

## Case Report: Conservative management of macrodontia



Reza Tayefeh Davaloo <sup>1</sup>, maryam tavangar <sup>1</sup>, faride darabi <sup>1</sup>, Fateme moosazade hassan kiadeh<sup>2</sup>

<sup>1</sup> Associate Professor, Department of Operative Dentistry, School of Dentistry, Guilan University of Medical Sciences, Rasht, Iran

<sup>2</sup> Post-graduate student, Department of Operative Dentistry, School of Dentistry, Guilan University of Medical Sciences, Rasht, Iran.

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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.

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#### \* Corresponding Author:

**Fateme moosazade hassan kiadeh.**

**Address:** Department of Operative Dentistry, School of Dentistry, Guilan University of Medical Sciences, Rasht, Iran .

**Tel:** +9813333486416

**E-mail:** Fmousazade93@gmail.com

## Case Report

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.



Fig 1. Maxillary central incisor appearance



Fig 2. Radiographic examination showed that this excessive tooth width extended all the way up to the root

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 the another choice is 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 2/1 to look like 21/12 and 3/1 to predictability of treatment and This is an ideal visual aid in presenting treatment to the patient( Figure 3).



Fig 3. An ideal visual aid in presenting treatment to the patient

Third step was Composite veneers and camouflaging 1/1 and 2/1 to look like 21/12 and 3/1. 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).



Fig 4. Finishing and polishing

The last step was Establishing lingual contours or anterior guidance in harmony with the envelope of function in straight protrusive movement. In lateral excursions movement posterior group function was set (Figure 5,6).

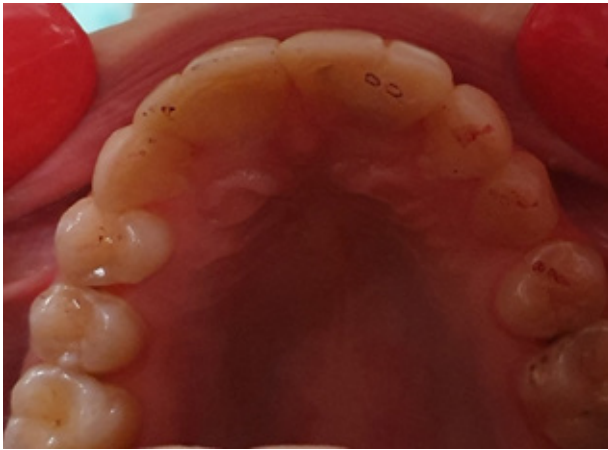


Figure 5. Establishing anterior guidance



Figure 6. Final result

Macrodonia is the term given to teeth which are bigger in size than the ordinary individual tooth type. This dental anomaly may also named as megalodontia or megadontia, and may be related with various syndromes and medical condition (Table 1).(1)

Table1.medical condition and syndromes associated with macrodonia

47,XXY syndrome	Tall stature,learning disabilities,macrodonia,facial anomalies
Hemihypertrophy/hemihyperplasia	Asymmetrical growth of all or parts of the body including the teeth
Ekman-westborg & julin trait	Macrodonia,multituberculum,pulpal invaginations, single conical roots
OFCD syndrome	Eye anomalies,cardiac anomalies,dental abnormalities,oligodontia, macrodonia
Insulin resistant diabetes	Endocrine disturbances,multiple macrodonia
Pituitary gigantism	Enlargement of all organs soft tissues and skeleton, macrodonia due to pituitary overproduction

## Discussion

Macrodon teeth are usually significantly larger than the normal corresponding tooth size. Where a normal central incisor measures an average of 8.6mm, macrodon 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.

3. Isolated macrodontia of an individual tooth – where the rest of the 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 large 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.

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