

## DENTAL MIDLINE SHIFT IN LIBYAN ORTHODONTIC PATIENTS

Fathia Hammad Mohammad \* 

### ABSTRACT

**Background:** Pleasant look of dentition is of paramount importance, especially in adolescents and young adults. Midline shift is of prime factors affecting dental esthetics. The **aim** of this study was to determine dental midline shifting clinically in a group of Libyan patients.

**Material & Method:** the study was carried out on 516 Libyan patients aged 16-36 years who were randomly selected from consecutive patients attending orthodontic clinic in Benghazi dental faculty in the period 1996- 2016. Inclusion criteria included a full set of permanent dentition excluding third molars, with no history of extraction or previous orthodontic treatment. The position of midline diastema determined by locating the position of the tip of the gingival papilla to the philtrum and coinciding them with the facial midline. Facial midline was determined by marking a point between nasion, the center of philtrum until pogonion then relating upper and lower arches. Midline shift was measured by a scale.

**Results:** about 26.55% of patients had a dental midline shift and more midline shift in the lower jaw. Shift to right side in 66 (12.79%) patients, and shift to left side in 27 (5.23%) patients. In the upper arch shift to right side was recorded in 32 (6.20%) patients and shift to left side in 12 (2.33%) patients.

**Conclusion:** shift of the dental midline was more in the lower dental arch, especially to the right side. Although a much smaller number of patients had midline shift in the upper arch, it also was more to the right side.

**KEY WORDS:** Midline shift, Orthodontic Libyan patients, Clinical Study

\* Assistant Professor, Department of Orthodontics, Faculty of Dentistry, University of Benghazi

## INTRODUCTION

It is well known fact that there is an increased concern for dental appearance during adolescent and adulthood. One of the main reasons for patients to seek orthodontic treatment is esthetic or cosmetic cases. Midline is an essential reference for all esthetic deviations, so knowledge of the midline position results in an improved understanding of dental esthetic invariably<sup>2</sup>.

The importance of midline asymmetries in orthodontic diagnosis and treatment planning, is justified by the large number of cases with midline disturbances treated by orthodontists<sup>1,2,3</sup>. Dental midline is usually evaluated by locating the tip of gingival papilla between the maxillary central incisors. The gingival papilla should be located below the center of the philtrum of the upper lip.<sup>4</sup> Although a suitable asymmetry between the facial and dental midline may exist within acceptable limits, significant discrepancies can alter the level of the dental attractiveness and may be detrimental to facial esthetics<sup>5,6</sup>. Knowledge about the extent and distribution of different malocclusion problems in a certain geographic location may help orthodontists for better understanding and dealing with the problem and help them in proper orientation and management of treatment possibilities. This study attempts to evaluate the transverse component of malocclusion (dental midline shift) in a group of Libyan population sample in the hope to provide a reference for the future studies in this regard.

## SUBJECTS & METHODS

A sample of Libyan patients comprised 516 orthodontics patients aged (16 to 36 years; average age 25 years) were randomly selected in the dental clinic provided that the patient having full

set of permanent dentition starting from 2<sup>nd</sup> molar to 2<sup>nd</sup> molar in both the dental arches. The patient should not have any previous dental extractions of permanent teeth, dental surgery or previous orthodontic treatment, midline diastema or any cranio-facial anomaly were excluded.

The dental clinical examination of the position of the upper midline includes visual check of the gingival papilla between the maxillary central incisors teeth. In the standard middle position, the gingival papilla should be located below the center of the philtrum and coincides with the facial midline.

Radiographically, the facial midline was examined by marking a point between nasion, center of philtrum until pogonion then relating the upper to lower arches. the midline shift was considered if there is more than 0.5 mm difference with help of scale.

## RESULTS

The present study was conducted on 516 randomly selected individuals in accordance to their availability 136 males (26.3%) and 380 females (73.6%) within the age range of 16 to 36 years average age of 25 years. Intra-arch measurements midline deviation was recorded. of a total of 516 subjects, a midline shift was noticed in 137 subjects (26.5%). The highest number of cases of midline shift was recorded in the lower jaw shifted to the right side in 66 (13.7%) subjects and to the left side in 27(5.2%) subjects. While the lowest number of cases was recorded in the upper jaw shifted to 44 (8.5%), cases to the left side were 12 (2.3%) and to the right side 32 (6.2%) subjects (Table 1). There was no statistically significant difference ( $P=0.189$ ) between prevalence of midline shift in males and females (Table 2).

TABLE (1): Prevalence of midline shift in the study sample

Midline shift	No. of pts	Percentage (%)
None	369	71.512
Upper shifted to the right	28	5.426
Upper shifted to the left	16	3.101
Lower shifted to the right	71	13.759
Lower shifted to the left	32	6.202
<b>Total</b>	<b>516</b>	<b>100</b>

TABLE (2): Prevalence of midline shift according to gender

Location of the Midline shift	Males		Females	
	No.	%	No.	%
None	103	75.735	276	72.6%
Upper shifted to the right	6	4.412	29	7.6%
Upper shifted to the left	3	2.206	12	3.1%
Lower shifted to the right	22	16.176	42	11.0%
Lower shifted to the left	2	1.471	21	5.5%
Total	136	100%	380	100%

## DISCUSSION

There is a conflicting report regarding the acceptability of deviation of dental midline by orthodontists and patients<sup>7</sup>. However esthetic perception of dental professional do not always match the opinion of the patients<sup>3</sup>. The present study was undertaken to evaluate the midline shift and determine the side of shift clinically.

Deman and co-associates found the midline shift in 506 Iraqi patients in 49.4% of them, mostly in maxilla (25.89%) than the mandible (23.52%).<sup>(8)</sup> In another study of 110 Iraqi adults the incidence of dental midline shift was (51.81%), mostly to the right side in the maxilla<sup>(6)</sup>. In Brazil, Souza and o-associates found the prevalence of (33%) in 84 patients<sup>(9)</sup>. While Borzabadi-Farahani<sup>(10)</sup> determined the prevalence of malocclusion, occlusal trails

in urban 502 Iranian school children the midline deviation was present in (23.7%). According to Daniela et al, the prevalence of midline shift in 384 patients was (20.7%) mostly in girls<sup>(11)</sup>.

Comparatively the findings in this study the midline shift figure is consistent with the findings in other worldwide studies. Although there is no difference in the gender regarding the midline shift but it is mostly to the right side. Further controlled studies on a larger scale is to be conducted to determine the true figure in the country.

## CONCLUSION

The current study showed that shifting of the lower dental midline to right side in the majority of the sample for males and females

## ACKNOWLEDGEMENT

I'm grateful to the help provided by Professor Mohamed Ingafou from the department of Oral Medicine in this faculty for the unlimited support and advice.

**Source of funding:** None

**Conflicts of Interest:** None

## REFERENCES

1. Tjan AH, Miller GD, The JG. Some esthetic factors in a smile. *Jprosthet. Dent.* 1984;51(1): 24-28.
2. Beyer JW, lindauer SJ. Evaluation of dental midline position. *Seminorthod.* 1998; 4(3): 146-152.
3. Machado AW, Moon W, Gandini LG, Jr. Influence of maxillary incisor edge asymmetries on the perception of smile esthetics among orthodontists and laypersons. *Am J Orthod Dentofacial orthop.* 2013;143(5):658-4.
4. Kokich V. Esthetics and anterior tooth position on orthodontic perspective. *J Esthet. Dent.* 1993;3(5):200-7.
5. Janson G, Branco NC, Fernandes TM, Sathler R, Garib D, lauris JR. influence of orthodontic treatment, midline position, buccal corridor and smile arc on smile attractiveness. *Angle Orthod.* 2011;81(1):153-61.
6. Jamille BF, Licinio ES, Marcia TO, Andrea FJ, Adriana CS and Jose NM. Perception of midline deviation in smile esthetics by laypersons. 2016;21(6):51-7.
7. Khan, F M, Qamar KN. Coincidence of facial midline with dental midline. *Pakistan Oral&Dent j.* 2014; vol.34 (2):355-7.
8. Deman HH, Tara SH, Asma QR, Rebin AM. Prevalence of dental midline shifting in a sample of orthodontic patients in Erbil city. *J UniverReparin.* 2020;7(1): 545-55.
9. Souza LA, Elmadjian TR, Dias RB, Coto NP. Prevalence of malocclusions in the 13-20-year-old categories of football athletes. *Brazil OrthoResear.* 2011;25(1):19-22.
10. Borzabadi F, Borzabadi FA, Eslamipour F. Malocclusion and occlusal traits in an Urban Iranian population. An epidemiological study of 11 to 14 years old children. *Eur J Orthod.* 2009; 31:477-84.
11. Daniela A, Georgeta Z, Calalina LS, Alina S. The prevalence of dental midline in a group of orthodontic patients. *nRevista de Chimie-Bucharest.* 2018; 69 (12): 3626-9.