BOTOX INJECTION IN THE LATERAL PTERYGOID MUSCLE VERSUS ARTHROCENTESIS: AN APPROACH TO MANAGEMENT OF INTERNAL DERANGEMENT OF THE TEMPOROMANDIBULAR JOINT.

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By

Samer Abdulgabar Ahmed Abdulwahab

B.D.S

Cairo University

Oral & Maxillofacial Surgery Department
Faculty of Oral and Dental Medicine
Cairo University

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Prof. Dr. Mohammed Galal Beheiri

Professor of Oral and Maxillofacial Surgery
Faculty of Oral and Dental Medicine
Cairo University

Dr. Dalia Abdel Khalik Radwan

Lecturer of Oral and Maxillofacial Surgery
Faculty of Oral and Dental Medicine
Cairo University

بسم الله الرحمن الرحيم

((ربَ اشْرَحْ لِي صَدْرِي ﴿ وَيُسِّرْ لِي أَمْرِي

﴿ وَاحْلُلْ عُقْدَةً مِّن لِّسَانِي ﴿ يَفْقَهُوا قَوْلِي))

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Contents

		Page
I.	INTRODUCTION	1
II.	REVIEW OF LITERATURE	4
III.	AIM OF STUDY	34
IV.	SUBJECTS AND METHODS	35
V.	RESULTS	57
VI.	DISCUSSION	69
VII.	SUMMARY	74
VIII.	CONCLUSION	75
IX.	REFERENCES	76
Χ.	APPENDIX I	83
XI.	APPENDIX II	86
XII	ARARIC SIIMMARV	87

List of Tables

Table	Title	Page
1	Mechanisms of action of BTX-A in pain therapy	29
2	Adverse events of BTX reported for cranio- maxillofacial conditions	32
3	Joints numbers and data of subjects included in the study	36
4	Comparison of TMJ pain VAS values in BOTOX and arthrocentesis groups during the follow up period	60
5	Comparison of MMO values in BOTOX and arthrocentesis groups during the follow up period	65
6	Clicking frequency and percent among subjects in both BOTOX and arthrocentesis groups during the follow up period	67

List of Figures

Figure	Title	Page
1	Mechanism of Functional Overloading for TMJ Disorders.	9
2	Dissection showing the lateral pterygoid muscle viewed laterally.	16
3	Dissection showing articular disc attached to the lateral pterygoid muscle.	16
4	Haematoxylin and eosin histological section of the articular disc and lateral pterygoid muscle.	17
5	Mechanism of action of BTX: (A) Normal neurotransmitter release. (B) Exposure to Botulinum toxin.	25
6	Examples of preoperative MRI for subject selection and diagnosis.	40
7	Photograph showing 16-gauge metal cannulae with trocar.	43
8	Photograph showing different 16-gauge metal cannulae with trocar.	43
9	Clinical photographs showing technique of Arthrocentesis.	44

10	Photograph showing BOTOX transfer via portable	47
11	refrigerator. Photographs showing BOTOX vial.	47
12	Photograph showing EMG device.	48
13	Photograph showing other type of EMG device.	48
14	Photographs showing (37 mm X 27 G) Teflon-coated monopolar injection needle electrode sterile package.	49
15	Photographs showing (37 mm X 27 G) Teflon-coated monopolar injection needle electrode.	50
16	Photograph showing connection setup to EMG device.	51
17	Clinical photographs showing placement of EMG surface electrodes.	51
18	Clinical Photographs showing intraoral EMG-guided BOTOX injection in to lateral pterygoid muscle.	52
19	Graph showing numeric pain rating scale.	55
20	Line graph show comparison of mean pain VAS values between BOTOX and arthrocentesis groups during the follow-up period.	60
21	Clinical photographs showing MMO measurements preoperatively and after end of 6 months follow-up period in BOTOX group patients.	63

- Clinical photographs showing MMO measurements preoperatively and after end of 6 months follow-up in arthrocentesis group patients.
- 23 Line graph show Comparison of mean MMO (mm) 65 values between BOTOX and arthrocentesis groups during the follow-up period.

List of Abbreviations

TMJ Temporomandibular joint

ID Internal derangement

TMD Temporomandibular disorder

ADD Anterior disc displacement

BTX-A Botulinum toxin type A

LP Lateral pterygoid muscle

MMO Maximal mouth opening

CL Closed lock

ADP Anchored disc phenomenon

UJC Upper joint compartment

EMG Electromyographic

SLP Superior head of lateral pterygoid muscle

ILP Inferior head of lateral pterygoid muscle

BTX Botulinum toxin

NMJ Neuromuscular junction

CNS Central nervous system

FDA American food and Drug Administration

U Units (mouse units)

ml Milliliter

mm Millimeter

MRI Magnetic resonance imaging

G Gauge

VAS Visual analogue scale

pg/ml Pictograms (one-trillionth of a gram) per millilitre

KD Kilo-Dalton

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INTRODUCTION

Introduction

Temporomandibular joint (TMJ) internal derangement (ID) is one of the most common forms of temporomandibular disorder (TMD). The term refers to clinical criteria classifying TMJ disorders but is generally used to denote a mechanical fault in the joint interfering with its smooth movement, such as an abnormal positional relationship of the articular disc to the mandibular condyle and the articular eminence. Thus, the term has been used synonymously with disc displacement. The disorders have been associated with characteristic clinical findings, including pain, joint sounds, and irregular or deviated jaw functions (*Emshoff & Rudisch*, 2007).

The term temporomandibular joint internal derangement has long been used synonymously with displacement of the disc. Both conservative and surgical techniques have been put forward for the treatment of TMJ internal derangement, but only a few of them have gained wide acceptance. The basic attempt has been to replace the disc in its normal position and thereby to provide relief of the symptoms (*Peterson et al.*, 1998).

The turning point in the treatment of TMJ internal derangement was the introduction of TMJ arthrocentesis. The simple lavage of the upper joint compartment enables the disc to slide and reestablishes a normal range of mouth opening in patients with closed lock. Today TMJ arthrocentesis is not only used in the treatment of acute closed lock but in

various other temporomandibular disorders as well (Alpaslan and Alpaslan, 2001).

Arthrocentesis of the temporomandibular joint (TMJ) as first described by *Nitzan et al.* is commonly defined as a lavage of the joint and is traditionally accomplished without viewing the joint. The procedure has been suggested for treatment of a variety of TMJ disorders, although the majority of the published studies have only investigated its efficacy in the treatment of TMJ closed lock *(Al-Belasy & Dolwick, 2007)*.

Recently a novel treatment procedure is introduced for severe clicking of the temporomandibular joint (TMJ) associated with anterior disc displacement (ADD), using injections with botulinum toxin (BTX-A) in the lateral pterygoid muscle (LP). It has been suggested that ADD may be caused, precipitated or maintained by LP activity (Bakke et al., 2005).

Studies of the anatomy and function of the lateral pterygoid muscle have had an important influence on aspects of clinical practice. For example, the clinical opinion that a disturbance to the activity of the lateral pterygoid muscle plays an important role in the etiology of temporomandibular disorders (TMD) is still widely accepted. Patients with TMD complain of pain in and about the temporomandibular joint and/or the jaw muscles, and patients may also experience limitation of jaw movements and/or joint sounds. In TMD patients, the lateral pterygoid muscle is thought to become hyperactive, or there is thought to be a lack of co-ordination between the upper and lower heads of the muscle, or there is thought to be a disturbance to the normal postulated role for the muscle in the control or stabilization of the

temporomandibular joint. The opinion that the lateral pterygoid muscle plays an important role in TMD at least partly underpins a number of management philosophies for TMD (Murray et al., 2004).