Conservative management of macrodontia: A Case Report

Case Report

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Abstract

Macrodontia is a rare but cosmetically challenging dental anomaly. The following case report is described of a young girl with macrodontia central incisors who was treated with direct composite veneer and gingival color composite. The aesthetic outcome was satisfactory without unnecessary loss of teeth.

Key words:
• Dental Esthetics • Tooth Abnormalities • Conservative Treatment

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A 26-year-old female was referred to private dental office with concern of appearance of her permanent maxillary central incisor teeth (Figure 1).

In the intraoral examination no caries or periodontal disease was noted. There was no known family history of macrodontia. Both maxillary right and left permanent central incisors were found to be macrodontia. The width of the right central incisor was 14.5 mm, and the left central incisor was 15 mm.

her previous dental history was orthodontic treatment and during orthodontic treatment Left canine and right first premolar was extracted. radiographic examination showed that this excessive tooth width extended all the way up to the root (Figure 2). So a full coverage crown restoration wouldn’t have been satisfactory at the gingival margin.

Several treatment alternatives were existed, included reducing the width of the malformed incisors. Approximal grinding of teeth could only allow minor improvement because of the root anatomy and the wide pulp chambers so its not satisfying. In the case of teeth with two separate roots, hemi-section is another treatment plan and another choice are extraction and prosthetic replacement. So a non-surgical, conservative approach was preferred in this case.

**The treatment plan included 4 steps:**

*Firstly,* the alginate impression is poured in dental stone to producing Study model. *Second step* was fabricating a Diagnostic wax-up of appearance of camouflaging 1/1 and 2/ to look like 21/12 and 3/ to predictability of treatment and This is an ideal visual aid in presenting treatment to the patient( Figure 3).

*Third step* was Composite veneers and camouflaging 1/1 and 2/ to look like 21/12 and 3/; first one side was completed then the other side was accomplished. Gingiva colored composite was used for esthetic reconstruction of the gingival papilla. afterward finishing and polishing were done (Figure 4). *The last step* was Establishing lingual contours or anterior guidance in harmony with the envelope of function in straight protru-sive movement. In lateral excursions movement posterior group function was set (Figure 5,6).
Macrodontia is the term given to teeth which are bigger in size than the ordinary individual tooth type. This dental anomaly may also be named as megalodontia or megadontia, and may be related with various syndromes and medical condition (Table 1).(1)

Macrodont teeth are usually significantly larger than the normal corresponding tooth size. Where a normal central incisor measures an average of 8.6mm, macrodont central incisors have been reported to measure between 12 mm to 14.5 mm, mesio-distally.(2)

In the case of premolars, the average-sized tooth is 7.3 mm in mesio-distal and 8.2 mm in bucco-lingual dimension, whilst reported macrodont premolars have measured up to 15.2 mm mesio-distally and 13.1 mm bucco-lingually.(3)

True macrodontia can be classified into three types(3):

1. Generalized macrodontia – where several or all teeth are influenced. This may be related to pituitary gigantism, unilateral facial hyperplasia or hereditary gingival fibromatosis.
2. Relative generalized macrodontia – the presence of normal-sized teeth in small jaws.

Table 1. Medical condition and syndromes associated with macrodontia

<table>
<thead>
<tr>
<th>Condition</th>
<th>Characteristics</th>
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<tbody>
<tr>
<td>47,XXY syndrome</td>
<td>Tall stature, learning disabilities, macrodontia, facial anomalies</td>
</tr>
<tr>
<td>Hemihypertrophy/hemihyperplasia</td>
<td>Asymmetrical growth of all or parts of the body including the teeth</td>
</tr>
<tr>
<td>Ekman-westborg &amp; julin trait</td>
<td>Macrodontia, multituberculism, pulpal invaginations, single conical roots</td>
</tr>
<tr>
<td>OFCD syndrome</td>
<td>Eye anomalies, cardiac anomalies, dental abnormalities, oligodontia, macrodontia</td>
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<tr>
<td>Insulin resistant diabetes</td>
<td>Endocrine disturbances, multiple macrodontia</td>
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<tr>
<td>Pituitary gigantism</td>
<td>Enlargement of all organs, soft tissues and skeleton, macrodontia due to pituitary overproduction</td>
</tr>
</tbody>
</table>

Discussion

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3. Isolated macrodontia of an individual tooth – where the rested dentition is considered normal.

True macrodontia of tooth should not be confused with gemination or fusion teeth (double teeth) that giving the appearance of one larger tooth.

The fusion is situation that two separately developing teeth united via dentin and/or enamel. (4) Where fusion occurs, macrodontia will present along with one or two pulp chambers and typically there will be one less tooth in the arch (5, 6).

Gemination can be defined as the formation of two teeth believed to arise from one dental follicle attempting to separate. In this case, there is usually only one pulp chamber and the correct number of teeth in the dental arch, if the double tooth is counted as one unit (5, 6).

Macrodontia have been found more frequently in incisors, mandibular premolars and third molars. (3, 7)

prevalence varies between 0.5 and 2.5%. (7) and there is a higher prevalence in men than women (3, 8).

It is important to know Macrodontia because it may cause problems with aesthetics and also with crowding if there is a discrepancy between the dimensions of the teeth and the size of the dental bases (9). Also, these teeth are more predisposed to caries and related with disruption of the developing occlusion by occlusal morphology (3).

The early detection and treatment of macrodontia cases can avoid problems with aesthetics, crowding and caries.

The diagnosis is based on clinical and radiographic exams. Treatment depends on the location of the affected tooth. In some cases, treatment may not be necessary; in others, however, restoration, extraction, or orthodontics may be implemented for esthetic purposes (3).

In the case of macrodontia the major treatment plan can be:

• No treatment;
• minor restorative adjustments;
• Enamel reduction/stripping;
• Endodontic treatment followed by surgical hemi-section;
• Extraction and closure of space;
• Extraction and prosthetic replacement.

The decision is depend on various factors. If the macrodont tooth is arranged in an unobtrusive position in the jaw, it is sometimes appropriate to accept this tooth in the arch. Usually this situation requires significant restorative adjustment to satisfy functional and aesthetic requirements.

Intervention might range from enamel stripping to radical anatomical reshaping, using composite resin or even crown or veneer. This is also a common to gain space for tooth alignment with orthodontic movement. Crown division and/or surgical hemi-section also can be the ideal treatment option if a macrodont tooth has resulted from fusion or gemination. This will therefore necessitate subsequent endodontic treatment and complexity of the treatment is upon to the pulp and root morphology.

Conclusion

Managing macrodont dental anomalies can be very challenging. Achieving optimum aesthetics is just as important as an acceptable functional occlusion in order to achieve the best clinical outcome and a satisfy patient. In this case, aesthetic camouflage was justified and treated with minimal intervention by direct composite veneer, we also point out the importance of the occlusion and gingival color composite to provide better treatment for patient. We believe it is the first example of this technique with gingival reconstruction by composite.

References

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