

## Case Report

# A Case Report on Skin Abscess in A Cow in Damot Sore District, Wolaita Zone, Southern Ethiopia

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## Abstract

An abscess is an accumulation of pus that hollows out a cavity in the tissues by destroying and expanding them and surrounded by fibrous tissue. Diagnosis of a skin abscess is usually made based on what it looks like and is confirmed by cutting it open. Ultrasound imaging may be useful in cases in which the diagnosis is not clear. Successful management of the abscess was presented in female cattle of five years of age. The abscess swelling was unusually located subcutaneously in right shoulder region. Clinical examination revealed the mass was warm, hard, and painful in the initial stages and become fluctuating, gas filled and soft on maturation. The animal was successfully treated by regular surgical drainage of pus along with a daily antiseptic dressing of tincture-iodine, parenteral administration of antibiotics (streptomycin and penicillin, for 5 days) and oxytetracycline wound spray. The animal was treated successfully and it recovered after 1-month post-intervention without any other complications.

**Keywords:** Abscess; Antibiotics; Cow; Drainage

## Introduction

An abscess is a collection of pus in confined tissue spaces, usually caused by a bacterial infection. Abscesses can develop anywhere in the body. A skin abscess also called a boil is a bump that appears within or below the skin's surface and it is one of the common types of abscesses that appears externally as a swollen pus-filled lump under the surface of the skin. Internal abscesses develop inside the body in an organ or the spaces between organs [1,2].

A skin abscess most commonly develops on the head, neck/dewlap, back, chest, and limbs. Abscesses of the lymph nodes in the head and neck region (often referred to as grass seed abscesses), and of the skin (skin abscesses), are commonly seen in the export process as a consequence of abrasions or penetrations of the oropharynx or skin from grazing prickly plants, seed penetrations or vaccination needles [3-5]. The symptoms of an abscess depend on where it develops in the body. However, it's more difficult to identify an abscess inside the body. The symptoms of abscesses include redness, tenderness, pain in the affected area, a high temperature (warmth), and swelling (if abscesses are near the skin layer) or constitutional symptoms (if abscesses are deep). The swelling may feel fluid-filled when pressed. Moreover, the area of redness often extends beyond the swelling [6].

A superficial abscess should be differentiated from other swellings by an exploratory puncture which reveals synovial fluid in bursitis; serous fluid in cysts; blood in hematoma; nothing or intestinal content in the hernia. In most cases, it is recommended to double-check that the swelling is fluid-filled, and not an indurated fibrous lump, hernia,

or hematoma before incising [7]. Most skin abscesses are harmless and may go away without treatment. However, there are cases in which an abscess can lead to serious, potentially life-threatening complications if left untreated. Sometimes, skin abscesses are more difficult to treat and may require laceration or drainage [8].

Most subcutaneous abscesses are the result of traumatic skin penetration with resulting infection. For example, facial subcutaneous abscesses are common in cattle eating roughage containing foxtail grass. Several animals in a herd may be affected at one time [7]. Besides, most abscesses are caused by a bacterial infection. Bacteria especially, *Staphylococcus* species is the most common bacterial cause of skin abscesses and occurs when *Staphylococcus aureus* bacteria enter the body through a hair follicle or through a wound or injury that has punctured or broken the skin. In rare cases, an abscess may be caused by a virus, fungi, or parasites [9,10]. When bacteria enter the body, the white blood cells attack the bacteria and some nearby tissue dies, creating a hole which then fills with pus to form an abscess. The pus contains a mixture of dead tissue, white blood cells, and bacteria. The abscess may get larger and more painful as the infection continues and more pus is produced. Some types of staphylococcal bacteria produce a toxin called Pantone-Valentine leukocidin (PVL) which kills white blood cells. This causes the body to make more cells to keep fighting the infection and can lead to repeated skin infections [11].

Abscesses can be treated in several different ways, depending on the type of abscess and how large it is. The main treatment options include antibiotics, a drainage procedure, and surgery. Proper physical and chemical restraining of the animal (crush and sedation) may be vital before starting manipulation. Besides aseptic procedures should be followed during the procedure to reduce infection and increase the prognosis of the condition. A small skin abscess may drain naturally or simply shrink dry up and disappear without any treatment. However, large superficial abscesses may need to be treated with antibiotics to clear the infection and the pus may need to be drained through an incision. This will usually be done by creating a ventral drainage hole and thoroughly flush with clean water under moderate pressure from a hose or syringe using a gloved finger to gently aid the removal of pus [8,9]. Thus, ensuring a clean healthy and largely free of bacteria can

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help reduce the risk of developing skin abscesses [1,12].

## Case History

An old cow weighted 140 kg was presented to Gununo veterinary clinic, Wolaita Sodo, on February 12, 2024 with complains of a swelling in right forelimb of shoulder region before weeks ago, the herd of cattle managed extensively in a field around swampy area and no history of previous medication.

## Clinical Examination and Findings

The clinical examination revealed a swelled mass, which was warm, hard, and painful in the initial stages, and become fluctuating and soft for maturation whereas their history revealed the gradual reduction of feed intake and water consumption. Body parameters were temperature 38.2°C respiratory rate 35 breaths/ minute and heartrate 36 beat/ minute.

## Diagnosis

**Differential Diagnosis:** To differentiate it from other types of lesions causing swelling like a tumor, hematoma, etc.

**Sample Collection:** The swelling was cleaned with gauze soaked in alcohol, and about 500 mls of insissipated pus exudate was aspirated from the swollen mass was performed using an 18-gauge sterile needle and 20 ml syringe (Figure 1), stored in ice bucket and submitted to WolaitaSodo University, Veterinary Microbiology laboratory for culture and identification that helpful in the diagnosis of the abscess.



Figure 1: Swelled subcutaneous abscess around in right shoulder region.

## Laboratory diagnosis and findings

**Isolation of sample:** A sterile inoculating wire loop was used to streak the pus sample directly on a freshly prepared agar media and incubated aerobically at 37°C for 24 hr. Suspected colonies were sub cultured on nutrient agar to obtain pure culture. Characteristic colonies were identified by conventional methods, including Gram stain and catalase test.

**Identification of Staphylococcus spp.** In Gram's staining, the isolated Staphylococcus spp. revealed Gram positive, violet colored, cocci shaped organisms arranged in grape like clusters (Figure 2).

**Biochemical tests:** In order to identify staphylococcus spp. *Staphylococcus aureus*, sugar media (mannitol) were used for biochemical tests. Staphylococcus spp. *Staphylococcus aureus* was found as catalase positive (Figure 3).

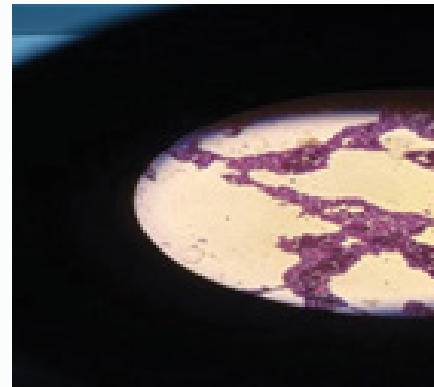


Figure 2: Gram positive, *Staphylococcus aureus* seen under microscope after Gram's staining.

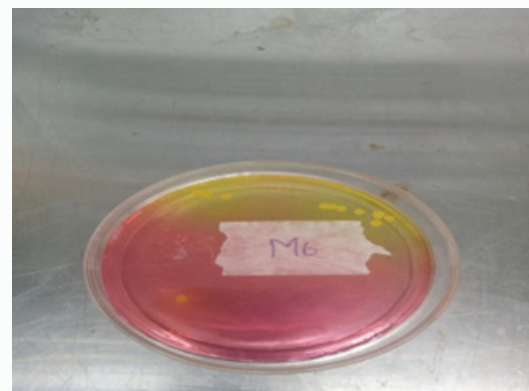


Figure 3: Gram positive, *Staphylococcus aureus* seen in Mannitol salt agar.

## Treatment and Management

In this case the cow was kept an abscess resulting from traumatic injury can safely and successfully be treated by lavage with iodine texture 10% and antibiotic Penicillin (1ml/25 kg) (Pen Strep® Norbrook UK) I.M was administered for three consecutive days. The owner advised to treat their animals in early stage of disease. On follow up period after three weeks of post treatment, the cow totally healed from the problem.

## Discussion

An abscess is a circumscribed inflammatory lesion, which consists of purulent exudates. Causes of abscesses formation are variable and include a breach on the surface of the skin or mucous membrane and entrance of pyogenic microorganisms through it infected foreign bodies migrating from the lumen of the digestive tract, the non-sterilized needle used for intramuscular injection, punctured or penetrating wounds [1,13].

An abscess swelling were subcutaneously located in body of cow that at the cranial surface of the shoulder region. This result was in agreement with that reported by (Misk 2008) who stated that the predilection sites of abscesses in different animals depend mainly on the way of entrance of the infection. Abscess cases were higher in males than females, due to the use of males for draught purposes in the area and fighting between them. Cattle are the species predominantly used in agriculture operations to pull agricultural implements (e.g. plough, weeder, puddler, etc.) [14]. This is in agreement with the case

report in terms of sex-wise incidence of the case.

The condition in the present study was diagnosed by physical examination (palpation) and aspiration, while culture and identification of the bacterial species were employed. In this case report Gram positive *Staphylococcus aerues* were isolated from skin lesions. This is in agreement with the finding of [15], recorded yellowish colony on MS agar, cocci shaped in a grape like arrangement under the microscope. Radiography and ultrasonography could also be an alternative in the diagnosis of subcutaneous abscess [16] which was considered in this case but the facility was not available. The exploratory puncture was highly diagnostic in case of abscesses. Besides, size, consistency, nature, and color of the contents play a considerable role in the diagnosis and differential diagnosis of abscesses. Treatments of case depend on maturation and evacuation. Treatment of large abscess was performed by evacuation of pus from the abscess cavity along with antibacterial therapy. A similar line of treatment was followed by [9,17,18] Drainage is essential to prevent dead space and seroma formation. Simple dependent stab incisions, passive drains, or active drainage systems were used depending on the wound [19,20].

## Conclusion and Recommendations

In conclusion, it could be concluded that at field or farm level, successful management of superficial skin abscess in cattle can be attained through proper/regular drainage of the pus followed by antiseptic gauze packing to allow drainage of pus so that the parental administration of antibiotics is effective.

### The following recommendations are forwarded

The owner should be advised to maintain clean dry living environments could reduce exposure of pathogens.

Providing adequate space and environmental enrichment will reduce stress and skin injuries in cattle.

The owner advised to treat their animals in early stage of disease.

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