ORIGINAL ARTICLE

THERAPEUTIC APPROACH TO DENTAL ABSCESSES

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Abstract: Endo oral abscesses are a common manifestation of dental and maxillofacial pathology, characterized by localized pus accumulation in the alveolar bone that extends to the adjacent soft tissues. They most frequently occur as a result of pulp infections, untreated caries, or failed endodontic treatments. A retrospective analysis conducted in 2024 at the OMF Surgery Clinic in Craiova aimed to evaluate the clinical and therapeutic aspects of endo oral abscesses in a group of 810 hospitalized patients. The collected data included age, gender, residence (rural/urban), etiological factors, hospitalization duration, and applied therapeutic methods. The diagnostic methods used included periapical and panoramic radiographs, as well as computed tomography for complex cases. Standard treatment consisted of early surgical drainage of the purulent collection, administration of broad-spectrum antibiotics (amoxicillin, clindamycin, or metronidazole), and the use of anti-inflammatory drugs to manage symptoms. The conclusions emphasize the importance of a multidisciplinary approach that combines prompt surgical drainage with appropriate drug therapy to prevent severe complications. A thorough understanding of the anatomical structures of the neck is essential for effectively managing cervical suppurations and optimizing the treatment of patients affected by endo oral abscesses.

Keywords: abscess, pathology, OMF Surgery

1. Introduction

Endo oral abscesses represent pus accumulations that form within the oral cavity, being a specific manifestation of dental and maxillofacial pathology. They occur as a result of an acute inflammatory process triggered by pulp infection, leading to a localized reaction characterized by intense pain, dental sensitivity to pressure, and swelling of adjacent tissues. The infection is initially localized in the alveolar bone near the root apex of the affected tooth but can progress to neighboring soft tissues, causing severe complications if left untreated. Despite significant advancements in medicine and increased access to specialized dental services, odontogenic abscesses remain one of the primary reasons for emergency hospitalization in maxillofacial surgery clinics. This highlights the importance of early diagnosis and appropriate therapeutic intervention to prevent systemic complications [1].

The classification of endo oral abscesses is based on their anatomical location:

A) Periosteal suppurations – This category includes vestibular, palatal, external perimandibular (basilar or semilunar), internal perimandibular, and submucosal abscesses. Periosteal suppurations are the most common and occur due to the spread of infection from the dental area to the alveolar bone. They are characterized by intense pain, localized swelling, and moderate functional difficulties.

B) Superficial space suppurations – These include abscesses of the cheek, perimandibular region, masseteric space, sublingual, submandibular, submental, parotid, and orbital spaces. These abscesses affect soft tissues near the oral cavity and are associated with more severe symptoms such as extensive swelling, chewing difficulties, and trismus. In advanced cases, systemic complications may arise if not promptly treated.

C) Deep space suppurations – This category includes abscesses of the infratemporal fossa and lateropharyngeal space. These abscesses are rarer but pose a higher risk of severe complications due to their proximity to vital structures such as major blood vessels or airways.

The clinical manifestations of endo oral abscesses include a wide range of local and systemic symptoms:

- pain, which is intense, pulsatile, and localized at the affected tooth or gum; it may radiate to adjacent structures such as the ear or neck;
- visible swelling, often associated with erythema and gingival hypersensitivity, is commonly observed in the affected region;
- functional difficulties, such as trismus or chewing problems, arise due to extensive inflammation [2].

The therapeutic management of endo oral abscesses aims to eliminate infection, reduce symptoms, and prevent local or systemic complications. The protocol includes:

- surgical drainage of the purulent collection to eliminate the source of infection;
- antibiotic therapy with an appropriate spectrum (such as amoxicillin, clindamycin, or metronidazole) [3];
- use of anti-inflammatory drugs and analgesics to manage pain and

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inflammation associated with these conditions;

- supportive therapy, including probiotics administration to maintain oral microbiome balance.

In complex cases or those resistant to conservative treatment, extraction of the causal tooth or endodontic treatment is recommended to prevent recurrence of infection. Accurate diagnosis is essential for treatment success; dental radiographs (periapical, panoramic) and computed tomography are indispensable tools for assessing infection spread and identifying affected structures.

This paper aims to highlight the importance of the clinical and therapeutic aspects used in the management of endo oral abscesses by analyzing a group of patients from the Oltenia region. The study is structured to provide a detailed overview of clinical manifestations, etiological factors, and treatments applied, using clinical methods, paraclinical investigations, and statistical analysis. The main objectives include determining the distribution of cases based on age, gender, residence (rural/urban), etiology, hospitalization duration, and the onset period of abscesses, as well as evaluating the therapeutic approaches employed.

2. Materials and method

The research was based on a detailed clinico-statistical study involving the examination of 810 patient observation records from Oral and Maxillo-Facial Clinic from Emergency County Hospital Craiova, University of Medicine and Pharmacy of Craiova. These records provided essential information about the distribution of cases by age, gender, residence (rural/urban), etiological factors, treatments applied, hospitalization duration, and the onset period of abscesses. Additionally, personal patient data, relevant medical histories, clinical and paraclinical examination details, and case evolution were analyzed.

The observation records served as a valuable resource for collecting the necessary data for this study. They included patients' medical histories, symptoms presented upon admission, diagnostic methods used, and therapeutic plans applied. Moreover, information regarding patients' personal medical histories (associated diseases or predisposing factors), clinical examination findings (local and systemic manifestations), and data obtained from paraclinical investigations were extracted.

2.1 Diagnostic Methods

The diagnosis of endo oral abscesses relied on dental radiographs and computed tomography (CT), which are considered indispensable methods in clinical dentistry for accurately identifying the affected area and establishing an appropriate treatment plan. The frequently used radiographic techniques included:

- periapical radiography;
- panoramic radiography;
- computed Tomography (CT).

Imaging examinations were complemented by detailed clinical evaluations to establish an accurate diagnosis. This included palpation of the affected region to identify swelling or purulent fluctuation, as well as assessing functional symptoms such as trismus or chewing difficulties.

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2.2 Treatment Plan

The therapeutic plan applied to hospitalized patients was tailored to case severity and the patient's general condition. Standard treatment included:

Early Surgical Drainage: Removal of the purulent collection to eliminate the source of infection. This intervention is essential for preventing severe complications and promoting rapid healing.

Broad-Spectrum Antibiotic Therapy: Using medications such as amoxicillin, clindamycin, or metronidazole. The choice of antibiotic was based on infection severity and the patient's allergy history. Adjuvant Medications: Anti-inflammatory drugs and analgesics were used to manage pain and inflammation associated with endo oral abscesses [3].

Supportive Therapy: Probiotics were administered to maintain oral microbiome balance and prevent adverse effects associated with antibiotic therapy [3].

In severe cases or those resistant to conservative treatment, extraction of the causal tooth or endodontic treatment was performed to prevent infection recurrence.

2.3 Case Evolution

The evolution of cases was monitored based on data collected from patient observation records. Hospitalization duration varied depending on disease severity and treatment complexity, ranging from 2 to 10 days in most cases. Post-treatment monitoring revealed favorable outcomes in patients who underwent early surgical drainage combined with appropriate antibiotic therapy [3].

The retrospective study conducted at the OMF Surgery Clinic in Craiova highlights the importance of using advanced clinical and paraclinical methods for accurate diagnosis and effective treatment of endo oral abscesses. Observation records provided a comprehensive perspective on the clinical characteristics of hospitalized patients, while dental radiographs and computed tomography proved indispensable for establishing a precise diagnosis. The therapeutic plan tailored to each patient contributed to favorable outcomes in most analyzed cases.

This multidisciplinary approach demonstrates the effectiveness of combining advanced imaging techniques, prompt surgical interventions, and appropriate drug therapy in managing this complex pathology. The study results can serve as a foundation for developing standardized therapeutic protocols tailored to the specific needs of patients in the Oltenia region.

3. Results

Following the centralization of data from the 810 observation records analyzed, relevant statistical results were obtained, highlighting the demographic, clinical, and etiological characteristics of endo oral abscesses in the cohort of hospitalized patients at the OMF Surgery Clinic in Craiova. These results provide a detailed overview of case distribution, and the factors involved in the etiology and evolution of this pathology.

Age Group Distribution

The study results show that the highest frequency of endo oral abscesses is observed

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in patients aged 20 to 29 years, suggesting that young adults are most predisposed to developing this condition. The minimum age recorded in the studied cohort was 9 years, while the maximum age was 59 years, indicating that endo oral abscesses can affect a wide range of age categories. However, their incidence is lower in children and elderly individuals. This distribution can be explained by a combination of factors, including poor oral hygiene, limited access to dental services, and an increased predisposition to dental caries or pulp infections among young adults.

Table 1. Age Group Distribution.

Age	Percentage
1-9	6.52%
10-19	4.35%
20-29	32.61
30-39	28.26%
40-49	17.39%
50-59	10.87%
TOTAL	**100.00%**

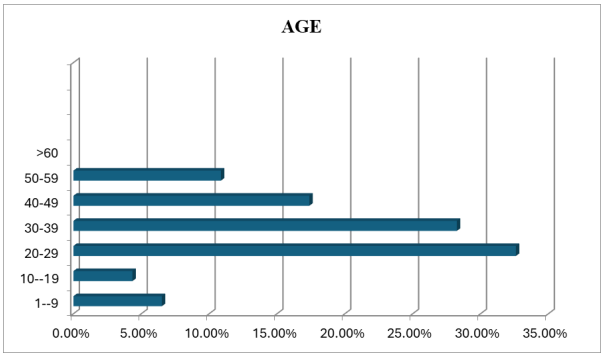

Figure 1. Age Group Distribution.

Gender Distribution

Regarding gender distribution, differences are not significant; however, women are slightly more frequently affected than men. This aspect may be related to hormonal or behavioral factors that influence oral health. Nonetheless, these minor differences suggest that endo oral abscesses affect both sexes relatively equally.

Table 2. Gender Distribution.

Gender	Percentage
MALE	43.48%
FEMALE	56.52%
TOTAL	**100.00%**

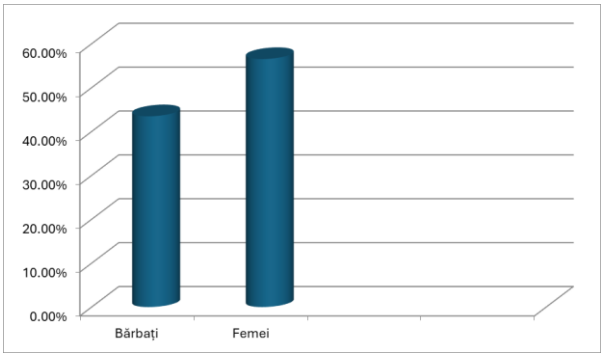

Figure 2. Gender Distribution.

Etiological Factors

Data analysis confirmed the predominant involvement of mandibular second and third molars in the etiology of endo oral abscesses.

Table 3. Etiological Factors.

Tooth	Percentage
1.8	7.41%
2.7	3.70%
3.1	1.85%
3.2	1.85%
3.4	1.85%
3.6	9.26%
3.7	11.11%
3.8	14.81%
4.1	1.85%
4.2	1.85%
4.6	9.26%
4.7	11.11%
4.8	24.07%
TOTAL	**100.00%**

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This finding is supported by specialized literature, which indicates that these dental structures are most prone to infections due to their anatomically challenging position for cleaning, prolonged contact with food debris, and increased susceptibility to caries or endodontic complications. Additionally, eruption disorders of wisdom teeth (third molars) significantly contribute to triggering inflammatory processes leading to abscess formation.

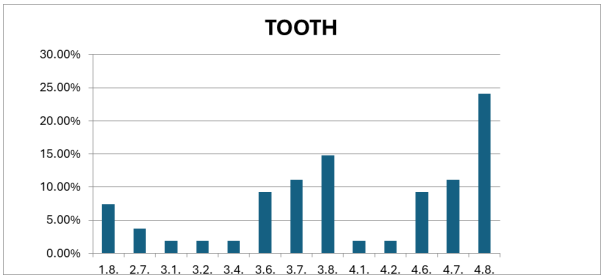

Figure 3. Etiological Factors.

Distribution by Place of Origin

Another analyzed aspect was the distribution of cases based on patients' place of origin (rural or urban). Results showed a slight predominance of cases from rural areas, which can be explained by limited access to specialized dental services and a lack of education regarding oral hygiene. Patients from urban areas had a lower incidence of endo oral abscesses; however, this does not completely exclude the risk of their occurrence.

Table 4. Distribution by Place of Origin.

Place of origin	Percentage
URBAN	41.30%
RURAL	58.70%
TOTAL	**100.00%**

Hospitalization Duration

The hospitalization duration for patients admitted with endo oral abscesses ranged from 2 to 10 days, depending on the severity of infection and complexity of treatment applied. Cases requiring early surgical drainage combined with appropriate antibiotic therapy showed favorable evolution and shorter recovery periods. Conversely, complicated cases or those associated with comorbidities required longer monitoring.

Table 5. Hospitalization Duration.

Duration	Percentage
<= 5 days	63,04%
Between 6 and 9 days	30,43%
Between 10 and 15 days	2,17%
Over 16 days	4,35%
TOTAL	**100.00%**

The results of this study confirm that endo oral abscesses are a frequently encountered pathology in clinical practice, with increased incidence among young adults and predominant involvement of mandibular second and third molars. Minor gender differences suggest that this condition does not significantly discriminate between men and women.

Additionally, hospitalization duration is directly influenced by case severity and the promptness of therapeutic intervention. These insights are essential for optimizing therapeutic strategies and preventing complications associated with endo oral abscesses.

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(a) (b) (c)

Figure 4. Buccal abscess. (a) frontal view; (b) side view; (c) dental lesions.

(a) (b) (c)

Figure 5. Sublingual abscess. (a) frontal view; (b) submandibular view; (c) oral view.

(a) (b)

Figure 6. Left mandibular buccal abscess. (a) frontal view; (b) side view.

4. Discussion

Management of endo oral abscesses represents a significant challenge in dental and maxillofacial practice due to the complexity of symptoms and the risk of severe complications.

Odontogenic infections can rapidly progress to involve vital structures such as the skull base or cervical spaces, emphasizing the need for prompt and effective treatment. The standard therapeutic approach involves surgical drainage of the purulent collection and administration of antibiotics to combat

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bacterial infection. This method is essential for preventing systemic complications and ensuring effective healing [6].

Early surgical drainage is considered a fundamental step in the treatment of endo oral abscesses. By eliminating the purulent collection, local pressure and inflammation are reduced, thereby promoting tissue regeneration. Abrams and Kopczyk in 1983 highlighted that adequate drainage minimizes systemic risks and accelerates recovery. For deep space suppurations, such as lateropharyngeal or infratemporal fossa abscesses, surgical management requires a thorough understanding of cervical anatomy to avoid major complications [7].

The administration of broad-spectrum ss, such as amoxicillin, clindamycin, or metronidazole, plays a crucial role in combating bacterial infection. Herrera et al emphasized that antibiotic selection should consider case severity, bacterial type, and patient allergy history [8]. In complex or resistant cases, antibiotic therapy is complemented by anti-inflammatory drugs and analgesics to manage pain and inflammation [9].

Probiotics also play an essential role in maintaining oral microbiome balance and preventing adverse effects associated with prolonged antibiotic use [10].

The results of our study confirm that the highest frequency of endo oral abscesses is observed in patients aged 20–29 years. Alghamdi et al. attributed this increased vulnerability among young adults to poor oral hygiene, limited access to specialized dental services, and a higher predisposition to dental caries or pulp infections [11]. Gender differences are minor; however, women are slightly more frequently affected than men, potentially due to hormonal or behavioral factors influencing oral health [12].

Hospitalization duration for patients admitted with endo oral abscesses varies between 2 and 10 days, depending on condition severity and promptness of therapeutic intervention. Heimdahl et al. noted that early surgical drainage combined with appropriate antibiotic therapy leads to favorable outcomes and shorter recovery periods [12]. Conversely, complicated cases or those associated with comorbidities require longer monitoring.

Discussions regarding diagnostic methods emphasize the importance of dental radiographs (periapical and panoramic) and computed tomography in accurately identifying the affected area and establishing an effective therapeutic plan. White and Pharoah highlighted that periapical radiography is indispensable for evaluating infections localized at the tooth root level, while panoramic radiography provides a general overview of the oral cavity [13]. Computed tomography offers detailed three-dimensional images critical for planning interventions in complex cases.

The study seeks to classify the analyzed cases based on the anatomical location of the abscesses:

- periosteal suppurations, including vestibular, palatal, and perimandibular (internal or external) abscesses. These are the most common and occur due to the spread of infection from the dental area to the alveolar bone;
- superficial space suppurations, such as cheek, sublingual, or submandibular abscesses. These affect soft tissues near

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the oral cavity and may lead to systemic complications if not promptly treated [4];

- deep space suppurations, such as infratemporal fossa or lateropharyngeal abscesses, which pose a higher risk of severe complications due to their proximity to vital structures.

The etiology of endo oral abscesses includes factors such as dentoperiodontal lesions (the most common cause), dental fractures that allow pathogens to penetrate perimaxillary spaces, maxillary tumors compromising local tissue integrity, pharyngotonsillar infections, and eruption disorders of wisdom teeth. Untreated deep caries or incomplete endodontic treatments are frequently implicated in these conditions.

From a demographic perspective, the study highlights that endo oral abscesses are more common in patients aged 20–29 years, with women being slightly more affected than men. The patients' residence (rural vs. urban) is another factor analyzed to determine how access to dental services influences the incidence of abscesses.

The identified clinical manifestations include intense pulsatile pain localized at the affected tooth or gum, visible swelling associated with erythema and gingival hypersensitivity. Extensive inflammation may cause functional difficulties such as trismus or chewing problems. In severe cases, systemic symptoms like fever or lymphadenopathy may occur.

The therapeutic management of endo oral abscesses aims to eliminate infection and prevent local or systemic complications. Treatment includes surgical drainage of the purulent collection, administration of broad-spectrum antibiotics (amoxicillin, clindamycin, or metronidazole), and the use of anti-inflammatory drugs and analgesics for managing pain and inflammation. Therapy is complemented by probiotics administration to maintain oral microbiome balance and prevent adverse effects associated with antibiotic therapy [3].

The duration of hospitalization varies depending on case severity and the type of diagnosed abscess. The study analyzes correlations between the type of therapy applied (surgical drainage vs. conservative treatment) and the time required for complete recovery. Additionally, seasonal periods with increased incidence rates are evaluated to identify possible epidemiological patterns.

The primary objective of this study was to analyze the clinical and therapeutic aspects of endo oral abscesses in a cohort of hospitalized patients.

This research contributes to a better understanding of clinical manifestations and therapeutic options used in treating endo oral abscesses, providing valuable information for optimizing the management of these conditions at a regional level. The results obtained can serve as a basis for developing standardized therapeutic protocols tailored to the specific needs of patients in the Oltenia region.

The therapeutic approach to endo oral abscesses must be multidisciplinary, combining prompt surgical interventions with appropriate drug therapy to prevent severe complications. The findings from Siqueira & Rôças provide valuable insights into optimizing therapeutic strategies tailored to specific patient needs [10].

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5. Conclusions

The management of endo oral abscesses represents a significant challenge in dental and maxillofacial practice due to the complexity of symptoms and the risk of severe complications. The results of the study conducted at the OMF Surgery Clinic in Craiova emphasize the importance of a multidisciplinary therapeutic approach that combines early surgical drainage with the administration of appropriate antibiotics to combat bacterial infection. This standard method is essential for preventing severe complications and ensuring effective healing.

In conclusion, a thorough understanding of the anatomical structures of the neck, particularly the cervical fasciae, is crucial for anticipating and effectively managing cervical suppurations. The results of this study provide valuable insights for optimizing therapeutic strategies and preventing complications associated with endo oral abscesses, contributing to the improvement of patient care quality in the Oltenia region.

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Author contributions

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Conflict of interest statement

There are no potential conflicts of interest concerning this study.

Data availability statement

Data availability at request.

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