

Maxillofacial Abscess et Causa Odontogenic Infection: A Case Report

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Abstract

Case Report

Background: Odontogenic infection is an infection that occurs in the oral cavity caused by carious teeth and periodontal disease where the disease can spread to surrounding tissues to the face, jaw and neck. Maxillofacial abscess is a manifestation of periapical or periodontal infection. Incisor, canine or molar teeth, where periapical infection is the most frequent source of odontogenic infection compared to periodontal. Inflammation or damage to chronic dental problems can cause complications of abscesses in the surrounding area. The main complaint that causes sufferers to come to the hospital is pain in the abscess area. These complaints can also be accompanied by trismus, dysphagia, stridor caused by compression of the trachea, and even respiratory tract obstruction. **Objective:** To determine the progression of maxillofacial abscess so that medical management can be provided up to surgical incision and drainage. **Case report:** We report 2 cases of maxillofacial abscess due to odontogenic infection with management according to the progression of each case. **Conclusion:** The most common cause or etiology that can cause maxillofacial abscess is toothache. Management of maxillofacial abscesses begins with empirical antibiotics, which is the first step to reduce bacterial infections that produce beta lactamase. In maxillofacial abscesses, medical therapy can be given in the form of antibiotics combined with ceftriaxone with metronidazole, or meropenem with metronidazole and termination measures in the form of incision and drainage. Treatment can be chosen based on the presence or absence of warning signs and signs of complications. Incision and drainage is performed when complaints do not improve after administration of antibiotics, multiple abscesses and airway obstruction threaten the patient's life.

Keywords: Odontogenic infection, maxillofacial abscess.

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A. INTRODUCTION

Infection is a condition caused by the process of entry and proliferation of pathogenic germs in the body. In orthomaxillofacial infections, pathogenic germs can enter through several pathways, namely dentogenous and trauma. Infections originating from the teeth (dentogen) are the most common type of infection and are called odontogenic infections (Oktavianto, 2022). Odontogenic infection is an infection that occurs in the oral cavity caused by carious teeth and periodontal disease where the disease can extend to surrounding tissues to the face, jaw and neck area. There are 3 clinical stages in odontogenic infection. The first stage (periapical osteitis), at this stage the infection is still localized within the alveolar bone. The second stage (cellulitis), where at this stage the infection has spread from the bone to the adjacent soft tissues. The third stage (suppuration), where at this stage the infection has formed a visible and fluctuating abscess (Jevon, 2020).

Abscesses are part of the body's defense system that aims to prevent the entry of infectious agents into other parts of the body, where the abscess consists of purulent exudate derived from degenerate inflammatory cells. Maxillofacial abscess is a manifestation of infection in the periapex or periodontal of the incisor, canine or molar tooth, where periapex infection is the most frequent source of odontogenic infection compared to periodontal (Shukla, 2021). According to Mirochnik (2017) in his research, the teeth that most often experience infection are the lower molar teeth 43%, the upper incisor & canine 20%, and the upper molar 10%. When the periapex tissue has been inoculated with bacteria, there is an active infection that will spread in various directions, especially to areas that have minimal resistance. This infection will spread to the cancellous bone towards the cortical plate, if the cortical plate is thin, the infection will erode the bone and enter the soft tissue, then in the soft tissue the spread depends on the

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potential space and the origo and insertion of muscle muscles in the maxillary and mandibular areas (Shukla, 2021). For example, if the infection penetrates through the labial aspect of the maxillary teeth and below the buccinator muscle attachment, the abscess will form in the vestibular space, if the infection penetrates the bone through the upper part of the buccinator muscle attachment, the abscess will form in the buccal space. In the mandible the mylohyoid muscle will determine whether the infection will be localized to the lingual or forwarded to the sublingual or submandibular space depending on the perforation area if it is located above the mylohyoid muscle then the infection will spread to the sublingual space, but if the location of the perforation area is below the mylohyoid muscle then the infection will spread to the submandibular space (Pasaribu, 2006). When the spread of infection involves the submandibular, sublingual and submental spaces, this condition is known as Angina Ludwig, which is characterized by severe swelling that causes the tongue to lift and a hard and dense induration in the submandibular region above the hyoid bone. This infection can spread very quickly between the submandibular space and the parapharyngeal space at a buccopharyngeal gap which is the main way of spreading the infection, so that the infection can easily spread to the retropharyngeal space and finally to the mediastinum (Shukla, 2021). The spread of an abscess that starts from a dental infection can spread extraorally & intraorally.

Extraoral examination can be seen from the shape of the face, the shape of the neck whether there is a mass, the shape, color and size of the visible mass. In addition to the mass, cellulitis can be seen which determines the severity of the spread of the abscess. The visible mass can be an abscess or enlargement or infection of the lymph nodes (Fan, 2020). Intraoral examination is the involvement of internal organs up to the mediastinum which is an emergency in cases of abscess. Three potential routes for the spread of intraoral foci of infection are retropharyngeal, perivascular and pretracheal. The direction of pus spread is in accordance with the direction of the earth's gravity, so that oral abscesses can spread towards the neck, thorax and mediastinum (Rochmah, 2018). Intraoral spread of pus involving internal organs, will potentially disrupt the respiratory tract so that more qualified management is needed (Lizar *et al.*, 2017).

Risk factors that play a role in the incidence of odontogenic infections are oral hygiene, gender, age, and normal flora in the mouth (Oktavianto, 2022) under normal circumstances the presence of normal flora in the oral cavity does not cause clinical manifestations, but due to an imbalance between the host, agent and environment causes infection by bacteria found in the oral cavity (Doving, 2020). According to Bahl (2014) in his research, the bacteria that cause odontogenic infections are generally polymicrobial and are mostly caused by a mixture of aerobic and anaerobic bacteria,

Streptococcus viridans is the most commonly isolated bacterium among aerobic bacteria, while *Bacteroides* and *Prevotella* are the most common bacterial species among anaerobic bacteria. In bacterial pathogenesis, bacteria secrete virulence factors in the form of enzymes that can damage the structure of the host tissue, these enzymes are collagenase, hyaluronidase, and streptokinase, which can dissolve through the organic matrix of the bone, in addition to the enzymes above, the acidic end products of metabolism produced by bacteria can also cause demineralization of bone structure (Shukla, 2021).

The incidence of odontogenic abscesses in Indonesia has been studied at dr. M. Djamil Hospital during the period October 2009 - September 2010. The number of odontogenic abscess cases obtained was 33 people with the location of peritonsillar abscess 11 cases, submandibular abscess 9 cases, parapharyngeal abscess 6 cases, retropharyngeal abscess 4 cases, masticator abscess 3 cases, pretracheal abscess 1 case (Arliando *et al.*, 2017). The most common signs and symptoms are tenderness in the abscess area, warmth in the abscess area, swelling in the abscess area, redness in the abscess area and fever. Usually accompanied by dysphagia, which is a swallowing disorder due to the pain felt by the patient. These complaints may also be accompanied by trismus, soft or hard consistency mass, fluctuating mass and stridor. The duration of these symptoms can range from 12 hours to 28 days (Bal *et al.*, 2022).

Management of abscesses should begin with intravenous administration of high-dose antibiotics. In deep neck abscesses including the maxilla, a combination of ceftriaxone and metronidazole, meropenem, antibiotic therapy and surgery in the form of incision and drainage can be given. Management can be selected based on the presence or absence of alert signs and signs of complications (Lizar *et al.*, 2017; Mutia Zatadin *et al.*, 2017). Alert signs in the form of tongue elevation, trismus, voice changes, odinophagy, and submandibular cellulitis with clinical angina ludwig and abscess size > 3cm, then the patient requires surgery (Mutia Zatadin *et al.*, 2017). Indications for surgery are no improvement in symptoms within 24 hours, threat of airway obstruction, life-threatening neurovascular complications, pus that appears more than 3 cm on CT scans, and multiple abscesses (Santhi Dewantara *et al.*, 2017).

B. PROBLEM FORMULATION

1. Can odontogenic infection cause abscesses in the maxillofacial region and surrounding areas?
2. What are the types of bacteria that can infect teeth to cause abscesses in the maxillofacial region and surrounding areas?
3. Can a maxillofacial abscess potentially cause an emergency?
4. What is the appropriate treatment for odontogenic maxillofacial abscess?

C. HYPOTHESIS

- 1 Odontogenic infection can cause abscesses in the maxillofacial region and surrounding areas.
- 2 The types of bacteria that often infect teeth so that abscesses form in the maxillofacial region and surrounding areas are aerobic and anaerobic bacteria.
- 3 Maxillofacial abscesses can potentially cause emergency conditions.
- 4 Treatment for maxillofacial abscess is intravenous administration of high-dose antibiotics and surgery.

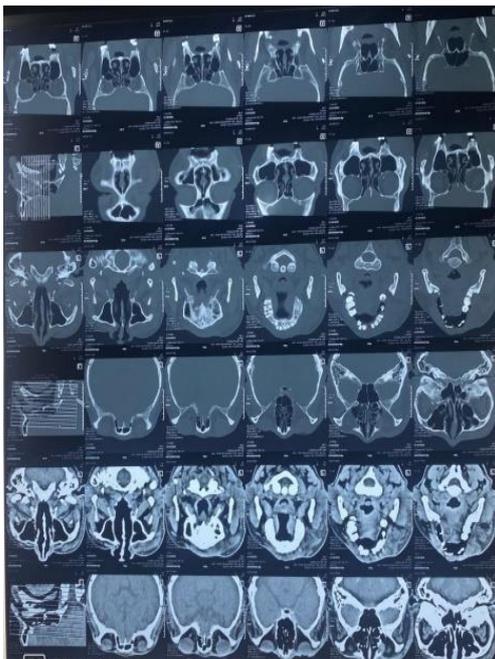
D. CASE REPORT

Case 1

We report a case of maxillary abscess Mr. N, 60 years old, came to the emergency room of Karanganyar Hospital with the main complaint of left cheek swelling since 5 days ago, continuous and getting worse. Symptoms accompanied by cheek pain, it has been 5 days, complaints are felt getting worse every day, swelling, toothache (+) for years, it has been difficult to

open the mouth since 3 days ago, getting worse every day, phlegm (+) has been 5 days getting worse, buzzing ears (+) has been 2 days getting worse.

In addition, the patient has a history of hypertension. The patient has no history of diabetes mellitus, allergies, or asthma. The patient's condition is compos mentis with a temperature of 37.0°C with a pulse rate of 93x/min, blood pressure 149/91 mmHg, respiratory rate 20x/min, and SpO₂ 95%. ENT KL examination of the head found Edem (+) on the left cheek with palpation results palpated hot and hard. Throat found phlegm (+). Nose, ear and neck examination within normal limits. Laboratory examination supporting results obtained an increase in platelets 693 neutrophils 78.6 and a decrease in hemoglobin 10.5 hematocrit 30.4 erythrocytes 3.73 lymphocytes 10.6 GDS 68. CT-Scan examination found an abscess in the sinistra maxilla region. OPG examination obtained multiple caries dentis and multiple missing teeth. The patient was given 20 tpm lactated ringer infusion, ceftriaxone injection/12 hours, metronidazole injection/8 hours, santagesic injection/8 hours.

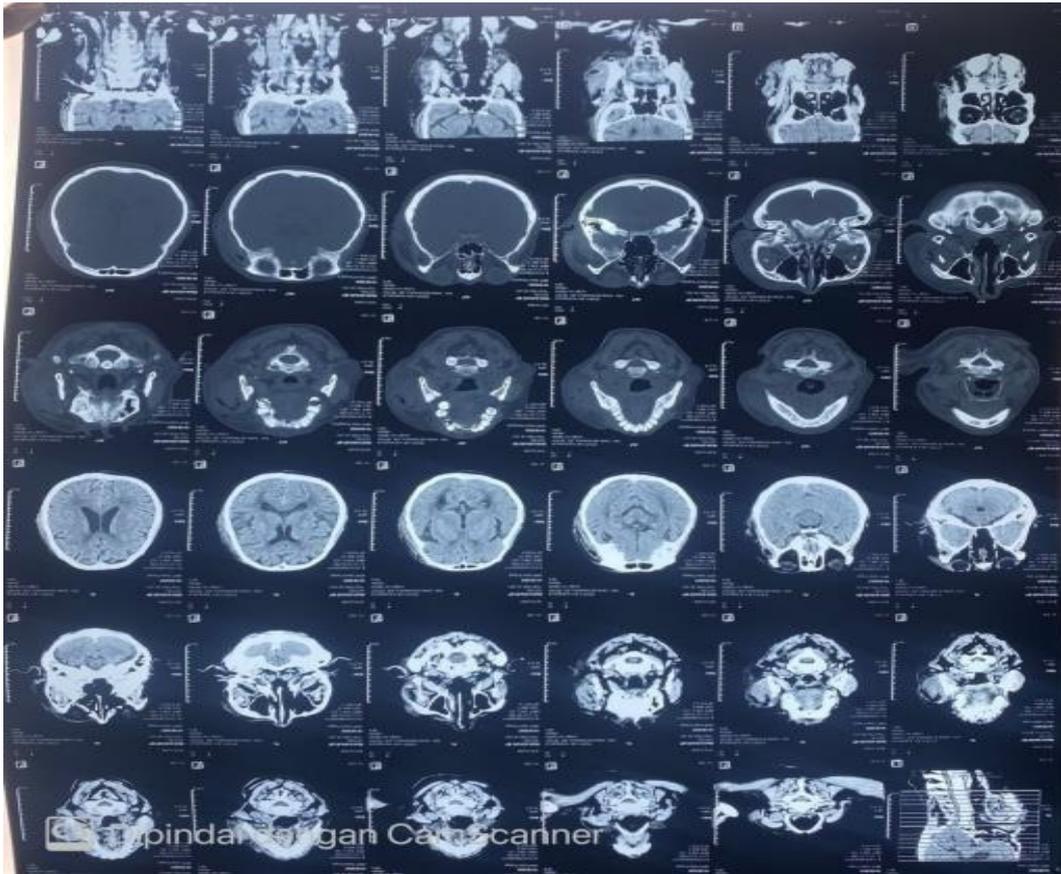


CT scan of the head without contrast showing an abscess in the maxilla region sinistra

Case 2

We report a case of maxilla abscess Mr. MA, 65 years old, came to the emergency room of Karanganyar Hospital with the main complaint of left cheek swelling since 6 days ago, continuously and getting worse. Symptoms accompanied by left cheek pain, it has been 6 days getting worse, fever has been 6 days, up and down, getting worse every day, toothache, pain felt every day for 6 days, complaints are getting worse. In addition, the patient has no history of hypertension, diabetes mellitus, allergies, or asthma. The patient's condition is compos mentis with a temperature of 37.7°C with a pulse rate of 90x/min, blood pressure 120/80 mmHg, respiratory rate

20x/min, and SpO₂ 96%. ENT KL examination of the head found Edem (+) on the left cheek with palpation results palpated hot and hard. Ears were found to be buzzing (+). Nose, throat and neck examination within normal limits. Supporting laboratory examination results obtained an increase in leukocytes 28.02, platelets 422, neutrophils 88.7, and a decrease in lymphocytes 4.8, normal GDS results 75. CT-Scan examination obtained enlargement in the left parotid region to the left bucal region with bubble lusensy in it. The patient was given 20 tpm lactated ringer infusion, ceftriaxone injection/12 hours, metronidazole injection/8 hours, santagesic injection/8 hours, dexamethasone injection/8 hours.



Head CT scan without contrast showed an abscess of the maxilla to the left buccal



Clinical photograph showing swelling of the submaxilla sinistra

E. LITERATURE REVIEW

1. Definition

Odontogenous infection is an infection that initially originates from damage to the hard tissue of the tooth or tooth supporting tissue caused by bacteria that are normal oral flora that turn into pathogens. The spread of odontogenic infection into soft tissue can be in the form of an abscess.

Odontogenic infections can come from three pathways, namely:

- a. Periapical pathway, as a result of pulp necrosis and bacterial invasion into periapical tissues
- b. The periodontal pathway, as a result of bacterial inoculation of periodontal pockets; and
- c. The pericoronal pathway, which occurs due to trapping of food under the operculum but this occurs only in teeth that are not yet fully erupted. And the most common is through the

periapical pathway.

An abscess is an isolated collection of pus under the dermis and deeper skin tissues, caused by infection from bacteria, parasites, or other foreign bodies. An abscess is also the final stage of a tissue infection that starts from a process called inflammation. Odontogenic maxillary abscess is an infection of the maxilla that starts as a dentoalveolar infection (infection of the tooth and surrounding tissues) that produces pus.

2. Etiology

Caused by bacteria in the plaque, in the gingival sulcus, and on the oral mucosa. These types of bacteria under normal conditions are normal flora in the oral cavity. Bacteria commonly found are gram-positive aerobic cocci, gram-positive anaerobic cocci and gram-negative anaerobic rods.

Aerob	Anaerob
<i>Streptokokus viridan</i>	<i>Prevotella sp.</i>
<i>Klebsiella pneumoniae</i>	<i>Peptostreptococcus sp.</i>
<i>Staphylococcus aureus</i>	<i>Prevotella intermedia</i>
<i>Eikenella corrodens</i>	<i>Peptostrepto. Micros</i>
<i>Stapilokokus koagulase-negatif</i>	<i>Bacteroides sp.</i>
<i>Streptokokus β-hemolitik non-ABD</i>	<i>Propionibacterium acnes</i>
<i>Neisseria sp.</i>	<i>Fusobacterium nucleatum</i>
<i>Streptococcus intermedium</i>	<i>Fusobacterium sp.</i>
<i>Streptokokus grup D</i>	<i>Peptostreptococcus magnus</i>
<i>Acinetobacter baumannii</i>	<i>Peptostreptococcus anaerobius</i>
<i>Escherichia coli</i>	<i>Veillonella alcalescens</i>
<i>Enterobacter aerogenes</i>	<i>Bacteroides vulgatus</i>
<i>Hemophilus parainfluenzae</i>	<i>Propionibacterium avidum</i>
<i>Klebsiella oxytoca</i>	<i>Eubacterium lentum</i>
<i>Morganella morganii</i>	GM(+) non-spora
<i>Proteus mirabilis</i>	
<i>Salmonella enteritis D</i>	
<i>Serratia marcescens</i>	
<i>Streptomyces sp.</i>	
<i>Burkholderia cepacia (Pseudomonas cepacia)</i>	

Common types of abscess-causing bacteria

3. Risk factors

As caused by several factors, namely:

- a. Organismal factors; orofacial infections are generally caused by bacteria and usually the patient's immune system can invade the bacteria,
- b. Anatomical tissue factors; the surrounding tissue has a great influence on the spread of infection and
- c. Patient factors; the patient's body resistance is very influential on the spread of bacteria.

4. Epidemiology

Epidemiologically, this disease is most common between the ages of 20 and 60 years, with the ratio between men and women being 3:1. The mortality rate due to mandibular abscess before the introduction of antibiotics reached 50% of all reported cases, in line with the development of antibiotics, after the introduction of good surgical care and fast and precise action, the mortality rate has begun to decrease, which is only 5%.

5. Pathophysiology

Odontogenic infections occur because oral/dental bacteria have access to the head and neck through the teeth and surrounding structures. Dental infections are triggered by metabolic reactions that occur in the biofilm that coats the teeth. More commonly

referred to as plaque, these reactions lead to tooth decay and infection. In the presence of underlying decay, bacteria will cause demineralization of the enamel. Usually the third and second molars are the most commonly affected teeth. As the enamel begins to break down, bacteria will invade the tooth causing pulpitis.

Generally, dental infections are caused by oral flora, both anaerobic and aerobic. The more common examples of aerobic bacteria involved with infections are *Streptococcus viridans* and *Staphylococcus aureus*. Anaerobic species include *Bacterioid* and *Prevotella*. If pulpitis is left untreated, the infection will spread to the bone causing a periapical abscess. Untreated periapical abscesses will spread to adjacent bone structures and the inner neck causing disease more systemic disease. The infection will erode the bone and enter the soft tissue, furthermore in the soft tissue the spread depends on the potential space of the origo and insertion of the muscles in the maxillary and mandibular region. If the infection is directed above the mylohioid muscle, the abscess will lead to the maxilla.

6. Management

Medicamentous treatment. This abscess needs to be treated with appropriate and adequate antibiotics to relieve the infection. Antibiotics that are effective for the infection are the penicillin class. Erythromycin,

clindamycin, cefadroxil, tetracycline and metronidazole. If it is suspected that the bacteria causing the abscess is resistant to penicillin, or the presence of opportunistic or anaerobic germs, it is necessary to consider the use of non-penicillin antibiotics. In severe odontogenic infections, it is advisable to administer high doses of bactericidal antibiotics parenterally when necessary to perform bacterial culture and resistance testing. Antipyretic analgesics are needed to reduce pain and fever. Supportive therapy such as a high-calorie, high-protein diet is also needed to improve endurance.

Surgical treatment and removal of pus by incision and drainage are very important actions in the treatment of this abscess. This can reduce pain and accelerate the healing process. Incision can be done when the pus has been localized on the surface area and there is fluctuation. Treatment of the tooth causing the infection needs to be extracted when endodontic treatment is no longer possible. Tooth extraction is done after the signs of infection have subsided, because if it is done during the acute phase, it is feared that the spread of infection will occur, besides that local anesthesia becomes less effective, causing pain which will increase the patient's suffering. If the infection continues rapidly and progressively, the spread of infection has reached the fascia space, the patient has difficulty breathing and swallowing, the temperature rises and there is trismus less than 1 cm, then the general dentist should immediately refer to the dentist who specializes in oral surgery.

7. Complications

Complications of maxillofacial abscess due to odontogenic infection are:

- a) Mediastinitis is a severe odontogenic infection that spreads to the inner neck can gain access to the mediastinum. When acute purulent mediastinitis from an odontogenic source occurs, mediastinitis to necrosis will occur.
- b) Orbital cellulitis is Rarely do severe odontogenic infections involve the orbita. However, when the orbita is involved, there is a significant morbidity and mortality rate associated with orbital cellulitis and abscesses caused by intracranial complications. orbital cellulitis and abscesses are caused by bacterial rhinosinusitis. A small proportion of cases are caused by trauma, infection of the face, middle ear, tonsils or teeth. Odontogenic infections usually have access to the orbit via the maxillary sinus and facial blood vessels.
- c) Sepsis is a life-threatening organ dysfunction caused by an unregulated body responding to infection. severe odontogenic infection will lead to sepsis in the absence of complications. Factors that may increase septic progression in patients with severe odontogenic infections include frailty, immunosuppression, children under one year of age, adults over 75 years of

age, and drug users.

- d) Lemierre syndrome is a rare form of disseminated septic thrombophlebitis characterized by *Fusobacterium necrophorum* superinfection, jugular vein thrombosis and septic embolism. Lemierre syndrome is preceded by infection of the head and neck region. The main mechanism by which severe odontogenic infections can lead to Lemierre's syndrome is through spread into the parapharyngeal space. Lemierre's syndrome can be complicated by septic metastases that most commonly involve the lungs and joints. Clinical features usually include fever, sore throat, neck mass and neck pain.

8. Prognosis

The prognosis of maxillary abscess depends on adequate treatment to avoid severe complications such as airway obstruction, spread of infection to the central nervous system, and sepsis. If the abscess ruptures, the complaints may disappear. However, the patient still requires treatment.

F. RESULTS AND DISCUSSION

Deep neck infection (DNSI) refers to infection with either abscess formation or cellulitis. The infection occurs due to the bacteria Group-A beta-hemolytic *Streptococcus* and *F. necrophorum* (Putri, 2021). Apart from GABHS, peritonsillar abscesses can also be caused by other aerobic and anaerobic microorganisms. Some aerobic bacteria that are the etiology of this disease are group B, C, and G *Streptococcus*, type B and nontypeable *Haemophilus influenzae*, *Neisseria* sp, *Staphylococcus aureus*, and *Mycobacterium* sp. Other causes of peritonsillar abscesses are viruses, for example parainfluenza and herpes simplex virus (Rahmah *et al.*, 2023).

In this case 2 cases of abscess were reported where in the first case the patient was diagnosed with maxillary odontogenic abscess sinistra due to the main complaint in the form of pain in the left cheek since 3 days ago which was the reason the patient came to the emergency room of Karanganyar Hospital. this is caused by infection in the maxillary area generally comes from infection of the teeth, floor of the mouth, pharynx, submandibular lymph nodes, or is a continuation of infection from another inner neck space. Dental infections can affect the pulp and periodontal tissues, and can extend through the apical foramen of the tooth to the surrounding area. In odontogenic infections the progression of infection can occur between the first day to the third week. Poor oral hygiene is a predisposing factor for submandibular abscess. Other predisposing factors are the presence of systemic diseases such as diabetes mellitus and immunodeficiency diseases because these diseases can facilitate the development of bacteria and the spread of infection. in general, submandibular abscesses are associated with the

incidence of odontogenic infections, generally from infections in the mandibular second and third molars so that abscesses are found in the submandibular area. Whereas in the case of a buccal abscess, it is associated with infection from the root canals of the posterior teeth of the maxilla and mandible so that an abscess is found in the cheek area, extending from the zygomatic arch to the inferior edge of the mandible and from the anterior edge of the ramus to the corner of the mouth.

On examination of the Ear Nose Throat, starting from inspection of the cheek area, signs such as edema, hyperemia, swelling that appear asymmetrical are found. Palpation examination revealed tenderness, with a rubbery swollen consistency. Generally, patients experience a palpable increase in volume during palpation in the maxillary area. Squeezing of the tongue towards the throat can result in difficulty swallowing (dysphagia), pain when swallowing (odinophagia), Trismus (+), vocal cord disorders (dysphonia), and even lack of oxygen (cyanosis). In many cases, there are also symptoms of infection such as high fever, malaise, tachycardia, and chills. To obtain definitive medical therapy, laboratory tests are needed to monitor the patient's general condition and to determine the bacterial culture of the abscess so that antibiotics can be given on target. Supportive examination such as radiographic examination is also needed to determine the extent of the infection.

Treatment of maxillary abscesses focuses on 4 things, namely securing the airway, incision and drainage, antimicrobial therapy, and elimination of the source of infection. Upper airway obstruction may occur due to mononucleosis infection causing a large abscess volume, tonsillar hypertrophy, and/or collateral mucosal edema or phlegmon of the pharynx and larynx (Klug *et al.*, 2020; Ravindran *et al.*, 2021). An incision can be made to remove the abscess from the submandibular space by first administering local or general anesthesia, then making a horizontal incision parallel to the mandible against the milohyoid muscle or under the mandibular angulus. During surgery, a biopsy of the abscess can be performed to determine the culture of the infecting bacteria. Drainage was then performed using a rubber glove sutured to the incision area to ensure that the entire abscess was successfully removed. Antibiotics are given to avoid re-infection. In addition, elimination of the source of infection is also carried out, one of which is tooth extraction if it is known that the infection originated from the tooth.

Patients are given management in the form of lactated ringer infusion 20 tpm, inj ceftriaxon 1a/12j, inj metronidazole 1vial/8h, inj santagesik 1 amp/8j, inj dexametason 1amp/8j. The administration of lactated ginger serves to prevent dehydration in patients and to fulfill nutritional intake. In addition, lactated ginger serves as volume resuscitation in intravascular volume which increases preload. Providing the body with sodium

lactate which functions as a bioenergy fuel that the human body is designed to metabolize in ischemic conditions thereby reducing cell death due to ischemia (Kerndt *et al.*, 2020). Patients are given ceftriaxone which is an antibiotic drug of the cephalosporin group with the aim of killing and inhibiting the growth of bacteria that cause infection in the body. Patients are given santagesik to treat acute or chronic pain caused by postoperative incision wounds. This drug can be used to relieve moderate to severe pain. The patient was given dexamethasone which is a class of corticosteroid drugs that work by reducing inflammation. Just like steroids produced by the body naturally.

In the second case, a patient was found with a diagnosis of sinistra odontogenic maxilla abscess with the main complaint of pain in the left cheek since 6 days ago which was the reason the patient came to the emergency room of Karanganyar Hospital. This is preceded by infection in the maxilla area which originates from the infectious process of the teeth, floor of the mouth, pharynx, submandibular lymph nodes, and continuation of infection from other inner neck spaces. Most maxilla and submandibular abscesses are caused by dental infections, 70-85%. Dental infections can affect the pulp and periodontal tissues, and can extend through the apical foramen of the tooth to the surrounding area. Dental caries is formed due to plaque and debris in the teeth that are not properly cleaned containing carbohydrates which will be converted by oral bacteria into lactic acid. Lactic acid will damage tooth enamel, making it easier for damage to continue to dentin and pulp to form holes in the teeth. Food debris that gathers in the hole will become a fertile place for microorganisms to grow which, if left unchecked, will cause periapical infection to form a periapical abscess.

The infection worsens until infection occurs in the supporting tissues of the tooth including the jawbone until the abscess ruptures into the deep neck layer. Dental pulp necrosis as a result of deep caries becomes an entry point for bacteria into the periapical tissue. After bacterial inoculation in the periapical area, infection is formed which will spread in all directions, but more in the area with the lowest resistance. The infection will spread through the cancellous bone until it enters the cortical bone. If the cortical bone is thin, the infection will penetrate the bone and enter the surrounding soft tissue. Infection of the premolar root above the mylohyoid muscle can lead to infection in the sublingual area, whereas infection of the molar root can lead to infection in both the sublingual and submaxillary/submental areas as the tooth root location can be below or above the mylohyoid muscle. Infection from the submandibular can extend to the masticator space and then to the parapharynx. Extension of infection to the parapharynx can also take place from the submandibular space, and then the infection can extend to other potential areas.

The incidence of odontogenic maxilla abscesses is more common in men than women because odontogenic infections are infections caused by pyogenic germs due to a lack of maintaining oral and dental health which can cause disturbances in periodontium health and smoking habits that are more prevalent in men than women. Based on research conducted by Andriyan in 2017, there is a significant relationship between smokers and the oral hygiene status of patients, allowing men to have a lower quality of dental and oral hygiene than women. Then for the age range of patients, those aged > 33 years have a higher risk level for odontogenic infection. This statement was corroborated by Belibasakis in 2018 who stated that oral enterobacteria, pseudomonads, staphylococci, yeasts increase with age. The function of cells in elderly individuals is also impaired, due to the reduced capacity in an elderly person to kill invading microbes by phagocytosis or extracellularly.

On examination of the Ear Nose Throat, starting from inspection of the patient's cheek area, a sign is found in the form of edema, looks asymmetrical, caries on the molar teeth. On palpation examination, a palpable lump was found that was hard as a board and painful with a rubbery swollen consistency. Generally, patients experience a palpable increase in volume during palpation in the maxillary area. Squeezing of the tongue towards the throat can result in difficulty swallowing (dysphagia), pain when swallowing (odinophagia), Trismus (+), vocal cord disorders (dysphonia), and even lack of oxygen (cyanosis). In many cases, there are also symptoms of infection such as high fever, malaise, tachycardia, and chills. To obtain definitive medical therapy, laboratory tests are needed to monitor the patient's general condition and to determine the bacterial culture of the abscess so that antibiotics can be given on target. Supportive examination such as radiographic examination is also needed to determine the extent of the infection.

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one of which is tooth extraction if it is known that the infection originated from the tooth.

Patients are given management in the form of lactated ringer infusion 20 tpm, inj ceftriaxon 1a/12j, inj metronidazole 1 vial/8h, inj santagesik 1 amp/8j, inj dexametason 1amp/8j. The administration of lactated ginger serves to prevent dehydration in patients and to fulfill nutritional intake. In addition, lactated ginger serves as volume resuscitation in intravascular volume which increases preload. Providing the body with sodium lactate which functions as a bioenergy fuel that the human body is designed to metabolize in ischemic conditions thereby reducing cell death due to ischemia (Kerndt *et al.*, 2020). Patients are given ceftriaxone which is an antibiotic drug of the cephalosporin group with the aim of killing and inhibiting the growth of bacteria that cause infection in the body. The patient is given santagesik to treat acute or chronic pain caused by postoperative incision wounds. This drug can be used to relieve moderate to severe pain. The patient is given dexamethasone which is a class of corticosteroid drugs that work by reducing inflammation. Just like steroids produced by the body naturally.

In the case of maxillary abscess, if there is no response with medicamentous treatment, surgical management can be given. The clinical prediction score uses simple criteria to quickly determine whether a patient with a deep neck abscess needs incision and drainage. Clinicians will evaluate the results with reference to the preoperative clinical examination and CT findings, and find that fever, leukocytosis, induration or elevation of the floor of the mouth, and elevation of the tongue, but not trismus and dysphagia, the presence of a hypodense area > 2mL, and no improvement in both signs & symptoms are clinical predictors of incision and drainage (Ban *et al.*, 2018). The critical aspect of maxillary abscess disease is the rapid spread of continuous infection. Ultrasonography (US) and computed tomography (CT) are standard imaging methods to confirm the diagnosis and evaluate the extension of infection before surgical management. The maxillary abscess treatment plan includes surgical drainage of the involved area. Space to ensure adequate ventilation and systemic administration of broad-spectrum antibiotics. US and/or CT measures are helpful to differentiate between abscess and cellulitis and to make decisions about possible treatment options. Computed tomography has an advantage over ultrasound in the precise visualization of inflammatory expansion (Rzepakowska *et al.*, 2021).

G. CONCLUSIONS AND SUGGESTIONS

Patients with maxillary abscesses who were treated in the Teratai inpatient room at Karanganyar Hospital in October with male gender characteristics. The age range obtained is 60 and 65 years. The most common cause or etiology that can cause maxillary abscess is toothache. Abscesses are formed from normal

flora that develops in the body. There were 2 patients who had maxillary abscesses. The signs found were pain in opening the mouth (trismus), pain in the abscess area, swelling, fluctuation, and signs of inflammation.

The average length of treatment is 10 days or even more than that. Risk factors that can increase the occurrence of complications include hypertension. The patient in this case was given antibiotics for management and all showed improvement. Drainage and incision were performed on our patient who had a maxillary abscess with the aim of preventing complications that could harm the patient. No complications were found in the treated patients.

Management of maxillary abscess can be given antibiotics such as ceftriaxone and metronidazole. For pain relief, analgesic is given, for inflammation and anti-inflammation, dexamethasone is given. Incision and drainage can then be performed if necessary. Management can be chosen based on the presence or absence of alert signs and signs of complications.

Based on this study, it is recommended for the community to maintain dental health and regulate diet so that the risk of maxillary abscess, as well as risk factors for complications from maxillary abscess can also be suppressed.

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