



شبكة المعلومات الجامعية

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ





شبكة المعلومات الجامعية



شبكة المعلومات الجامعية

التوثيق الالكتروني والميكرو فيلم



شبكة المعلومات الجامعية

# جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

## قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها  
علي هذه الأفلام قد اعدت دون أية تغيرات



## يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

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# بعض الوثائق الأصلية تالفة



شبكة المعلومات الجامعية



بالرسالة صفحات

لم ترد بالأصل

**Cairo University**  
**Faculty of Veterinary Medicine**  
**Department of Surgery,**  
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# **Studies on the Prevalent Surgical Infected Lesions in Some Farm Animals**

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## قرار لجنة الحكم والمناقشة

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## Content

<b>Subject</b>	<b>Page</b>
Introduction .....	1
Review of literature .....	2
Material and Methods .....	30
Results .....	37
Discussion .....	124
Summary .....	151
References .....	160
Arabic summary .....	



# Introduction

## Introduction

The surgical infected lesions are widely distributed among animals. The infection process is usually set up as the result of a reaction between the invading microorganism, the animal and the environmental peculiarities. In Egypt, the infected lesions occupied the first place among the surgical problems of high prevalence and destructive effects specially in farm animals. The interest in such studies became inevitable since the affection by these lesions causes great economic losses in mass production breeding system as well as in the sporadic cases. So, the identification of the causative agents of these lesions in addition to their clinicopathological features becomes of due importance in order to make decision for the best line of treatment to assure positive and quick results. Such results saves the time and cost in treating animals.

The haphazard use of antibiotics in the field of veterinary practice lead to resistance of the microorganisms against the chemotherapeutic agents. A fact which obliges the veterinarians to choose the suitable and available drug for the treatment and the post surgical care of different surgical affections. Therefore, the use of the *in-vitro* sensitivity test shouldn't be ignored.

**The objectives of the presented work are:(1) to investigate the surgical infected lesions in bovine, equine and caprine with regards to their clinicopathological pictures(2) to identify the most common pathogenic organisms under the field condition (3) the application of the *in-vitro* sensitivity test on bacterial isolates recovered from each case to recommend the suitable antibiotic treatment as post surgical care (4) performing the suitable surgical and/or medicinal treatment in such cases under field relations.**

# Review of Literature

## Review of Literature

### The surgical infection:

**Bobkurov (1977)** and **Frank (1981)** stated that, the knowledge of bacteriology should be used in diagnosis and treatment of surgical infected lesions. They mentioned that the pyogenic bacteria are the most important in acute surgical infections. They can produce pus like staphylococci, streptococci, colon bacilli, and bacillus pyocyaneous.

**Plakhotin (1984)** classified surgical infection into: (1) aerobic, or purulent surgical infection which is brought about by aerobic microorganisms (staphylococci, streptococci, diplococci, *Escherichia coli*, *Pseudomonas aeruginosa*); (2) anaerobic surgical infection which is caused by anaerobic bacilli as that of gas gangrene, malignant edema, those of tissue lysis and toxic edema; (3) putrid surgical infection in which the causative organisms are anaerobes or facultative anaerobes (*Proteus vulgaris*, sporogenic bacillus, *Escherichia coli*); (4) specific surgical infection (tetanus, red rattle, brucellosis, tuberculosis, necrobacteriosis, actinomycosis, botryomycosis).

**Macdonald, Morley, Bailey, Barber and Fretz (1994)** classified surgeries into clean and clean – contaminated. The clean wound is defined as non traumatic, uninfected operative wounds in which the respiratory, gastrointestinal, or genito-urinary tracts were not entered. While, clean-contaminated wounds are the operative wounds in which the respiratory tract, genito-urinary tract, intestinal tract or oropharyngeal cavity were entered, but without unusual contamination; or a clean operative wound in

which a drain was used. The authors found that, clean-contaminated surgeries had an increased risk of infection compared to clean surgery. Surgeries lasting 90 minutes or longer had an increased risk of infection compared to those less than 90 minutes. Administration of preoperative antibiotics was associated with an increased risk of infection and female patients were 2.6 times more likely to develop post operative infection than male patients. The authors attributed the difference in infection rates between male and female patients to the hormonal influence on neutrophil function. While, the increased risk of post operative infection associated with preoperative prophylactic antibiotics might be due to other factors especially in high risk patients as nutritional or metabolic status, the difficulty of the procedure, the trauma associated with the occurrence of the injury, or the trauma associated with the repair.

**Stashak (1991)** considered the infection as an important factor in reduction of equine wound healing. He mentioned that contaminated wounds with lesser concentrations of organisms may become infected when: (1) foreign bodies are present, (2) excessive necrotic tissue is left in the wound, (3) excessive bleeding, (4) impairment of local tissue defenses, or (5) alteration in the vascular supply. He concluded that, the best way to deal with infection in the surgical wound is by the followings: (1) proper wound preparation, (2) the use of good surgical principles, (3) reduce surgery time as much as possible, and (4) the use of aseptic technique.

**Macdonald, et al. (1994)** mentioned that out of 452 cases of equine with orthopedic surgery, 45 (10.0%) showed surgical infected wounds. Bacterial isolates were obtained in 25 (55.6%) of the infected cases while no isolate or no culture was obtained in 20 (44.4%). The bacterial isolates

included 19 (76.0%) gram positive, 4 (16.0%) gram negative and, 2 (8.0%) mixed infections.

**Moore; Schneider; Kowalski; Bramlage; Mecklenburg and Kohn, (1992)** found that, out of 424 bacterial isolates from 233 horses with musculoskeletal infection, 386 were aerobic or facultative and 38 were anaerobic. Enterobacteriaceae (28.8%) were the most common bacterial group isolated, followed by non-beta-haemolytic streptococci (13.0%), Coagulase – positive staphylococci (11.8%), Beta – haemolytic streptococci (9.4%) and Coagulase – negative, staphylococci (7.3%), while, other Gram-negative, other Gram-positive and miscellaneous bacteria represented 15.8%, 2.3% and 2.6% respectively.

**Burks, (1996)** reported that, infection with *Rhodococcus equi* can manifest itself in many ways, from pneumonia to abscesses to suppurative arthritis. Furthermore, other organs or systems, including musculoskeletal, ophthalmic, and central nervous systems usually infected after respiratory infection.

**Kumar, (1996)** recommended the use of penicillinase resistant antibiotics as ampicillin, gentamicin and kanamycin in the treatment of surgical wound infection as most of the pathogenic staphylococci produce penicillinase enzyme. He added that, penicillin and streptomycin combination for systemic effect along with sulphonamide mixture bacitracin or polymyxin for local application is an effective satisfactory method for chemotherapy for surgical infections.

## **Infection and pus formation:**

**Plakhotin (1984) and Fry (2000)** stated, the pus consists of serum and huge amount of leucocytes, predominantly neutrophils. The later are usually killed during phagocytosis by microbial toxins and histolysis products in the vast majority of cases. The pus serum contains proteolytic enzymes, proteins and various products of tissue destruction (peptones, amino acids, ketone bodies, fatty acids). The pus serum of horses does not contain fibrin while that of cattle contains a small amount of fibrinogen which is converted into fibrin, falling out as a network over the walls of the forming purulent cavity. The authors described the staphylococcal pus as thick, white – yellow or yellow, of skim milk – or sour cream-like consistency and with specific sourish odor. In cattle it contains fibrin flakes. However, the streptococcal pus is usually malodorous, of liquid consistency, greyish – yellow or greyish – brown and has an admixture of small amount of necrotic tissues usually streaked with blood. In cattle it shows few fibrin flakes. They added that, pus of hemolytic streptococcus is liquid, yellowish, with bloody hue and blood streaks. In cattle it shows fibrin admixtures. Moreover, pus of of *Escherichia coli* is liquid, malodorous, of brown color. While that of *pseudomonas aeroginosa* is thick, pale green or grey-green with emerald green necrotic tissues. Furthermore, the same authors mentioned that in general, the pus of chronic abscesses is commonly thick and of caseous character while, in tuberculous abscess, the pus is liquid, contains flakes and cheesy like masses. On the other hand, the pus of brucellous abscess is purulent-bloody, liquid, sometimes has a small admixture of whitish-yellow cheesy – like mass; it may subsequently acquire a greyish-yellow oily appearance.