Pakistan Journal of Pharmaceutical Research
Faculty of Pharmacy, Bahauddin Zakariya University Multan, Pakistan
ISSN: 2410-6275 **Jan, 2019** **DOI:** 10.22200/pjpr.2019137-41

Review Article

The efficacy of surgical and non-surgical method for the treatment of malocclusions of skeletal class II

Sarah Ashfaque, Ashfaq Ahmad*, Mumtaz Hussain, Hina Batool
Sheikh Zayed Medical College/Hospital Rahim Yar Khan

Received: Jun, 08, 2020
Revised: Jun, 13, 2020
Accepted: Jun, 22, 2020
Online:

Abstract

Background: *There are primary 32 teeth of normal person each of which are present in the pair form in upper and lower portion which tells that there are six pairs of teeth in mouth including upper and lower incisors. Strength of each pair is different from other on the basis of presence and nature of job because each pair is responsible of working different job from other pair. There are two types of treatment of these teeth that includes both surgical and non-surgical methods and both are effective for the treatment of malocclusions of skeletal class II.* ***Objective:*** *The study was conducted to find that the most effective treatment that can used to improve the quality of life for the patients dealing with malocclusions of skeletal class II. Furthermore, the study also found the efficacy of surgical and non-surgical methods for the treatment.* ***Methodology:*** *A cross sectional study was performed in the hospital to determine the clear understanding of dental procedures. In the study total number of patients was 28 from which most of the participants were women as 26 were female while only 2 were male. The mean age of patient was selected before conducting the study and patients below or above than that age was excluded from the study and average age ranges from 20 to 40 years.* ***Results:*** *The results determined that surgical and non-surgical treatment can be used for the treatment. Various method for surgical treatment are used but from various methods the most common and effective method was overjet correction, Herbst and camouflage.* ***Conclusion:*** *It was concluded from the results that the analysis of strength of pair of teeth is important and helps the health care practitioner in doing treatment in effective manner. The strength of pair depends on the pair, age and gender. Mostly patients whose data was collected for the study were women which show that gender has higher influence on strength of teeth's pair.*

Keywords: Malocclusions of skeletal class II, growth modification, orthognathic surgery, occlusions, Orthoganthic surgery

Introduction

Malocclusions of skeletal class II can be treated by a health practitioner in 3 various ways such as by orthognathic surgery, growth modification or alteration and Camouflage. The treatment of skeletal class II depends on different factors such as overjet, age of patient, gender, growth status and severity of the disease occlusions (Bock and Ruf, 2012, Chaiyongsirisern *et al.*, 2009). The experiments have been made on finding the best method among that can treat such disease effectively and research showed that all means of treatment are good enough that there is now no need to worry for the people during treatment of teeth that is major loop hole of young and adult. The patients that are suffering with moderate or severe class II with deficient mandible are usually treated with the Orthoganthic surgery to move forward mandible with the bilateral sagital split osteotomy (Marsico *et al.*, 2011)

The selection of treatment for the disease depends on the choices of patient as well as severity of disease such as surgery is the best option but cannot be performed without patient willingness. But most of the patients preferred nom-surgical treatment and other alternative treatment for the treatment of disease. Many studies have been studied to determine the outcomes of different type of treatment such as surgical and non-surgical treatment for improving the quality of adolescent (Nucera *et al.*, 2016)

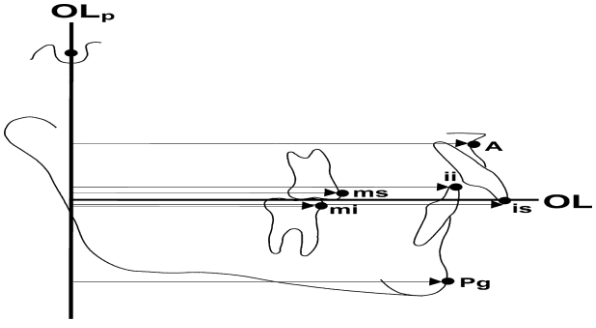

Figure 1: Rlp plans sections wise pairs differences.

***Corresponding Author:** Ashfaq Ahmad
Address: Sheikh Zayed Medical College/Hospital Rahim Yar Khan
Email address: ashfaqahmadnishter@gmail.com

Overjet correction method that was used in this article was compared with other types of treatment such as mandibular sagittal split osteotomy and Adult Herbst treatment. It was shown in figure 1 the study that occlusal results can be comparable between various groups by dental changes were major in the Herbst patients (Perillo *et al.*, 2011)

Many researchers and health care practitioners have recommended the Herbst treatment for the adult class II division 1 borderline cases. No any study has been performed in the past to determine the treatment of this disease by using Herbst appliances in class II appliances. The purpose of this study is to determine the dental skeletal effects for the treatment of Class II adults by Herbst appliance (Michelotti *et al.*, 2011)

Literature Review

Cassidy *et al.* concluded a study to determine the most common treatment of malocclusions of skeletal class II. The data of almost 150 patients was collected to determine the effects of all treatment for healthy life. Different methods of treatment were performed in various groups to check most effective method. The result concluded that Hesbst is the most common and effective method because it gives good results as campared to other used treatment method. Furthermore, the study also determined that surgery is the last option for the severe cases (Janson *et al.*, 2013).

Proffit et al. conducted a study to review various surgical and non-surgical treatments for malocclusions of skeletal class II by reviewing the treatment methods. During the review of camouflage (a non-surgical treatment) and surgical treatment, it was found that various parameters can alter the efficacy of treatment. The effect of cephalometric and cast measurement was also evaluated by determining its efficacy before and after treatment. The study showed that end results of the treatment in various group was almost similar. The study indicated that in various surgical treatments, the most effective and highly efficient method was overjet correction method (Baccetti *et al.*, 2009).

A study was conducted by Kinzinger et al. to find the outcomes in the patients that were dealing with Class II Division I malocclusions at the age of 60 after the surgical and non-surgical treatment. The results of studies found alteration in all skeletal categories because skeletal base highly influence the treatment. The treatment of patients in the study had reduction in overjet and significant protrusion was present in the incisors. Furthermore, it was also found that camouflage treatment is also helpful for treatment of incisors. Before the starting of surgery, alignment of teeth is essential because crowding can alter the results (Sloss *et al.*, 2008, Cacciatore *et al.*, 2014).

Mihalik et al. conducted a study to perform a long term follow up for adults of Class II that has been treated with overjet correction, camouflage as well as surgical treatment and post-deband results were analyzed after collecting data from patients. After the treatment and proper setting of patients, they were allowed to go home to perform regular function and after 12 years of treatment they were called for follow-up. The results of study determined that treatment with both surgical and non-surgical methods give good and acceptable correction of malocclusion. It was reported in the study that overbite enhanced to some extinct while overjet

increase in the patient who were treated with surgical methods.

Objective

The study was conducted to find that the most effective treatment that can use to improve the quality of life for the patients dealing with malocclusions of skeletal class II. Furthermore, the study also found the efficacy of surgical and non-surgical methods for the treatment.

METHODOLOGY

STUDY DESIGN:

Cross Sectional Study

SETTING:

Sheikh Zayed Medical College/Hospital Rahim Yar Khan

STUDY DURATION:

4 Months

SAMPLING TECHNIQUE:

Sampling technique

SAMPLE SIZE:

28

INCLUSION CRITERIA:

- Men and Women of ages from 20 to 60 with malocclusions of skeletal class II can
- People having both professional and un-professional life and various nature of job
- The patients who are willing to perform both surgical and non-surgical treatment.
- General people belongs to different areas of country such as urban and rural
- People who are taking medication for the management of pain

EXCLUSION CRITERIA:

- People who are not taking any precaution or medication
- The people who are not interested in surgical treatment.
- Patients with an co-morbidity of any disease such as diabetes and blood pressure
- People below the age of 20

Statistical Tool

SPSS version 19

Statistical T-test used.

ETHICALCONSIDERATION

- Written informed consent was taken from all the patients.
- The subject was informed there are no disadvantages or risk on the procedure of study.
- Data will be saved in personal laptop and hard copies from data will be in locker.
- All informed and collected data will be kept confidential.
- Participants will remain anonymous throughout the study
- They were also informed that they are free to withdraw at any time during the process of the study

DATA COLLECTION

- Data collection sheets were utilized to collect the data.
- The data was gathered according to the variable of gender, qualification, awareness and age
- The demographic data was collected from all the patients.
- The patients who were unable to fill the performa, the data was collected from their relatives.

DATA ANALYSIS

- Appropriate statistical technique for collection of data as well as for data analysis was used with SPSS version
- T-test was pragmatic in statistical P-value<0.05 is analyzed.

Results

Table 1: Molar_relation2

molar_relation1 * molar_relation2 Crosstabulation					
Counts		molar_relation2			Total
		class1	supra 1	class 3	
molar_relation1	class 1	0	1	0	1
	class 2	3	3	2	8
	1/2 cusp 2	3	5	1	9
	1/4 cusp 2	1	1	0	2
	3/4 cusp 2	2	0	1	3
Total		9	10	4	23

The table 1 indicates the frequency of treatment method that are applied for the various pairs of teeth. All the six classes of teeth were accessed in the test. The results indicated that there was no any problem in class 1 and class 2 pair of teeth but other pairs has direct related with the treatment. T-test was also applied in the test whose results showed that these results are not significant because the value was greater than 0.05.

Table 2: Molar_relation1 * molar_relation2 Crosstabulation

Count							
		molar_relation2					Total
		class1	supra 1	class 2	1/2 cusp 2	class 3	
molar_relation1	class 1	0	1	0	0	0	1
	class 2	3	4	0	0	2	9
	1/2 cusp 2	3	7	1	0	1	12
	1/4 cusp 2	1	1	0	0	0	2
	3/4 cusp 2	2	0	0	1	1	4
Total		9	13	1	1	4	28

The table 2 determined the relation between molar relation 1 and molar relation 2 teeth. Lateral headfilms from before Herbst treatment (T1), after Herbst–Multibracket treatment (T2), and after retention (T3) were analysed. The 'sagittal-occlusal analysis' (SO analysis, Figure 1) according to Pancherz (1982) as well as standard cephalometric variables (Figure 2) were used for the assessment of the treatment and post-treatment dentoskeletal changes. .Paired t-test statistics were performed to determine means differences of pretreatment and post treatment pairs of skeletal variables. Correction in sagittal direction was determined by the mean difference of ANB which was 1.23+_1.32mm (p=0.000) and the difference was small but was statistically significant. SNB angle was increased (-1.59mm +_1.51mm) p=0.000 while linear measurement OLp-pg is -7.50mm+_6.76mm (p= .000) and Co-Gn 3.20mm+_3.62mm (p=0.000) were increased which also showed it is statistically significant. This showed that the correction was mainly attributed to mandibular forward movement by statistically classified that there are sufficient evidence to indicate that the treatment affects average measurement. For the whole sample, Mean Overjet correction of 5.42mm+_2.73mm (p=0.000) was observed. The change was statistically significant. Molar relation was corrected by 1.28mm+_2.55mm p=0.01, the change in molar relation is statistically significant.

Discussion

The results determined that the most effective treatment for the improve affect was overjet correction because this method is effective and easy includes in non-surgical treatment. The results were similar to a study conducted by Mihalik et al. which also stated that both surgical and non surgical

methods are used for treatment but the most effective is overjet correction as compared to other. It was also found in the study that the treatment options depend on the nature of disease, severity of disease and willingness of patient. The surgical method gives better results but morbidity rate is high in surgical treatment method of occlusion of Class II.

The results found that the strength of teeth and its pair also influence the treatment because the pair of teeth which has high strength needs better and effective method that can treat the teeth in good manner. The results were similar to a study performed by Kinzinger et al. which find the outcomes in the patients that were dealing with Class II Division I malocclusions at the age of 60 after the surgical and non-surgical treatment. The results of studies found alteration in all skeletal categories because skeletal base highly influence the treatment. The treatment of patients in the study had reduction in overjet and significant protrusion was present in the incisors. Thus, it was clear that our results were similar with that study.

Conclusion

It was concluded from the results that the analysis of strength of pair of teeth is important and helps the health care practitioner in doing treatment in effective manner. The strength of pair depends on the pair, age and gender. Mostly patients whose data was collected for the study were women, which show that gender has higher influence on strength of teeth's pair.

References

Baccetti, T Franchi, L and Stahl, F. (2009). Comparison of 2 comprehensive Class II treatment protocols including the bonded Herbst and headgear appliances: a double-blind study of consecutively treated patients at puberty. American Journal of Orthodontics and Dentofacial Orthopedics, **135**: 698. e1-698. e10.

Bock, NC and Ruf, S. (2012). Dentoskeletal changes in adult Class II division 1 Herbst treatment—how much is left after the retention period? European journal of orthodontics, **34**: 747-753.

Cacciatore, G Alvetro, L Defraia, E Ghislanzoni, LTH and Franchi, L. (2014). Active-treatment effects of the Forsus fatigue resistant device during comprehensive Class II correction in growing patients. The korean journal of orthodontics, **44**: 136-142.

Chaiyongsirisern, A Rabie, AB and Wong, RW. (2009). Stepwise advancement Herbst appliance versus mandibular sagittal split osteotomy: treatment effects and long-term stability of adult Class II patients. The Angle Orthodontist, **79**: 1084-1094.

Janson, G Sathler, R Fernandes, TMF Branco, NCC and De Freitas, MR. (2013). Correction of Class II malocclusion with Class II elastics: a systematic review. American Journal of Orthodontics and Dentofacial Orthopedics, **143**: 383-392.

Marsico, E Gatto, E Burrascano, M Matarese, G and Cordasco, G. (2011). Effectiveness of orthodontic treatment with functional appliances on mandibular growth in the short term. American Journal of Orthodontics and Dentofacial Orthopedics, **139**: 24-36.

Michelotti, A Buonocore, G Manzo, P Pellegrino, G and Farella, M. (2011). Dental occlusion and posture: an overview. Progress in orthodontics, **12**: 53-58.

Nucera, R Giudice, AL Rustico, L Matarese, G Papadopoulos, MA and Cordasco, G. (2016). Effectiveness of orthodontic treatment with functional appliances on maxillary growth in the short term: A systematic review and meta-analysis. American Journal of Orthodontics and Dentofacial Orthopedics, **149**: 600-611. e3.

Perillo, L Cannavale, R Ferro, F Franchi, L Masucci, C Chiodini, P and Baccetti, T. (2011). Meta-analysis of skeletal mandibular changes during Fränkel appliance treatment. The European Journal of Orthodontics, **33**: 84-92.

Sloss, EA Southard, KA Qian, F Stock, SE Mann, KR Meyer, DL and Southard, TE. (2008). Comparison of soft-tissue profiles after treatment with headgear or Herbst appliance. American journal of orthodontics and dentofacial orthopedics, **133**: 509-514.