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# Head and neck metastasis of breast cancer

Metástase de câncer de mama em cabeça e pescoço

Metástasis de cabeza y cuello del cáncer de mama

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**ABSTRACT**

**Objective:** To conduct an integrative review of the literature on anatomical predilection, clinical manifestations, and diagnostic strategies related to breast cancer metastases in the head and neck region. **Methods:** The review was conducted in stages: formulation of the guiding question, search in the Medline/PubMed, Scopus, Web of Science, and PsycINFO databases, selection and extraction of data, critical analysis of the included studies, interpretation, and presentation of findings. Controlled descriptors in Health Sciences (DeCS) were used, combined by the Boolean operator “AND”. **Results:** Thirty-five studies were selected. It was observed that breast cancer metastases to the head and neck are rare events, as is supraclavicular involvement. However, among women, breast cancer stands out as the most frequent infraclavicular primary site associated with metastases in this region. Clinical manifestations may be nonspecific, contributing to late diagnoses and challenges in differentiating between primary and metastatic lesions. **Final considerations:** Professionals such as head and neck surgeons and dental surgeons should perform a detailed medical history and rigorous evaluation of clinical and radiographic findings. Signs such as paresthesia of the lip and chin deserve attention, as they may represent early manifestations of metastasis and aid in the differential diagnosis of oral lesions.

**Keywords:** Breast cancer, Metastasis, Head and neck neoplasms, Maxillary neoplasms.

**RESUMO**

**Objetivo:** Realizar uma revisão integrativa da literatura sobre predileção anatômica, manifestações clínicas e estratégias diagnósticas relacionadas às metástases de câncer de mama na região de cabeça e pescoço. **Métodos:** A revisão foi conduzida em etapas: formulação da pergunta norteadora, busca nas bases Medline/PubMed, Scopus, Web of Science e PsycINFO, seleção e extração dos dados, análise crítica dos estudos incluídos, interpretação e apresentação dos achados. Foram utilizados descritores controlados em Ciências da Saúde (DeCS), combinados pelo operador booleano “AND”. **Resultados:** Trinta e cinco estudos foram selecionados. Observou-se que metástases de câncer de mama para a cabeça e o pescoço são eventos raros, assim como o acometimento supraclavicular. Contudo, entre mulheres, o câncer de mama

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destaca-se como o sítio primário infraclavicular mais frequente associado a metástases nessa região. As manifestações clínicas podem ser inespecíficas, o que contribui para diagnósticos tardios e desafios na diferenciação entre lesões primárias e metastáticas. **Considerações finais:** Profissionais como cirurgiões de cabeça e pescoço e cirurgiões-dentistas devem realizar anamnese detalhada e avaliação rigorosa de achados clínicos e radiográficos. Sinais como parestesia do lábio e do queixo merecem atenção, pois podem representar manifestações iniciais de metástase e auxiliar no diagnóstico diferencial de lesões orais.

**Palavras-chave:** Câncer da mama, Metástase, Neoplasias da cabeça e pescoço, Neoplasias maxilares.

**RESUMEN**

**Objetivo:** Realizar una revisión integradora de la literatura sobre la predilección anatómica, las manifestaciones clínicas y las estrategias diagnósticas relacionadas con las metástasis del cáncer de mama en la región de la cabeza y el cuello. **Métodos:** La revisión se llevó a cabo en varias etapas: formulación de la pregunta orientadora, búsqueda en las bases de datos Medline/PubMed, Scopus, Web of Science y PsycINFO, selección y extracción de datos, análisis crítico de los estudios incluidos, interpretación y presentación de los resultados. Se utilizaron descriptores controlados en Ciencias de la Salud (DeCS), combinados por el operador booleano «AND». **Resultados:** Se seleccionaron treinta y cinco estudios. Se observó que las metástasis de cáncer de mama en la cabeza y el cuello son eventos raros, al igual que la afectación supraclavicular. Sin embargo, entre las mujeres, el cáncer de mama destaca como el sitio infraclavicular primario más frecuente asociado a metástasis en esta región. Las manifestaciones clínicas pueden ser inespecíficas, lo que contribuye a diagnósticos tardíos y a dificultades en la diferenciación entre lesiones primarias y metastásicas. **Consideraciones finales:** Los profesionales, como los cirujanos de cabeza y cuello y los cirujanos dentistas, deben realizar una anamnesis detallada y una evaluación rigurosa de los hallazgos clínicos y radiográficos. Signos como la parestesia del labio y el mentón merecen atención, ya que pueden representar manifestaciones iniciales de metástasis y ayudar en el diagnóstico diferencial de lesiones orales.

**Palabras clave:** Cáncer de mama, Metástasis, Neoplasias de cabeza y cuello, Neoplasias maxilares.

## INTRODUCION

Cancer remains one of the leading causes of death worldwide. In 2020, there were approximately 19.3 million new cancer cases and 10 million deaths globally. Specifically in women, breast cancer is the most frequently diagnosed malignant disease and the leading cause of cancer mortality. (SUNG S, et al., 2021; KIRSCHNICK LB, et al., 2022; GONDIM DD, et al., 2017; MORRIS PR, et al., 2001). Breast cancer is the most common type of malignant neoplasm among women, representing a major cause of mortality in this population (SPIRITO F, et al., 2024). This type of cancer is multifactorial, and because of its global prevalence, its incidence and mortality rates will vary considerably among different geographic regions, which can be explained by lifestyle, population structure, environment, and genetic issues (MIYAZAKI R, et al., 2022).

The metastatic process is a complex phenomenon involving unregulated cell proliferation and the translocation of tumor cells to vital organs such as the lungs, liver, bones, and brain. The circulatory system directs these malignant cells to important structures, as occurs with tumors in the digestive tract, which are directed to the liver via the portal vein. Metastasis seems to prefer sites of easy cell hypertrophy, attracted by cytokines, growth factors, and extracelular matrix, shaping a favorable environment for tumor growth and nutrition. The formation of a premetastatic niche is based on the preparation of distant organs to support metastatic cancer. Cytokines released by malignant cells prepare the target organ for metastatic colonization, and growth factors play a role in supporting cancer in the target tissue, favoring mitosis and metastasis hypertrophy (FIDLER IJ and POSTE G, 2008; PEINADO H, et al., 2017; CHAKRABORTY S and BANERJEE S, 2023; HESS KR, et al., 2006).

The most common manifestations of metastatic breast cancer in the head and neck are involvement of the maxillary bones and supraclavicular lymphadenopathy. Bones are the second most frequently affected sites for distant metastasis of breast cancer (after the lung), showing a certain predilection for the gnathic bones (maxilla and mandible). In a review of more than 600 metastatic cases with lesions in these bones, breast cancer was responsible for 41% of the metastases in women (GUIMARÃES ALS, et al., 2003).

This type of cancer can also spread, in 7% of cases of metastatic disease, to the supraclavicular lymph nodes. The involvement of these structures is associated with a poor clinical prognosis, comparable to the other presentations of distant metastasis of this condition. Although uncommon, metastatic breast cancer may involve the salivary glands, paranasal sinuses, orbits, and skin (SPIRITO F, et al., 2024; MIYAZAKI R, et al., 2022). In this context, integrative reviews are essential for understanding rare cases, as they disseminate knowledge on a given topic that is scarce in the current database. In this case, this integrative review synthesizes the available literature on breast cancer metastasis in the head and neck region. Therefore, the present study is an integrative review of the literature on the anatomical predilection, clinical manifestations, and diagnostic processes of the occurrence of breast cancer metastases to the head and neck.

## METHODS

The integrative literature review followed six stages, as proposed by Souza M.T. et al. (2010): (1) construction of the guiding question; (2) search in databases; (3) data collection; (4) critical analysis of the studies found and included; (5) interpretation of the results; and (6) presentation of the findings.

The guiding question defined was: *What are the most affected anatomical regions, the main clinical manifestations, and the diagnostic methods described in the literature for breast cancer metastases in the head and neck?*

Articles were retrieved from the following databases: National Library of Medicine (Medline via PubMed), Scopus, Web of Science, and the American Psychological Association (PsycINFO). The selection of the databases was based on their broad scientific coverage and relevance to the research question. Medline via PubMed was chosen due to its extensive indexing of biomedical literature and its recognized reliability in medical research.

Scopus and Web of Science were included because they provide comprehensive multidisciplinary coverage, allowing retrieval of studies not always indexed in more specialized databases. PsycINFO was selected to ensure retrieval of publications addressing behavioral, psychosocial, or multidisciplinary aspects that may appear in case reports or oncology-related studies. Together, these databases offer a wide and complementary scope, increasing the likelihood of capturing all relevant scientific evidence on breast cancer metastases in the head and neck region.

The search strategy used controlled Health Sciences Descriptors (DeCS) corresponding to universal descriptors, including: “Breast Cancer,” “Breast Neoplasm,” “Breast Tumors,” “Mammary Cancer,” “Breast Malignant Neoplasm,” “Cancer of Breast,” “Breast Carcinoma,” “Metastasis,” “Metastases,” “Metastatic,” “Bone Metastasis,” “Head and Neck Metastasis”, “Buccal Metastasis,” “Maxillary Bone,” “Maxilla,” “Mandible,” and “Oral Cavity,” crossed using the Boolean operator AND.

The following criteria were adopted for inclusion: complete publications available in Portuguese, English, or Spanish; studies published up to 2024, with no initial time restriction; articles addressing metastases of breast cancer located in the head and neck region; studies providing adequate clinical, radiological, or histopathological information to answer the guiding question; case reports and case series that contributed to documenting previously reported cases.

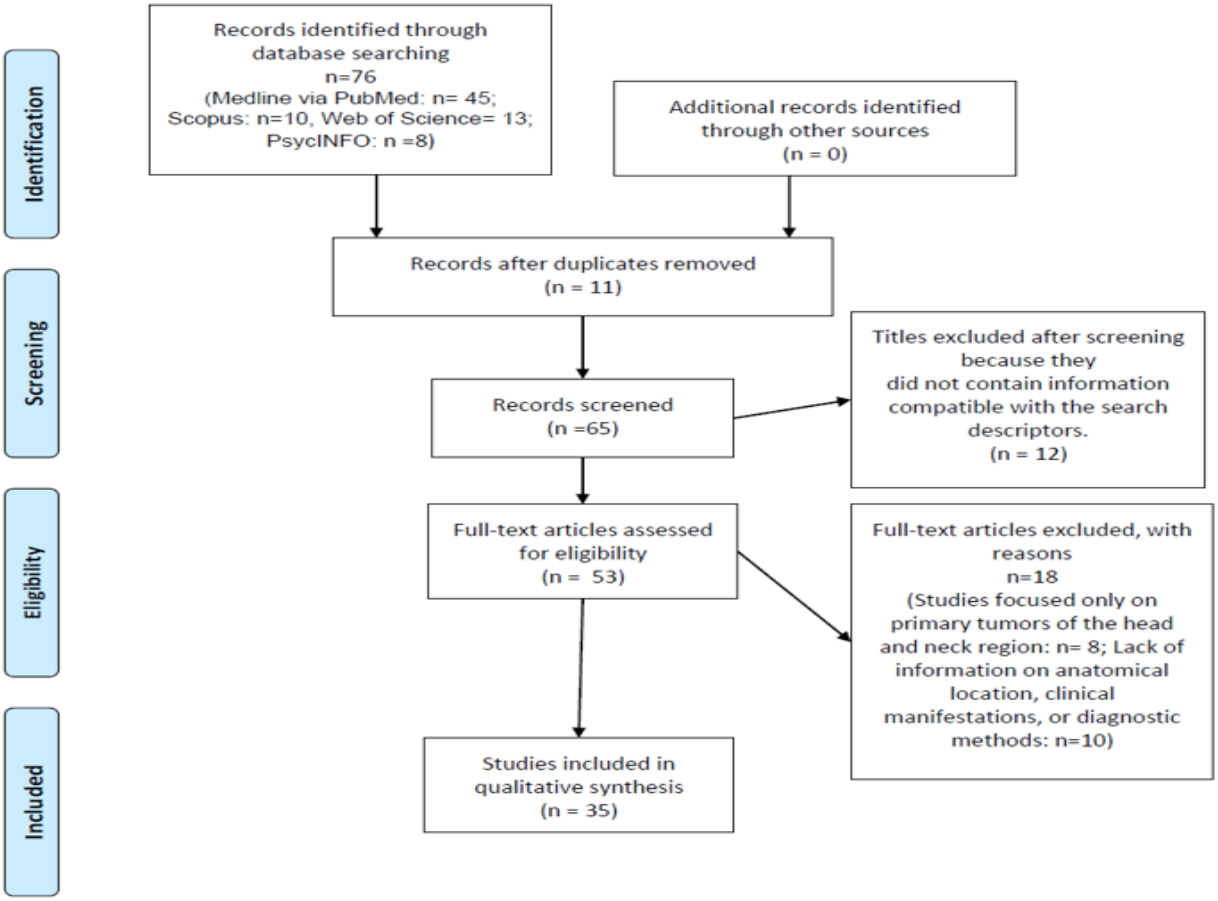
The following were adopted as exclusion criteria: studies unrelated to the theme; dissertations, theses, book chapters, editorials, letters, and conference abstracts; duplicate articles; studies without access to full text; studies presenting insufficient or inconsistent clinical or diagnostic information; articles in which histological images did not correspond to the diagnostic description provided by the authors.

The search was conducted between June 2024 and May 2025. Data extraction was performed independently by two reviewers using a standardized data collection form developed specifically for this review. For each eligible study, the reviewers extracted information regarding: (1) study identification (authors, year, country, and journal); (2) patient demographics; (3) primary breast cancer characteristics; (4) anatomical site of metastasis in the head and neck region; (5) clinical manifestations; (6) diagnostic methods used, including imaging and histopathology; and (7) main findings and conclusions. The extracted data were organized in tables and compared systematically to ensure accuracy and consistency. Any incomplete or unclear information was noted and discussed during the consensus phase.

In cases of disagreement regarding study eligibility, interpretation of data, or classification of findings, divergences were initially discussed between the reviewers to reach a consensus. If consensus could not be reached, a third senior reviewer was consulted to arbitrate the decision. This procedure ensured methodological rigor, minimized selection bias, and strengthened the reliability of the final dataset.

A total of 53 articles were selected for full-text reading, and 35 were included in the final sample after removal of duplicates and exclusion of studies unrelated to the subject. All selected articles were read thoroughly and analyzed descriptively. To ensure transparency in the selection process, a PRISMA flow diagram was developed to illustrate the identification, screening, eligibility, and inclusion of studies in **Figure 1**.

**Figure 1 -** PRISMA flowchart of the process of identification, screening, eligibility, and inclusion of studies in the review.




**Source:** Silva HHV, et al., 2026.

## RESULTS

Case reports and case series retrieved for review are summarized in **Table 1**.

**Table 1 -** Characterization of case studies reported in the literature of breast cancer metastasis to the stomatognathic system regarding the year of publication, patient sex and age, anatomical location of metastasis, clinical manifestations, and history of breast cancer diagnosis/immunomarkers.

| Year | Sex | Age | Anatomical location of the metastasis | Clinical manifestation | History of breast cancer diagnosed; immunomarkers | References |
|---|---|---|---|---|---|---|
| 2001 | M | 61 | Intracranially, right parotid region and mandible. | Soft tissue mass in the right parotid region with submental swelling complaints of transient numbness of the lip and chin | YES; absent. | MORRIS PR, et al., 2001. |
| 2001 | F | 46 | Alveolar mucosa of the mandible. | Left submandibular swelling extending from the lateral incisor area to the second molar. Intraorally, a soft erythematous fleshy mass on the buccal and lingual gingiva, the pacient presented pain, foetid odour and necrotic tags of tissue. | YES; absent. | SCIPIO JE, et al., 2001. |
| 2001 | F | 61 | Alveolar mucosa of the mandible bilaterally. | Functional problems such as traumatic bite of the tumor mass causing hemorrhages. In addition, the patient complained of pain that was described as dull and inconsistent. | YES. Yes; positive: factor VIII. | POULOPOULOSAK, et al., 2001. |
| 2003 | F | 45 | Mandible. | Swelling in the left region of mandible and trismus. | YES. Absent. | GUIMARÃES ALS, et al., 2003. |
| 2005 | F | 48 | Buccal mucosa (cheek) | Right oral vestibular mass pain and hypoesthesia of the right mental nerve distribution. | YES. Yes; positive: CK7, ER. | ADELSON RT, et al., 2005. |
| 2007 | F | 57 | Mandible. | Right jaw mass and severe pain in her mandible. | YES. Yes; negative: E-cadherin; positive: ER; PR; GCDFP. | SAHOO S, et al., 2007. |
| 2007 | F | 67 | Mandible and maxila. | Irritation, swelling, and pain associated with implants in the mandible and the maxila. Low-grade numbness in the lower lip. | YES; absent. | DIB LL, et al., 2007. |
| 2009 | F | 25 | Upper alveolar gingiva. | Lesion clinically similar to an epulis. | YES. Yes; negative: ER, PR. | SHAH MY, et al., 2009. |
| 2009 | F | 79 | Mandible. | Progressively enlarging, painful left facial swelling. Constant aching or occasional sharp pain that was not alleviated by over-the-counter pain medications, sensations of burning and tingling in both the left mandible and the left side of the lower lip. | No. Yes; positive: pan-cytokeratin (AE1/AE3), CK7, EMA, ER; negative: CK20, HMB-45, S-100, vimentin, TTF-1. | PANOSSIAN M, et al., 2009. |
| 2009 | F | 42 | Left parotid gland. | Progressive painless swelling in the left parotid gland region. | YES. Absent. | DANGORE-KHASBAGE SB, et al., 2009. |
| 2010 | F | 40 | Mandible | Vague pain in lower second premolar and Labial paresthesia. | YES; absent. | KHALILI M, et al., 2010. |

| Year | Sex | Age | Anatomical location of the metastasis | Clinical manifestation | History of breast cancer diagnosed; immunomarkers | References |
|---|---|---|---|---|---|---|
| 2010 | F | 61 | Body of the right zygoma | Asymmetry of the midface due to the zygomatic mass and a mild proptosis. | YES. Yes; positive: ER; negative: PR. | BRUCOLI M, et al., 2010. |
| 2011 | F | 55 | Mandible. | Similar to aperiodontal abscess. Diffuse swelling, periodontal pocket in the posterior right mandible and paresthesia of the lower right lip and chin. | YES; absent. | POULIAS E, et al., 2011. |
| 2011 | F | 74 | Right parotid gland. | Peripheral facial paralysis. | YES. Yes; positive: ER, PR; negative: HER-2 | SELLINGER M, et al., 2011. |
| 2011 | F | 67 | Left parotid gland. | Swelling in the region. | YES. Yes; positive: HER-2. | ANDO K, et al., 2011. |
| 2012 | M | 73 | Posterior mandible. | Localized swelling and pain in the left preauricular region. | NO; absent. | GONZÁLEZ-PÉREZ LM, et al., 2012. |
| 2012 | F | 52 | Alveolar mucosa of the mandible. | swelling of the buccal mucosa in the molar region of the left mandible and severe trismus. | YES. Yes; positive: ER, PR, CK7, E-cadherin; negative: HER-2. | KECHAGIAS N, et al. 2012. |
| 2013 | M | 60 | Masticator space. | Trismus and pain on the left side of the face. | NO. Absent. | SAHOO NK, et al., 2013. |
| 2013 | F | 30 | Masticator space. | Painful swelling in the right cheek. | YES. Absent. | JAIN S, et al., 2013. |
| 2014 | F | 58 | Mandible. | history for swelling and the onset of numbness to the lower right quadrant that was thought to be associated with an odontogenic infection from the right lower second molar. The tooth was extracted and an incision was made in order to drain a small vestibular abscess.<br>2 months later presented with a complaint of a non-healing extraction socket and numbness to her right lip and chin. | YES. Yes; positive: ER, PR, CK7; negative: HER-2. | ERICKSON HP, et al., 2014. |
| 2014 | F | 53 | Posterior maxilla, soft palate and alveolar ridge. | Painful mass with yellowish coloration and ulcerative surface. | YES. Yes; positive: CK7, CK8, cytokeratin HMW, ER, PR. | DE FREITAS FILHO SAJ, et al., 2014 |
| 2014 | F | 38 | Mandible. | Pain in the right half of her face, jaw and teeth. Normal mucous membrane and no swelling or bulging. Paresthesia and numbness of her lip as well. | YES. Absent. | ASHABYAMIN MR, et al., 2014. |
| 2015 | F | 50 | Mandibular ramus, condyle and surrounding soft tissue. | Painful swelling over the right preauricular region with paraesthesia and paresis in the right side of the face. | YES.<br>Yes; negative: ER, HER-2. probably owing to the poorly differentiated nature of the tumour cells | RAM H, et al., 2015. |

| Year | Sex | Age | Anatomical location of the metastasis | Clinical manifestation | History of breast cancer diagnosed; immunomarkers | References |
|---|---|---|---|---|---|---|
| 2015 | F | 45 | Mandible. | Complaint of pain and swelling in the lower right posterior region of jaw. | YES; absent. | THORAWAT A, et al. 2015. |
| 2016 | F | 60 | Mandible. | Bilateral numb chin syndrome. | YES. Yes; positive: EMA, EP, Ck7; negative: TTF-1, p63, vimentin, CK20. | LONCAREVIC S, et al., 2016. |
| 2016 | F | 65 | Right parotid gland. | Painless mass of the right cheek. Right mandibular branch palsy. | YES. Yes; positive: ER, GATA3. | KMEID M, et al., 2016. |
| 2017 | F | 55 | Mandibular and left condyle | Trismus and difficulty with chewing. | YES. Absent. | DODO M, et al., 2017. |
| 2017 | F | 54 | Mandible. | Sudden pain in the right mandible and numbness in the right chin region. | YES. Yes; positive: ER, PR; negative: HER-2. | AERDEN T, et al., 2017. |
| 2018 | F | 76 | Mandible. | Discrete pain, mild swelling in the mandibular area and painful chewing. | YES. Yes; positive: ER, PR, Ki-67; negative: HER-2. | CMREČAK F, et al., 2018 |
| 2018 | F | 48 | Right parotid gland. | Firm right mass in parotid region. No pain and without signs of facial nerve involvement. | YES. Absent. | BOHLI M, et al., 2018. |
| 2019 | M | 88 | Left maxillary sinus, with involvement of the orbital floor, nasal cavity and maxillary sinus. | Nodule located between the left buccal mucosa and retromolar region with Painless swelling in the left retromolar region, slight asymmetry of the left midface. | YES. Yes; positive: ER, GCDFP15 negative: CK7, CK20, PSA; | DE ALMEIDA FREIRE N, et al., 2019. |
| 2020 | F | 45 | Mandible. | Intense pain in the right mandibular region and lip paresthesia. | YES. Yes; positive: pan-cytokeratin (AE1/AE3), CK7, ER; negative: CK20, PR, HER-2, synaptophysin. | MELGAÇO-COSTA JLB, et al., 2020. |
| 2022 | F | 66 | Buccal mucosa (cheek) | Right buccal swelling. No pain, and facial appearance was normal. | NO. Yes; positive: ER, PR. | MIYAZAKI R, et al., 2022. |
| 2024 | F | 32 | Mandible Angle | Paresthesia/anesthesia in the left mandibular region. | Yes. Positive: AE1/AE3 | SPIRITO F, et al., 2024. |
| 2024 | F | 36 | Cervical spine | Persistent neck pain. | Yes. Absent | CHU ECP, et al., 2024. |

**Note: CK7**= Cytokeratin 7; **CK8**= Cytokeratin 8; **CK20**= Cytokeratin 20; **EMA**= Epithelial Membrane Antigen; **ER**= Estrogen Receptor; **GATA3**= T Cell Specific "trans" Action Transcription Factor; **GCDFP15**= Gross Cystic Disease Fluid Protein; **HER-2**= Human Epidermal Growth Factor 2; **HMB-45**= Human Melanoma Black; **HMW**= High Molecular Weight; **PR**= Progesterone Receptor; **PSA**= Prostate-Specific Antigen; **TTF1**= Thyroid Transcription Factor 1.
**Source:** Silva HHV, et al., 2026.

Tumor metastasis is a complex multistep process that begins with local invasion, intravasation, diffusion through lymphatic or blood vessels, adhesion, extravasation and invasion, leading to tumor formation in distant organs. In the case of breast cancer, it is relatively common for this process of metastasis to start occurring in the early stages of development, and the dissemination of cancerous cells can occur independently of the progression of primary tumors (SAHOO S, et al., 2007; PANOSSIAN M, et al., 2009).

Oral cancer accounts for 5% to 6% of all malignancies in the human body, whereas metastatic lesions in oral regions, comprising soft tissues and maxillary bones, account for only 1-8% of all oral malignancies. Approximately 61% occur in the mandible, 24% in the maxilla, and 15% in soft tissues (KHALILI M, et al., 2010; BRUCOLI M, et al., 2010; POULIAS E, et al., 2011).

The most common metastases in women come from primary cancers in the breast, kidneys, colorectal region, genital organs and thyroid glands, and come from the lungs, prostate, kidneys and colorectal region in men (28, 36). Breast cancer is among the most metastatic primary tumors to the maxillofacial region, in large series, it constitutes 15-20% of all metastases to this region, yet this dissemination is uncommon and can be a diagnostic challenge (ERICKSON HP, et al., 2014; DE FREITAS FILHO SAJ, et al., 2014).

Bone metastases are more frequent than soft tissue metastases at a ratio of 9:1. All subtypes of breast cancer are capable of developing them, and including those to the jaws, bone metastases are the second most common malignant bone tumors, preceded only by osteosarcomas (POULOPOULOS AK, et al., 2001; GUIMARÃES ALS, et al., 2003; ADELSON RT, et al., 2005; KECHAGIAS N, et al., 2012;).

Analysis of the cases clearly demonstrated a higher frequency of mandibular involvement compared to the maxilla. The mandible appeared as the metastatic site in the majority of reports, consistent with the literature indicating a mandibular-to-maxillary ratio of approximately 3.5:1. This predilection is likely related to the presence of hematopoietic marrow, abundant vascular branching, and lower flow dynamics in the posterior mandible, which facilitate the deposition of metastatic cells. In contrast, maxillary involvement was less frequent and often associated with more extensive lesions affecting adjacent structures such as the palate, maxillary sinus, or nasal cavity. This striking anatomical difference underscores the need for heightened clinical suspicion when evaluating mandibular symptoms, particularly in patients with a known history of breast cancer. (DIB LL, et al., 2007; POULIAS E, et al., 2011).

Clinically, Oral metastatic lesions often mimic benign inflammatory or hyperplastic conditions, and symptoms such as progressive swelling, pain and paresthesia, tooth mobility or extrusion, halitosis, regional lymphadenopathy, maxillary nerve involvement and numb cheek syndrome, cortical expansion of the jaws, ulceration, trismus, exophytic growth, and rarely pathological fracture may occur. Imaging findings are nonspecific or even nonexistent, often radiolucent osteolytic lesions with ill-defined margins, also known as a moth-gnawed appearance, are observed (MORRIS PR, et al., 2001; SCIPIO JE, et al., 2001; GONZÁLEZ-PÉREZ LM, et al., 2012; KECHAGIAS N, et al., 2012).

Therefore, Across the reviewed case reports, several consistent patterns emerged regarding breast cancer metastases to the head and neck. Most affected patients were middle-aged to older adults, predominantly women, reflecting the epidemiological distribution of primary breast cancer. The metastases frequently presented with nonspecific symptoms, such as pain, swelling, paresthesia, and trismus, which often mimicked odontogenic or inflammatory conditions, delaying diagnosis. Another clear pattern was the predominance of metastatic involvement of bone structures compared to soft tissues, aligning with the biological behavior of breast carcinoma, which exhibits strong tropism for osseous sites. Clinically, many cases reported “numb chin syndrome,” a hallmark of mandibular involvement. Histopathologically, most lesions demonstrated positivity for markers such as ER, PR, CK7, and GCDFP-15, reinforcing the diagnostic connection to the primary breast tumor.

Comparing between sexes, a marked predominance of female patients was observed, with only a small number of male cases reported. Ages ranged widely, from young adults in their 30s to elderly patients over 80, demonstrating that metastatic dissemination can occur across age groups, though the majority of cases clustered between the fifth and seventh decades of life. Comparisons also showed that women tended to

present with intraosseous lesions more frequently, whereas men in this dataset showed a slightly more variable distribution, including masticator space involvement. These differences help highlight demographic and anatomical tendencies relevant for clinical suspicion and diagnostic pathways.

The treatment of metastatic lesions depends on the degree of tumor dissemination, and the management of metastatic maxillary lesions of breast carcinoma is at first palliative, in which radiotherapy, chemotherapy, hormone therapy and, rarely, surgical intervention are the interventions of choice. The main goals are pain relief, lesion size control, infection control, and prevention of fractures, bleeding, and loss of function. The combination of radiotherapy, chemotherapy, hormone therapy and bone-targeted treatment is employed in most cases of metastatic breast cancer with hormone receptor (KHALILI M, et al., 2010; SELLINGER M, et al., 2011; THORAWAT A, et al., 2015).

The prognosis for patients with oral metastasis is generally poor, mainly due to late diagnosis. The average survival time for patients with metastatic tumors in the oral cavity is six to seven months, and only four years in approximately 10% of the cases, with about 70% of the patients dying within the first year of diagnosis (KHALILI M, et al., 2010; POULIAS E, et al., 2011; LONCAREVIC S, et al., 2016)

The doctor or dental surgeon, whether a specialist or not, should consider the importance of obtaining a thorough anamnesis and careful clinical examination, and should always be attentive when evaluating patients with a history of cancer. Although cases of metastases are infrequent, metastatic tumors should be considered in the differential diagnosis (KHALILI M, et al., 2010; JAIN S, et al., 2013).

## DISCUSSION

In an epidemiological set of what is reported in the literature as more common in tumor metastases to the stomatognathic system, there is a marked predilection for the mandible in areas distal to the canines due to the structural and physiological vulnerability of the area, and the most frequent clinical features of these lesions include inflammatory and hyperplastic conditions, with possible occurrence of progressive swelling, pain and paresthesia, mobility or dental extrusion, halitosis, regional lymphadenopathy, maxillary nerve involvement, numb chin syndrome, as well as, cortical expansion of the maxillary bones (KIRSCHNICK LB, et al., 2022; GONDIM DD, et al., 2017; CMREČAK F, et al., 2018).

As mentioned above, the mandible is considered more vulnerable to metastatic lesions because of the deposition of neoplastic cells due to the presence of hematopoietic bone marrow, local branching of blood vessels, and less vascular flow. Given this, it is known that breast carcinoma metastasizes to the mandible three times more than any other malignant tumor, and that, most patients with oral metastases have already developed generalized metastases at the time of diagnosis, however, in many cases, a solitary mandibular metastasis may be the initial manifestation of the primary tumor, which highlights the importance of frequent contact of the patient with his doctor or dentist and the professional to proceed with a complete and well conducted clinical examination, since the time of diagnosis is directly related to the prognosis (RAM H, et al., 2015; CMREČAK F, et al., 2018; KMEID M, et al., 2016; DODO M, et al., 2017).

The metastatic process may indicate systemic dissemination at an advanced stage. Since cases of breast cancer metastasis in the head and neck region are rare, diagnosis is often delayed, worsening the patient's prognosis by reducing control over tumor progression. Therefore, patients with uncommon metastases tend to have a lower quality of life and higher morbidity, reinforcing the importance of early diagnosis (GONDIM DD, et al., 2017; Hess KR, et al., 2006).

The diagnosis of metastatic lesions to the oral cavity is still a great challenge for the head and neck doctor and dental surgeon, due to the absence of pathognomonic signs and symptoms. As discussed in the literature review, some clinical features may be observed in the presence of metastatic tumors in the stomatognathic system, especially the presence of pain and paresthesia, such as paresthesia of the lower lip, also known as mental nerve neuropathy or numb chin syndrome. In a case of metastasis in the mouth described in the literature, the only symptom reported was paresthesia of the right lower lip and chin, and in the present case, although it was not the only symptom mentioned, it was present. Given these reports and what the literature

indicates, paresthesia is an important sign to consider the occurrence of a malignant lesion in the oral cavity, including metastatic lesions, as well as to lead the professional to investigate other sites of involvement by lesions of this nature (AERDEN T, et al., 2017; SPIRITO F, et al., 2024).

Because diagnosis is challenging due to the lack of specific signs and symptoms of these conditions, which tend to present themselves clinically in different ways depending on the site of location and their histogenic and pathophysiological nature, it is extremely important to recognize the differential diagnoses and the theoretical and technical concepts to exclude these diagnostic hypotheses. The search for cases reported in the literature of breast cancer metastases in the stomatognathic system revealed that a range of diagnostic hypotheses that dealt with differential diagnoses for malignant lesions were given, for example, in cases with lesions in soft tissues and jaw, odontogenic abscess, osteomyelitis, cellulitis, hemangioma, non-neoplastic proliferative lesions, ameloblastoma and temporomandibular disorders were the first diagnostic hypotheses raised (KIRSCHNICK LB, et al., 2022; MORRIS PR, et al., 2001; POULOPOULOS AK, et al., 2001).

Regarding the types of diagnostic procedures for breast cancer metastasis in the head and neck region: Computed Tomography (CT) – fast, efficient, and widely available, although limited in its ability to apply contrast to soft tissues; Magnetic Resonance Imaging (MRI) – a precise procedure for detecting the tumor, allowing differentiation between soft tissue and cancer; and Positron Emission Tomography (PET) – emission of labeled radioactive signals to create a topographic map of the tumor; the most commonly used marker is FDG, which has an affinity for neoplastic tissues (Pisani P, et al., 2020).

As mentioned above, a problem involved in this context is the clinician's lack of preparedness in performing an adequate anamnesis and clinical with the appropriate and necessary semiotechnics for an early and accurate diagnosis. The indication of biopsy for cases with increases in volume associated with pain, paresthesia, personal and family history of cancer, as well as bone invasion demonstrated in imaging exams, is necessary, and the professional is responsible for ensuring a correct and early diagnosis, as also, consequently, provide better treatment conditions and increase patient survival (MORRIS PR, et al., 2001; POULOPOULOS AK, et al., 2001).

Advances in immunohistochemistry are notable when exploring the different markers capable of differentiating primary tumors originating from sites other than the breast. Positive markers such as GATA3, cytokeratin 7, mammaglobin, GCDFP-15, Ki-67, ER, PR, and HER-2 contribute to the accuracy of the diagnosis of breast cancer metastasis in the head and neck, since metastases from other origins, such as the thyroid, can also spread to this region. Thus, immunohistochemical characteristics of breast cancer make it possible to differentiate the metastatic tumor origin (GONDIM DD, et al., 2017; SPIRITO F, et al., 2024).

In cases where the primary tumor site is uncertain, immunohistochemical panels can be performed in order to elucidate this question. Thus, to investigate the primary site, a typical and prognostic panel of breast tumors was performed on histological slides of the lesion in the jaw, which includes: the ER, PR, HER-2 and ki-67 protein, and GATA 3, a transcription factor that regulates the luminal epithelial cells of mammary glands. In the technique it is possible to quantify the expression of these proteins (CMREČAK F, et al., 2018; ASHABYAMIN MR, et al., 2014; SPIRITO F, et al., 2024).

As reported in other studies in the literature, the present case showed in the histological fragments of the oral lesion, positive immunoreactivity for the markers ER, PR, ki-67 and GATA 3, showing negativity only for HER-2, even so, the immunohistochemical panel indicated sufficiently that the primary site of involvement was the breast. Furthermore, immunohistochemical evaluation of these markers, but in histological fragments of the breast lesion, it would be possible to classify the molecular profile of the tumor and a specific anti-tumor therapy, but the latter is more frequent and effective in non-metastatic lesions (ASHABYAMIN MR, et al., 2014; SPIRITO F, et al., 2024).

Infraclavicular cancerous lesions will rarely involve the head and neck, but when the lesion metastasizes to this region, breast cancer is a common primary site. When this type of cancer involves supraclavicular sites, bone metastasis and lymphadenopathy are the most common manifestations (KIRSCHNICK LB, et al., 2022; GONDIM DD, et al., 2017), both of which are visualized in the context of the present case. The prognosis of

breast cancer with distant metastases to the head and neck is often poor, and the management of these conditions is controversial. The prognosis of the patient and the extent of the lesions that guide decision making and treatment by the medical oncologist and multiprofessional team (KIRSCHNICK LB, et al., 2022; GONDIM DD, et al., 2017).

## FINAL CONSIDERATIONS

Breast cancer with supraclavicular or cervicofacial metastasis is an uncommon clinical finding; nevertheless, breast carcinoma remains the most frequent primary infraclavicular tumor to metastasize to the head and neck region in women. This reinforces the importance of clinical vigilance among head and neck surgeons, oral and maxillofacial surgeons, and dental practitioners. Early recognition of metastatic disease is crucial, as atypical signs such as persistent facial pain, trismus, and lip or chin paresthesia may prevent misdiagnosis and allow timely referral and treatment. Differentiating metastatic lesions from benign odontogenic or inflammatory conditions is essential to avoid delays that may compromise prognosis. Despite available case reports, the evidence remains fragmented and heterogeneous, highlighting the need for multicenter studies with standardized methodologies to better define clinical features, diagnostic patterns, and prognostic implications, ultimately improving patient care.

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