EGYPTIAN DENTAL JOURNAL
www.eda-egypt.org
VOL. 71, 173:189, JANUARY, 2025
PRINT ISSN 0070-9484 • ONLINE ISSN 2090-2360
ORAL SURGERY
Submit Date : 14-10-2024 • Accept Date : 13-11-2024 • Available online: 01-01-2025 • DOI : 10.21608/edj.2024.327350.3227

MANAGEMENT OF TONGUE ULCER AND TEMPOROMANDIBULAR JOINT SUBLUXATION IN EHLER-DANLOS SYNDROME VERSUS NON-SYNDROMIC PATIENTS

Ahmed Mohammed Shraki * *and* Ahmed Abdelmohsen Younis Ahmed Ali **

ABSTRACT

Objective: In our study we were focusing on treatment of ulcers in the lateral border of the tongue caused by repeated trauma and Temporomandibular joints (TMJ) subluxation. Moreover, we compared the results among non-syndromic patients (normal patients) versus syndromic patients (Ehlers-Danlos syndrome (EDS)].

Methods: This clinical, interventional, prospective, and randomized controlled study was carried out on individual chosen from the outpatient clinic. The study has been performed on 20 patients divided into two groups equally, Group I (control group) consisted of 10 normal patients had tongue ulceration and TMJ subluxation (4 males and 6 females). Group II (study group) consisted of 10 patients had tongue ulceration and TMJ subluxation with Ehler-Danlos syndrome (4 males and 6 females).

Results: After one day, group I showed a significant reduced pain score contrasted to group II (P-value = 0.015). After two days, group I revealed a significantly reduced pain score contrasted to group II (P-value = 0.012). After seven days, group I revealed a statistically significantly reduced pain score contrasted to group II (P-value = 0.071). A significant reduction in the diameter in group I in a shorter period contrasted to group II (P-value = 0.005).

Conclusion: low level laser therapy is an effective tool for management of tongue ulcer and intrarticular injection of auotologous blood is a magic choice for management of temporomandibular joint subluxation. However, non- syndromic normal patients showed marked and rapid improvement more than patients with Ehler-Danols syndrome.

KEYWORDS: Tongue Ulcer, Temporomandibular Joint Subluxation, Ehler-Danlos Syndrome, Auotologous Blood, Intrarticular Injection

* Periodontology Department, Faculty of Dentistry, Zagazig University, Zagazig, Egypt
** Oral and Maxillofacial Surgery, Faculty of Dentistry, Suez Canal University, Ismailia, Egypt

INTRODUCTION

Ehlers-Danlos syndrome (EDS) is a heterogeneous collection of hereditary connective tissue disorders marked by irregularities in collagen synthesis and structure, exhibiting skin hyperextensibility, joint hypermobility, tissue fragility evidenced by easy bruising, and delayed wound healing accompanied by atrophic scarring [1].

Johnson and Falls [2]concluded that EDS might be inherited as an autosomal dominant feature following an extensive study of 32 cases. The first molecular defect was identified by Pinnell et al. [3] as a deficit of lysyl hydroxylase in an autosomal recessive variant of Ehlers-Danlos disease. EDS has been categorized into six primary kinds based on the Villefranche nosology [4].

It impacts males and females equally of all races with a female predominance. The most common subtype, hypermobile EDS (hEDS), presents with Skin hyperextensibility with the skin appearing soft, doughy, and easily stretched beyond normal limits, joint hypermobility, and tissue fragility [5].

Tissue fragility is a hallmark of EDS, meaning that the body's connective tissues, including bones, cartilage, ligaments, and the protective walls of blood vessels, exhibit increased fragility. This symptom may result in increased susceptibility to bleeding and bruising, as well as delayed healing of the wounds, and increased vulnerability to injury. Individuals with EDS may furthermore exhibit excessively wrinkly skin due to the abnormal collagen structure. Other common findings in EDS patients include flat feet, also known as pes planus, because of the laxity of the ligaments and tendons in the feet [6].

Oral manifestations of EDS are increasingly recognized, including severe periodontitis and subsequent tooth loss due to the connective tissue disorder affecting the periodontal ligament and alveolar bone, poor wound healing, mucosal fragility, and tongue hypermobility [7].

Tongue hypermobility in EDS is thought to result from abnormal collagen fibers within the lingual frenulum and intrinsic tongue musculature, leading to laxity and increased elasticity [8]. This allows for excessive tongue movements and positions not typically seen in unaffected individuals. Tongue hypermobility with absence of the lingual frenulum occurs in approximately 71% of EDS patients and is considered a distinct diagnostic criterion [8].

Excessive tongue mobility can lead to repetitive trauma and ulceration of the lateral tongue borders which is very painful [7].

Knowledge of the oral features of EDS is important for proper diagnosis, management, and counseling of affected patients [7].

Increased awareness of the oral complications of EDS among dental and medical providers is crucial for early recognition and prevention of further morbidity in these patients [9].

There has been suggestion in various studies that ulcers may be managed using low-level laser treatment [10]. Other than alleviating pain and suffering, it also promotes the healing of ulcers [11].

Temporomandibular joints (TMJ) subluxation in EDS is thought to be of the core symptoms of EDS (JS), which are defined as excessively mobile joints that move beyond their normal range. Excessive TMJ mobility can result in increased maximal mouth opening (MMO), pain and discomfort in the periauricular region. TMJ hypermobility is more common in females [1].

In hypermobility, the condyles traverse beyond the articulatory eminence, that has a relatively steep short posterior slope (the functional aspect of the joint), but the articular eminence' anterior surface possesses a longer and less steep slope, resulting in a skip of the condyle complex during the mouth maximum opening [5, 12].

The clicking sound in the final phases of opening of the mouth is considered a sign of the condyle subluxation that progresses anteriorly along the

articular eminence in an attempt to adapt. The alterations may be attributed to the tendency of the osseous condylar surfaces and the "weakness" of the muscle structure and ligament [12].

Treatment for subluxation includes injection of autologous blood to act as a sclerosing agent. The first report on the management of TMJ subluxation was made by Brachmann in 1964. Nevertheless, the use of autologous blood injections in the TMJ did not achieve widespread acceptance for reasons that remain ambiguous. This approach was recently re-instated. This research aims to document our experience with autologous blood injections as a therapy for persistent recurring TMJ subluxation [13, 14].

In our study we were focusing on treatment of ulcers in the lateral border of the tongue caused by repeated trauma and TMJ subluxation. Moreover, we compared the results among non-syndromic patients (normal patients) versus syndromic patients (EDS).

METHODS

This clinical, interventional, prospective, and randomized controlled study was carried out on individual chosen from the outpatient clinic, Department of Oral and Maxillofacial Surgery at Faculty of Dentistry and Department of Dermatology at Faculty of medicine in Suez Canal University and Zagazig University. The study has been performed on 20 patients divided into two groups equally, Group I (control group) consisted of 10 normal patients had tongue ulceration and TMJ subluxation (4 males and 6 females). Group II (study group) Consisted of 10 patients had tongue ulceration and TMJ subluxation with Ehler-Danlos syndrome (4 males and 6 females).

This work has been approved by the ethical committee. Each participant received full explanations of the surgical procedures, any complications, the entire study schedules, and the photographs that were used in the scientific study and signed the consent form.

Inclusion criteria was patients middle-aged adults, have painful tongue ulcer for the past 2 weeks, have pain in front of the ear (TMJ subluxation), ASA I patients (control group) and EDS hypermobile type III (study grousp).

Exclusion criteria were pregnant or lactating patients, smoker patients and have dysplastic histopathologic criteria.

Patients were divided into two groups: Group I (control): 10 non-syndromic patients (normal) and Group II (study): 10 syndromic patients (EDS). Application of low-level laser on traumatic ulcer on tongue and injection of autologous blood inside TMJ was performed on each patient.

Clinical examination for Group I:

Examination for tongue ulceration

Clinical examination showed ulcers on the lateral border of the tongue ranging from 0.5 cm to 1 cm in diameter due to variant reasons such as old broken restorations, bruxism poorly fitting dentures, burning from eating hot food, eating spicy or acidic foods and brushing the teeth with a hard-bristled brush. All the ulcers' diameters were measured by a digital caliper and recorded as shown in table 1:

TABLE (1) Records of tongue ulcers diameter in group I

Patient	Gender	Diameter (cm)
1	F	0.9
2	F	0.9
3	F	0.9
4	F	1
5	F	0.6
6	F	1
7	M	0.9
8	M	0.5
9	M	0.8
10	M	0.6

Examination for TMJ:

Examination revealed pain, discomfort, and clicking sound. Mouth opening measurements were collected. They increased more than normal range. Measurements of maximum mouth opening (MMO), protrusive movement (PM), Right lateral excursive movement (RLEM) and left lateral excursive movement (LLEM) were taken by digital caliper for both groups as shown in table 2

TABLE (2) REcords of mouth-opening measurements in group I

Patient	Gender	MMO (mm)	PM (mm)	RLEM (mm)	LLEM (mm)
1	F	66	15	16	16
2	F	64	16	16	16
3	F	69	15	15	15
4	F	67	15	15	15
5	F	65	16	15	15
6	F	66	16	16	16
7	M	66	15	16	16
8	M	68	15	15	15
9	M	66	15	16	16
10	M	66	15	15	15

Radiographic examination

By radiographic examination (Lateral tomography of TMJ (both Right & left joints, open & closed)), there was obvious displacement of both right and left condyles anterior to articular eminence with maximum mouth opening as shown in figure 1.

Clinical examination for Group II:

Patients of the study group showed clinical criteria of hypermobile EDS which include skin hyperextensibility (figure 2A), tissue fragility and easy bruising (figure 2B), excessive wrinkly skin (figure 2C), flat feet (figure 2D), severe periodontitis with teeth loss (figure 2E).

Examination of tongue Ulcers:

Intraoral examination revealed well-demarcated ulcers ranging from 0.5 mm to 1.5 cm in diameter on lateral borders of the tongue (figure 3). The ulcers had a yellow fibrinous base with surrounding erythema and were tender but not indurated. No other oral mucosal abnormalities were observed.

All the ulcers' diameters are measured by a digital caliper and recorded as shown in table 3:

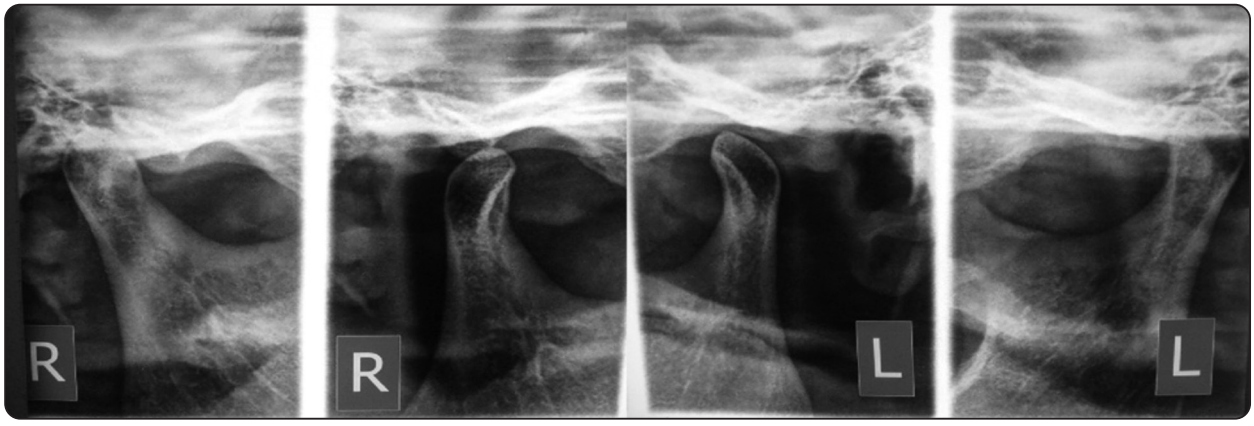


Fig. (1) Show displacement of condyles anterior to articular eminence (case no 2)

Fig. (2) A) skin hyperextensibility, B) easy bruising, C) excessively wrinkly skin, D) flat feet and E) sever periodontitis with teeth loss (case no 1)

Fig. (3) Ulcer at day zero (case no 1)

TABLE (3) Records of tongue ulcers diameter in group II

Patient	Gender	Diameter (cm)
1	F	0.8
2	F	0.7
3	F	1.5
4	F	0.6
5	F	1.3
6	F	1
7	M	1.4
8	M	0.5
9	M	1.3
10	M	1.1

Histopathological evaluation of the tongue ulcers showed the presence of a fibropurulent membrane and dense lymphocytic infiltrate (Figure 4), consistent with chronic inflammation and trauma. There was no evidence of dysplasia or malignancy. Complete remission of the lesion was expected with continuation of conservative management.

Examination of TMJ:

Same as group I, all movements were measured as shown in table 4:

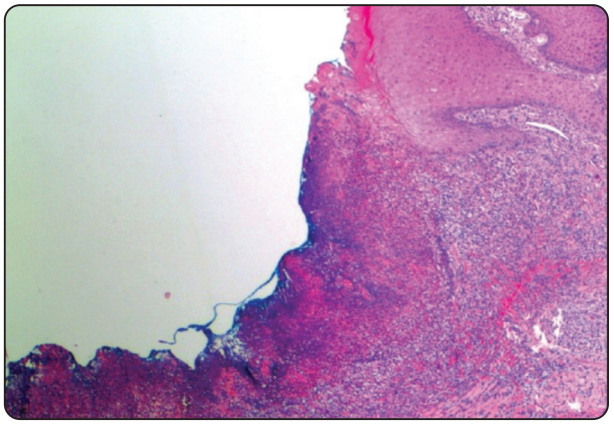


Fig. (4) Histopathological features presence of fibroprulent membrane and dense lymphocytic infiltrate (H and E) (case no 1)

TABLE (4) Records of mouth-opening measurements in Group II

Patient	Gender	MMO	PM	RLEM	LLEM
1	F	65	15	15	15
2	F	69	16	16	16
3	F	67	16	15	15
4	F	64	15	14	14
5	F	69	16	15	15
6	F	68	15	15	15
7	M	69	16	14	15
8	M	67	15	15	16
9	M	69	15	16	14
10	M	65	14	15	15

Radiographic examination: Same as group I

Management of tongue ulceration for group I:

First, Participants were required to mark their degree of pain on the visual analogue scale (VAS) and the diameter of ulcers were recorded as mentioned before. Then, elimination of the cause: any old sharp restorations that caused trauma to tongue were replaced, if the patient was complaining of clenching and bruxism, night guard was fabricated, the patients were asked to stop any irritant such as spicy food. Low-level laser therapy using a wavelength of 808 nm, a power output of 100 mW,

and an energy density of 105 J/cm^2 for a duration of 5 seconds (LAZON Medical Laser), exactly encompassing the whole extension of the lesion to promote healing. Proper oral hygiene and a soft, non-irritating diet were also recommended.

Postoperative assessment

Pain score on visual analog scale:

The participants were instructed to indicate the amount of discomfort they experienced on a 10-cm horizontal line utilizing a VAS, with 0 signifying no pain and 10 representing extreme pain. The amount of discomfort was measured one, three and seven days after the operation.

Healing time: diameter of ulcer will be measured preoperatively and postoperatively during follow-up intervals by digital caliper as shown at figure 5.

Fig. (5) Digital caliper (IDC WOOD CRAFT)

Follow-up and recall:

After 1 day, 3 days, 1 week, 2 weeks, 1 month, three months and six months.

Management of tongue ulceration for group II

Pain degree and ulcers diameters were recorded, smoothing any rough edges on the teeth adjacent to the tongue, fabrication of a night guard appliance to prevent further trauma, laser application (figure 6) and postoperative instructions.

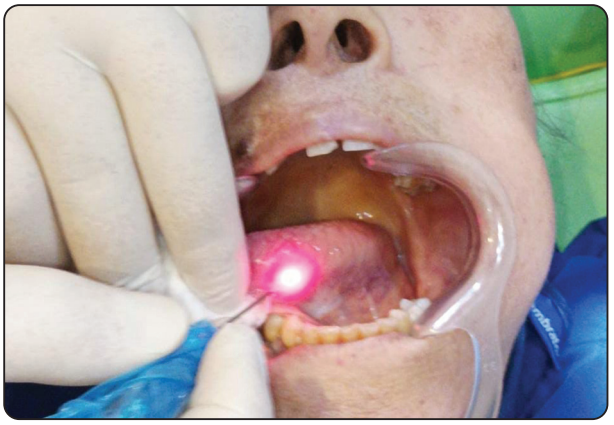


Fig. (6) Using of low-level laser to promote healing

Postoperative assessment: same as Group I

Follow-up and recall: same as Group I

Management of TMJ subluxation for both groups includes injections of autologous blood to act as a sclerosing agent.

First, pain degree was recorded and all mouth opening measurements were recorded as mentioned before. Local anaesthesia was applied to the auriculotemporal nerve. The previously known protocol for arthrocentesis included identifying the articular fossa at a location 10 mm anterior to the tragus and 2 mm inferior to the tragal-canthal line. An 18-gauge needle was placed into the upper joint space (UJS) of the TMJ, and accurate insertion was verified by the movement of the mandible upon gentle fluid injection. A second needle was inserted into the UJS of TMJ 10 mm anterior to tragus on tragal-canthal line and 2mm inferior to the line to confirm its location and facilitate fluid exits throughout the lavage procedure. The joint was thereafter irrigated with about 5 mL of lactated Ringer's solution. Three ml of blood were subsequently extracted from the patient's antecubital fossa as shown in figure 7.

Two ml were administered into the UJS, and one ml was administered around the capsule, as shown in figure 8. The second needle was removed before blood was injected into the joint. The technique was then replicated on the contralateral side in the same way. An occlusive head bandage was then placed.

Fig. (7) Withdrawing autologous blood from the patient's antecubital fossa

Fig. (8) Injecting withdrawn blood inside the joint

Post-procedure, the patient was provided with explicit instructions to facilitate their postoperative rehabilitation and control opening of their mouth. In the first two weeks, the patients consistently wore a head covering and adhered to a diet restricted to soft foods only. Commencing at two weeks, individuals began rehabilitation of jaw with progressive and controlled range of motion exercises while positioned facing a mirror. They used the head covering just during sleep and modified their diet as tolerated.

Postoperative assessment

Clinical assessment

Pain score on VAS

Maximum mouth opening improvement:

The patients were asked to open his mouth, The maximum distance between the mandibular central incisor and the maxillary central incisor incisal edges was measured using a digital caliper.

Protrusive movements improvement:

The participants were instructed to maximally protrude their jaw, and the distance between the maxillary central incisor to the mandibular central incisor incisal edges has been determined using a digital caliper.

Right lateral extrusive movement improvement:

The patients were asked to move their mandible to the right, the distance between the center of maxillary central incisors and the center of mandibular central incisors has been determined by a digital caliper.

Left lateral extrusive movement improvement:

The patients were asked to move their mandible to the left, the distance between the center of maxillary central incisors and the center of mandibular central incisors has been determined by a digital caliper.

Radiographic assessment: Lateral view of TMJ CT (open & close) was done to assess the alignment of the condyle with the articular eminence preoperatively and after 3 months

Follow-up and recall:

After 1 day, 3 days, 1 week, 2 weeks, 4 weeks, 3 months and 6 months.

RESULTS

In this work, application of low-level laser on tongue ulceration and injections of autologous blood inside TMJ was performed on 20 patients categorized into two groups:

Group I (control): non-syndromic patients (normal) and Group II (study): syndromic patients (Ehler-Danlos syndrome).

10 patients in every group (4 males and 6 females). Their ages span from 18 to 60 years, with a mean age of 38 (± 20) years.

Healing of tongue ulcer:

Pain on visual analogue scale (VAS):

Comparison between the two groups:

After one day, group I showed a significantly reduced pain score contrasted to group II (P-value = 0.015). After two days, group I revealed a significantly reduced pain score contrasted to group II (P-value = 0.012). After seven days, group I revealed a statistically significantly reduced pain score contrasted to group II (P-value = 0.071).

Changes within each group:

In group I, a statistically significant alteration in pain scores by time (P-value= 0.002).

On the first day, a slight reduction in pain existed, on the third day there was moderate relief in pain, after the seventh day there was almost no pain.

In group II, also no statistically significant alteration existed in pain scores in the first week (P-value= 0.112).

At the 2-week follow-up visit, the patients reported only partial improvement in pain. (P-value = 0.117). At the 1-month follow-up visit, a statistically significant reduction existed in pain scores (P-value= 0.002).

Healing time and diameter change:

Comparison between the two groups:

A statistically significant reduction in the diameter in group I in a shorter period contrasted to group II (P-value = 0.005).

Changes within each group:

In group I: a statistically significant decrease existed in the diameter by time as shown in table 5: (p-value =0.075).

TABLE (5) Changes in ulcer size of group I

Patient	1	2	3	4	5	6	7	8	9	10
Diameter at day 0 (cm)	0.9	0.9	0.9	1	0.6	1	0.9	0.5	0.8	0.6
Diameter at day 1 (cm)	0.9	0.9	0.8	0.8	0.5	1	0.9	0.4	0.8	0.5
Diameter on day 3 (cm)	0.4	0.4	0.5	0.5	0.1	0.4	0.4	0.1	0.4	0.1
Diameter after 1 week	Complete healing									

In Group II:

In the first two weeks, clinical examination revealed the tongue ulcers had reduced slightly in size but still appeared erythematous and infiltrated on palpation (P-value = 0.106). The borders remained irregular with overlying yellow fibrin.

At 1-month follow-up, a statistically significant reduction existed in diameter (P-value = 0.001). The tongue ulcers had healed completely, leaving slight residual erythema at the lesion sites (Figure 9).

Fig. (9) Complete healing of tongue ulcer

In table 6, measurements of tongue ulcer had been recorded as follows:

TABLE (6) Changes in diameter of ulcers within a month

Patient	1	2	3	4	5	6	7	8	9	10
Diameter at day zero (cm)	0.8	0.7	1.5	0.6	1.3	1	1.4	0.5	1.3	1.1
Diameter after 1 week (cm)	0.8	0.7	1.2	0.6	1.2	0.9	1.3	0.5	1.1	1
Diameter after 2 weeks (cm)	0.6	0.5	1.1	0.4	1	0.7	1	0.4	0.9	0.8
Diameter after 1 month	Complete healing with slight residual erythema at the lesion site									

Improvement of TMJ subluxation

Clinical evaluation

Pain on visual analogue scale (VAS):

Comparison between the two groups:

After one day, group I showed a statistically significant reduced pain score contrasted to group II (P-value = 0.011). After two days, group I revealed a statistically significantly decreased pain score contrasted with group II (P-value = 0.017). After seven days, group I revealed a statistically significantly decreased pain score contrasted to group II (P-value = 0.066).

Changes withing each group:

In Group I: a statistically significant decrease existed in pain by time (P-value = 0.004). After first day there was slight decrease in pain, third day there was more relief in pain, after seventh day there was mild or almost no pain.

In group II: a statistically significant decrease existed in pain by time (P-value = 0.004). After first day there was no decrease in pain, on the third day there was slight relief in pain, after seventh day there the pain score decreased to the half and after two weeks there was mild or almost no pain.

Figure 10 shows VAS Ruler 10 cm to express degree of pain

Fig. (10) Visual analogue scale ruler

Improvement of mouth opening measurements:

Improvement of maximum mouth opening

Comparison between two groups

A statistically significant decrease existed in maximum mouth opening in control group more than study group (P-value= 0.0125)

Changes within each group:

Group I: There was statistically significant decrease in maximum mouth opening (MMO) (P-value = 0.017) as shown in table 7:

There was a reduction in hypertranslation, by palpating the condylar head during mandibular opening and closure. Revealed reduction in mouth-opening measurements.

Group II: a statistically significant reduction existed in MMO (P-value = 0.021) as shown in table 8:

Improvement of protrusive movement (PM):

Comparison between two groups:

A statistically significant decrease existed in protrusive movement in control group more than study group (P-value = 0.057)

Changes within each group:

Group I: a statistically significant decrease in protrusive movement (PM) (P-value = 0.022) as shown in table 9:

TABLE (7) Changes in MMO measurvements in Group I patients

Patient	1	2	3	4	5	6	7	8	9	10
MMO at day zero (mm)	66	64	69	67	65	66	66	68	66	66
MMO after 2 weeks (mm)	62	60	65	63	61	63	62	64	61	60
MMO after 1 month (mm)	58	56	60	58	57	57	58	60	58	55
MMO after 3 months (mm)	50	48	51	50	49	50	51	50	48	48

TABLE (8) Changes of MMO measurements in Group II patients

Patient	1	2	3	4	5	6	7	8	9	10
MMO at day zero (mm)	65	69	67	64	69	68	69	67	69	65
MMO after 2 weeks (mm)	64	67	65	63	67	66	67	66	68	64
MMO after 1 month (mm)	62	65	63	61	65	64	65	64	66	63
MMO after 3 months (mm)	58	60	59	58	61	60	61	60	61	60

TABLE (9) Changes in PM measurements in Group I patients

Patient	1	2	3	4	5	6	7	8	9	10
PM at day zero (mm)	15	16	15	15	16	16	15	15	15	15
PM after 2 weeks (mm)	14	15	14	14	15	15	13	14	14	13
PM after 1 month (mm)	12	14	13	13	14	13	11	13	13	12
PM after 3 months (mm)	9	11	11	10	11	10	9	11	10	9

Group II: A statistically significant decrease existed in protrusive movement (PM) (P-value = 0.026) as shown in table 10:

Improvement in right lateral extrusive movement (RLEM):

Comparison between two groups:

A statistically significant decrease existed in RLEM in control group more than study group (P-value = 0.037)

Changes within each group:

Group I: A statistically significant decrease existed in RLEM (P-value = 0.029) as shown in table 11:

Group II: A statistically significant decrease existed in RLEM (P-value = 0.062) as shown in table 12:

Improvement in left lateral extrusive movement (LLEM):

Comparison between two groups:

A statistically significant decrease existed in LLEM in control group more than study group (P-value = 0.034)

Changes within each group:

Group I: a statistically significant decrease existed in LLEM (P-value = 0.027) as shown in table 13:

Group II: a statistically significant decrease existed in LLEM (P-value = 0.062) as shown in table 14:

TABLE (10) Changes in PM measurements in Group II patients

Patient	1	2	3	4	5	6	7	8	9	10
PM at day zero (mm)	15	16	16	15	16	15	16	15	15	14
PM after 2 weeks (mm)	14	15	15	14	15	14	14	14	14	13
PM after 1 month (mm)	13	14	14	13	14	13	13	14	13	13
PM after 3 months (mm)	12	13	13	12	13	12	12	13	12	12

TABLE (11) Changes in RLEM measurements in Group I patients

Patient	1	2	3	4	5	6	7	8	9	10
RLEM at day zero (mm)	16	16	15	15	15	16	15	15	16	15
RLEM after 2 weeks (mm)	15	14	14	14	14	15	14	14	15	14
RLEM after 1 month (mm)	13	12	12	13	13	13	12	11	13	12
RLEM after 3 months (mm)	11	9	9	10	10	10	10	9	10	10

TABLE (12) Changes in RLEM measurements in Group II patients

Patient	1	2	3	4	5	6	7	8	9	10
RLEM at day zero (mm)	15	16	15	16	15	15	14	15	16	15
RLEM after 2 weeks (mm)	14	15	14	14	14	14	13	14	15	14
RLEM after 1 month (mm)	13	14	13	13	13	13	13	13	14	13
RLEM after 3 months (mm)	12	13	12	13	12	12	12	12	12	12

TABLE (13) Changes in LLEM measurements in Group I patients

Patient	1	2	3	4	5	6	7	8	9	10
LLEM at day zero (mm)	16	16	15	15	15	16	16	15	16	15
LLEM after 2 weeks (mm)	15	14	14	14	14	15	14	14	15	14
LLEM after 1 month (mm)	13	12	12	13	13	13	12	11	13	12
LLEM after 3 months (mm)	11	9	9	10	10	10	10	9	11	10

TABLE (14) Changes in LLEM measurements in Group II patients

Patient	1	2	3	4	5	6	7	8	9	10
LLEM at day zero (mm)	15	16	15	16	15	15	14	15	16	15
LLEM after 2 weeks (mm)	14	15	14	14	14	14	13	14	15	14
LLEM after 1 month (mm)	13	14	13	13	13	13	13	13	14	13
LLEM after 3 months (mm)	12	13	12	13	12	12	12	13	12	12

Radiographic evaluation

Position of the condyle to articular eminence:

Comparison between the two groups: a statistically significant improvement existed in position of the condyle head in Group I more than group II (P-value = 0.074)

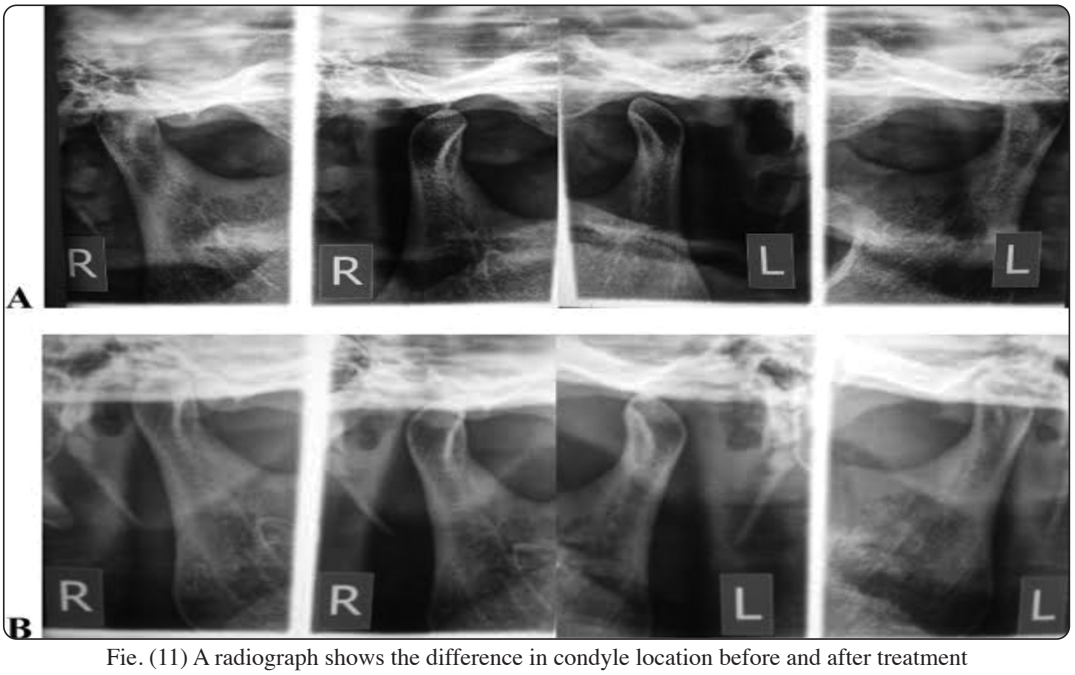
Changes within each group

Group I: a statistically significant improvement by Radiographic examination existed (P value = 0.069), as shown in Figure 11:

(A) Before treatment

(B) After treatment: there is no loss in components of bone, the condyle doesn't show any exceeding of the articular eminence with maximum mouth opening

Group II: a statistically significant improvement existed in condyle position (P-value= 0.081)



Fie. (11) A radiograph shows the difference in condyle location before and after treatment

DISCUTION

Ehlers-Danlos Syndrome (EDS) comprises a collection of inherited connective tissue illnesses distinguished by skin hyperextensibility, joint hypermobility, and tissue fragility [15, 16]. Tongue hypermobility and TMJ subluxation are a common feature among EDS patients, particularly in the hypermobile type (hEDS) [7, 8].

This work was performed to contrast the healing of tongue ulceration by using low level laser and the efficacy of injecting autologous blood inside TMJ to act as sclerosing agent for treatment of joint subluxation in normal patients versus Ehler Danlos syndromic patients.

This study was performed on middle-aged adults, but according to Beighton et al.[4]EDS affects children as well.

EDS patients have poor and del ayed wound healing in comparison with healthy patient due to abnormalities in collagen synthesis and structure. This was consistent with retrospective research by Mitakides et al. [7].

In some types of EDS such as Arthrochalasic type of EDS (EDS VIIB) there is normal wound healing. This was consistent with retrospective research by Steinmann et al. [17]

Furthermore, this study did not include heavy smokers. Smoking is linked to the release of catecholamines, leading to vasoconstriction and reduced perfusion of tissues. That will lead to delayed ulcer healing according to the research performed by Al-Belasy et al. [18]

According to one of the studies by Grossi et al.[19], former smokers had responses to treatment comparable to those of nonsmokers.

In early childhood, the male-to-female ratio of those afflicted is comparable. In the general population, joint mobility typically increases in females and decreases in males when children reach adolescence. This was consistent with retrospective research by Quatman et al. [20]

Exposure to low-powered lasers is believed to promote the reepithelialization of wounds[21,22]. Various ideas have been suggested to elucidate the mechanism of their activity. Low-power lasers may promote reepithelialization by augmenting respiratory metabolism, which subsequently enhances mitotic activity, collagen production, and epithelial proliferation [23].

A recent spectroscopic investigation has shown that exposure to helium neon (He-Ne) lasers elevates collagen turnover in wounds[24]and boosts mitochondrial enzyme activities[25]. Research employing animal models has shown accelerated wound healing when subjected to low-level lasers[26,27]. Extensive clinical data indicates that low-level lasers facilitate wound repair and healing in humans[28,29]. A potential mechanism for pain alleviation by laser exposure to wounds is the modification of electrical activity in nerve cells [30,31].

Clinical experiments conducted by Zand et al.[32] and Prasad et al. [33]have shown that few seconds of exposure to CO2 lasers may elicit rapid analgesia. Nevertheless, none of this research has evaluated the efficiency of lasers in comparison to generally available topical medications utilized for the treatment of aphthous ulcers. Nevertheless, CO2 lasers seem to promote rapid healing of ulcers in comparison to placebo controls at far lower power levels.[35,36] The healing durations of CO2 laser treatment in comparison to topical medications need to be assessed. CO2 lasers, due to its capability of treating aphthous ulcers at much lower power settings and brief exposure durations, are usually regarded as safer for clinical usage comparing to other lasers.

De Souza et al. [34]contrasted InGaAlP diode laser (670 nm, 50 mW, and 3 J/cm^2 in continuous mode) with topical corticosteroids and found that laser therapy provided immediate pain relief, whereas the

subsequent pain relief and enhancement in wound healing weren't significantly different from those achieved with topical medication.

Autologous blood injection into the TMJ was successful in treating TMJ hypermobility, shown by considerable pain reduction and decreased MMO throughout follow-up. These results align with Daif et al.[35], who recently revealed that autologous blood injection into the TMJ for those with habitual dislocation is a straightforward, safe, and economical procedure.

Eighty percent of participants in the present research had substantial improvement after a single autologous blood injection. This observation aligns with the results of Hasson et al. [13], who administered 5ml of autologous blood into the superior joint space and pericapsular tissue, yielding favorable outcomes without problems.

Furthermore, Machon et al.[36] performed research including 25 individuals with TMJ subluxation and observed a good result in 80% of the patients at the one-year follow-up.

Roosendaal et al.[37] shown that brief exposure of cartilage to blood in vitro generates lasting degenerative alterations in cartilage. Roosendaal et al. [38]found in a separate investigation that a brief bout of intra-articular bleeding in vivo induces similar alterations in the cartilage. The etiology of this blood-induced cartilage degradation remains unclear. The gradual advancement of this kind of joint injury complicates the demonstration of the correlation between joint damage and bleeding [39].

In 2003, Hooiveld et al. [39]determined that brief interaction of cartilage to blood induces chondrocyte apoptosis. Apoptosis is considered pivotal in the pathophysiology of blood-induced cartilage injury, since it hinders cartilage healing mechanisms and contributes to cartilage degradation.

CONCLUSIONS

Low level laser therapy is an effective tool for management of tongue ulcer and intrarticular injection of auotologous blood is a magic choice for management of temporomandibular joint subluxation. However, non- syndromic normal patients showed marked and rapid improvement more than patients with Ehler-Danols syndrome.

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