and centres in the city of Lubumbashi

Cabinets	**Causes**	**Observations**
Animal rescue	Trauma, bite, and human sadism	The etiology of deep wounds is mostly the same
Seth enterprise	Bite, trauma, Inadequate kennel and overcrowding.	
Labrador	Trauma, Bite and skin lesion.	
Veterinary action	Inadequate kennel , overcrowding., bite by congeners, trauma.	
Kenos	Bite, skin infections and trauma.	
Nassa	Dental fistula, bite between congeners and fight	
Zoo veterinary center	Bite, fight, trauma and inadequat kennel.	

This table shows that trauma, fights between conspecifics, dental fistula, skin lesions and human sadism were listed among the causes of deep wounds diagnosed in dogs seen for consultation at the Lubumbashi veterinary center and practices. With regard to the causes of the deep wounds observed, Table 6 shows that trauma, fights between conspecifics, dental fistulas, skin lesions and human sadism were listed among the causes of the deep wounds diagnosed in dogs seen in consultation at the veterinary practices and centers in Lubumbashi. According to Aguerre (2004), the most frequent causes of skin wounds are trauma, bites and others. These include burns, wounds, punctures and lacerations. The human sadism incriminated in this study as one of the causes of the deep wounds on the head and neck is explained by the dog attacks that have become recurrent in the city of Lubumbashi. As for the bites incriminated by the majority of the institutions surveyed, they are often accompanied by contused wounds associated

with cellular destruction as stipulated (Ashcroft, *et al.,* 2003). Furthermore, the removal of skin lesions, in particular abscesses, tumours or cysts, resulted in deep wounds whenever they were performed on the head and neck. This observation was also made by Barreau (1992) in relation to deeply localized hot abscesses. Denture fistula is a condition usually encountered in dogs, the orifice of which opens below the orbital region in the form of wounds (Decazes *et al.,* 2004). As for the characteristics of wounds, according to Chaudieu (2008), wounds are characterized by varied and sometimes specific lesion profiles; determining their respective origins is important for their treatment.

Treatment of deep wounds: The protocols for the treatment of deep wounds diagnosed in dogs receiving consultations in veterinary practices and centres in Lubumbashi are presented and described in **Table 8** below.

Table 8: Protocols for the treatment of deep wounds applied in the zoo, various veterinary practices and centres

Institutions	Treatment protocols	Results
Action vétérinaire	**1. Recent wounds** Grooming, disinfection of the wound with Mercurochrome, systemic administration of Pen streptomycin, and application of the healing ointment to the wound, systemic administration of Pen streptomycin **2. Old wounds** Grooming, dressing with Dakin's solution, and systemic administration of Pen streptomycin.	Healing within 6 days Hypertrophic healing within 12 days
Centre vétérinaire du zoo	**1. Recent wounds** Wound preparation using antiseptic compresses, shaving of the wound, cleaning of the wound with Dakin's solution, wound debridement and suturing, administration of Pen streptomycin systemically **2. Old wounds** Cool the wound, apply antiseptic compresses on the wound, shave and clean the area around the wound, clean the wound with Dakin's solution, administer Pen streptomycin systemically.	Healing after 14 days Tendency to wound dehiscence. Healing with postoperative stress by day 13.
Kenos	**1. Recent wounds** Grooming, wound disinfection with wound spray, administration of Dexamethasone, local instillation of Pen streptomycin, wound suturing, systemic administration of Pen streptomycin **2. Old wounds** Grooming, wound care, systemic administration of Penicillin streptomycin, administration of multivitamins,	Effective healing 7 days later Healing within 21 days
Labrador	**1. Recent wounds** Wound dressing with KMnO4, topical instillation of Penicillin streptomycin, administration of Dexamethasone, and wound suturing **2. Old wounds** Cooling and cleaning of the wound with KMnO4, administration of Dexamethasone, systemic administration of Penicillin streptomycin, euthanasia	Healing after 10 days Absence of healing.
Nassa	**1. Recent wounds**	Healing after 8 days

	Grooming, disinfection of the wound with Mercurochrome, local instillation of Pen streptomycin, and suturing of the wound. **2. Old wounds** Grooming, disinfection of the wound with wound spray and administration of Pen streptomycin	Effective healing between 12 et 21 days
Secours des animaux	**1. Recent wounds** Wound irrigation with KMnO4, local instillation of Pen streptomycin, wound suturing, administration of Pen streptomycin **2. Recent wounds** Wound irrigation with KMnO4, systemic administration of Pen streptomycin; local instillation of Pen streptomycin	Start of healing from 6th day Healing within 13 days
Seth entreprise	**1. Recent wounds** Grooming, cleaning the wound with Mercurochrome, administering Diclofenac, and applying the healing ointment to the wound. **2. Old wounds** Hair removal, disinfection with Mercurochrome, administration of Penicillin streptomycin, euthanasia	Healing after 12 days Absence of healing.

This table shows that the protocols for treating deep wounds are not identical in the 7 private veterinary medical institutions in Lubumbashi, and the results obtained vary.

Treatment: Observation of this (table 8) shows that the protocols for treating deep wounds are not identical in the 7 private veterinary medical institutions in Lubumbashi, and the results obtained vary. In fact, we found that most of the institutions where our surveys were carried out simply groomed the wound, applied antiseptics and/or Peni-streptomycin solutions locally, daubed the wound with healing ointments, injected antibiotics combined with anti-inflammatories and dressed the wound. Azad *et al.,* (2008), the aim of treatment is to transform a contaminated wound into a surgically clean wound that can be sutured. Although this goal is not always achieved, the measures implemented by patricians remain the same. The classic wound treatment regimen combines local and general treatment (Afset and Maeland, 2003; Azoulay, 2008). Local treatment involves cleansing the wound, Bexflield (2004) considers to play a vital role during detersion of the wound. During detersion, the author suggests that irrigation should be carried out using only Ringer lactate, 0.9% Nacl or, failing that, tap water. Furthermore, Decazes *et al.,* (2004) adds that the purpose of using an antiseptic is to destroy micro-organisms. Efficacy, safety for the recipient tissue and persistence of action must be taken into account when choosing the antiseptic to use. Although the use of local antibiotics is debated, bacitracin, neomycin and polymixin are three antibiotics frequently combined in ointments; their application does not appear to have any adverse effects on healing and no systemic toxicity has been noted (Deneuche and Fayolle, 2002). However, some studies have shown nitrofurazone to slow healing. As for gentamycin, Fayolle (2004) consider that it is effective in controlling infections, especially of gram-negative bacteria, especially when the bacitracin-neomycin-polymixin combination has failed. After cleaning the wound, Lambrechts *et al.,* (2004) recommend rational trimming to eliminate foreign bodies and necrotic tissue, which are good bacterial substrates; ideally, complete trimming should be carried out at once and as soon as possible, but this is still not possible. Some recent, clean, well-

vascularized wounds require only token trimming, or no trimming at all. At the end of trimming, Moissonier (2002) recommends cleaning again, possibly combined with an antiseptic. Once the wound has been cleaned and trimmed, Baranyiova (2003) recommend deciding how the wound should be sutured, if at all possible, in order to achieve rapid healing with less risk of infection and a better impact on the owner. However, suturing is not always possible: in the case of infections, in the presence of necrotic tissue, in the case of sutures causing excessive tension or dehiscence of the sutures.

If several layers of suture cannot be used, a drain must be inserted.

If the wound is to heal as a second-line dressing, different types of dressing can be used Canapp *et al.,* (2003). To obtain an adherent layer, sterile compresses can be used, as they have a good absorption capacity Decazes *et al.,* (2004). On the other hand, to obtain a non-adherent first layer, the compress can be impregnated with a fatty substance (Vaseline, paraffin or polyethylene glycol) (Azoulay, 2008). It should be noted that each healing phase has specific characteristics to which the dressing must adapt in order to optimize progress (Chaudieu, 2008). General treatment is essentially based on antibiotic therapy. In cases where prolonged antibiotic therapy is justified, it is necessary to adapt the antibiotic to the contamination or infection flora by means of a wound tracing or culture of the local flora. An antibiogram is performed and renewed regularly to monitor changes in the sensitivity of the flora Fayolle (2004). Quinolones are administered in a single daily dose, whereas all other antibiotics require 2 to 3 doses per day (Moissonier, 2002). Antibiotic therapy is stopped 5 days after the wound has been cleansed (Jackson *et al.,* 2003) or when healthy granulation tissue appears (Fayolle, 2004). The wound will then be colonised by a low pathogenic flora, just like healthy skin, which competitively prevents the development of pathogenic bacteria. This explains why the excessive use of antibiotics can be harmful, allowing the emergence of bacteria such as Proteus or Pseudomonas, which are also highly pathogenic and rapidly develop resistance (Jackson *et al.,* 2003). It has been clearly demonstrated that corticosteroids, whether natural or synthetic, slow down wound healing. However, corticosteroid therapy in the usual doses does not necessarily lead to clinical delay, but it is advisable to keep a close eye on scarring, even though the inflammatory reaction is an integral part of the scarring process. It would appear that non-steroidal anti-inflammatory drugs in the usual doses have no harmful effects. Despite these advances, there are still situations where treatment of the wound and a return to normal are not possible. Nor should it be forgotten that the care required is sometimes too costly or burdensome for some owners (Fayolle, 2004). It is for this reason that the euthanasia carried out on dogs with old wounds evolving in the form of ulcers in our study is justified. In veterinary medicine, the aim of wound treatment is to avoid complications and to achieve the best possible healing as quickly as possible. In order to treat wounds appropriately and achieve a functional and aesthetically pleasing final scar, it is important to be aware of the physiological evolution of wound healing, possible complications and the factors that promote them (Deneuche and Fayolle, 2002). When a patient is presented with a wound, the first step is to carry out a general examination of the animal and the necessary care. Secondly, the patrician will examine the wound. The only exceptions are wounds that compromise the animal's survival, such as thoracic wounds or those associated with significant haemorrhage. A clinical examination is absolutely essential for good general treatment, and should be a reflex in all situations, even if it is usually the wound that attracts attention. This is particularly important when the wound is the result of a road traffic accident, as other organs may be affected. The decision to use systemic antibiotics should not be taken systematically: their use should be justified by the existence of a high-risk wound (old

wound, with major tissue damage, impossible to treat completely straight away), inflammation, or signs of infection such as fever (Dillie and Dillie, 2005). The choice of antibiotic is based on the presumed nature of the contaminating germs; a cephalosporin is generally used for superficial infections. A combination of amoxicillin and clavulanic acid is prescribed, ampicillin or clindamycin in the case of bites (Fayolle, 2004). In the course of this study, we found that the results of treating deep wounds on the head and neck of dogs in the 7 private veterinary medical institutions were variable. Wound healing occurred between 12 and 21 days. According to Jackson *et al.,* (2004), healing should take place in 11 days. In our humble opinion, this delay in healing was due to failure to comply with one or more of the principles governing wound treatment in general and deep wounds in particular, such as efficient wound cleansing, correct wound trimming, judicious use of antiseptics, antibiotics and anti-inflammatories, the application of a good dressing and the control of general, local and medicinal factors during the scarring process (Lambercht *et al*,. 2004).

CONCLUSION AND APPLICATION OF RESULTS

The general objective of this study was to enhance the skills of veterinary surgeons in the treatment of wounds in dogs. At the end of the study, it emerged that 25% of the 1,298 dogs receiving consultations in the 7 private veterinary medical institutions in Lubumbashi had been treated for wounds. This study focused on deep wounds on the head and neck of dogs of various breeds, sexes and ages. The majority of deep wounds diagnosed were fresh wounds, cuts and contused wounds. As for the causes of these lesions, trauma, fights between congeners, dental fistulas, skin lesions and human sadism were listed.

BIBLIOGRAPHY

Afset, J.E. Maeland, J.A. Susceptibility of skin and soft-tissue isolates of *Staphylococcus aureus* and *Streptococcus pyogenes* to topical antibiotics: indications of clonal spread of fusidic acid-resistant Staphylococcus aureus. Scand J Infect Dis. 2003, 35 (2), 84-89.

Aguerre, H. Les lambeaux cutanés axiaux chez le chien et le chat : tude bibliographique et clinique Th. : Med. Vet. : Toulouse : 2004-TOU 3, 4048, 158p.

Aquino, S. M. Management of eyelid neoplasms in the dog and cat. Clinical Techniques in Small Animal Practice, 2007, 22: 46-54.

Ashcroft, G.S. Ashworth, J.J. Potential role of estrogens in wound healing. Am J Clin Dermatol. 2003, 4 (11), 737-743.

Azad, A.K. Sermsintham, N. Chandrkrachang, S. Stevens, W.F. Chitosan membrane as a wound-healing dressing: characterization and clinical application. J Biomed Mater Res B Appl Biomatter. 2004, 69 (2), 16-22.

Azoulay, T. L'équipement de base pour la chirurgie des paupières chez le chien et le chat. Le Nouveau Praticien Vétérinaire – canine, féline, 2008 : 14-16.

Baranyiova, E. Holub, A. Martinikova, M. Epidemiology of intraspecies bite wounds in dogs in the Czech Republic Acta Vet. Brno. 2003, 72, 55-62.

Barreau, P. Matériel et techniques de base des sutures cutan.es. Le Point Vétérinaire. Num.ro spécial 1992, 24, 37-46.

Bexfield, A. Nigam, Y. Thomas, S. Detection and partial characterisation of two antibacterial factors from the excretions/secretions of the medicinal maggot Lucilia sericata and their activity against methicillin-resistant Staphylococcus aureus (MRSA).

Microbes Infect. 2004, 6 (14), 1297-1304.

Bohling, M.W. Henderson, R.A. Swaim, S.F. Cutaneous wound healing in the cat: A macroscopic description and comparison with cutaneous wound healing in the dog. Vet Surg. 2004, 33, 579-587.

Canapp, S.O. Farese, J.P. Schultz, G.S. The effect of topical tripeptide-copper complex on healing of ischemic open wounds. Vet Surg. 2003, 32, 515-523.

Chaudieu, G. Comment faire une plastie palpébrale de glissement. Pratique Vet, 2008, 45 : 34-37.

Decazes-De-Glucksbierg, J.M. Bernard, P. Lebrun-Vignes.B. Prescription des antibiotiques par voie locale dans les infections cutanées bactriennes primitives et secondaires. Ann Dermatol Venereol. 2004, 131, 1018-1021.

Deneuche, A. Fayolle, P. Pansement des plaies cutan.es en phase de réparation. Le Point Vétérinaire. 2002, 33 (222), 12-13.

Dillie, L. Dillie, K. Cicatrisation des plaies cutanées d'ovariectomie de chatte. Comparaison entre une colle chirurgicale et un fil de suture. Le Point Vétérinaire. 2005, 255, 10-11.

Fayolle P. Suture et parage des plaies. Action vétérinaire, 2002 (mai 2002) : p. 1-7.

Isard, P-F. Exérèse d'une tumeur palpébrale chez un chat. L'Action Vétérinaire, 2004, 1669 : 8-10.

Jackson, A.H. Degner, D.A. Jackson, I.T. Deep circonflex iliac cutaneous free flap in cats. Vet Surg. 2003, 32, 341-349.

Jongh, O. Conduite à tenir chirurgicale lors de tumeurs palpébrales chez le chien et le chat. Le Nouveau Praticien Vétérinaire – canine, féline, 2008, 37 : 37-42.

Lambrechts, N.E. Hurter, K. Picard, J.A. A prospective comparison between stabilized glutaraldehyde and chlorhexidine gluconate for preoperative skin antisepsis in dogs. Vet Surg. 2004, 33, 636-643.

Moissonier P. La cicatrisation des plaies. Action vétérinaire, 2002 : p. 3-6.