



# SMART DENTAL UPDATES

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Dear Doctor,

Greetings from Micro Labs Limited. We are happy to bring you  
“**SMART DENTAL UPDATES**” which contain latest and interesting  
news in the field of Dentistry.

This issue contains:

- A Retrospective Study of Evaluation of the Outcomes of Orthodontic Treatment after Traumatized Immature Permanent Teeth Apexification.
- A pilot study of segmental mandibulectomy for medication-induced jaw osteonecrosis
- A case report on Nasolabial pleomorphic adenoma

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Looking forward to your valuable feedback

Best Regards,  
Medical Team, Micro Labs Limited



## A Retrospective Study of Evaluation of the Outcomes of Orthodontic Treatment after Traumatized Immature Permanent Teeth Apexification.

Dental trauma is frequent in children under the age of 12 years, with 25% of schoolchildren experiencing it. Inflammation and pulp necrosis can occur after dental trauma, leaving the affected teeth vulnerable. <sup>[1]</sup> The type of dental trauma and the stage of root development have both been linked to the likelihood of pulp necrosis. The chance of developing pulp necrosis after luxation damage was observed to be 38% for adult teeth and 8% for immature teeth. <sup>[2]</sup>

A novel material (mineral trioxide aggregate [MTA]) was launched in 1995 that creates an instantaneous apical barrier, resulting in positive clinical and histologic results. Both long-term and immediate treatments have high healing rates, which are mostly determined by the stage of tooth growth. Long-term apexification with  $\text{Ca(OH)}_2$  in anterior teeth, on the other hand, may increase the risk of the cervical fracture. This might be due to the young teeth's thin dentin walls, as well as the impact of  $\text{Ca(OH)}_2$  on the physical characteristics of dentin.

The objective of this study was to see if orthodontic tooth movement might help injured immature teeth that had lost their vitality owing to trauma. Because these teeth's roots haven't fully grown, applying orthodontic stresses might weaken them even more and raise the chance of resorption. Despite prior suggestions to delay orthodontic treatment following trauma, due to patients' demands and the appropriate scheduling advised for orthodontic and orthopedic therapy, this is often not possible. This essential issue has never been researched before. The objective of this study was to see how orthodontic pressures affected damaged teeth that had already undergone apexification in the short and long term.

|                                         | Failures, <i>n</i> (%) |                   |          | <i>P</i> value |
|-----------------------------------------|------------------------|-------------------|----------|----------------|
|                                         | Control group          | Orthodontic group | Total    |                |
| Apexification                           |                        |                   |          |                |
| Ca(OH) <sub>2</sub>                     | 2 (9.5)                | 2 (8.3)           | 4 (8.89) | >.05           |
| MTA                                     | 1 (4.8)                | 0 (0)             | 1 (2.22) |                |
| Stage of root development <sup>18</sup> |                        |                   |          |                |
| 8                                       | 2 (9.5)                | 2 (8.3)           | 4 (8.89) | >.05           |
| 9                                       | 1 (4.8)                | 0 (0)             | 1 (2.22) |                |

### The Relationship between the Stage of Root Development and Apexification Technique and Failures

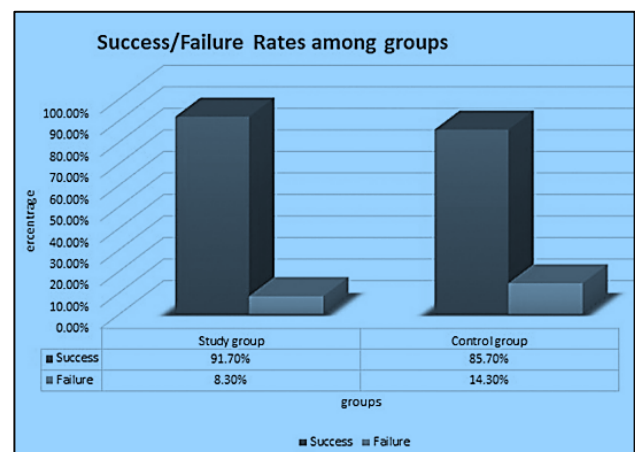
A total of 36 children were included in this retrospective research who had anterior permanent traumatized teeth with underdeveloped roots and were treated with apexification and root canal therapy. After apexification, the orthodontic group comprised of 17 children with 24 teeth who had orthodontic therapy. The control group comprised 19 children who had just apexification without orthodontic therapy and had 21 teeth. Almost half of the teeth in both groups had calcium hydroxide apexification,



whereas the other half had mineral trioxide aggregate apexification. The impacts of sex, root stage, and apexification material on apexification results were evaluated and compared between the two groups.

After at least 5 years of follow-up, apexification was effective in 88 percent of instances. Neither the apexification technique nor the gender of the patient had a significant impact on the treatment success. Although not statistically significant, the stage of root growth had a beneficial influence on the outcome. After orthodontic therapy, some root resorption (average 50.3 mm) was seen, but teeth that received apexification without orthodontic treatment showed some root extension (average 5 0.1 mm). This was a considerable difference.

The fact that the apical zone is enclosed by a bundle of blood vessels and nerves, as well as the fact that it is the only area of the root where the cementodentin junction and the dentin predentin are exposed to the outside tissue, are all factors that make the apical zone more vulnerable to force activation, according to a study. The cellular cementum that covers the root apices of adult teeth may be prone to resorption. As a result, in young teeth, the lack of a well-developed root tip with cellular cementum may have contributed to our observation of little resorption. [3]



**The failure rate in percentages. Similar failure rates were observed in both groups**

Instrumental orthodontitis (also known as cemental resorption, part of the remodelling during orthodontic treatment, without root shortening) and instrumental detrimental orthodontitis (also known as root resorption, with root shortening) were described as two different types of root resorption after orthodontic treatment. It might be classified as instrumental orthodontitis or instrumental dental orthodontitis based on the low root resorption seen in this investigation. [4]

According to previous research, the quantity of resorption varies depending on the type of equipment utilised. The degree of resorption of maxillary central incisors treated with self-ligating brackets was found to be much lower than that of traditional brackets, but not in other incisor teeth. [3] In this study, the majority of the teeth were maxillary central incisors, which are frequently implicated in dental trauma. Despite the fact that the majority of patients in the control group were boys, which is consistent with recent reports that dental trauma affects both boys and girls, the numbers of boys and girls in the orthodontic group undergoing orthodontic treatment were nearly equal, likely because more boys suffer dental trauma but more girls seek orthodontic treatment than boys. [2]

The results suggest that orthodontic therapy in endodontically treated necrotic immature teeth following  $\text{Ca}(\text{OH})_2$  apexification or the MTA barrier approach is safe.



More study on a large-scale population having orthodontic treatment after trauma is needed, as well as an inquiry into the influence of dental trauma on teeth following regenerative endodontics.

According to the findings of this study, the 5-year success rate was over 90%, failure was related to fractures or the development of periapical diseases, and orthodontic therapy in immature teeth following apexification may be regarded as safe. After orthodontic treatment, only minor apical resorption was observed in teeth that had been apexified. The type of apexification material utilized,  $\text{Ca(OH)}_2$  or MTA, as well as the approach used, long-term or single-visit, had no effect on the treatment's efficacy.

**In the orthodontic group, there was minor root resorption compared to a slight increase in root length in the control group. After apexification, orthodontic movement of immature traumatised teeth appears to be safe.**

### Reference:

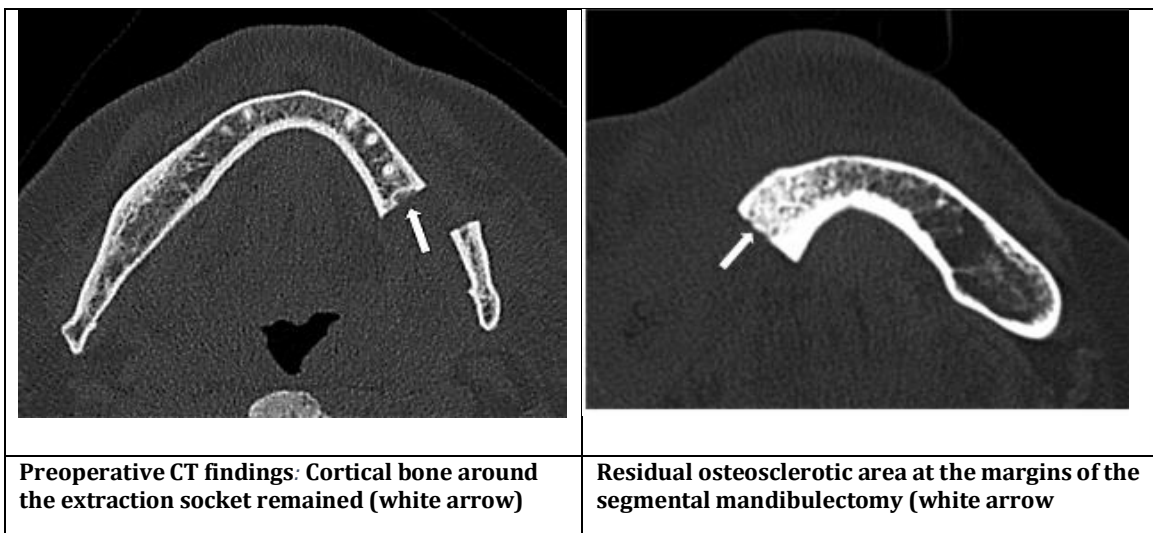
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## A pilot study of segmental mandibulectomy for medication-induced jaw osteonecrosis

Bisphosphonate and denosumab are examples of bone modifying agents (BMAs) that are utilised as first-line treatments to prevent osteoporosis-related fractures and treat skeletal-related events in cancer patients. [1] These medications have a substantial inhibitory impact on bone resorption, however, they can produce a serious late adverse event called medication-related osteonecrosis of the jaw (MRONJ). Pathologic fractures, fistula development, prolonged pain, and infection are all possible side effects of MRONJ. MRONJ has no known causes or treatments. Conservative therapy is indicated as the first line of defence, but if conservative treatment fails to yield positive results, surgical treatment is also a possibility. [2]

A total of 137 individuals with medication-related osteonecrosis of the lower jaw who had surgical treatment at a hospital were included in this retrospective analysis. There were a total of 168 procedures conducted (155 marginal mandibulectomies and 13 segmental mandibulectomies). In the segmental mandibulectomy patients, the association between clinical and imaging variables and treatment outcome was studied.

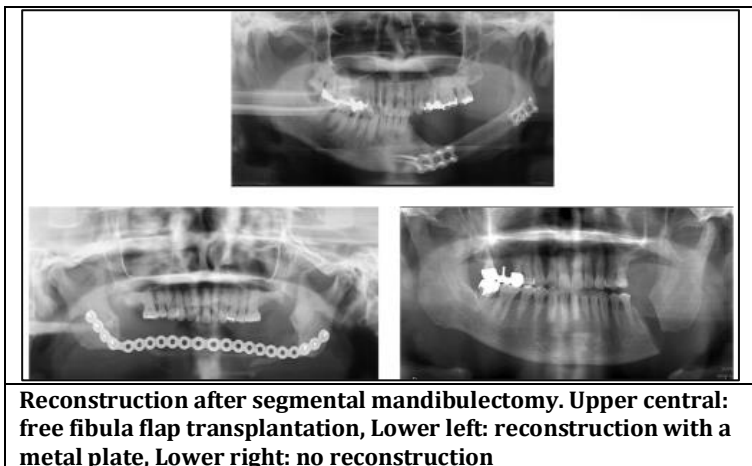


In 13/13 patients of segmental mandibulectomy, preoperative computed tomography (CT) revealed osteolytic lesions, Periosteal Response (PR) in 12/13 cases, and osteosclerosis in 12/13 cases. No residual osteolytic lesion or PR were seen on postoperative CT, and 9 patients revealed osteosclerosis. Twelve patients (92.3%) showed complete healing after segmental mandibulectomy, whereas 104/155 had complete healing with marginal mandibulectomy (67.1 %). After a second resection, one patient who had relapsed following segmental mandibulectomy had healed. Clinical symptoms such as discomfort and purulent discharge vanished in individuals who underwent segmental mandibulectomy, and oral intake was resumed.

According to the American Association of Oral and Maxillofacial Surgeons (AAOMS) position paper and the Multinational Association of Supportive Care in Cancer/International Society of Oral Oncology (MASCC/ISOO) Guidelines, conservative treatments for MRONJ include antibiotics and antiseptic mouthwash. [2] The treatment



results of patients having surgery were previously found to be considerably better than those of patients receiving conservative therapy in multi-center observational research utilizing propensity score matching analysis. [3]



Because segmental mandibulectomy disrupts the mandible's continuity, resulting in facial deformities and malocclusion, bone restoration is commonly used. In this study, free fibula flaps were transplanted in two cases and reconstruction plates in four cases, but reconstruction surgery was not conducted in the remaining seven patients. In cases of segmental mandibulectomy, encompassing the anterior section of the mandible, reconstruction was undertaken. All of the instances without repair were segmental mandibulectomy of the mandible's posterior portion. Reconstructive surgery increases surgical invasion and raises the risk of infection and reoperation thereafter. As a result, after consulting with the patient in seven cases of excision just in the posterior region of the mandible, reconstruction was not conducted. Malocclusion can cause masticatory problems if bone repair is not performed. Some participants in this research had a poorer diet after surgery than they did before surgery. Others, on the other hand, had a better diet after surgery than before, and all patients were able to eat. The alleviation from symptoms such as discomfort may account for the improvement in eating status despite segmental excision. We feel that segmental mandibulectomy is one of the therapeutic alternatives for patients with excessive physical and mental pain or prolonged discomfort owing to pus discharge after conservative therapy or marginal mandibulectomy, as previously stated.

The study examined at osteolytic lesions, PR, osteosclerosis, TCB, and TCW. Segmental mandibulectomy can effectively eliminate osteolytic lesions and PR. According to a research, PR should be taken into account while evaluating the amount of osteotomy. 12 Segmental mandibulectomy seems to be more likely than marginal mandibulectomy to eradicate osteolytic lesions and PR. [4]

The osteosclerotic lesion persisted in nine cases, but since healing was achieved, it was not necessarily required to include osteosclerosis in the resection field. When evaluating blood flow from the periosteal and inferior alveolar arteries, it was also postulated that expansion of the cortical bone is implicated in blood flow abnormality. The residual TCB of TCW, on the other hand, does not appear to be related to the cure rate. Finally, it was



thought that when undergoing segmental mandibulectomy for medication-related osteonecrosis of the mandible, it was important to resect osteolytic lesions and PR.

**As it can remove clinical symptoms early, segmental mandibulectomy is a therapy option for end-of-life care with refractory MRONJ. The location of the osteolytic lesion and periosteal response must be considered before doing segmental mandibulectomy.**

#### Reference:

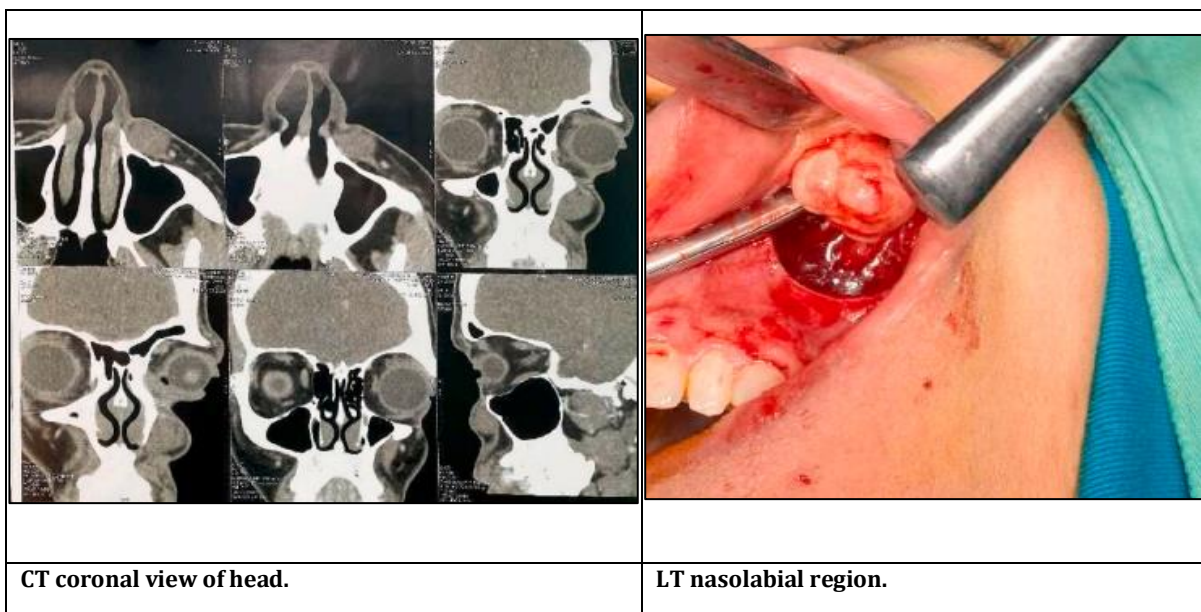
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## A case report on Nasolabial pleomorphic adenoma

Pleomorphic adenoma, the most common benign salivary gland tumour, has epithelial and stromal components histopathologically. [1] Pleomorphic adenoma often present as a single, painless, asymptomatic, and slow-growing lesion. Pleomorphic adenoma, although being classified as a benign tumour, has the potential to transform into carcinoma ex-pleomorphic adenoma, a risk that is expected to increase over time. Furthermore, it might remain following resection; distant metastases have been seen after long periods of time. [2]

A 36-year-old female patient presented to m clinic with a painless tumour on her left nasolabial area that was gradually growing in size; our patient's major concern was cosmetic. On palpation, the mass was 2\*3 cm in size, movable, not adherent to the overlying skin, well confined, and firm in substance, with no intraoral examination findings. A thorough examination, which included a CT scan of the head and neck, revealed a soft tissue mass in the left nasolabial area. Under general anaesthesia, the tumour was removed by an intraoral maxillary vestibular incision, with sharp dissection all around the mass and full excision. Histopathological examination of the removed mass revealed a mixed salivary gland tumour (pleomorphic adenoma). Epithelial, myoepithelial, and stromal components combine to form this structure.



Pleomorphic adenoma, a mixed tumour, most commonly affects the primary salivary glands, although it can also affect the nasal cavity, pharynx, larynx, trachea, and lacrimal glands. Females were found to have more of these neoplasms than males. They are more common in the third and fourth decades of life. Because epithelial components rather than stromal elements predominate in intranasal mixed tumours, the rate of recurrence is quite low (10%). In one case study, the adenoma Pleomorphic Adenoma of the nasolabial area was described. [3]

CT scans of the head and neck, as well as CT scans and MRIs, are appropriate imaging modalities for tumour mapping rather than identifying pleomorphic adenomas in this



research. The mass in this case study was 2x the mass was  $2 \times 3$  cm mobile and not attached to overlying skin, this result was partially consistent with Ozel's study [3], in which the mass was  $1.5 \times 2.0$  cm and the labial mucosa was not fixed. The mass in this case study was composed of epithelial, myoepithelial, and stromal parts, just as it was in Ozel's prior initial case study.

Since nasolabial pleomorphic adenomas are soft tissue tumours, standard radiographs are sometimes insufficient. To appropriately identify them, further imaging modalities and clinical exams are required. Along with a clinical assessment, ultrasound (US) and magnetic resonance imaging (MRI) are effective imaging modalities for assessing the location, characterising the contents of the cyst, and identifying.



Mass after excision.

**In the prediction of non-osseous soft tissue lesions, such as nasolabial pleomorphic adenoma, it may be appropriate to use two radiological methods: MRI and US.**

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