MedCrave
Step into the World of Research

Journal of Dental Health Oral Disorders & Therapy

Research Article

Open Access

CrossMark

Paradox in orthodontic treatment of the adult patient with maxillary prognathism and distalization of low posterior teeth

Abstract

A clinical case of orthodontic treatment of an adult patient with maxillary prognathism is presented in the article. The patient refused orthognathic surgery. Extraction of individual teeth and distalization of lower posterior with fixed buccal appliances.

Keywords: maxillary prognathism, adults, orthodontic treatment

Volume 4 Issue 5 - 2016

Vasilyeva MB, Kosyreva TF
Department of Pediatric Dentistry and Orthodontics, Peoples' Friendship University of Russia, Russia

Correspondence: Maria Vasilyeva, Department of Pediatric Dentistry and Orthodontics, Peoples' Friendship University of Russia, Micklucho-Maklaya str., 10, bilding 2, Medical Institute, PFUR, Moscow, 117198, Russia, Email dr.vasilyeva003@gmail.com

Received: December 24, 2015 | **Published:** May 18, 2016

Introduction

Skeletal distal occlusion is one of the most common dentoalveolar abnormalities that influence the quality of life. In recent years, young patients understand more and more the necessity to correct the bite abnormalities and they are ready to go for orthodontic treatment.[1] However, diagnosis and treatment of the patients with distal occlusion are difficult for many practicing orthodontists. An important task in diagnosis and treatment approach is to determine main signs of the abnormality, their causes and relationship with dentoalveolar and/or skeletal forms of the abnormality. At that, determination of posterior (especially maxillary) teeth position in sagittal, horizontal and vertical planes aredifficult for doctors. The present work is devoted to examination of the approach to treat patients with dentoalveolar pathology.

In patients with distal occlusion and adapted TMD, bite abnormality doesn't need to be treated and may be considered as individual normality (Slavicek R. "Masticatory Organ: Functions and Dysfunctions", "Azbuka" 2008). However distal occlusion is often accompanied by horizontal and transversal disturbance of relationship of front teeth what affects the smile of the patient in the process of his complaints. It is often the cause to consult an orthodontist. In these case patient motivation and necessity of treatment coincide. Distal occlusion is a multifactorial abnormality with dentoalveolar and/ or skeletal component. One of the important steps in treatment planning is diagnosis of abnormalities causing distal occlusion and disturbance of relationship of front and posterior teeth. Difference between dentoalveolar, skeletal or mixed forms demands examination of the pictures of the patient's face, study models, panoramic X-rays, head cephalometric, side and front (on indication) views.

It is necessary to determine on study models:

I. dimension proportions of maxillary and mandibular incisors (Tonn, Bolton);
II. form and dimension proportions of dental arches;
III. presence and intensity of narrowing, shortening or lengthening of dentition;
IV. relationship between dental arches and jawbones;
V. sufficient amount of buccal bone in front teeth, especially in the area of upper canines and lower incisors;
VI. presence of rotated teeth (specially premolars and molars);
VII. Quantity of opposing teeth and other abnormalities of dentitions.
VIII. According to panoramic X-ray we determine:
IX. presence and condition of periapical tissues;
X. presence and position of the third molars;
XI. Position and contour of maxillary sinus floor.
XII. On a side view of head cephalometric we determine:
XIII. sagittal and vertical position and inclination of the jaws relative to anterior skull base (angles sna, snb, sn/ nl, sn/ ml);
XIV. skeletal type of the jaws[2]
XV. Position and inclination of incisors and molars, upper incisors to the skull base, lower incisors to the plane of the lower jaw body, interincisal angle (angle ii).
XVI. Besides it is necessary to study facial signs of the full face front and profile:
XVII. symmetry of the face;
XVIII. position of the lips relative to esthetic line;
XIX. Position of the chin relative to facial angle and nasal axis (Figure 1).

Figure 1 Pictures of the face.

Treatment plan of adult patients with skeletal distal occlusion may include fixed appliances-bracket-arch systems, additional appliances without extraction of the teeth, with extraction of individual teeth and orthognathic surgery. Distalization of upper molars, which is usually the common way of treatment in children with Class II abnormality, is difficult in adult patients due to eruption of the 2nd and 3rd molars.[3,4] In recent years the use of microimplants for anchorage and corticotomy increased the efficacy of the replacement of the upper teeth. The most effective way of teeth correction is orthognathic surgery, which may have psychosomatic contraindications and patients' unwilling to do a maxillofacial surgery.

Clinical case

Patient KA 31 yrs case history # 572, came to the orthodontic clinic with complaints of (according to patient) "uneven teeth and ugly smile". The patient didn't have orthodontic treatment before teeth 18 and 28 were extracted on therapeutic indications. On oral examination (Figure 2) the patient has pseudo-Class I (by Angle) due to mesial inclination of lower posterior teeth, severe crowding of front teeth (multiple abnormalities of tooth position), protrusion of upper and lower incisors, mesial displacement and inclination of lower canines, mesial bodily displacement of lower premolars and molars, narrowing and lengthening of dental arches, deep traumatic overbite, chronic catarrhal gingivitis and gum recession on tooth 31 (Figure 3).

Figure 2 Pre-operative occlusion. Right, front, left view, upper and lower dentition.

Figure 3 Chronic catarrhal gingivitis and gum recession on tooth 31.

Panoramic X-ray (Figure 4) disturbance of angulation and inclination of incisors and lower posterior teeth, retention and abnormal position of the germs of the 3rd molars. Side view of headcephalometric (Figure 5) & (Figure 6) prognathism (angle SNA=86, 3), lower retroinclination (angle SN/ML=40), decreased intermaxillary angle (angle ML/NL=30), mesial inclination (3/ML=115), protrusal inclination of upper and lower incisors (angle 1/SN=113, 1/ML=102), decreased interincisal angle (angle ii=125), retention and abnormality of position of the germs of the 3rd molars.

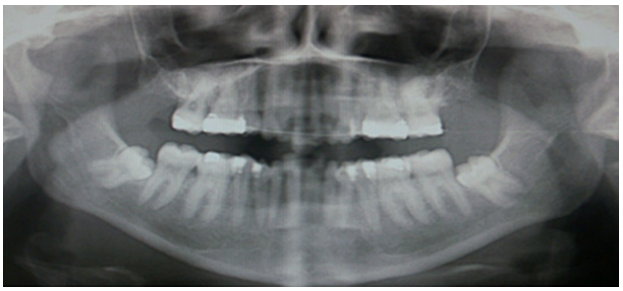

Figure 4 Pre-op Panoramic X-ray.

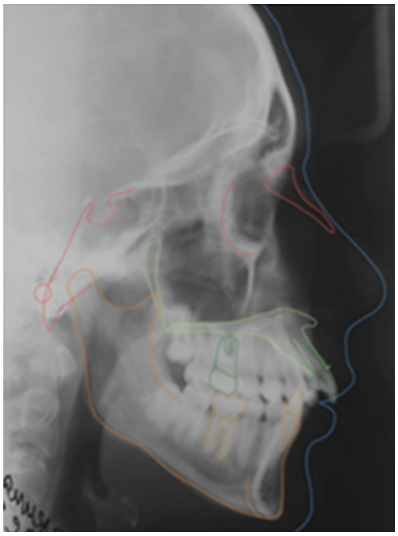

Figure 5 Head cephalometric, side view.

	Ретрогнатический					Нормальный							Прогнатический				
SNA	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
NL\NSL	16,5	15,5	14,5	13,5	12,5	11,5	10,5	9,5	8,5	7,5	6,5	5,5	4,5	3,5	2,5	1,5	0,5
NSBa	146	144	142	140	138	136	134	132	130	128	126	124	122	120	118	116	114
ML\NSL	48	46	44	42	40	38	36	34	32	30	28	26	25	24	23	22	21
SNB	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88

Figure 6 Analysis by Hasund. Skeletal form of distal occlusion.

The patient has skeletal form of abnormality; orthognathic surgery was indicated which patient refused.

Treatment plan: alternative treatment was performed, Roth fixed appliance was used (Figures 7–11).

i. Extraction of 14, 24 and impacted 38, 48.

Citation: Vasilyeva MB, Kosyreva TF. Paradox in orthodontic treatment of the adult patient with maxillary prognathism and distalization of low posterior teeth. *J Dent Health Oral Disord Ther.* 2016;4(5):132–135. DOI: 10.15406/jdhodt.2016.04.00125

ii. Retraction of canines and retrusion of upper incisors.

iii. Distalization of lower posterior teeth.

iv. Normalization of lower incisor position.

Stable result of the orthodontic treatment is confirmed by a follow-up in 6 years (Figure 12) & (Figure 13).

Figure 7 During treatment.

Figure 8 Post-op occlusion. Right, front, left view, upper and lower dentition.

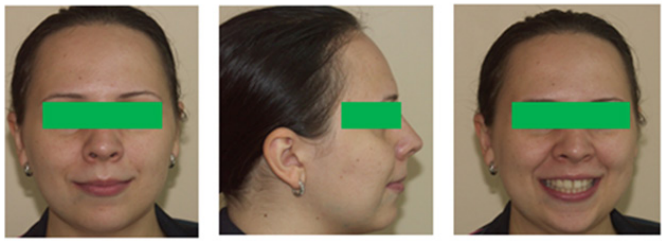

Figure 9 Pictures of the face after the treatment. Treatment outcome after 25 months.

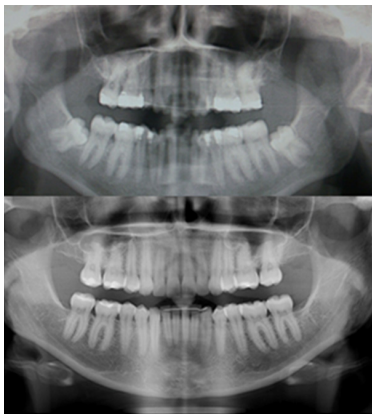

Figure 10 Pre-op and post-op panoramic x-ray.

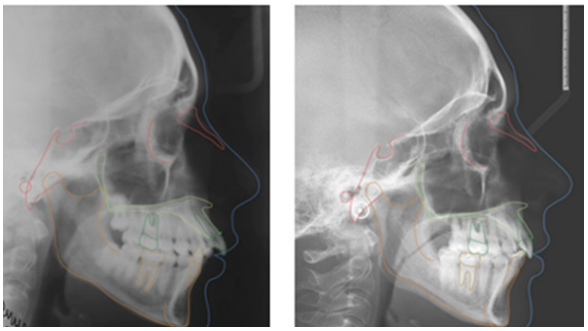

Figure 11 Pre-op and post-op side view of the head cephalometric.

Figure 12 Post-op occlusion (delayed result, after 6 years). Right, front, left view, upper and lower dentition. Stable occlusion.

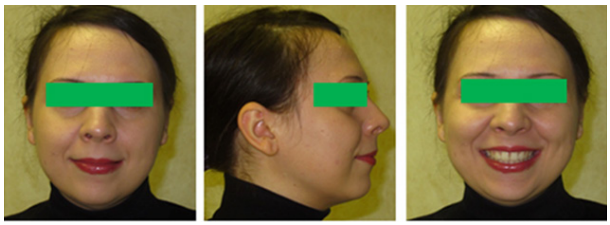

Figure 13 Post-op pictures of the face after 6 years.

Results

After analysis of jaw anthropometric models we determined 7 mm deficiency of space in the mandible. Thus extraction of two lower premolars would lead to expressed shortening of lower dental arch and reduction of space for tongue. As this patient has normal relations between lower and upper front teeth (Tonn formula), extraction of one of the lower incisors would prevent formation of good cusp-to-fissure occlusal contacts in posterior teeth. It was decided to distalize lower posterior teeth with extraction of lower third molars (Figure 7).

Post-op headcephalometric, side view, (Figure 8) reflects improvement of parameters (angle SNA=84, 5°), mandibular retroinclination is less expressed (angle SN/ML=37, 0°), normal inclination 3L (3/ML=100,0°), considerable improvement of inclination of upper and lower incisors (angle 1u/SN=101,0°, 1l/ML=110°), interincisal angle-physiologic standard (ii=131, 8°). Type of profile and skeletal class II malocclusion correlation between them not necessary (Figure 9). Many malocclusions have disgnatizm, although it does not exclude the ideal visible occlusal contacts at the posterior teeth. Therefore, an important task in diagnosis and treatment approach is to determine main signs of the abnormality, their cause and relationship with dentoalveolar and/or skeletal forms of the malocclusion to detect hidden pathology. Being that Skeletal Class II malocclusion can be masked due to mesial displacement

of both upper and lower teeth, mimicking Angle Class I. Post-op-cephalometric, side view, reflects improvement of parameters: mandibular retroinclination is less expressed, normal inclination of canines, considerable improvement of inclination of upper and lower incisors, interincisal angle -physiologic standard (ii=130, 1°- 131, 8°). And long-term results are stable.

Conclusion

Analyzing these cases report based on long-term results, we can conclude that the treatment of skeletal Class II malocclusion without orthognatic surgery indications for upper premolar extraction depends from severity of Maxillary Prognathizm and mesial inclination of posterior upper teeth. Lower molars distalization depends from mesial inclination of posterior low teeth. Regardless of the differences with the generally accepted standards for the facial profile and incisor's inclinations, interincisal angle at the end of treatment corresponded to normal and, therefore, a good physiological load of these teeth.

Funding

None.

Acknowledgements

None.

Conflicts of interest

The author declares there are no conflicts of interest.

References

1. Nettsel F, Schulz K. *A Practical Guide to orthodontic diagnosis*. 2006. p. 68.
2. Hasund A. *Clinical cephalometry for the mountain technique. University of Bergen*, Norway; 1973.
3. http://www.kfo-online.de/31/bioprog01a.html
4. Ruf S, Pancherz H. Orthognathic surgery and dentofacial orthopedics in adult CLASS ii Division I treatment. *Am J Orthod Dentofacial Orthop*. 2004;126(2):140–152.

Citation: Vasilyeva MB, Kosyreva TF. Paradox in orthodontic treatment of the adult patient with maxillary prognathism and distalization of low posterior teeth. *J Dent Health Oral Disord Ther.* 2016;4(5):132–135. DOI: 10.15406/jdhodt.2016.04.00125