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Original Article

Initial Presentation of Sporadic Burkitt Lymphoma as Painful Gingival Swellings and Tooth Mobility: A Critical Referral Case

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ABSTRACT

Burkitt lymphoma (BL) is a rapidly progressing subtype of non-Hodgkin lymphoma (NHL) categorized into three clinical variants: endemic, sporadic, and immunodeficiency-related. Jaw involvement is frequent in endemic BL but uncommon in sporadic cases, and it rarely serves as the initial sign of disease. This report aims to describe an unusual pediatric case of sporadic BL initially presenting as gingival enlargements and increased tooth mobility, along with a review of previously documented sporadic BL cases with oral symptoms as the first indication. Case report: An 11-year-old Caucasian girl presented with loosening of the lower posterior teeth and tender gingival swellings lasting 20 days. Examination revealed right facial swelling and bilateral gingival enlargements in the posterior mandible. A panoramic X-ray demonstrated bilateral poorly defined radiolucencies in the posterior mandible. Computed tomography showed soft-tissue growths extending from the mandibular ramus into both maxillary sinuses. Histopathological and immunohistochemical evaluations confirmed the diagnosis of BL. Staging investigations identified bone marrow infiltration and disseminated disease. The patient received combination chemotherapy, resulting in the rapid regression of oral lesions within several weeks and complete remission after nine treatment cycles. She has remained disease-free for 11 years. Conclusions: This case highlights the necessity of early detection and prompt referral of fast-growing jaw lesions that might represent the first clinical clue of an aggressive lymphoid malignancy such as BL.

Keywords: Burkitt lymphoma, Sporadic, Initial presentation, Jaws, Gingival enlargement, Tooth mobility

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Introduction

Non-Hodgkin lymphomas (NHLs) constitute roughly 4% of all malignancies in children under 15 years of age [1]. Burkitt lymphoma (BL) is a highly aggressive B-cell lymphoma driven by MYC oncogene translocation [2]. It was first characterized by Denis Burkitt in 1958 as a jaw tumor among African children [3, 4]. Subsequent reports confirmed its global occurrence. BL is divided into three subtypes with distinct epidemiological, immunological, and cytogenetic profiles: endemic, sporadic, and immunodeficiency-related [5].

The endemic form represents 30–50% of all childhood cancers in equatorial Africa, with an incidence of approximately 3–6 cases per 100,000 children annually [2, 6]. It peaks between ages 6 and 8, shows a male predominance, commonly involves jaw bones, and is Epstein–Barr virus (EBV) positive in about 95% of cases [3, 7].

The sporadic form is rare in Western regions, with an estimated incidence of 2–3 cases per million per year. Nevertheless, it accounts for 30–50% of childhood

lymphomas, though under 1% of adult NHLs [2, 8, 9]. It typically affects the abdominal organs, with EBV detected in 10–30% of cases [3].

The immunodeficiency-associated variant often arises in HIV-positive individuals and constitutes 20–40% of HIV-related NHLs [10]. It tends to occur early during HIV infection, before substantial CD4+ decline [3, 11, 12], and may also develop in transplant recipients or those with congenital immune deficiencies. This form primarily affects lymph nodes, bone marrow, and the central nervous system [2, 5].

Although BL frequently involves multiple organs, oral and maxillofacial manifestations are characteristic mainly of the endemic variant. Head and neck presentations in sporadic BL remain uncommon [2].

The present study describes a pediatric case of sporadic BL first appearing as gingival swellings and tooth mobility, representing early signs of disseminated disease. Additionally, all reported cases of sporadic BL initially presenting with oral findings are reviewed to aid early recognition.

Case Presentation

An 11-year-old girl was referred for evaluation of painful bilateral gingival swellings affecting the lower premolar and molar regions, accompanied by tooth loosening. The discomfort began three weeks earlier and was initially attributed to erupting second molars but progressively worsened, causing swallowing difficulty, fatigue, and weight loss. During the preceding three days, noticeable right-sided facial asymmetry developed. The patient had previously received amoxicillin for seven days, along with analgesics and mouth rinses prescribed by a dentist and ENT specialist, but symptoms persisted. A periodontist subsequently referred her to an Oral Medicine clinic.

Her medical history was noncontributory, and blood work obtained on the same day was normal. No fever or lymphadenopathy was noted.

Clinical inspection revealed an extraoral swelling over the right mandibular region. Intraoral examination showed bilateral gingival enlargements around the mandibular premolars and molars, exhibiting erythema and focal ulceration **(Figure 1a, b)**. Affected teeth demonstrated marked hypermobility, with several displaced or partially extruded **(Figure 1c)**.

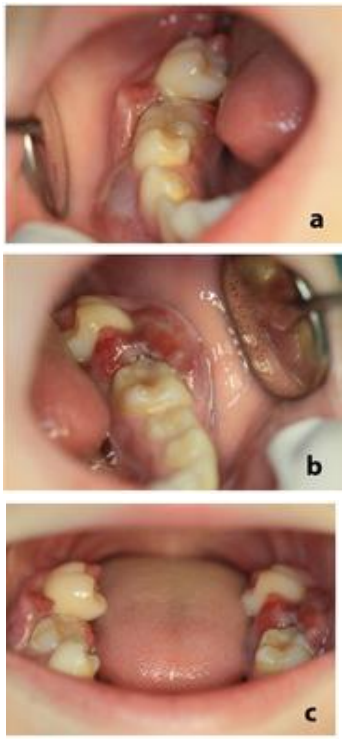

Figure 1. Oral inspection displayed marked gingival enlargements surrounding the premolar and molar areas on both the right (a) and left (b) sides of the mandible. The gingiva appeared inflamed, reddened, and partially ulcerated. The involved teeth—most notably the second molars—were excessively mobile, displaced from their sockets, and slightly extruded (c)

Panoramic imaging revealed diffuse, ill-defined radiolucent regions on both sides of the posterior mandible, involving adjacent permanent teeth that appeared to be “floating” within the bone **(Figure 2)**. Computed tomography demonstrated bilateral hypodense soft-tissue proliferations extending along and posterior to the mandibular ramus and projecting upward toward both maxillary sinuses. These lesions measured roughly 1.5 × 3.0 × 7.0 cm on the right and 1.7 × 1.2 × 3.5 cm on the left. Additional extension into the posterior orbital wall was evident, with cortical destruction of the right mandible near the second molar **(Figure 3a, b)**.

Based on these findings, the differential diagnoses included hematologic malignancies such as lymphoma, leukemia, and Langerhans cell histiocytosis, while sarcomas (rhabdomyosarcoma and Ewing sarcoma) were also taken into consideration given the patient’s young age.

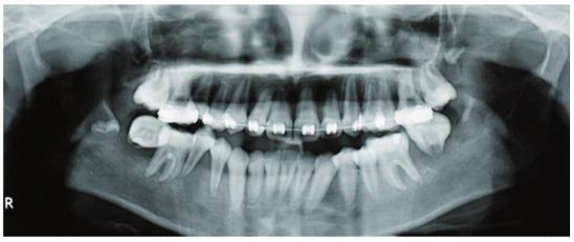

Figure 2. Panoramic radiograph illustrating bilateral osteolytic changes in the posterior mandible, producing a "floating teeth" radiographic pattern. The bone loss appeared more pronounced on the right side, where it extended into the premolar region and caused displacement of the forming third molar

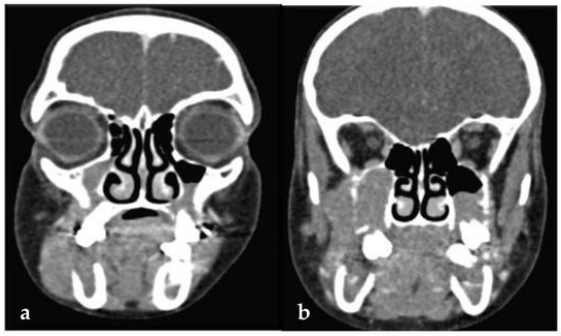

Figure 3. (a,b) CT scans revealing bilateral hypodense soft-tissue lesions occupying the region of the mandibular ramus with superior invasion toward the maxillary sinuses

Due to the rapid clinical progression, an immediate incisional biopsy of the gingiva surrounding the right mandibular second molar was carried out during the initial appointment. Microscopic assessment showed sheets of medium-sized lymphoid cells with scant cytoplasm and round nuclei bearing multiple nucleoli. Numerous mitotic figures and apoptotic bodies were observed, together with abundant macrophages creating the classic "starry sky" configuration **(Figure 4a–c)**. Immunohistochemical profiling demonstrated that tumor cells were positive for CD20, CD79a, CD10, Bcl-6, and B-myc **(Figure 5a)**. No expression was observed for Bcl-2, Tdt, Cyclin-D1, MUM1, or myeloperoxidase. A minor population of reactive T lymphocytes exhibited positivity for CD3 and CD5. The neoplastic population displayed kappa light chain restriction, and Ki-67 labeling was detected in nearly all tumor cells, suggesting extremely high proliferation **(Figure 5b)**. Collectively, these results confirmed the diagnosis of sporadic Burkitt lymphoma.

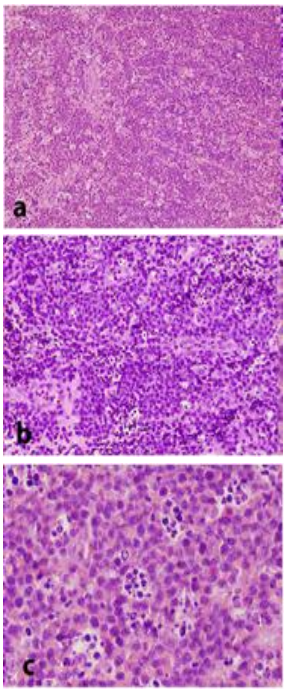

Figure 4. Histologic micrographs showing dense sheets of medium-sized lymphocytes with minimal cytoplasm, round nuclei, and multiple nucleoli, exhibiting a brisk mitotic rate. Scattered macrophages impart a distinct "starry sky" appearance. (H&E staining; (a) 25×, (b) 100×, (c) 200×)

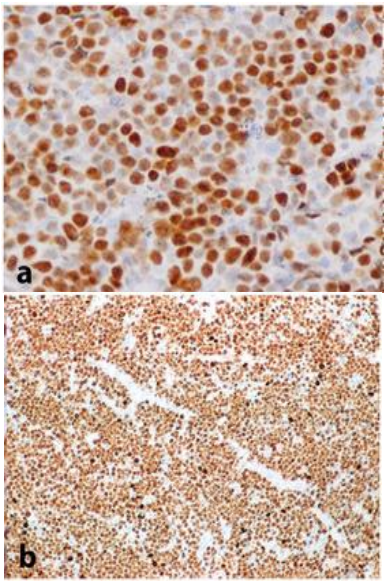

Figure 5. Immunohistochemical analysis: (a) strong nuclear staining for B-myc (200×); (b) nearly 100% Ki-67 proliferation index (25×)

The patient was urgently referred to the Pediatric Oncology Division for comprehensive assessment. Staging with full-body CT and PET/CT scans revealed disseminated involvement of skeletal structures—including the skull, vertebrae, ribs, humerus, femur, and pelvis—as well as hepatic lesions **(Figure 6)** and

pelvic lymphadenopathy. Bone marrow aspiration confirmed infiltration by malignant lymphocytes (15–20%). The disease was classified as Stage IV, with no central nervous system extension.

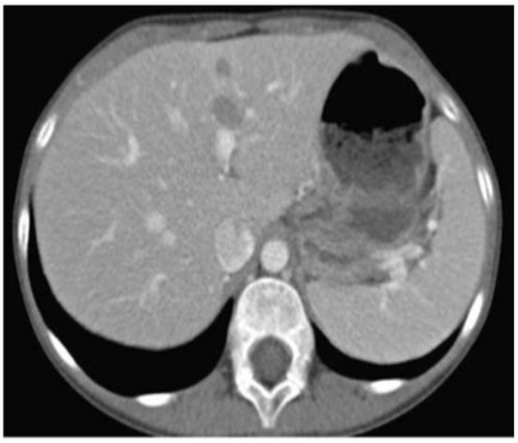

Figure 6. Abdominal CT indicating widespread hepatic infiltration by neoplastic cells

According to staging results, the patient was assigned to Group B and treated under the FAB-LMB 96 therapeutic protocol, receiving nine chemotherapy cycles spaced at 21-day intervals. After four cycles, due to partial response, the treatment was adjusted to Group C, Arm C1, leading to complete remission upon completion of therapy.

The oral manifestations began to subside within days of starting chemotherapy, showing visible improvement after the first treatment cycle **(Figure 7a, b)**. Post-therapy PET/CT scans verified the absence of active disease. Continuous follow-up—including PET/CT, MRI of the brain and maxillofacial region, abdominal ultrasonography, chest X-ray, and serial blood evaluations—confirmed stable, long-term remission. The oral cavity remained clinically normal throughout the follow-up period **(Figure 7c, d)**. Eleven years after diagnosis, the patient remains in excellent health and completely disease-free.

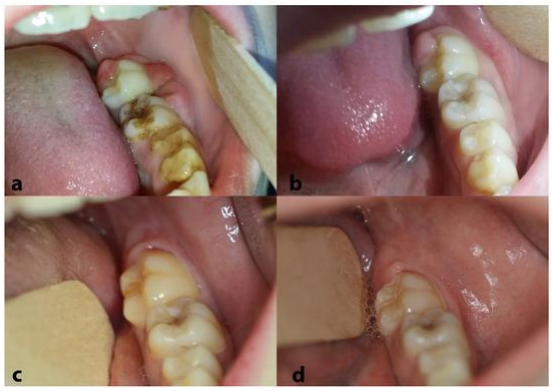

Figure 7. Sequential oral photographs showing progressive regression of the left mandibular lesions at 10 days (a) and 15 days (b) post-biopsy, with complete improvement soon after chemotherapy initiation. No recurrence was noted during prolonged monitoring—illustrative follow-up at 9 months (c) and 32 months (d) following diagnosis.

Discussion

Burkitt lymphoma (BL) originates from germinal-center–derived B lymphocytes, with each of its three clinical variants believed to emerge from these cells at distinct developmental phases [2]. The neoplastic population typically comprises uniform CD19+ and CD20+ B cells, often expressing surface IgM, featuring intensely basophilic cytoplasm, numerous mitotic figures, and a Ki-67 proliferation index exceeding 95% [3]. Because of the extremely high apoptotic rate, histologic sections show a characteristic “starry-sky” pattern on H&E staining [13]. In this pattern, the basophilic tumor cells constitute the “sky,” while scattered benign macrophages represent the “stars” [14].

Although all three variants share identical microscopic morphology, they differ markedly in their clinical profile, geographic distribution, and age of onset. The endemic form predominates in African regions and is most common during early childhood, whereas the sporadic type occurs worldwide, affecting mainly children and adolescents. Endemic BL characteristically involves the jaws, producing dental mobility and expansion of the jawbone, while the sporadic form seldom presents in this location [15–17]. The immunodeficiency-associated subtype, seen primarily in individuals with HIV infection or other immunocompromised states, rarely involves the oral cavity or jaws [3,5,11,12].

When BL affects the jaws, the posterior mandible is the site most frequently involved [18]. Facial swelling, as observed in the present case, is typically the earliest sign. Another notable symptom is paresthesia of the lower lip and chin—commonly referred to as numb chin syndrome—caused by mental nerve compression [19,20]. Tooth mobility and pain, as occurred in this patient, are frequent findings that often mimic odontogenic infections. Such resemblance may lead to unnecessary dental procedures and delayed oncologic diagnosis, adversely affecting prognosis [15]. Other reported clinical manifestations include molar loosening or extrusion (in both primary and permanent dentition), premature loss of deciduous molars, early eruption of successors, gingival overgrowth, maxillary sinus obstruction, and facial asymmetry [21], several of which were also observed here.

In suspected mandibular lesions, panoramic radiography serves as a useful preliminary investigation to exclude odontogenic inflammatory processes—the most prevalent cause of swelling in children [18]. Radiographically, BL typically presents as ill-defined osteolytic defects and sometimes produces the classical "floating teeth" image, consistent with the current case. Other findings may include tooth displacement, resorption of lamina dura, and widening of the periodontal ligament space [19]. Ultrasound may assist in evaluating neck masses, whereas CT and MRI are crucial for defining bone destruction and assessing involvement of adjacent structures. Systemic imaging such as PET–CT, along with scans of the chest, abdomen, and pelvis, is indispensable for staging and monitoring treatment response [18].

Definitive diagnosis relies on biopsy of the affected tissue or a lymph node. Besides the distinctive morphology, the tumor exhibits expression of germinal-center B-cell markers [14]. Typically, BL cells are positive for surface IgM, CD19, CD20, CD79a, PAX5, CD43, CD38, CD10, and BCL6, and show a Ki-67 index above 95% [14]. Additional diagnostic evaluation includes bone marrow aspiration, cerebrospinal fluid analysis, hepatic and renal function tests, and HIV screening [22].

Microscopically, the differential diagnosis encompasses other hematologic malignancies, particularly diffuse large B-cell lymphoma (DLBCL), the intermediate BL/DLBCL unclassifiable subtype (which carries a poor prognosis), lymphoblastic lymphoma, blastoid mantle cell lymphoma, and leukemias [6,14].

Epstein–Barr virus (EBV) was first detected in the endemic African variant of BL in 1964. The frequency of EBV infection differs among BL subtypes, and its exact pathogenetic contribution remains partially unresolved. In endemic BL, more than 95% of cases are EBV-associated, with viral DNA clonally integrated within tumor cells and strong epidemiologic links between prior EBV exposure and later malignancy, indicating that infection precedes transformation [3, 23]. Conversely, roughly one-third of sporadic or non-endemic BL cases are EBV-positive [5]. This variability has led to debate regarding whether EBV acts as an initiating agent or a bystander in lymphomagenesis. The prevailing hypothesis suggests that EBV, similar to chronic malaria infection, induces polyclonal B-cell activation, permitting unregulated proliferation of infected cells and thereby increasing the likelihood of c-MYC rearrangements and tumor formation [24]. More recent evidence supports a "hit-and-run" model for EBV-negative BL, implying that EBV may trigger early oncogenic events but is subsequently lost during tumor evolution [3].

Regardless of EBV status, constitutive activation of the c-MYC oncogene remains the pivotal molecular event in all BL variants. This typically results from a translocation between the long arm of chromosome 8 (bearing MYC) and immunoglobulin loci—most often the heavy-chain gene on chromosome 14 (in over 85% of cases)—or, less frequently, the kappa or lambda light-chain genes [25]. These translocations enhance MYC expression, promoting uncontrolled cellular proliferation. Conventional cytogenetics may fail to identify such rearrangements, but techniques like fluorescence in situ hybridization (FISH) or polymerase chain reaction (PCR) markedly improve detection [26]. Notably, the chromosomal breakpoints differ slightly between endemic and sporadic BL, hinting at distinct underlying molecular mechanisms [27].

The stage of non-Hodgkin lymphoma is defined by the number and distribution of lymph node groups involved and by the presence or absence of extranodal disease, such as liver or bone marrow infiltration. The Ann Arbor and St. Jude/Murphy classification systems—ranging from stage I to IV—are still applied for BL staging [28]. The majority of patients, about 70%, are diagnosed in advanced stages (III–IV). Consistent with this pattern, the current case was classified as stage III after full diagnostic evaluation.

Untreated BL progresses rapidly and is invariably fatal. Prognosis depends on disease stage, age, and timing of diagnosis. Early-stage or moderately advanced cases have an excellent outcome, with survival rates of 97–98%, whereas advanced stages (III–IV) show reduced survival, around 87.3% [29]. Factors contributing to poorer outcomes include older age, higher stage, poor performance status, bulky tumor mass, elevated lactate dehydrogenase (LDH) levels, and central nervous system (CNS) or bone marrow involvement [30]. A recent study identified four independent prognostic parameters: age ≥ 40 years, LDH > 3× normal, ECOG performance status ≥ 2, and presence of CNS disease [31].

The main therapeutic strategy for BL involves multi-agent chemotherapy, typically combining doxorubicin, vincristine, alkylating agents, and etoposide, which may be administered in either short-term or extended regimens [2]. More recently, monoclonal antibodies have been incorporated as adjuvant agents. Among them, rituximab, an anti-CD20 antibody, is now frequently used alongside chemotherapy, particularly in advanced-stage BL, where it has been shown to

improve survival rates to over 95% [2, 29]. Radiation therapy is reserved for cases with central nervous system (CNS) involvement unresponsive to chemotherapy and may serve in urgent situations such as airway obstruction. Hematopoietic stem cell transplantation, though still investigational in adults, might represent a therapeutic option for younger patients who experience refractory or recurrent disease [32]. Surgical intervention in BL is generally restricted to emergency gastrointestinal complications, such as intestinal blockage, hemorrhage, or perforation, requiring segmental resection [33]. With the rapid progress in molecular oncology, several emerging therapeutic approaches are being explored, including epigenetic drugs (e.g., histone deacetylase and DNA methyltransferase inhibitors) and small peptide-based nucleic acids designed to target oncogenic drivers [32]. Strict clinical monitoring during therapy and vigilant follow-up after treatment completion are crucial. Follow-up evaluations are recommended every 2–3 months, including comprehensive examinations, imaging, and laboratory testing [2]. The frequency of assessments is reduced over time, given that most relapses occur within the first year after completion of therapy [29].

In the present case, the initial and most diagnostically significant feature was the mandibular manifestation, which closely mimicked common dental inflammatory disorders. The patient initially received empirical treatment under the assumption of pericoronitis secondary to tooth eruption. However, timely referral to a specialized center, followed by urgent imaging and histopathologic analysis, proved critical and lifesaving, allowing for early recognition of a highly aggressive malignancy and the immediate initiation of appropriate chemotherapy.

To contextualize our findings, a literature review of all English-language reports of sporadic BL with initial oral or maxillofacial involvement was conducted. The reviewed cases were categorized by patient age: children (0–17 years) and adults (≥18 years). The collected data, including demographic features, clinical presentation, radiologic characteristics, and outcomes, are summarized in **Table 1** [34–67] and **Table 2** [19, 21, 43, 61, 68–98], respectively.

In total, 44 pediatric cases of sporadic BL were identified, including the current one. The age range spanned 3–16 years, with an average age of 7.9 years, and a male-to-female ratio of 2.1:1. Among adults, 38 cases were recorded, with ages ranging from 18 to 84 years, averaging 43 years, and a male-to-female ratio of 2.8:1.

Table 1. Reported pediatric (0–17 years) cases of sporadic Burkitt lymphoma with oral and maxillofacial onset

Case No.	Source	Age	Gender	Initial Oral/Facial Symptoms	Physical Evaluation	Imaging Observations (X-ray/CBCT/CT/MRI/PET)	Post-Treatment Outcome
1	Stewart and Whitlock [34]	7 ½	M	Facial puffiness for 3 weeks	Mobile and shifted teeth, bite irregularity, pronounced maxillary ridge protrusion, facial swelling, orbital swelling–eyelid drooping	Missing lamina dura, shifted teeth, mandibular bone erosion, severe maxillary bone loss, antrum side wall deterioration	Passed away 5.5 months later
2	Joncas *et al.* [35]	5	M	Lower jaw swelling for over 1 month	Mandibular gingival sore, loose teeth, jaw enlargement	Lower jaw bone dissolution	7 years, no relapse
3	Terill *et al.*[36]	12	F	Jaw swelling, ongoing mild tooth pain	Loosened teeth, uneven gingiva/mucosa, occasional lower lip tingling, mandibular buccal cortex expansion, detectable submandibular lymph nodes	Extensive lower jaw alveolar bone loss	Passed away 5 months later
4	Moore *et al.* [37]	9	M	Loose teeth, tooth pain for a few days, orbital	Mobile teeth, palpable bilateral neck lymph nodes	Lower jaw bone loss, absent lamina dura, enlarged dental papillae merging with mandibular bone,	Passed away 3

				swelling, eye bulging, double vision		technetium scan indicated heightened maxillary/mandibular activity	months later
5	Boraz [38]	9	M	Pain while chewing	Loose teeth, swollen gums, facial asymmetry, submandibular enlargement	Lower jaw bone dissolution	2 years, no relapse
6	Zachariades and Papanikolaou [39]	7	F	Lower jaw swelling for 3 weeks	Soft mass near mandibular molars, bilateral painless, mobile lymph nodes	Teeth appearing to float, widespread mandibular radiolucency	Passed away 6 months later
7	Kearns *et al.* [40]	3	M	Maxillary mass with loosening teeth, 4-week fatigue	Deformed right maxilla with mass invading hard palate, loose teeth	Right maxillary antrum involvement with bone destruction	No disease, duration unknown
8		5	M	Bilateral neck masses, mild fever for 7 weeks	Not recorded	Bilateral maxillary/ethmoid sinus opacity, bone loss, gallium scan verified nasopharyngeal pathology	No disease, duration unknown
9	Alaluusua *et al.* [41]	6	M	Lower jaw tooth pain, jaw swelling	Mandibular gingival mass, extruded teeth, mandibular/orbital swelling, dislocated jaw joints, limited jaw motion	Shifted teeth, mandibular/maxillary bone loss, jaw asymmetry	Passed away 10 months later
10	Svoboda *et al.* [42]	4	M	Tooth looseness, dental pain	Mobile teeth, bilateral mandibular/maxillary vestibule swelling, anterior open bite, detectable submandibular/jugulodigastric/neck lymph nodes	Absent lamina dura, early root resorption, missing dental follicles, mandibular/maxillary bone loss, disrupted trabecular bone structure	Passed away 10 months later
11	Wang *et al.* [43]	6	M	Upper jaw tooth pain	Bleeding mass on maxillary ridge	Nasopharyngeal bone destruction extending to right maxillary sinus, infratemporal fossa, right orbit	7 years, no relapse
12		4	F	Hard palate and right maxillary sinus mass	Not recorded	Not recorded	16 years, no relapse
13		5	F	Facial puffiness	Not recorded	Not recorded	18 months, no relapse
14	Ardekian *et al.* [44]	16	M	Lower jaw vestibule swelling	Mandibular vestibule/gum swelling, sensitive teeth	Lower jaw bone loss, missing lamina dura, widened periodontal ligament, altered bone trabeculae	Not recorded
15	Lund *et al.* [45]	5	F	Submandibular swelling, cheek pain for 10 days	Mobile/extruded/dislocated teeth, buccal/palatal alveolar expansion, fixed neck/mandibular swelling	Periapical bone thinning, pericoronal bone loss, displaced tooth germs	2 years, no relapse

16	Alpaslan *et al.* [46]	6	F	Intraoral mass for 5 months	Detectable lymph nodes, mandibular swelling, bite abnormalities	Tooth germ displacement, lower jaw bone loss	Relapse, duration unknown
17	Hanazawa *et al.* [47]	10	M	Submandibular/ mandibular swelling, jaw tooth pain	Swollen mandibular gums, mobile/dislocated teeth, jaw stiffness, enlarged pharyngeal wall	Floating/shifted teeth, root resorption, absent lamina dura, mandibular bone loss, mass in sublingual/submandibular/parapharyngeal/retropharyngeal areas	2 years, no relapse
18	Mitsudo *et al.* [48]	16	M	Alveolar bone loss	Loose teeth, deep periodontal pocket, swollen gums	Upper/lower alveolar bone destruction, missing lamina dura	Passed away 11 weeks later
19	Tsui *et al.* [49]	4	M	Lower jaw swelling for 4 days	Mandibular swelling, loose teeth, palpable submandibular lymph nodes	Lower jaw bone dissolution	Complete resolution 1 month after chemotherapy
20	Liu *et al.* [50]	14	M	Chewing pain at left upper premolar, tooth looseness for 1 week, mild tooth pain	Moderate tooth mobility in most permanent teeth, buccal alveolar expansion along maxilla/mandible folds, no defined boundary	Absent lamina dura, periapical bone loss, mandibular/maxillary bone destruction	Passed away 12 weeks later
21	Durmus *et al.* [51]	10	M	Left mandibular swelling/pain, facial puffiness	Mandibular swelling, mobile/displaced/extruded teeth, buccal/lingual alveolar expansion, palpable submandibular lymph nodes	Lower jaw bone loss, tooth extrusion	Passed away 8 months later
22	Comfort *et al.* [52]	5	M	Facial puffiness 2 weeks after tooth extraction	Swollen gums, palpable neck/submandibular lymph nodes	No bone destruction, facial swelling	Discharged 3 weeks post-admission with poor prognosis explained to parents
23	Jan *et al.* [53]	13	F	Spontaneous jaw tooth pain for 2 weeks, loosening teeth, chewing issues	Mobile/supraelevated teeth, open bite, mandibular swelling, buccal alveolar expansion, pale/swollen/bleeding gums, palpable submandibular lymph nodes	Floating/shifted teeth, alveolar bone resorption, lower jaw bone loss	Not recorded

24	Ugar *et al.* [54]	5	M	Bilateral neck masses for 7 weeks	Not recorded	Bilateral maxillary/ethmoid sinus opacity, bone destruction, gallium scan confirmed nasopharyngeal pathology	No disease, duration unknown
25	Patil *et al.* [55]	9	F	Lower jaw swelling for 15 days	Loose teeth, bleeding gums, solitary lobulated red mass in left posterior mandible, mandibular swelling	Vague radiolucency, trabecular destruction ('moth-eaten' look), displaced teeth ('floating in air'), buccal/lingual mandibular cortical expansion, lower jaw bone loss	Remission, follow-up every 2 months
26	Freitas *et al.* [56]	7	M	Lower jaw swelling	Mandibular swelling, mandibular vestibule mass	Displaced tooth germs, lower jaw bone destruction, ruptured mandibular cortical layer	7 years, no relapse
27	Pereira *et al.* [57]	4	M	Toothache-like pain for 1 month, mandibular swelling	Mandibular swelling, facial asymmetry	Shifted teeth, lower jaw bone destruction	11 months, no relapse
28	Valenzuela-Salas *et al.* [58]	5	M	Painful maxillary vestibule swelling for 1 month, submandibular lymph node enlargement	Not recorded	Upper jaw bone loss, maxillary sinus opacity, soft mass affecting right maxillary sinus, orbital floor, lateral nasal wall	12 years, no relapse
29	Vasudevan *et al.* [59]	13	M	Gum bleeding, chewing difficulty, facial swelling for 2 months	Mandibular swelling, loose teeth, palpable lymph nodes	Lower jaw bone destruction	Passed away, duration unknown
30	Chbicheb *et al.* [60]	13	F	Intraoral enlargement	Swollen mandibular/maxillary gums	Mandibular/maxillary bone destruction	2 years, no relapse
31	Rebelo-Pontes *et al.* [61]	9	F	Painful mandibular exophytic mass	Painful exophytic mandibular swelling, loose teeth	Alveolar bone destruction, root resorption, missing lamina dura	Passed away from disease
32		8	M	Facial swelling and pain	Painful mandibular/maxillary swellings, loose teeth	Alveolar bone destruction, root resorption, missing lamina dura	3 years, no relapse
33		3	M	Bilateral facial swelling and pain	Bilateral exophytic mandibular/maxillary masses	Alveolar bone destruction, root resorption, missing lamina dura	4 months, no relapse
34		5	M	Skin ulceration, facial asymmetry	Maxillary swelling, loose teeth	Alveolar bone destruction, root resorption, missing lamina dura	Passed away from disease
35	Cabras *et al.* [62]	15	F	Mild pain on right maxillary second molar	Swollen gums around right maxillary second molar extending to right palatal mucosa, reduced lip sensation	Panoramic: no abnormalities; CT: high-uptake solid tissue in right maxilla, bone loss, disrupted right maxillary sinus floor	3 years, no relapse
36	Cho *et al.* [15]	6	M	Hypermobile right maxillary first molar	Painless gum/mucosal swelling in posterior maxilla/mandible,	Periapical: severe alveolar bone loss around maxillary right 1st molar, incomplete root development; Panoramic: missing lamina dura	20 months, no relapse

					lingually tilted right mandibular first molar	around all four first molars; CT: tumorous lesions in both maxillary sinuses, partial sinus wall resorption	
37	Yilmaz *et al.* [63]	13	F	Hypermobile mandibular/maxillary teeth, right mandibular pain/numbness	Swollen gums around right mandibular/maxillary premolars/molars, loose teeth, facial asymmetry, enlarged lymph nodes	Panoramic: alveolar bone resorption near canines/premolars/molars, 'floating teeth'; Periapical: root resorptions, maxillary alveolar bone perforation	Not recorded
38	De Coninck *et al.* [18]	7	F	Persistent painful unilateral mandibular swelling	Intraoral mass in left mandible disrupting occlusion	Osteolytic lesions in lower left mandibular quadrant, missing cortical layer around left lower second molar, mass in left masseter fixed to ascending mandibular ramus with bone loss	Disease regression
39	Kulczyk *et al.* [64]	11	M	"Inflammation" in left lower premolar area	Hypermobile left lower premolars, enlarged/reddened vestibular/lingual gums with pain	Root resorption of left lower premolar, bone rarefaction, loss of trabecular pattern, buccal cortical destruction, lingual cortical thinning in left mandible (canine/premolar/first molar area), 'floating-in-air' look	5 years, no relapse
40		8	M	"Trauma" to front upper central incisors	Hypermobile left upper incisor, swollen/petechial upper lip, dome-shaped palatal enlargement from midline to left upper first molar	Soft-tissue mass in hard palate extending to maxillary sinus/nasal cavity, blurred alveolar bone pattern in left upper molars	7 years, no relapse
41	Riaz *et al.* [65]	3	M	Rapidly growing right lower facial swelling	Extraoral: firm right facial swelling from cheek bone to mandibular border; Intraoral: red, lobulated mass on right posterior mandible	Mixed radiolucent/radiopaque osteolytic lesion, cortical bone destruction, missing lamina dura of right lower primary first/second molars	Passed away from disease
42	De Freitas Filho *et al.* [66]	5	M	Bilateral mandibular swelling, jaw stiffness, left-sided facial pain, headache	Left alveolar ridge ulceration, right alveolar ridge swelling/color change, loose left lower primary second molar	Solid tissue invading maxilla, maxillary sinus, partial orbital floor	3 years, no relapse
43	Chait *et al.* [67]	7	M	Upper gum swelling 1 month after dental extraction	Swollen gums, mobile/displaced right maxillary teeth	Maxillary bone loss, tooth displacement, tumor in maxillary/sphenoidal sinuses with left temporal intracranial extension	1 month, complete lesion regression
44	Papadopoulou *et al.* (present case)	11	F	Painful gum swelling of lower molars, hypermobile teeth, facial asymmetry	Bilateral red/ulcerated gum swelling near mandibular premolars/molars, hypermobile/shifted/partially extruded teeth, right posterior mandibular swelling	Panoramic: vague bilateral posterior mandibular radiolucencies, 'floating-in-air' teeth; CT: low-density masses along/distal to mandibular ramus, extending to maxillary sinuses bilaterally, right orbit posterior wall, right mandibular cortex perforation	11 years, no relapse

Table 2. Reported adult (≥18 years) cases of sporadic Burkitt lymphoma with oral and maxillofacial onset

ID	Reference	Age (Years)	Sex	Primary Oral/Maxillofacial Complaints	Physical Assessment	Diagnostic Imaging (Periapical/ Panoramic/ CBCT/CT/ MRI/PET)	Follow-Up Status
1	Baden and Carter [68]	18	M	Intense tooth pain leading to extraction, submandibular enlargement	Cervical lymph node palpable, submandibular region swelling, mass at mandibular third molar extraction site	Loss of lamina dura around posterior mandibular teeth, retromolar triangle osteolysis with enlarged cancellous spaces	Deceased 1.5 months post-diagnosis
2	Wang *et al.* [43]	22	M	Double vision, left-sided eyelid drooping, facial sensory loss	Double vision, weakened left lateral rectus, left ptosis, facial numbness, later bilateral ptosis and numbness in trigeminal ophthalmic/maxillary regions	Large tumor in ethmoid sinuses, extending to sphenoid sinus, right orbit, olfactory foramen	Deceased soon after diagnosis
3	Lynch and Harris [69]	41	F	Chin discomfort, mandibular swelling, horizontal double vision	Numbness/pain in chin, palpable preauricular/cervical lymph nodes, right mandibular enlargement	Osteolytic mandibular lesion with unclear borders	Responded to initial chemotherapy, died of herpesvirus infection 50 days post-transplant
4	Yoskovitch *et al.* [70]	76	M	Growing mass on right dorsal tongue for 5 months, worsening swallowing/pain	Firm, non-painful submucosal mass on posterior right dorsal tongue	Not available	18 months, no relapse
5	Landesberg *et al.* [21]	28	M	Numbness/anesthesia in lower lip/chin	Tooth mobility, mandibular buccal cortex expansion after 5 days, 3rd trigeminal nerve anesthesia	No abnormalities on panoramic/CT, elevated uptake in maxilla/mandible/skull on PET	16 months, no relapse
6	Manolopoulos *et al.* [71]	38	M	Swallowing challenges for 2 months	Tongue base mass	Soft tissue mass at tongue base reaching oropharynx/proepiglottic space	17 months, no relapse
7	Chan Lau *et al.* [72]	57	M	Chin numbness, lip drooping, intermittent pain from preauricular to chin	Reduced sensation in chin, scalp, brow	Not available	12 months, no relapse
8	Cascarini and Brown [73]	38	M	Painful mandibular enlargement, numb lip on same side	Mandibular vestibule enlargement, lower lip sensory loss	No abnormalities detected	3 years, no relapse
9	Nissenbaum *et al.* [74]	55	M	Non-healing right posterior mandibular socket, toothache for 5	Firm, exophytic mass on right alveolar ridge at extraction site, right	Poorly defined lytic lesion in right mandibular body	2.5 years, no relapse

				weeks, lower lip numbness, right eyelid drooping	submandibular lymph node palpable		
10	Feinberg *et al.* [75]	80	M	Muffled speech, painful swallowing, cough, snoring for 3 months	Tongue base mass	Tongue base mass crossing midline to vallecula	2.5 years, no relapse
11	Balasubramaniam *et al.* [76]	36	F	Mandibular enlargement, tooth pain, restricted mouth opening	Gingival redness, ulceration, pus, mandibular swelling	Widened periodontal ligament, irregular mandibular alveolar bone loss near lesion	3 months, no relapse
12	Martos-Diaz *et al.* [77]	29	M	Sensory changes in lower lip for 1 month	Complete lower lip numbness	No osteolysis, MRI: hypointense T1, hyperintense T2 at left mandibular angle/joint marrow	3 years, no relapse
13	Nikgoo *et al.* [78]	31	M	Large maxillary masses at extraction sites, loose teeth, chewing issues, gingival bleeding	Gingival bleeding, bilateral firm maxillary masses at extraction sites, facial asymmetry	Periapical osteolysis, floating teeth, sinus bone destruction, bilateral sinus lesions	6 months, poor treatment response
14	Keichiro *et al.* [79]	54	M	Chin numbness, mild pain, headache	Hypoesthesia below lower lip in 3rd trigeminal nerve division	Mandibular osteolysis	Deceased 11 months later
15	Sudhakara *et al.* [80]	42	M	Facial swelling for 1 year, tingling in same area	Submandibular lymph node palpable, facial asymmetry, diffuse mandibular vestibule mass	No abnormalities detected	Not available
16	Faltas *et al.* [81]	48	F	Numbness, tingling in right lower lip/chin for weeks	Hypoesthesia in right trigeminal mental branch	No abnormalities detected	2 years, no relapse
17		37	M	Mandibular pain post-dental cleaning	No abnormal signs	No abnormalities detected	5 years, intra-abdominal relapse, no recurrence post-transplant
18	García-Álvarez *et al.* [82]	58	M	Left chin sensory changes for 2 months, swallowing/chewing issues, voice changes	Reduced left facial sensation to preauricular area, absent gag reflex, unilateral palatal palsy, uvula/tongue deviation, anterior two-thirds tongue sensory loss	No jaw abnormalities	23 months, no relapse
19	Kikutsi *et al.* [83]	61	F	Lower lip sensory changes	Initial dull left posterior mandibular pain, later rapid left facial/buccal	Panoramic: no abnormalities; CT: large soft tissue mass in left masseter/medial pterygoid	11 months, no relapse

					mucosa swelling, trismus		
20	Ho *et al.* [84]	59	M	Tooth mobility, mandibular/maxillary swelling, mandibular numbness for over 1 month	Mandibular/maxillary enlargement, mandibular sensory loss, palpable neck lymph nodes	Mandibular/maxillary osteolysis	Deceased 1 month later
21	Barboza *et al.* [85]	35	M	Painless maxillary swelling for 2 months	Extraoral swelling in left nasal wing/upper canine, intraoral ulcerated/friable mass in left maxilla crossing midline	Diffuse osteolytic lesion	6 months, no relapse
22	Boffano *et al.* [86]	35	M	Bilateral maxillary swelling for 3 months	Ulcerative, non-painful, soft bilateral maxillary tuber swelling	Not available	Not available
23	Manne *et al.* [87]	21	M	Asymptomatic cheek swelling for 2 months, right eye double vision	Intraoral firm, diffuse, non-painful maxillary teeth-bearing area swelling, extraoral mild diffuse, firm maxillary swelling, soft/tender/non-adherent submandibular lymph node	Intact lamina dura, mild diffuse bony rarefactions, no panoramic abnormalities, CT: tumor mass from maxilla to inferior orbital wall 4 weeks post-biopsy	Deceased during chemotherapy
24	Rebelo-Pontes *et al.* [61]	22	M	Painful mandibular mass	Painful exophytic mandibular alveolar ridge mass	Osteolysis, root resorption, loss of lamina dura	1 year, no relapse
25		54	F	Mandibular enlargement	Mandibular enlargement, tooth mobility	Osteolysis, root resorption, loss of lamina dura	2 years, no relapse
26		19	M	Maxillary enlargement	Exophytic maxillary alveolar ridge mass, tooth mobility	Osteolysis, root resorption, loss of lamina dura	Deceased from disease
27	Patankar *et al.* [88]	38	M	Painful upper anterior gingival swelling	Mandibular/maxillary gingival swelling, tooth mobility, displacement	No changes detected	Deceased from disease
28	Sethi *et al.* [89]	38	M	Swollen, bleeding gingiva (initially anterior maxilla, progressing to entire maxilla/mandible) for 6 months	Generalized maxillary/mandibular gingival enlargement/bleeding, matted right submandibular lymph nodes, enlarged/mobile/non-painful cervical lymph nodes	Not available	Lost to follow-up
29	Goto *et al.* [90]	27	F	Pain, numbness in right lower premolar/lower lip	Mandibular pain, right lower lip numbness	Reduced bone trabeculae density on right mandible, no cortical erosion	No relapse

30	Garcia *et al.* [91]	42	M	Mild mandibular enlargement, lower lip sensory changes	Mandibular enlargement, tooth mobility	No changes detected	4 years, no relapse
31	Kuo *et al.* [92]	29	M	Mandibular enlargement	Two ulcerative gingival swellings at buccal side of left mandibular molar/retromolar area	Radiolucent lesion at bifurcation/periapical areas of left mandibular 1st molar	5 years, no relapse
32	Pedraza *et al.* [93]	63	M	Bilateral painful mandibular enlargements	Bilateral erythematous mandibular swellings at posterior alveolar ridges, left premolars, right molars	Not available	Deceased from disease
33	Tseng *et al.* [94]	84	M	Mandibular gingival enlargement	Mandibular gingival enlargement	Mandibular osteolysis	Deceased from disease
34	Azimi *et al.* [19]	49	M	Pain in left mandibular area, lower lip sensory changes	Firm mass with intact mucosa at left edentulous mandibular ridge	Ill-defined radiolucent lesion from left alveolar crest to inferior alveolar canal, left buccal cortical plate invasion	3 months, no marrow involvement
35	Parker *et al.* [95]	37	F	Right mandibular pain, intermittent right lower lip/chin numbness	Right mandibular pain, intermittent ipsilateral mental nerve numbness	Well-defined unilocular radiolucency at right lower second molar apex	No relapse
36	Stanbouly *et al.* [96]	37	F	Bilateral lower lip/chin sensory changes	Initially no findings; 1 month post-3rd molar extractions: fungating soft tissue from mandibular 3rd molar socket, adjacent 2nd molar mobility	Panoramic: no changes; Post-extraction CT/panoramic: vacuous mandibular trabecular spaces, opacity in sinus floor above left maxillary 1st molar	6 months, no relapse
37	Sodnom-Ish *et al.* [97]	31	M	Bilateral numbness, severe sensory disturbance in lower lip/mandible	Mobility of lower left 1st/2nd molars	Generalized loss of lamina dura, widened periodontal ligament space of posterior mandibular teeth (CT/panoramic)	4 years, no relapse
38	Tereshko *et al.* [98]	43	F	Numbness, sensory changes, persistent burning pain in right/left mental nerve regions	Swollen cervical lymph nodes	Bilateral cervical lymph node enlargement	Currently under treatment

In children, the most frequent early oral/maxillofacial findings were swelling (68.2%), often located in the mandible (34.1%), and pain (34.1%), typically resembling toothache. Tooth mobility or loosening occurred in 18.2%, while paresthesia was uncommon. Among adults, swelling (52.6%, mandible in 28.9%) and pain (42.1%) were also common; however, sensory disturbances, particularly chin or lower lip numbness,

were far more frequent (50%), whereas tooth hypermobility was only noted in 5.3%. In numerous instances, lesions were mistaken for dental infections, leading to unnecessary endodontic or extraction procedures followed by antibiotic therapy, which delayed accurate diagnosis and enabled disease progression.

During clinical examination, the predominant sign was swelling or mass formation in 84.1% of children and 71.1% of adults. Palpable lymphadenopathy occurred in 27.3% of pediatric and 21.1% of adult patients. Conversely, tooth movement or displacement was far more common among children (61.4%) than adults (18.4%), while neurological alterations (e.g., paresthesia or anesthesia) appeared in 28.9% of adults compared to 4.5% of children. In several instances, secondary lesions at distant anatomical sites were discovered during staging.

Imaging studies—including panoramic and periapical radiographs, CBCT, CT, MRI, and PET/CT—proved essential in defining disease location and extent of bone or soft tissue invasion. Most patients displayed osteolytic or destructive lesions (93.2% in children, 47.4% in adults) and/or space-occupying masses (29.5% in children, 18.4% in adults). Radiologic findings related to teeth included lamina dura loss (29.5% vs. 13.2%), tooth displacement (25% in children, none in adults), root resorption (18.2% vs. 7.9%), “floating-in-air” appearance (15.9% vs. 2.6%), and periodontal ligament widening (2.3% vs. 5.3%). Overall, imaging abnormalities were notably more prevalent in children, though variability in imaging techniques limits direct comparisons.

Follow-up periods ranged from 1 to 192 months in children and 1 to 60 months in adults. Remission was achieved in 50% of pediatric cases (mean 59 months; range 4–192) and 57.9% of adults (mean 23.2 months; range 3–60). Mortality occurred in 29.5% of children (within 3–10 months post-diagnosis) and 26.3% of adults (within 1–11 months).

Conclusions

Although Burkitt lymphoma is a highly aggressive B-cell malignancy, early and accurate diagnosis enables rapid therapeutic response and favorable long-term outcomes. Rapidly expanding jaw lesions with destructive bone changes and no evident odontogenic cause should alert clinicians to a potentially serious underlying disorder. Early identification and prompt specialist referral, as demonstrated in this case, can be life-saving, ensuring timely diagnosis and therapy for a fast-progressing tumor. Finally, continuous long-term surveillance, including comprehensive dental, oral, and maxillofacial assessments, is essential to detect potential recurrences and maintain sustained remission.

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