INTERNATIONAL SEVEN JOURNAL
OF MULTIDISCIPLINARY
ISSN: 2764-9547

THERAPEUTIC MANAGEMENT OF SIALOLITHIASIS: CONSERVATIVE TREATMENT PROTOCOLS WITH SIALOGOGUES AND HYDRATION

MANEJO TERAPÊUTICO DA SIALOLITÍASE: PROTOCOLOS DE TRATAMENTO CONSERVADOR COM SIALAGOGOS E HIDRATAÇÃO

MANEJO TERAPÉUTICO DE LA SIALOLITIASIS: PROTOCOLOS DE TRATAMIENTO CONSERVADOR CON SIALOGOGOS E HIDRATACIÓN

https://doi.org/10.56238/isevmjv5n2-023

Receipt of originals: 02/21/2026 **Acceptance for publication:** 03/21/2026

Glenda Cristina de Lima Firmino Almeida[1], Evellyn Cruz Teles[2], Juliana Rezende Guedes[3], Julia Bergamaschi Rossa[4], Andre Medeiros Carvalho[5], Thiago Cruz Brandão[6], Margareth Pandolfi[7], Maria Karla Indrina Morais[8], Vinicius Grangeiro Leite Bezerra[9]

ABSTRACT

Sialolithiasis is a non-neoplastic disease that primarily affects the submandibular glands due to the formation of calculi, known as sialoliths, within the glandular parenchyma or its excretory ducts. The most common signs and symptoms observed are swelling and pain in the affected gland region, which are exacerbated when salivary production is stimulated during meals. Diagnosis can be established through clinical examination during consultation, associated with complementary tests such as radiographs. For the treatment of smaller calculi, conservative management is recommended through a triad consisting of abundant oral hydration, glandular massage, and the use of sialogogues, in addition to adjunctive therapies with anti-inflammatory drugs for pain control. The present study aimed to review and analyze conservative therapeutic protocols based on hydration and the use of substances that stimulate salivary production (sialogogues). This is a literature review based on scientific articles published in the last five years in the PubMed database. The results demonstrated that, depending on the prognosis related to the size, location, and mobility of the calculus, conservative management presents favorable outcomes in cases of smaller sialoliths, avoiding the need for invasive procedures, such as the removal of affected salivary glands. It is concluded that conservative treatment with sialogogues and hydration is an effective approach in cases with a favorable prognosis, contributing to the resolution of the clinical condition and reducing the need for surgical interventions.

Keywords: Sialolithiasis. Salivary Glands. Sialogogues. Hydration. Conservative Treatment.

[1] Graduated in Dentistry. Universidade Nilton Lins (UNL).
[2] Undergraduate Student in Dentistry. Faculdade de Teologia, Filosofia e Ciências Humanas Gamaliel (FATEFIG).
[3] Graduated in Dentistry. Universidade Federal de Juiz de Fora (UFJF).
[4] Undergraduate Student in Dentistry. Centro Universitário de Maringá (UNICESUMAR).
[5] Graduated in Dentistry. Universidade Vale do Rio Doce (UNIVALE).
[6] Undergraduate Student in Dentistry. Centro Universitário do Norte (UNINORTE).
[7] Dr. in Public Health. Universidade de Pernambuco (UPE).
[8] Undergraduate Student in Dentistry. Atitus Educação.
[9] Graduated in Dentistry. Universidade Federal de Campina Grande (UFCG).

INTERNATIONAL SEVEN JOURNAL
OF MULTIDISCIPLINARY
ISSN: 2764-9547

RESUMO
A sialolitíase é uma doença de origem não neoplásica que acomete, principalmente, as glândulas submandibulares devido à formação de cálculos denominados sialólitos no interior do parênquima glandular ou de seus ductos excretores. Os sinais e sintomas mais comuns observados são edema e dor na região da glândula acometida, os quais são exacerbados quando há estímulo da produção salivar durante as refeições. O diagnóstico pode ser obtido por meio do exame clínico durante a consulta, associado a exames complementares como radiografias. Para o tratamento de cálculos menores, preconiza-se o manejo conservador por meio da tríade composta por hidratação oral abundante, massagem glandular e utilização de sialogogos, além de terapias adjuvantes com anti-inflamatórios para controle da dor. O presente estudo teve como objetivo revisar e analisar os protocolos terapêuticos conservadores baseados na hidratação e no uso de substâncias que estimulam a produção salivar (sialogogos). Trata-se de uma revisão bibliográfica baseada em artigos científicos publicados nos últimos cinco anos na base de dados PubMed. Os resultados demonstraram que, dependendo do prognóstico relacionado ao tamanho, localização e mobilidade do cálculo, o manejo conservador apresenta resultados favoráveis em casos de sialólitos menores, evitando a necessidade de procedimentos invasivos, como a remoção das glândulas salivares afetadas. Conclui-se que o tratamento conservador com sialogogos e hidratação é uma abordagem eficaz em casos com prognóstico favorável, contribuindo para a resolução do quadro clínico e reduzindo a necessidade de intervenções cirúrgicas.

Palavras-chave: Sialolitíase. Glândulas Salivares. Sialogogos. Hidratação. Tratamento Conservador.

RESUMEN
La sialolitiasis es una enfermedad de origen no neoplásico que afecta principalmente a las glándulas submandibulares debido a la formación de cálculos, denominados sialolitos, en el parénquima glandular o en sus conductos excretores. Los signos y síntomas más comunes observados son edema y dolor en la región de la glándula afectada, los cuales se exacerban cuando hay estimulación de la producción salival durante las comidas. El diagnóstico puede obtenerse mediante el examen clínico durante la consulta, asociado a estudios complementarios como radiografías. Para el tratamiento de cálculos pequeños, se recomienda el manejo conservador mediante una tríada compuesta por hidratación oral abundante, masaje glandular y el uso de sialogogos, además de terapias adyuvantes con antiinflamatorios para el control del dolor. El presente estudio tuvo como objetivo revisar y analizar los protocolos terapéuticos conservadores basados en la hidratación y el uso de sustancias que estimulan la producción salival (sialogogos). Se trata de una revisión bibliográfica basada en artículos científicos publicados en los últimos cinco años en la base de datos PubMed. Los resultados demostraron que, dependiendo del pronóstico relacionado con el tamaño, la localización y la movilidad del cálculo, el manejo conservador presenta resultados favorables en casos de sialolitos pequeños, evitando la necesidad de procedimientos invasivos, como la extracción de las glándulas salivales afectadas. Se concluye que el tratamiento conservador con sialogogos e hidratación es un enfoque eficaz en casos con pronóstico favorable, contribuyendo a la resolución del cuadro clínico y reduciendo la necesidad de intervenciones quirúrgicas.

Palabras clave: Sialolitiasis. Glándulas Salivales. Sialogogos. Hidratación. Tratamiento Conservador.

1 INTRODUCTION

Sialolithiasis represents one of the most prevalent salivary gland disorders, characterized by the formation of stones (sialoliths) within the glandular parenchyma or its excretory ducts (Koch et al., 2022; Almotairi et al., 2023). The submandibular gland is the most common location for the development of these calcified deposits, accounting for about 80% to 90% of cases, due to the tortuosity and alkaline, calcium-rich nature of its secretion (Badash et al., 2022). This process often triggers sialectasia and can evolve into chronic sialadenitis. Clinically, the condition manifests itself through edema, pain and, in infectious conditions, hyperthermia.It has a higher prevalence in male adults, and its occurrence in the pediatric population is considered rare.(Almotairi et al., 2023). Although less frequent, the parotid gland and minor salivary glands may also be affected, presenting specific diagnostic challenges (Almotairi et al., 2023; Lee et al., 2024).

In the context of clinical practice, sialolithiasis is characterized by periods of relapse and remissions, with symptoms that can vary from mild to severe. However, although the clinical signs are pathognomonic, especially when associated with imaging tests, the diagnosis of sialolithiasis may tend to be ambiguous, given that there are differential diagnoses in general dental practice, such as sialadenitis and ranulas (Bukhary, 2024). In addition, some imaging findings may not be identified, as detection will depend on the position and size of the salivary stones, which can make it difficult to accurately define the diagnosis (Badash et al., 2022).

Faced with the problem of diagnosis, which delays the planned treatment and is aggravated by the lack of professional experience, the importance of an in-depth anamnesis together with an effective clinical analysis to rule out other types of correlated diseases is noticeable (Almotairi et al., 2023; Bukhary, 2024). There are several tests that, with the data discovered referenced above, can contribute, such as radiographs, ultrasounds, sialographs, computed tomography and magnetic resonance imaging (Koch, et al., 2022; Almotairi et al., 2023; Bukhary, 2024). Early diagnosis followed by treatment has a positive impact on prognosis, in the absence of worsening of the clinical picture for other diseases or loss of glandular function, aesthetic advantages, and imperceptible scars (Badash et al., 2022; Koch, et al., 2022; Almotairi et al., 2023). However, there are conditions that aggravate the complexity of sialolithiasis, such as the size, place, number, and mobility of the stones present, and the anatomy of the duct system (Koch, et al., 2022; Almotairi et al., 2023).

In addition, this pathology has a slight predilection for the male public, compared to females, and for the age group from adults to the elderly, being rarer in the pediatric society (Barbeiro et al., 2022; Almotairi et al., 2023). In addition to research carried out in Sweden, they proposed that genetics could influence, since in patients with sialolithiasis, other relatives also had this history present in the family. Among the agents mentioned above, dehydration, smoking, chronic periodontal disease, the use of diuretics and anticholinergic medications, and a history of rheumatic problems, such as gout, can be determining factors in the occurrences of sialolithiasis (Badash et al., 2022).

Although the pathogenesis is unknown, there are about two main theses, which reinforce the multifactorial origin of sialoliths (Badash et al., 2022; Almotairi et al., 2023; Bukhary, 2024). The first would be that intracellular microstones, which are expelled through the channels, can turn into an additional posterior calcification nucleus (Badash et al., 2022; Almotairi et al., 2023). While the second conjecture assumes that some foods, waste, and certain microorganisms, such as existing bacteria, would have the possibility of moving into the salivary ducts (Badash et al., 2022; Almotairi et al., 2023). Furthermore, some causal factors for cases of sialolithiasis would be the change present in the individual's salivary pH as a result of oropharyngeal infections, the salivary flow being impacted along with its decrease, and the modification of the crystalloids in their solubility (Almotairi et al., 2023).

An important finding was highlighted by Mortarazi et al. (2024), in a Systematic Review (SR) with meta-analysis in which previous gallstones (cholelithiasis) were significantly more prevalent among patients with sialolithiasis (p=0.000), with an odds ratio (OR) of 2.04. Although one of the studies found that there is no relationship between sialolithiasis and cholelithiasis, it appears that cholelithiasis is significantly associated with an increase in salivary stone formation. Therefore, a complete salivary examination is recommended in all patients who report current or past cholelithiasis.

Clinically, sialolithiasis typically manifests through recurrent episodes of edema and pain in the affected glandular region, often exacerbated by salivary stimulation during meals (Bukhary, 2024; Badash et al., 2022). Differential diagnosis is crucial, as the condition can mimic infectious sialoadenitis or ranulas (Bukhary, 2024). Initial clinical management prioritizes conservative approaches, based on the stimulation of salivary flow through vigorous hydration and the use of sialogogues, aiming at the spontaneous expulsion of small and distal stones (Almotairi et al., 2023; Badash et al., 2022).

2 METHODOLOGY

The present investigation is based on a narrative literature review, structured with the aim of synthesizing and critically analyzing the contemporary scientific guidelines on the Therapeutic Management of Sialolithiasis: Conservative Treatment Protocols with sialogogues and Hydration. Data collection was conducted using the PubMed platform, using the descriptor "Sialolithiasis", in strict compliance with the Medical Subject Headings (MeSH) terminology. The selection included articles published in the last five years, made available in full and written in Portuguese or English, which directly addressed the pathophysiology and treatment of the condition. Exclusion criteria were applied to remove publications without a central thematic nexus, duplicates, reviews of low methodological rigor, and articles not indexed in the database used. The selection process took place in two stages: screening of titles and abstracts, followed by evaluation and critical reading of full texts to validate relevance. The information collected was organized in a descriptive and systematic way.

3 RESULTS AND DISCUSSION

3.1 CONSERVATIVE TREATMENT PROTOCOLS

Conservative management is the first line of treatment for patients with sialolithiasis, especially when the stones are small and located in the distal portion of the duct (Almotairi et al., 2023). This protocol is based on the triad: aggressive oral hydration, glandular massage (milking), and the use of sialogogues, such as lemon juice or citrus candies, to induce salivary hypersecretion (Almotairi et al., 2023; Badash et al., 2022). The application of local heat and the use of anti-inflammatory drugs help to control pain and reduce ductal spasm. In cases of stones smaller than 4 mm in the parotid, the response to these measurements is usually satisfactory, avoiding the need for invasive interventions (Almotairi et al., 2023).

Understanding the physiological mechanisms involved in increased salivary flow is essential to justify the effectiveness of these approaches. The stimulus promoted by sialagogues occurs mainly through the activation of taste receptors in the oral cavity, triggering parasympathetic reflexes mediated by the autonomic nervous system, which result in a significant increase in salivary secretion (Badash et al., 2022; Almotairi et al., 2023). This increase in flow increases intraductal pressure, which can mobilize small stones present in the excretory ducts and facilitate their spontaneous elimination (Badash

et al., 2022; Koch et al., 2022). At the same time, adequate hydration plays an important role in maintaining salivary fluidity, contributing to the reduction of saliva viscosity and the prevention of salivary stasis — one of the factors often associated with the formation and growth of sialoliths (Badash et al., 2022; Almotairi et al., 2023).

In addition, adequate hydration enhances the effects of sialogogues, since the stimulated salivary secretion will be more fluid and, therefore, more effective in washing the ducts and mobilizing debris and microstones. In this way, hydration and sialogogues act synergistically: while sialogogues increase the volume and pressure of the flow, hydration ensures that this flow has low viscosity, optimizing its mechanical and preventive effect (Badash et al., 2022).

It should be noted that the effectiveness of these mechanisms depends not only on the correct indication, but also on the patient's adherence to therapeutic guidelines, as well as on the precocity of the intervention, since conservative treatment presents better results when instituted before the stones reach larger dimensions or become impacted (Koch et al., 2022; Almotairi et al., 2023).

3.2 FACTORS INFLUENCING THE SUCCESS OF THE CONSERVATIVE

The success of conservative treatment is directly related to the characteristics of sialoliths. Stones smaller than 4 mm, located in the distal portion of the duct and with preserved mobility, have the best response rates to conservative measurements (Almotairi et al., 2023; Badash et al., 2022). On the other hand, larger stones, impacted or located in nearby or intraparenchymal regions tend not to respond to these approaches, requiring complementary interventions (Koch et al., 2022).

The patient's adherence to therapeutic guidelines — such as regular water intake, correct use of sialogogues, and glandular massage — is decisive for the success of conservative treatment (Badash et al., 2022). In addition, the early intervention directly influences the prognosis: the earlier treatment is instituted, the greater the chances of spontaneous elimination of the stone, preventing its growth or impaction (Koch et al., 2022; Almotairi et al., 2023).

Koch et al. (2022) highlight that advances in the management of sialolithiasis have prioritized minimally invasive and salivary gland-preserving approaches. The improvement of techniques such as sialoendoscopy and lithotripsy has significantly reduced the need for glandular resection, which has gone from about 40–50% to less

than 5%. However, the therapeutic management of sialolithiasis must be individualized, considering factors such as the size, location, and mobility of sialoliths (Badash et al., 2022). In cases of small and mobile stones, conservative measures remain as first treatment options (Almotairi et al., 2023).

On the other hand, larger, impacted, or localized stones in hard-to-reach regions require interventional approaches, such as sialoendoscopy, intraendoscopic lithotripsy (ISWL), combined techniques, and, in selected cases, transoral or transcutaneous surgical procedures (Koch et al., 2022; Bukhary, 2024). The advancement of minimally invasive techniques, especially sialoendoscopy and intraendoscopic lithotripsy (ISWL), has expanded the therapeutic possibilities and reduced the need for total resection of the salivary glands, maintaining high rates of therapeutic success (Bukhary, 2024).

In addition, combined, image-guided procedures have shown promise for cases of complex sialolithiasis, ensuring better visualization, complete removal, and reduction of recurrence (Bukhary, 2024). Galdermans and Gemels (2020) published that the selection and identification of cases provide the path to therapeutic success, with smaller stones being the context of better prognosis. According to Koch et al. (2022), early diagnosis and intervention are essential factors for the success of conservative management, as well as the appropriate selection of the therapeutic modality.

Thus, the modern approach to sialolithiasis prioritizes conservative treatment whenever possible, associating minimally invasive techniques and therapeutic individualization according to the characteristics of the stone and the patient, with the aim of ensuring clinical efficacy, lower morbidity, and preservation of glandular function, ensuring clinical efficacy (Koch et al., 2022; Bukhary, 2024).

3.3 LIMITS OF CONSERVATIVE TREATMENT AND INTERVENTIONAL OPTIONS

When conservative treatment fails and stones are unattainable endoscopically, transoral or cervical surgery may be necessary (Badash et al., 2022).

Sialendoscopy has revolutionized the treatment of sialolithiasis by allowing the transition from radical surgeries to glandular preservation techniques. It is a minimally invasive tool that allows direct visualization of the duct, irrigation, and extraction of stones with the help of metal baskets or forceps, and can be performed under local anesthesia in most cases (Kochet al., 2022; Badash et al., 2022).

For larger or impacted stones, the association with laser or pneumatic lithotripsy has demonstrated high success rates in fragmentation and complete removal of the sialoliths (Koch et al., 2022). Specifically for calculations between 5 and 7 mm, success rates range from 81% to 100% (Koch et al., 2022).

Although safe, sialendoscopy can present complications such as ductal stenosis, ranule formation, and nerve injuries in about 3% of cases, and its success is related to the professional's experience (Badash et al., 2022; Almotairi et al., 2023).

For stones larger than 7 mm, particularly those located in the hilar or intraparenchymal region, the combined approach that associates sialendoscopy with transoral surgery has demonstrated success rates greater than 95% in the complete removal of sialoliths, with glandular preservation (Koch et al., 2022; Badash et al., 2022).

Transoral sialolithotomy is preferred for palpable Wharton duct stones, while robotic excision of the submandibular gland has emerged as an alternative to reduce aesthetic morbidity and the risk of facial nerve injury in complex cases (Badash et al., 2022). Lee et al. described the use of the retroauricular approach, reporting favorable aesthetic outcomes and an optimization of surgical time when compared to endoscopic resection, without the occurrence of postoperative complications. Similarly, Singh et al. observed that, although the robotic modality requires a prolonged operative time and has a greater drainage volume compared to the conventional transcervical approach, the aesthetic benefits are substantially higher. In addition, DeVirgilio et al. corroborated these findings by using a modified postauricular facelift access, evidencing the mitigation of hypertrophic scars and aesthetic superiority over purely endoscopic techniques, maintaining a safety profile with no reported complications. (Badash et al., 2022).

The simultaneous use of intraoperative ultrasound and sialendoscopy is recommended to accurately locate intraparenchymal stones, optimizing the removal success rate and minimizing tissue trauma (Koch et al., 2022). Fine-needle guided ultrasonography has been described as an auxiliary technique for accurate marking of stones in deep locations, especially in the parotid gland (Almotairi et al., 2023).

Sialolithotomy (surgical removal of the stone) is performed under local anesthesia when the stone is palpable and accessible through the duct. Excision of the gland (adenectomy) is currently reserved for less than 5% of cases, where the stone is intraparenchymal or in glands with severe functional damage. (Koch et al., 2022; Almotairi et al., 2023; Bukhary, 2024).

Badash et al. (2022) and Koch et al. (2022) point out that, despite advances in minimally invasive techniques, sialoadenectomy — that is, the complete removal of the gland — is still necessary in approximately 2% to 5% of cases. According to the authors, this occurs mainly when conservative and minimally invasive approaches prove to be insufficient, in the face of recurrent stones or in the presence of irreversible loss of glandular function. Although effective, the traditional transcervical approach has disadvantages such as visible scarring, risk of injury to the lingual, marginal mandibular and hypoglossal nerves, as well as possible hematoma (Badash et al., 2022).

The advancement of these techniques has reduced the need for glandular resection, maintaining high success rates and functional preservation (Bukhary, 2024; Koch et al., 2022).

3.4 SIALOLITHIASIS IN MINOR SALIVARY GLANDS

Although sialolithiasis in smaller glands is considered uncommon, recent reports highlight its occurrence, being more frequent in the upper lip and oral mucosa, although it can also affect the lower lip (Lee et al., 2024; Barbeiro et al., 2022). In these cases, the stone often presents as an asymptomatic submucosal nodule, which can be confused with mucocele or benign tumors (Lee et al., 2024). In situations of secondary infection, purulent drainage may occur, requiring complete surgical excision of the affected gland and associated calculus to ensure definitive cure and prevent recurrence (Barbeiro et al., 2022). The diagnostic difficulty is evidenced by the fact that less than 6% of cases are correctly diagnosed before biopsy (Lee et al., 2024). The time of evolution of symptoms can vary from months to years, with most identified in the first year (Barbeiro et al., 2022).

Given this scenario, the diagnosis of these lesions can represent a significant clinical challenge, despite their lower prevalence when compared to the larger salivary glands (Lee et al., 2024; Barbeiro et al., 2022). This is because the clinical manifestations often resemble other benign changes of the oral mucosa, such as mucoceles, fibromas, or small tumors of the minor salivary glands (Lee et al., 2024; Barbeiro et al., 2022). In many cases, the symptomatology is nonspecific or has a slow evolution, which can make the initial diagnosis difficult based on clinical evaluation alone (Barbeiro et al., 2022; Bukhary, 2024). Thus, the detailed clinical evaluation associated with the histopathological examination after the removal of the lesion becomes essential to establish the definitive diagnosis, allowing the differentiation of sialolithiasis from other

pathological conditions of the oral cavity (Lee et al., 2024; Barbeiro et al., 2022; Bukhary, 2024).

The symptomatology of sialolithiasis fluctuates according to the chronicity of the condition. Acute episodes are predominantly manifested by severe pain, localized edema, and purulent exudation. On the other hand, the chronic phase is marked by recurrent sialadenitis or persistent inflammatory processes in the affected gland. (Almotairi et al., 2023).

Diagnosis is based on a combination of clinical findings and imaging methods. Although most stones are radiopaque and can be identified in intraoral examinations, ultrasonography stands out as a first-line modality due to its high accuracy (99%) in the detection of radiolucent stones greater than 1.55 mm. In cases of parotid duct stones, where the overlapping of the masseter and buccinator muscles can make visualization difficult, sialography allows a detailed evaluation of the ductal lumen; however, its use is contraindicated in patients with acute infection or hypersensitivity to contrast. (Almotairi et al., 2023).

Computed tomography (CT) has superiority over radiography and ultrasonography in the identification of stones and abscesses, although it has limitations in the precise location and analysis of structural defects of the duct. Magnetic resonance imaging (MRI) offers greater tissue discrimination, allowing the differentiation between acute and chronic obstructions, in addition to accurately delimiting the glandular anatomy, despite its greater complexity, cost, and execution time. (Almotairi et al., 2023).

3.5 SUMMARY OF THE EVIDENCE

From a synthesis of the Scientific Evidence, it is necessary to highlight three SRs: Galdermans and Gemels (2020), who selected 109/208 articles on sialoendoscopy and sialolithotripsy, choosing 13 for data extraction, in which the treatment was successful in 1,139/1285 patients, with a mean of 88.7% (CI=95%: 71.4-100). Interventions are more suitable as a first-choice treatment - if conservative therapy fails, and the lower the stone, the more likely it is to be symptom-free. El-Sherif et al. (2025) evaluated the efficacy and safety of combined sialoendoscopy-assisted surgery in the management of submandibular sialolithiasis through 15 carefully selected, reviewed, and analyzed articles. The success rate of combined sialoendoscopy-assisted surgery in the management of submandibular sialolithiasis was 95.5% (CI=95%: 91.4-98). The overall

percentage of sialadenectomy cases was 2% and the percentage of complications was 8%. Salzano et al. (2005) using the PRISMA guidelines, evaluated 42 studies involving 1,559 patients. Endoscopic-assisted removal had the highest rate of stone clearance was 93% (CI=95%: 90–96) and symptom improvement of 91% (CI=95%: 92–99). Combined endoscopic-external approaches were effective for complex stones, but had higher complication rates of 24% (CI=95%:14–37). Most complications were mild. Endoscopic-assisted and combined approaches offer effective and gland-preserving options for parotid sialolithiasis. Extracorporeal shock wave lithotripsy (ESWL) and laser techniques remain as adjuvants. In both studies (Galdermans and Gemels; 2020; Salzano et al., 2005), although minor complications were frequent, no serious complications occurred.

4 CONCLUSION

Sialolithiasis is a non-neoplastic pathology that affects the salivary glands, with a predominant focus on the submandibular glands. Other sites, such as the minor salivary glands and the parotid gland, are also affected, although to a lesser extent. Sialoliths generate signs and symptoms, such as pain and edema in the affected region, noticeable in the clinical consultation. Therefore, the anamnesis and the complementary tests requested are essential for the diagnosis.

The etiology is associated with the mineralization of calcium salts around an organic nucleus (mucus plugs, bacteria, or epithelial cells), favored by the stagnation of salivary flow (Barbeiro et al., 2022; Almotairi et al., 2023). Although more common in adults, sialolithiasis should also be considered in young patients and in smaller salivary glands, and may manifest in an unusual way, sometimes associated with purulent drainage (Barbeiro et al. 2022; Almotairi et al., 2023).

The diagnosis of sialolithiasis often faces challenges due to factors such as professional inexperience and the lack of use of complementary tests (sialography, histopathological, magnetic resonance imaging, radiographs, ultrasounds, and CT scans). Early diagnosis and treatment are crucial, contributing significantly to a positive postoperative period with fewer comorbidities. Treatment options are varied, including conservative management, sialendoscopy, transoral sialolithotomy, sialoadenectomy, robotic excisions, and associated approaches.

The choice of treatment depends on the condition of the sialoliths and the effectiveness of the approach selected for each patient. The main focus of the study is

conservative management, based on the triad of hydration, sialogogues (lemon juice, citrus candies) and glandular massage. This stimulation of salivary hypersecretion, along with local heat and medications (such as anti-inflammatories) to reduce pain and ductal spasm, is indicated for non-expressive sialoliths. However, more invasive interventions are necessary when conservative treatment is not effective.

Current trends prioritize glandular preservation, minimally invasive techniques, and the increasing use of sialoendoscopy and combination therapies should conservative treatment fail. It is noteworthy that: sialoendoscopy and sialolithotripsy are indicated as the treatment of choice if conservative therapy is not successful; endoscopic-assisted removal has demonstrated the highest rate of stone clearance and symptom improvement; combined approaches are effective for complex calculations but had higher complication rates; and *ESWL* and laser techniques continue to play supporting roles.

REFERENCES

Almotairi, N., et al. (2023). Parotid sialolithiasis in a 17-year-old girl. Cureus, 15(3), e36378.

Badash, I., et al. (2022). Contemporary review of submandibular gland sialolithiasis and surgical management options. Cureus, 14(8), e28147.

Barbeiro, C. O., et al. (2022). Suppurative minor salivary gland sialolithiasis. Autopsy and Case Reports, 12, e2021397.

Bukhary, S. M. N. (2024). The diagnostic challenge of sialolithiasis [Case report, King Abdulaziz University, Jeddah].

El-Sherif, I., et al. (2023). Efficacy of combined sialendoscopic-assisted surgery in management of submandibular sialolithiasis: A systematic review. The Egyptian Journal of Otolaryngology, 39.

Galdermans, M., & Gemels, B. (2020). Success rate and complications of sialendoscopy and sialolithotripsy in patients with parotid sialolithiasis: A systematic review. Oral and Maxillofacial Surgery, 24(2), 145–150.

Koch, M., et al. (2022). Treatment of sialolithiasis: What has changed? An update of the treatment algorithms and a review of the literature. Journal of Clinical Medicine, 11(1), 231.

Lee, Y.-P., et al. (2024). Sialolithiasis of the lower lip. Journal of Dental Sciences, 19, 1880–1882.

Mortazavi, H., et al. (2024). What is the impact of previous cholelithiasis on sialolithiasis: A systematic review and meta-analysis. Saudi Dental Journal, 36(1), 44–51.

Salzano, G., et al. (2025). Parotid gland sialolithiasis: A comprehensive systematic review and meta-analysis. European Archives of Oto-Rhino-Laryngology.