JURNAL VNUS
Vocational Nursing Science Journal
Online ISSN: 2656-8799

Clinical Presentation, Diagnostic Challenges, and Management of Bezold's Abscess: A Narrative Review

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Citation:
Syawaliyah, A. N., Ichsan, B., Khairunnisa, N. A., Ramadhani, F. F. ., Sinta, N. P. Z. ., & Asyari, A. R. P. . (2025). Clinical Presentation, Diagnostic Challenges, and Management of Bezold's Abscess: A Narrative Review. JURNAL VNUS (Vocational Nursing Sciences), 7(2), 186–202. https://doi.org/10.52221/jvnus.v7i2.885.

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Abstract: Bezold's abscess is a rare yet severe complication of otitis media that poses significant diagnostic challenges due to its non-specific and often misleading symptoms, which can mimic less serious conditions. This review aims to summarize recent literature (2015–2025) on the clinical presentation, diagnostic approaches, and management of Bezold's abscess. A narrative review was conducted through a systematic search of electronic databases, including PubMed, ScienceDirect, SpringerLink, Wiley Online Library, and Frontiers. Twenty relevant case reports and case series published between 2015 and 2025 met the inclusion criteria. The findings show that Bezold's abscess frequently presents with atypical manifestations that deviate from classical features, leading to delays in recognition. Consequently, diagnosis relies heavily on a high index of clinical suspicion, supported by definitive imaging modalities such as contrast-enhanced computed tomography (CT) or magnetic resonance imaging (MRI). Early detection requires heightened clinical vigilance, especially in patients with persistent otitis media symptoms and new-onset neck swelling. Management typically involves a combination of broad-spectrum intravenous antibiotics and surgical procedures, such as abscess drainage and mastoidectomy. Early diagnosis and timely intervention are essential to prevent complications and improve patient outcomes.

Keywords: bezold's abscess; mastoiditis; deep neck infection; otitis media; diagnosis; narrative review

1. Introduction

Otitis media, particularly chronic suppurative otitis media, is a common condition that can lead to serious complications if inadequately treated. One rare but potentially life-threatening complication is Bezold's abscess (Alkhaldi et al., 2022). This condition results from the extension of infection from the mastoid to the deep cervical spaces through erosion of the medial mastoid cortex, often involving the sternocleidomastoid muscle or adjacent deep neck structures (Dyrmishi & Qirjani, 2025). Diagnosing Bezold's abscess can be challenging because its clinical presentation is often nonspecific, with symptoms such as fever, neck pain, and torticollis that may mimic other conditions (Katayama et al., 2018). Delayed recognition may

result in severe complications including sigmoid sinus thrombosis, meningitis, mediastinitis, or even sepsis (Mustafa et al., 2018). Therefore, maintaining a high index of suspicion and utilizing appropriate imaging are essential for early and accurate diagnosis. Due to its rarity, most available evidence comes from isolated case reports or small case series (Toloczko et al., 2024). Which limits the possibility of conducting large-scale studies or systematic reviews. A narrative review therefore provides the most suitable approach to synthesize and summarize relevant findings from the past decade. This review aims to synthesize the clinical characteristics, diagnostic modalities, and management strategies for Bezold's abscess based on published cases from 2015 to 2025.

2. Materials and Methods

This review was designed as a narrative literature review that aimed to summarize and critically analyze the most recent case reports and case series on Bezold's abscess. A narrative approach was deliberately chosen instead of a systematic review because the available evidence predominantly consists of individual case descriptions and small case series with highly heterogeneous data in terms of patient characteristics, diagnostic approaches, and therapeutic interventions. Consequently, a statistical synthesis or meta-analysis was not feasible. The narrative design allowed for contextual interpretation and thematic grouping of findings to highlight recurring clinical patterns, diagnostic challenges, and variations in management strategies reported across different cases. To ensure methodological clarity and transparency, the review followed the Scale for the Assessment of Narrative Review Articles (SANRA) guidelines (Baethge et al., 2019).

A comprehensive literature search was conducted in May 2025 across five major electronic databases, namely PubMed, ScienceDirect, SpringerLink, Wiley Online Library, and Frontiers, with the final access date on May 30, 2025. The search strategy incorporated both controlled vocabulary (MeSH terms) and free-text terms related to Bezold's abscess and case-based studies. An example of the search query used in PubMed was: ("Bezold abscess" OR "Bezold's abscess" OR "deep mastoid abscess" OR "mastoiditis" OR "petrositis" OR "lateral sinus thrombophlebitis") AND ("case report" OR "case series" OR "clinical case"). Equivalent strings were adjusted according to the syntax of each database. The search was restricted to studies published between January 2015 and May 2025 to ensure that the review reflects contemporary clinical practice. References of included articles were also screened manually to identify additional relevant publications.

Studies were included if they met the following criteria: (1) case reports or case series focusing on Bezold's abscess, (2) published between 2015 and 2025, (3) full-text available, and (4) written in English. Exclusion criteria were (1) review articles, editorials, commentaries, or conference abstracts without complete data; (2) studies that only mentioned Bezold's abscess briefly without detailed discussion of clinical manifestations, imaging findings, or management; (3) articles with incomplete or inaccessible data; and (4) animal studies. The study selection was performed in two stages by two independent reviewers. The initial search identified 400 records, from which 105 duplicates were removed. The remaining 295 records were screened based on titles and abstracts, and 34 studies were retrieved for full-text assessment. After applying the inclusion and exclusion criteria, 20 studies were ultimately included in the final review.

To ensure methodological rigor and minimize bias, inter-rater agreement between the two reviewers was calculated using Cohen's kappa ($\kappa = 0.86$), indicating strong agreement. Any disagreements were resolved through discussion and consensus, with a third independent reviewer consulted when necessary. Data from the included studies were extracted into a standardized form, encompassing patient demographics (age, sex), medical history and presenting symptoms,

radiological findings (CT or MRI), treatment modalities (intravenous antibiotics, mastoidectomy, abscess drainage), complications, and patient outcomes (recovery, morbidity, or mortality).

Given the qualitative and heterogeneous nature of the data, a narrative synthesis was employed instead of a quantitative meta-analysis. Findings were organized and analyzed according to major thematic domains, including clinical presentation, diagnostic approaches, and management strategies. This approach facilitated the identification of patterns and variations in the presentation and treatment of Bezold's abscess while acknowledging the contextual differences across reported cases. The methodological quality of this review was further evaluated using the SANRA scale, in which two independent reviewers assessed the manuscript based on six domains: justification of the review's importance, clarity of objectives, literature search transparency, appropriateness of referencing, scientific reasoning, and presentation of evidence. The review met all SANRA criteria, demonstrating clear objectives, transparent methodology, structured data presentation using tables and flowcharts, and a critical assessment of the evidence included.

3. Results and Discussion

Table 1. Extracted Data from Case Reports

Author/ Year	Age (Year)	Gender	Sign & Symptoms	Clinical history	Treatment	Outcomes
Dyrmishi, E., & Qirjazi, B. (2025)	14	Male	Fever, otorrhea, postauricular pain/erythema, dull TM with lost Politzer's triangle.	No dizziness, tinnitus, dysphagia, or previous otologic surgery. Treated with cefuroxime.	Complete cortical mastoidectomy with tympanostomy and abscess drainage.	Early combined treatment to good recovery, while delayed management may cause severe or fatal complications.
El Youbi, H., et al. (2025)	29	Male	Fever, painful cervical mass, otorrhea, hypoacusis, trismus, stenotic canal with pus.	Chronic cholesteatomatous otitis media; no tinnitus or vertigo.	Ultrasound drainage, IV ceftriaxone + metronidazole, LMWH, later.	Swelling regressed after antibiotics, drainage, anticoagulation, and mastoidectomy.
Aljehani, N., et al. (2023)	8	Female	Recurrent AOM with foul-smelling discharge, hearing loss, and perforated left tympanic membrane with granulation.	Multiple antibiotic courses with poor improvement; otherwise healthy child.	Tympanomastoidectomy, bilateral tympanostomy tubes, intraoral drainage of Bezold's abscess.	Abscesses resolved after surgery and anti-tuberculosis therapy, with residual hearing loss requiring hearing aids.
Scarpa, A., el al. (2021)	17	Male	Left otalgia with otorrhea, neck stiffness, laterocervical swelling, bilateral TM perforation.	8-year history of bilateral chronic cholesteatomatous otitis media with recurrent flare-ups, refused surgery before.	Initial IV ceftriaxone + metronidazole, followed by mastoidectomy, neck abscess drainage, adenoidectomy, later tympanoplasty.	Infection controlled with antibiotics until delayed surgery, leading to full recovery without complications.

Lyoubi, H., et al (2020)	62	Male	Laterocervical & mastoid swelling, recurrent otalgia, thickened deformed TM.	History of recurrent right ear pain, & chronic mastoiditis.	Incision and drainage of abscess, & wide mastoidectomy.	Postoperative recovery gradual, no complications, discharged day 15, follow-up CT improved, prognosis good with timely drainage.
Darmawan, A. B., et al. (2024)	21	Male	Cholesteatoma, single perforation. Neck swelling, fever, trismus, persistent otorrhea, severe hearing loss, otalgia, tinnitus.	Six-month history of bilateral purulent discharge unresponsive to antibiotics, & tuberculosis otitis media.	Initial incision and drainage, & canal wall-down mastoidectomy.	Six months after Canal Wall Down mastoidectomy, no recurrent ear discharge with good healing.
Alkhaldi, A. S., et al. (2022)	46	Male	Left otorrhea, fever, postauricular pain, neck swelling, dull TM, ↓hearing.	Three-year history of recurrent right otorrhea, & history of Bell's palsy.	Cortical mastoidectomy, incision, & drainage of abscess.	Discharged 5 days after mastoidectomy in good condition. At 1-week follow-up: no complaints and clean wound.
Tsuruta, S., & Fujiwara, T. (2024)	57	Male	Bulging TM with otopyorrhea, ear–neck pain, headache, ↓consciousness.	History of bronchial asthma, eosinophilic sinusitis, & bilateral otitis media with thrombosis.	Mastoidectomy, antimicrobial therapy & antithrombotic therapy.	Regained driving and full social reintegration within 2 months; good health at 1-year follow-up.
Cruz Rodriguez, J., et al. (2023)	42	Male	Severe left otalgia, headache, fever, neck mass, mastoid tenderness, TM perforation.	Hyperglycemia (409 mg/dL), mild anemia, no prior treatment reported.	Urgent mastoidectomy, lateral neck exploration and drainage, debridement.	Stable post-op, minimal pain; patient left hospital on POD2 against medical advice, no further follow-up.
Toloczko, A. J., et al. (2024)	72	Male	3-week otalgia with discharge, postauricular swelling, neck mass, tachycardia; CT: Bezold's abscess, malleus erosion.	Hx: HTN, HLD, CAD with stents, smoker, COPD, no prior ear infections.	Emergent incision & drainage, cortical mastoidectomy, right myringotomy & tympanostomy tube.	Recovered well; cultures grew anaerobes; discharged with antibiotics; good postoperative recovery.
Suwita, B. M., et al. (2020)	19	Male	2-day retroauricular pain, bilateral hearing loss; right TM	Chronic bilateral ear discharge (≈10 years),	Right radical mastoidectomy, neck abscess	Recovered well; abscess resolved; discharged on antibiotics; good

			marginal, left TM multiple central perforations.	HIV/HBV/HCV negative.	drainage & debridement.	postoperative recovery.
Katayama, K., et al.(2018)	52	Male	Mild dizziness, later mild mental status change; persistent right cervical lymph node enlargement.	Type 2 DM, HbA1c 13.3%, untreated otitis media (stopped antibiotics early).	IV ceftriaxone + metronidazole, later mastoidectomy with drainage, full recovery.	Clinical improvement, no residual abscess on follow-up CT, discharged well.
Silva, V. A. R., et al. (2020)	67	Male	Otorrhea, otalgia, shoulder bulging, purulent drainage; CT: EAC and mastoid cholesteatoma with tip erosion.	Alcoholism, smoking, homelessness, malnutrition, hypertension, acute renal failure, hyperkalemia.	Abscess drainage, necrotizing fasciitis debridement, tracheostomy, hyperbaric oxygen therapy.	Clinical improvement after aggressive treatment. Survival achieved. Wound required skin graft.
Maharani, D., et al. (2022)	15	Female	Ear–neck swelling, fever, palsy; CT: soft tissue, mastoid destruction.	3-year history of CSOM with worsening discharge last week.	Bezold abscess drainage, CWD mastoidectomy with subdural abscess evacuation, antibiotics.	Subdural abscess decreased, facial paresis improved in 5 days, no intracranial hypertension, overall condition improved.
Minerva, M., et al. (2021)	30	Female	Goldenhar syndrome with VP shunt; CT/MRI: bone defect, cholesteatoma, deep cervical abscess.	Goldenhar syndrome; multiple prior reconstructive surgeries for auricle & jaw.	Abscess drainage; left lateral petrosectomy with removal of large cholesteatoma.	Cervical abscess resolved, cholesteatoma removed, clinical improvement achieved, complications prevented.
Sujatha, S., Baby, M., et al. (2019)	35	Male	Postaural discharge, neck swelling with sinus; EAC pus, Tymphanic Membrane not visualized.	History of right ear discharge for 23 years; chronic otitis media with active squamosal disease (cholesteatoma).	USG-guided aspiration and drainage of neck abscess; modified radical mastoidectomy with excision of postaural sinus; cholesteatoma removal.	Good recovery after surgery; cholesteatoma confirmed; tuberculosis negative.
Bouzoubaa, Y., Labib., et al. (2024)	45	Female	Neglected right otorrhea, facial palsy, mastoiditis, recurrent vertigo; EAC stenosis with polyp, TM not visualized.	Chronic right purulent otorrhea since childhood, complicated with mastoiditis, hypoacusis, vertigo.	Right mastoidectomy with removal of cholesteatoma, ossicles, nerve canal, inner ear, and fistula.	Postoperative recovery successful; timely intervention prevented further deterioration.

Goh, S. P., et al. (2022)	59	Male	Right ear pain, purulent discharge, painful neck swelling with torticollis and trismus; EAC edema, TM intact.	Diabetes mellitus; recurrent acute otitis media; history of chronic otitis media with non-serviceable left ear after mastoid surgery 17 years ago.	Emergency cortical mastoidectomy with incision and drainage of neck abscess.	Marked symptom improvement; culture grew Klebsiella; favorable recovery; hearing improved at 6-month follow-up.
Kiakou, M., Dimitriadi, A., et al. (2024)	70	Female	Laterocervical swelling, chronic otorrhea, hearing loss; EAC polyp with pus, mastoid erosion, middle ear opacification.	Hypertension, 2-year history of intermittent otorrhea and hearing loss.	Right modified radical mastoidectomy with multiple biopsies and drainage of neck abscess.	Histopathology: paraganglioma; no further treatment; remained asymptomatic with dry ear after 1 year.
Aziz Mustafa et al. (2018)	14	Female	Headache, fever, right earache, neck stiffness, and torticollis, Acute otitis media on the right side with mastoid tenderness..	Previously healthy; diagnosed with acute mastoiditis complicated by Bezold's abscess and lateral sinus thrombosis.	Myringotomy, mastoidectomy, abscess drainage, IV antibiotics, and anticoagulants.	Excellent recovery with resolution of infection, asymptomatic persistent lateral sinus thrombosis, and preserved hearing at 30-month follow-up.

Table 2. Summary of Etiological Factors and Management in 20 Cases of Bezold Abscess

Category	Subcategory	Frequency (n)	Percentage (%)	Remarks
Etiological Factors				
	History of Otitis Media/Cholesteatoma	19	95%	Majority of cases had chronic ear infection history
	Immunocompromised State	4	20%	Diabetes Mellitus, HIV, malnutrition
Identified Pathhogens				
	Klebsiella pneumoniae	1	5%	Goh et al. (2022)
	Anaerobic Bacteria	1	5%	Toloczko et al. (2024)
	Not Reported/Not Cultured	18	90%	Highlights gap in microbiological diagnosis

Medical Therapy				
	Ceftriaxone + Metronidazole Combination	7	35%	Most common empirical regimen
	Other 3rd Generation Cephalosporins	3	15%	Cefuroxime, etc
	Other Broad-spectrum Regimens	10	50%	Piperacillin/Tazobactam
Surgical Interventions				
	Mastoidectomy	18	90%	Primary procedure for infection source
	Neck Abscess Drainage	17	85%	For pus evacuation in soft tissue
	Combination of Both Procedures	16	80%	Multimodal surgical approach as standard

A comparative analysis of the 20 cases in this review reveals significant alignment with existing literature. The finding of male predominance (75%) is consistent with the report by (Valeggia et al. 2022), which also identified this gender predisposition, although its underlying etiology remains incompletely understood. The broad age distribution (8–72 years), with a notable concentration in young to middle-aged adults, reinforces the consensus that this condition can affect all age groups, as documented in case reports by (Dyrmishi & Qirjani, 2025; Toloczko et al., 2024). The primary predisposing factor identified was a history of chronic otitis media or cholesteatoma (95% of cases), a pattern consistently reported across multiple studies, including those by (Maharani & Ferriastuti 2022 and Sujatha, Merin Baby 2019) (Hajar et al., 2025; Tsuruta & Fujiwara, 2024). Clinically, the frequently incomplete and atypical presentation strongly supports its characterization as a "diagnostically challenging condition," as described by (Toloczko et al. 2024) (Aljehani et al., 2023; Scarpa et al., 2021), thereby affirming the critical role of CT imaging as the gold standard for confirmation, as emphasized by (Valeggia et al. 2022) (Maharani & Ferriastuti, 2022; Sujatha, Merin Baby, 2019). The uniform management approach—combining broad-spectrum intravenous antibiotics with surgical intervention—resulted in favorable outcomes (90% recovery rate). This demonstrates the efficacy of an aggressive multimodal strategy, which has become the standard of care and is strongly recommended in the literature, as supported by (Alkhaldi et al. 2022 and Ansari et al. 2024) (Bouzoubaa et al., 2024; Goh et al., 2022),to prevent life-threatening intracranial and extracranial complications.

3.1. Definition and Classification

A Bezold's abscess is a serious complication that arises from the spread of infection from the mastoid to the deep neck tissues through erosion of the medial mastoid cortex, particularly at the mastoid tip adjacent to the insertion of the sternocleidomastoid muscle. This condition was first described by Friedrich Bezold in 1881 as a continuation of untreated suppurative mastoiditis (Dyrmishi & Qirjani, 2025). Essentially, a Bezold's abscess is a manifestation of a purulent inflammatory process that extends from the mastoid air cell system into the deep neck soft tissues. This process typically occurs due to increased pus pressure within the mastoid, combined with osteitis that causes destruction of the thin bone at the mastoid apex (Toloczko et al., 2024; Valeggia et al., 2022). From this point, the pus can extend along the neck fascia, forming a characteristic abscess beneath the sternocleidomastoid muscle (Cruz Rodriguez et al., 2023; Toloczko et al., 2024).

In modern clinical contexts, a Bezold's abscess is categorized as a subset of deep neck abscesses, a group of abscesses that form in the deep neck spaces due to the spread of infection from structures within the head or neck, including the middle ear. Unlike subperiosteal or Citelli's abscesses, which are confined to the temporal bone, Bezold's abscesses are characterized by extension of the infection to the lower cervical region (Toloczko et al., 2024). There is currently no universal classification system for determining the severity or extent of these abscesses, but assessment is usually based on abscess size, surrounding tissue involvement, and the presence of intracranial or vascular complications Valeggia et al., 2022). Understanding these definitions and classifications is essential for differentiating Bezold's abscesses from other complications of mastoiditis and determining the most appropriate therapeutic approach (Valeggia et al., 2022).

3.2. Epidemiology

Bezold's abscess is a very rare complication in the modern era. This decline in incidence is primarily due to advances in antibiotic therapy and increased public awareness of early treatment of otitis media (Kiakou et al., 2024). Before the advent of antibiotics, this abscess was a common and fatal consequence of mastoiditis. The effective administration of antibiotics and early detection of otitis media have significantly reduced its prevalence (Sujatha, Merin Baby, 2019). Nevertheless, several studies indicate that Bezold's abscess can still occur, particularly in patients with limited access to healthcare, inadequate antibiotic use, or untreated chronic ear infections (Kiakou et al., 2024; Toloczko et al., 2024).

The increasing incidence in developing countries confirms that social and economic factors still play a significant role in the development of this complication (Valeggia et al., 2022). The distribution of cases found in the literature over the past decade indicates that Bezold's abscess can occur in all age groups, from children to the elderly, with a peak incidence in young adults. There is no significant difference by gender, although some reports indicate a slight male predominance, likely due to the higher incidence of chronic otitis media in these populations (Goh et al., 2022). Predisposing factors such as diabetes mellitus, HIV/AIDS, malnutrition, and long-term corticosteroid use also increase the risk of infection spreading to the mastoid. Furthermore, increasing antibiotic resistance and the emergence of highly virulent bacteria are thought to contribute to the persistence of this disease today (Katayama et al., 2018). Therefore, despite being a rare clinical entity, Bezold's abscess still deserves attention as a potential complication that can arise in patients with otitis media with suboptimal treatment (Valeggia et al., 2022).

3.3. Histopathology

Histopathologically, a Bezold's abscess begins with an acute inflammatory process in the middle ear mucosa due to otitis media (Dewan et al., 2022). The immune response to bacterial infection triggers the infiltration of neutrophils and other acute inflammatory cells into the tympanic cavity mucosa. This condition causes edema, hyperemia, and the accumulation of purulent exudate, which can then extend to the mastoid air cell system (Massa et al., 2021) As the infection becomes chronic, the inflammatory pattern changes, with a predominance of lymphocytes and macrophages and the formation of granulation tissue, indicating persistent inflammation (Fan et al., 2023).

Fibroblast proliferation and new blood vessels are seen around the abscess wall, as the body attempts to limit the spread of infection. Gram staining and tissue culture are essential for identifying the causative microorganism and determining appropriate antibiotic therapy. (Feger et al., 2022). These histological findings indicate that a Bezold's abscess is the end result of a chronic,

progressive, destructive inflammatory process, in which failure to eliminate the initial infection leads to destruction of the mastoid bone, leading to the formation of a deep neck abscess (Valeggia et al., 2022).

3.4. Etiology and Risk Factor

A Bezold abscess is generally recognized as a complication of chronic suppurative otitis media (CSOM) or inadequately managed acute mastoiditis (Toloczko et al., 2024). Prolonged middle ear infection leads to persistent inflammation and progressive destruction of the mastoid bone, allowing pus to penetrate the cortical barrier and spread into the deep neck spaces (Sammal et al., 2024). The most frequently isolated pathogens are bacteria commonly associated with otitis media, including *Streptococcus pneumoniae*, *Staphylococcus aureus*, *Pseudomonas aeruginosa*, and *Haemophilus influenzae* (Toloczko et al., 2024). In some chronic or advanced cases, anaerobic organisms such as *Bacteroides spp*. and *Peptostreptococcus spp*. may also be involved, particularly when extensive osteolysis has occurred (Toloczko et al., 2024).

The ability of certain microorganisms to form biofilms on the epithelial and bony surfaces of the mastoid cavity plays a crucial role in sustaining long-term infection and enhancing resistance to antimicrobial therapy. This mechanism explains the recurrence of infection in many patients despite prior antibiotic administration (Sammal et al., 2024). The predisposing factors for the development of a Bezold abscess are multifactorial. Host factors include immune compromise seen in diabetes mellitus, HIV infection, malnutrition, and long-term corticosteroid or immunosuppressive use (Alkhaldi et al., 2022). Inadequate management of otitis media, such as improper antibiotic dosage, short treatment duration, or delayed mastoid surgery, also increases the risk. Moreover, a thin and highly pneumatized mastoid predisposes to cortical erosion and spread of infection into the neck. The combination of persistent infection, microbial virulence, and weakened host defense facilitates abscess formation, highlighting the importance of early detection and appropriate treatment to prevent severe complications.

3.5. Pathogenesis and Patophysiology

The pathogenesis of a Bezold abscess begins with the extension of infection from the middle ear cavity to the mastoid air cells, leading to mastoiditis (Valeggia et al., 2022). As pressure and purulent material accumulate, osteoclastic activity increases, resulting in bone resorption and coalescence of the mastoid air cells (Goldberg-Bockhorn et al., 2024). Progressive destruction of the mastoid tip allows pus to erode the cortical bone and spread through the digastric groove into the soft tissues of the neck (Popescu et al., 2024). The infection then follows the fascial planes and forms an abscess deep to the sternocleidomastoid muscle, which may extend to the parapharyngeal or retropharyngeal spaces if not treated promptly (Wahyudiono et al., 2024).

At the molecular level, this process is driven by the activation of inflammatory pathways such as NF-κB, leading to the release of proinflammatory cytokines including tumor necrosis factor-alpha (TNF-α), interleukin-1 beta (IL-1β), and interleukin-6 (IL-6) (Toloczko et al., 2024). These mediators promote osteoclastic differentiation and enhance the production of matrix metalloproteinases (MMPs), which degrade the extracellular matrix and further weaken the bony structures of the mastoid. The result is a cycle of inflammation, tissue destruction, and bacterial proliferation that sustains the abscess.

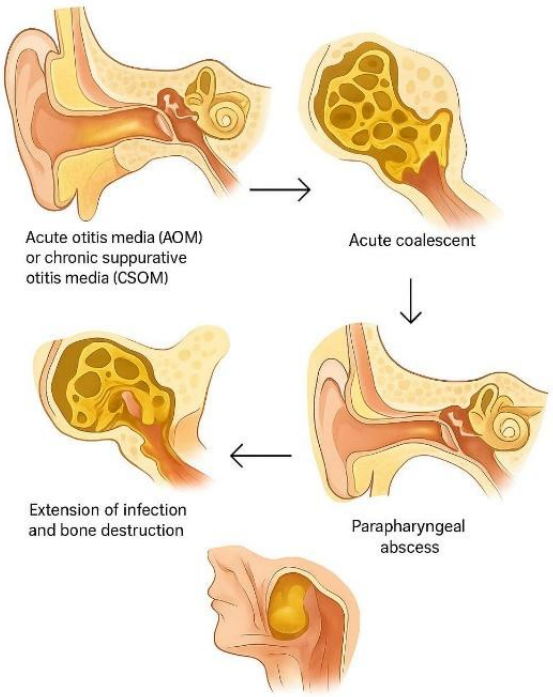

Figure 1. The Pathological Progression of Otitis Media into Bezold's Abscess.

Legend. (1) Initial infection as Acute Otitis Media (AOM) or Chronic Suppurative Otitis Media (CSOM). **(2)** Progression to **Acute Coalescent Mastoiditis** with bone destruction. **(3) Infection extension** through the mastoid cortex. **(4)** Final formation of a **Parapharyngeal Abscess** in the neck

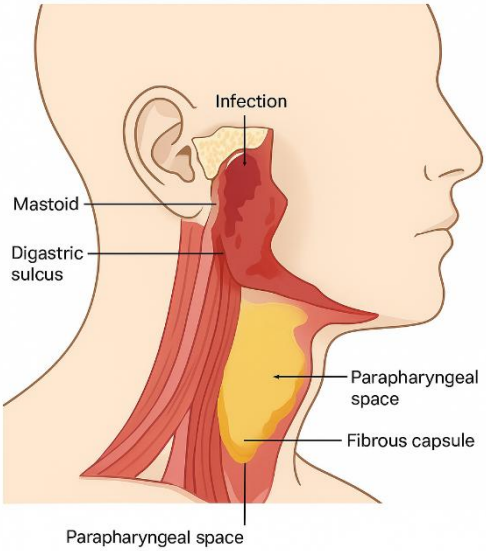

Figure 2. Pathway of Mastoid Infection Spread to the Deep Neck Spaces

Legend: (1) Infection Source- Mastoid bone **(2)** Spread Pathway- Digastric sulcus **(3)** Abscess Location- Parapharyngeal space **(4)** Containment- Fibrous capsule.

This progressive destruction eventually erodes the mastoid bone cortex, allowing pus to penetrate the soft tissues of the neck through the digastric sulcus and tympanomastoid fissure (Popescu et al., 2024). After successfully penetrating the bony cortex, the infection spreads along the fascial planes of the neck, primarily through the insertion of the sternocleidomastoid muscle. Pus then collects in the parapharyngeal space and other deep neck spaces (Wahyudiono et al., 2024). The body attempts to limit the spread of infection by forming a fibrous capsule around the collection of pus, which is then known as a Bezold's abscess.

3.6. Clinical Manifestations

Bezold's abscesses are known as "the difficult-to-diagnose abscess" owing to their diagnostic difficulties and misleading clinical features. Most of the time, they are left undiagnosed and treated, but well-known symptoms consist of the triad associated with mastoiditis, which includes otorrhoea, otalgia, and retroauricular pain and fever accompanied by a neck mass under the sternocleidomastoid muscle (Hajar et al., 2025), These symptoms and a diagnosis of chronic infection and chronic antibiotic treatment are left unacknowledged; clinical features are mostly absent in patients with a previously resolved chronic infection (Valeggia et al., 2022) (Tsuruta & Fujiwara, 2024).

Different reports provide a description of an atypical clinical presentation which resembles other cervical disorders, especially in instances of otological infection and immunosuppression. In these instances, the otological symptoms are mostly absent or undiscovered. Patients complain of neck pain or torticollis, which is often overlooked and attributed to a musculoskeletal pathology. This clinical presentation is usually accompanied by significant diagnostic neglect. A high index of suspicion is the best approach for any chronic otitis media, which indicates new-onset neck pain or mastoiditis. This is especially the case for patients with unexplained, swollen neck or cervical region (Toloczko et al., 2024).

3.7. Diagnosing Bezold's Abscess

It is still necessary to obtain a medical history, especially for recurrent or inadequately treated acute otitis media or mastoiditis. The type, dose, and duration of prior antibiotic therapy, as well as the presence of immune system dysfunctioning comorbidities like diabetes, HIV, and the use of immunosuppressive medications, need to be recorded separately

On examination, otoscopy may demonstrate mastoiditis with distended and hyperemic tympanic membranes, as well as with the depression of the superior canal wall. Palpation of the neck for soreness or the presence of a firm, early stage non-fluctuating mass along the sternocleidomastoid is important. It is non-fluctuating in the early stages. The presence of Griesinger's and Luc's classic signs may be present, but their existence or non-existence does not rule out diagnosis for the sake of having some diagnostic criteria. (Goh et al., 2022).

Bezold's abscess confirms the use of radiological imaging. For diagnosis and operational strategy, a contrast-enhanced CT of the temporal bone is the criterion reference, showing cortical erosion in the region of the mastoid tip, opacified mesotonal mastoid bone (Valeggia et al., 2022), and a ring-enhancing deep neck abscess. With the use of CT, the abscess relationship to the important neurovascular alignments is shown, indicating direction for drainage and mastoidectomy.

Though contrast-enhanced MRI paired with diffusion-weighted imaging (DWI) is still the standard for soft-tissue assessment, DWI is particularly useful for differentiating the parapharyngeal, retropharyngeal, or carotid spaces (Dassoufi et al., 2023). MRI makes sense if intracranial complications are suspected, such with sigmoid sinus thrombosis, or an epidural, subdural, or cerebral abscess, or meningitis.

While the results of lab tests are not diagnostic, they support the diagnosis. The laboratory results reflect the presence of a bacteria causing an infection, with a noted increase in the inflammation markers such as the erythrocyte sedimentation rate (ESR), C-Reactive Protein (CRP), and white blood cell count (Darmawan et al., 2024), Therapeutic CRP response is especially useful in signaling the presence of inflammation.

3.8. Differential Diagnosis

The atypical clinical presentations of Bezold's abscess need careful consideration for a differential diagnosis for effective management in avoiding delays and incorrect label diagnoses (Valeggia et al., 2022). Various pathologies involving the neck can show similarities in their clinical features, so they need to be differentiated systematically (Valeggia et al., 2022). Suppurative lymphadenitis accompanied by superficial, sometimes multiple, neck lumps is associated with pharyngeal or tonsil infection and not otitis media. The identifying feature on CT is enlarged lymph nodes without associated mastoid bone erosion (Bandol et al., 2025).

Typically linked to congenital neck malformations, branchiogenic cysts with superadded infection have been demonstrated to have a correlated cystic mass as revealed through imaging, without evidence of mastoid inflammatory disease or bone erosion (Mishra et al., 2024). Parapharyngeal and retropharyngeal abscesses most commonly originate from infections of the tonsils or the pharynx, and their most distinctive clinical feature is trismus. Imaging studies invariably show the presence of abscesses within the retropharyngeal or parapharyngeal spaces (Bandol et al., 2025). Scrofuloderma (tuberculous lymphadenitis) presents as a chronic, "cold abscess" with minimal inflammatory signs such as erythema or warmth. Diagnosis is confirmed by biopsy and culture for Mycobacterium tuberculosis (Darmawan et al., 2024).

Lemierre's syndrome manifests as septic thrombophlebitis of the internal jugular vein secondary to oropharyngeal infection. Contrast-enhanced CT or MRI reveals intraluminal thrombus without evidence of mastoiditis (Koukias et al., 2024). Malignancy, including metastases or sarcomas, presents as a firm, progressive, and typically painless neck mass without acute inflammatory symptoms. Imaging demonstrates a solid lesion, and definitive diagnosis requires histopathological confirmation (Baba et al., 2023).

3.9. Complications

An untreated or inadequately managed Bezold's abscess may lead to severe intracranial and extracranial complications, which are the main contributors to morbidity and mortality (Toloczko et al., 2024). Intracranial complications arise when infection spreads from the mastoid to the cranial cavity through bone erosion or septic thrombophlebitis of emissary veins (Toloczko et al., 2024). The most serious outcomes include meningitis, epidural or subdural abscess, cerebral abscess, and sigmoid sinus thrombosis (Cruz Rodriguez et al., 2023). Sigmoid sinus thrombosis may result in intracranial hypertension, papilledema, and septic pulmonary emboli (Ansari et al., 2024). These

conditions require urgent neurosurgical intervention combined with high-dose intravenous antibiotics (Ansari et al., 2024).

Extracranial complications occur when infection extends into the neck or thoracic cavity (Goh et al., 2022). Deep neck abscesses, including parapharyngeal and retropharyngeal abscesses, can cause airway obstruction, while descending mediastinitis represents the most fatal outcome. The spread of infection along cervical fascial planes into the mediastinum leads to severe sepsis, pleural effusion, pericarditis, and cardiopulmonary compromise (Goh et al., 2022). Internal jugular vein thrombophlebitis may also develop, with the potential for septic pulmonary emboli or retrograde intracranial infection (Goh et al., 2022).

Systemic complications result from hematogenous bacterial dissemination, leading to sepsis, septic shock, and multi-organ failure (Valeggia et al., 2022). These represent the most critical forms of disease progression and demand aggressive intensive care management (Valeggia et al., 2022).

3.10. Therapy

Pharmacological management of Bezold's abscess primarily involves medical therapy with antibiotics. Empirical intravenous (IV) broad-spectrum antibiotics should be administered immediately upon clinical suspicion of Bezold's abscess, even before microbiological confirmation (Toloczko et al., 2024). The empirical regimen is designed to cover the common pathogens responsible for otomastoiditis and deep neck infections, including Gram-positive bacteria such as Streptococcus pneumoniae and Staphylococcus aureus, Gram-negative bacteria such as Haemophilus influenzae and Pseudomonas aeruginosa, and anaerobic bacteria.

Common empirical regimens include a combination of a third-generation cephalosporin (e.g., Ceftriaxone) with Metronidazole (Alkhaldi et al., 2022), or a broad-spectrum antibiotic such as Piperacillin/tazobactam (Maharani & Ferriastuti, 2022). Vancomycin supplementation is highly recommended in areas with a high prevalence of Methicillin-Resistant Staphylococcus aureus (MRSA). Antibiotic therapy is subsequently adjusted according to culture and sensitivity results obtained from pus samples during surgery. The duration of antibiotic treatment typically lasts 4 to 6 weeks, with adjustments based on the patient's clinical response and radiological evidence of abscess resolution (Darmawan et al., 2024).

Non-pharmacological therapy focuses on surgical intervention to eradicate the source of infection. Mastoidectomy serves as the primary surgical treatment for addressing the infectious etiology. This procedure—commonly performed as a cortical mastoidectomy or modified radical mastoidectomy—aims to remove all infected mastoid air cells and necrotic bone, as well as to identify and repair any cortical defects that facilitate the spread of infection to the neck (Tsuruta & Fujiwara, 2024).

It is also crucial to perform surgical drainage of the accumulated pus in the cervical region. The method of drainage depends on the location and complexity of the abscess. In most cases, incision and drainage (I&D) via an external approach is required (Ansari et al., 2024). This procedure involves thorough drainage and debridement of necrotic tissue, with pus specimens submitted for culture and sensitivity testing. CT-guided percutaneous drainage can be considered for localized pus collections; however, open surgical drainage remains the gold standard in terms of both efficacy and safety.

3.11. Prognosis

The prognosis and outcome of Bezold's abscess largely depend on the timeliness of diagnosis and the accuracy of the treatment plan (Valeggia et al., 2022). Advances in diagnostic imaging modalities such as CT and MRI, along with the use of broad-spectrum antibiotics and refined surgical techniques, have markedly reduced both mortality and morbidity associated with this condition (Ansari et al., 2024). However, delayed detection or inadequate treatment can result in severe and potentially fatal complications (Toloczko et al., 2024). Patients who develop intracranial or mediastinal abscesses generally have a poor prognosis due to the rapid systemic spread of infection (Alkhaldi et al., 2022). Close monitoring and long-term follow-up after antibiotic and surgical therapy are crucial to ensure complete recovery and to prevent recurrence (Alkhaldi et al., 2022). Recommended follow-up strategies include regular clinical evaluations, repeat imaging studies, and serial monitoring of inflammatory markers such as C-reactive protein (CRP) and white blood cell counts (Toloczko et al., 2024). Furthermore, educating patients about the importance of treating otitis media is an important step in preventing relapse (Valeggia et al., 2022).

4. Conclusions

Bezold's abscess is a rare but potentially fatal complication of mastoiditis. Its nonspecific clinical presentation often leads to diagnostic challenges. This review summarizes 20 reported cases from the past decade, highlighting diagnostic difficulties, the critical role of imaging, and multidisciplinary treatment strategies. The findings indicate that the classic symptom triad is rarely sufficient for diagnosis; instead, high clinical suspicion supported by contrast-enhanced CT and MRI is essential.

Successful therapy requires a combination of broad-spectrum intravenous antibiotics and surgical intervention such as mastoidectomy and neck abscess drainage. Clinicians must maintain vigilance in patients with a history of otitis media or mastoiditis presenting with neck swelling or pain, as delayed diagnosis can lead to severe intracranial and extracranial complications including sigmoid sinus thrombosis, meningitis, mediastinitis, and sepsis.

Although this review offers valuable insights, it is limited by reliance on case reports, which restrict generalizability. Future research should focus on prospective, multicenter studies to establish stronger evidence and develop standardized management algorithms. Clinicians should maintain high suspicion for Bezold's abscess in patients with chronic otitis media and new neck swelling. Standardized management guidelines are needed to improve outcomes.

5. Acknowledgements

The authors would like to express their gratitude to the colleagues who were willing to exchange ideas and provide constructive input during the preparation of this narrative review. This narrative review was prepared independently without external funding support.

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