MIDDLE BLACK SEA JOURNAL OF HEALTH SCIENCE

APRIL 2017 VOLUME 3 ISSUE 1

Published three times per year by Ordu University

ISSN 2149-7796

MIDDLE BLACK SEA JOURNAL OF HEALTH SCIENCE (MBSJHS)

MIDDLE BLACK SEA JOURNAL OF HEALTH SCIENCE

The Middle Black Sea Journal of Health Science is published by Ordu University Institute of Health Sciences on behalf of the Middle Black Sea Universities Collaboration Platform

ISSN 2149-7796

Middle Black Sea Journal of Health Science

Editorial Office

Ordu University

Institute of Health Sciences

Cumhuriyet Campus

52200, Ordu, TURKEY

Tel: +90 (452) 234 5010-6105

Fax: +90 (452) 226 52 28

E-mail: mbsjohs@odu.edu.tr

Correspondence Address: Ulku KARAMAN, PhD, Asst. Prof.
Institute of Health Sciences,
Ordu University,
Cumhuriyet Campus,
52200 Center/ Ordu TURKEY

Phone: +90 452 234 50 10
Fax: +90 452 226 52 55
Email: ukaraman@odu.edu.tr
mbsjohs@odu.edu.tr

Web site: http://dergipark.ulakbim.gov.tr/mbsjohs

Sort of Publication: Periodically

Publication Date and Place: 25 / 04 / 2017, ORDU, TURKEY

Publishing Kind: Online

Indexing: Turkey Citation Index

The Middle Black Sea Journal of Health Science is published by Ordu University Institute of Health Sciences on behalf of the Middle Black Sea Universities Collaboration Platform

Aims and Scope

The journal publishes clinical and experimental studies, interesting case reports, invited reviews and letters to the editor. Middle Black Sea Journal of Health Science is an international journal which is based on independent and unbiased double-blinded peer-review principles. The publishing language of the journal is English.

The aim of the journal is to publish original articles with highest clinical and scientific quality at the international level. Middle Black Sea Journal of Health Science also publishes reviews covering fundamental innovations in health education, editorial articles, case reports and original images.

The contents of all issues in full text can be accessed free of charge through the web site http://dergipark.ulakbim.gov.tr/mbsjohs/index

General Rules

Middle Black Sea Journal of Health Science publishes experimental and observational research articles, clinical reviews, case reports and review articles on health science. Manuscripts must be submitted online at http://dergipark.ulakbim.gov.tr/mbsjohs/user

All submissions must be accompanied by a signed statement of scientific contributions and responsibilities of all authors and a statement declaring the absence of conflict of interests.

Any institution, organization, pharmaceutical or medical company providing any financial or material support, in whole or in part, must be disclosed in a footnote. Manuscripts must be prepared in accordance with ICMJE-Recommendations for the Conduct, Reporting, Editing and Publication of Scholarly Work in Medical Journals (updated in December 2013 - http://www.icmje.org/icmje-recommendations.pdf).

An approval of research protocols by an ethical committee in accordance with international agreements (Helsinki Declaration of 1975, revised 2002 - available at http://www.vma.net/e/policy/b3.htm, "Guide for the care and use of laboratory animals - www.nap.edu/catalog/5140.html/) is required for experimental, clinical and drug studies. A form stating that the patients have been informed about the study and consents have been obtained from the patients is also required for experimental, clinical and drug studies. All submissions must be accompanied by a letter that states that all authors have approved the publication of the paper in the Middle Black Sea Journal of Health Science.

Submission of the studies requiring ethical committee decision must be accompanied by a copy of the submission to the ethical committee.

SUBMISSION POLICY

Submission of a paper to Middle Black Sea Journal of Health Science is understood to imply that it deals with original material not previously published, and is not being considered for publication elsewhere. Manuscripts submitted under multiple authorships are reviewed on the assumption that all listed Authors concur with the submission and that a copy of the final manuscript has been approved by all Authors. After acceptation of an article, it should not be published elsewhere in the same form, in either the same or another language, without the written consent of the Editors and Publisher. Upon acceptance of an article, Authors will be asked to transfer copyright (for more information on copyright see). This transfer will ensure the widest possible dissemination of information. A letter will be sent to the corresponding Author confirming receipt of the manuscript. A form facilitating transfer of copyright will be provided.

If excerpts from other copyrighted works are included, the Author(s) must obtain written permission from the copyright owners and credit the source(s) in the article. Please write your text in good English (American or British usage is accepted, but not a mixture of these).

Authors in nonnative speaker of English should check and improve the English of their paper (before submission).

The layout and style should adhere strictly to the instructions. No revisions or updates will be incorporated after the article has been accepted and sent to the Publisher (unless approved by the Editors).

SUBMISSION PROCEDURE

The Middle Black Sea Journal of Health Science welcomes submitted manuscripts online at http://dergipark.gov.tr/login Manuscripts submitted online are received on the day of submission and quickly assigned to reviewers. Through individual Author Centers on this website, authors can view the status of their manuscripts as they progress through the review process. Notification of the disposition of each manuscript will be sent by e-mail to the corresponding author on the day of decision.

To establish your account for online submission, go to http://dergipark.gov.tr/register/ Authors are encouraged to check for an existing account. If you are submitting for the first time, and you do not have an existing account, then you must create a new account. If you are unsure about whether or not you have an account, or have forgotten your password, enter your e-mail address into the Password Help section on the log-in page. If you do not have an account, click on the Create Account link on the top right of the log-in page. You then will be able to submit and monitor the progress of your manuscripts.

Once you have logged in, you will be presented with the Main Menu and a link to your Author Centre. Submit your manuscript from the Author Centre. At the end of a successful submission and you will receive an e-mail confirming that the manuscript has been received by the journal. If this does not happen, please send an e-mail to mbsjohs@odu.edu.tr ukaraman@odu.edu.tr

To submit your manuscript online, please prepare the text and illustrations according to the instructions listed below. You may enter and exit the manuscript submission process at the completion of each step. After submission of the manuscript, however, you will not be able to edit it.

Web submission is required- instructions are available for downloading on the website http://dergipark.gov.tr/mbsjohs

COPYRIGHT TRANSFER AGREEMENT

A signed **COPYRIGHT RELEASE FORM** by all authors of the manuscript should be sent during manuscript submission.

Middle Black Sea Journal of Health Science
Editorial Office
Ordu University
Institute of Health Sciences
Cumhuriyet Campus
52200, Ordu, TURKEY
Tel: +90 (452) 226 52 14-5234
Fax: +90 (452) 226 52 28
E-mail: **mbsjohs@odu.edu.tr; ukaraman@odu.edu.tr**

Where possible, Authors should also include a list of three or more potential reviewers for their manuscript, with contact information (Full address, telephone and fax numbers, e-mail address).

PREPARING ELECTRONIC MANUSCRIPTS

Author should submit manuscript in both ways as explain in below:
1- Please keep text, tables and graphics as separate files in other word do not import the figures or tables into the text file. Text files should be supplied in one of the following formats: Microsoft Word or WordPerfect, Windows or Macintosh formatted. Text files should be supplied in one of the following formats: Microsoft Word or WordPerfect, Windows or Macintosh formatted.
2- Please insert all attachments that are tables, figures and graphics into the text file in appropriate place, than creates the PDF file of this text. During submission submits this PDF file as a supplementary.
When mentioning parasites in the main text and references, the genus and species names must be italicized and the genus name must be written with an initial capital letter.
Abbreviations should be expanded at first mention and used consistently thereafter.
Graphic files: Journal only accepts PDF, TIFF and EPS formats for graph. Each figure should be a separate file and not be embedded in the text.
All graphic files must be submitted in sufficiently high resolution, for grey scale and color images 250 dpi and 500-800 dpi for line art) to allow for printing.

Electronic submission of articles via the Web

http://dergipark.gov.tr/login
Full instructions for uploading data and files etc. are given on the website when submitting a manuscript. It is the responsibility of the Authors to create the proper files as instructed above for the electronically submitted manuscript. The editorial office cannot make conversions beyond the supported file types.
After online submission, there is no need sending a hardcopy of manuscript or illustrations to the Editors. Please note that the electronic files supplied will always be used to produce the illustrations, including those for the print version of the article; it is the Authors' responsibility to ensure that these files are of suitable quality

ORGANIZATION OF THE ARTICLE

Manuscripts should be prepared electronically using an appropriate MS Word compatible word-processing package, formatted for A4 or letter page size, double-spaced throughout with 3 cm margins on all sides, and using 12 point font. Text should not be justified, but flush left. Words should not be hyphenated to fit on a line. Pages should be numbered sequentially.

Title page: The title page should contain the following items: The title page should include full and **short title English**, and meeting and congress presentations of the manuscript must be stated, if any. Authors' names and their institutional affiliations must only be provided at the submission stage, author information must not be included in the main text.

Abstract Page: The second page should include abstracts written both in Turkish and English, and key words. Structured abstracts, not to exceed 400 words, should consist of four sections, labeled as Objective, Methods, Results and Conclusion.

Keywords: Keywords: Provide at least 3-6 keywords and avoiding general and plural terms and multiple concepts. These keywords will be used for indexing purposes. Key words in should follow the abstract. Please select keywords in Turkish Science Terms (http://www.bilimterimleri.com).

Research Reports should be divided into numbered sections headed by a caption

1. Introduction, 2. Methods, 3. Results, 4. Discussion, 5. Conclusion, 6. Conflict of Interest Disclosure, 7. Acknowledgements 8. References, Tables, Figures and Illustrations (with legends) sections.

Case reports should be divided into the following sections: 1. Introduction, 2. Case(s), 3. Discussion, 4. Conclusion, 5. References, Tables, Figures and Illustrations (with legends).

Introduction: The objectives of the research should be clearly stated in this section. Relevant background information and recent published studies should be described concisely, and be cited appropriately.

Methods: This section should contain all the details necessary to reproduce the experiments. Avoid re-describing methods already published; only relevant modifications should be included in the text. Experimental subjects when human subjects are used, manuscripts must be accompanied by a statement that the experiments were undertaken with the understanding and written consent of each subject.

When experimental animals are used, the methods section must clearly indicate that adequate measures were taken to minimize pain or discomfort.

Results and Discussion: These sections should present the results and interpret them in a clear and concise manner. Results should usually be presented descriptively and be supplemented by figures. Extensive citations and discussion of published literature should be not be used.

Literature references:

Care should be taken to cite Turkey-based studies and journal of national during the granting of resources (www.atifdizini.com).

In the text, references should be cited by authors' surnames and year of publication. All references cited in the text (and only those cited in the text) should be included. One or two authors should be cited by surname; for three or more, the first author is cited followed by et al.:

… (Yaman, 2003) …
… (Yaman and Erturk, 2001)…
… (Erbil et al., 2003) …
… (Yaman and Erturk, 2001; Erbil et al., 2003; Gürgör, 2009; Sahin, 2010) …

References that are not cited by surname should be included at the end of a phrase or sentence in parentheses, in chronological order, separated by semicolons, except for two or more papers by the same authors, which should be separated by commas. References to more than one paper in the same year should be designated by letters:
... (Yaman and Erturk, 2001; Erbil et al., 2003; Karaman et al., 2007a, 2007b) …
All references cited in the text should be listed at the end of the manuscript on a separate page, arranged in alphabetical order of first author then year of publication. The accuracy of references is the responsibility of the author. The references should include only articles that are published or in press. Unpublished data, submitted manuscripts, or personal communications should be cited within the text only. Personal communications should be documented by a letter of permission. All items in the list of references should be cited in the text and, conversely, all references cited in the text must be presented in the list. The abbreviations of journal titles should conform to those adopted by the List of Serial Title Word Abbreviations, CIEPS/ISDS, Paris, 1985 (ISBN 2-904938-02-8).

Please use the following style for references:
Examples
Periodicals
Stephane A. Management of Congenital Cholesteatoma with Otoendoscopic Surgery: Case Report. Turkiye Klinikleri J Med Sci 2010;30(2):803-7.
Chapter in Edited Book
Hornbeck P. Assay for antibody production. Colign JE. Kruisbeek AM, Marguiles DH, editors. Current Protocols in Immunology. New York: Greene Publishing Associates; 1991. p. 105-32.
Book with a Single Author
Fleiss JL. Statistical Methods for Rates and Proportions. Second Edition. New York: John Wiley and Sons; 1981.
Editor(s) as Author
Balows A. Mousier WJ, Herramaflfl KL, editors. Manual of Clinical Microbiology. Fifth Edition. Washington DC: IRL Press. 1990.
Conference Paper
Entrala E, Mascaro C. New structural findings in Cryptosporidium parvum oocysts. Eighth International Congress of Parasitology (ICOPA VIII); October, 10-14; Izmir-Turkey: 1994. p. 1250-75
Thesis
Erakıncı G. Donörlerde parazitlere karşı oluşan antikorların aranması. İzmir: Ege Üniversitesi Sağlık Bilimleri Enstitüsü. 1997.
Article in Electronic Format
Morse SS. Factors in the emergence of infectious diseases. Emerg Infect Dis (serial online) l995 Jan-Mar (cited 1996 June 5): 1(1): (24 screens). Available from: URL: http:/ www.cdc.gov/ncidodlElD/cid.htm.

Review articles are only prepared and published by authors invited by the editorial board.

The explanations given below should be at the end of the article as a separate section before the references.

Ethics Committee Approval: Ethics committee approval was received for this study from ……. Clinical Research Ethics Committee of …… University.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept - …….. Design ……..; Supervision ……...; Materials - ……..,; Data Collection and/or Processing - ……...; Analysis and/or Interpretation - ……; Literature Review - ……...; Writing - ……; Critical Review - ……

Acknowledgements:

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study has /hasn't received no financial support.

ILLUSTRATIONS AND TABLES

Illustrations:

The use of color in illustrations can enhance the effective presentation of results, and we are pleased to offer free reproduction of color illustrations in the electronic version of MBSJHS. There is no charge for color reproduction of illustrations in the electronic version of the journal when the use of color is clearly required to further understanding and communication. It should be borne in mind that in the journal illustrations will appear either across a single column (=8.3 cm) or a whole page (=17.6 cm). The illustrations should be numbered in Arabic numerals according to the sequence of appearance in the text, where they are referred to as Fig. 1, Fig. 2, etc.

If illustrations (or other small parts) of articles or books already published elsewhere are used in papers submitted to MBSJHS, the written permission of the authors and publisher concerned must be included with the manuscript. The original source must be indicated in the legend of the illustration in these cases.

Color reproduction:

On the Web: If you submit usable color figures with your accepted article, then these figures will appear in color on the Web, they are reproduced in black-and-white in the printed version of the article.

Tables: Tables should be so constructed together with their captions and legends. They should be prepared with minimal reference to the text.

Tables of numerical data should each be typed (with one-spacing) on a separate page and numbered in sequence in Arabic numerals (Table 1, 2, etc.). They are referred to in the text as Table 1, Table 2, etc. The title of each table should appear above it. A detailed description of its contents and footnotes should be given below the body of the table.

PROOFS, OFFPRINTS, MISCELLANEOUS

Proofs

Proofs will be sent by e-mail, as a pdf. Only printer's errors may be corrected; no change in, or additions to, the edited manuscript will be allowed at this stage. It should be kept in mind that proofreading is solely the authors' responsibility. A form with queries from the copyeditor may accompany the proofs. Please answer all queries and make any corrections or additions required. Corrections to the proofs must be returned by e-mail or fax within 48 hours after receipt. If the publisher receives no response from the authors after 3 days, it will be assumed that there are no errors to correct and the article will be published.

Page charges

There are no page charges.

Offprints

A pdf file of each paper will be provided free of charge to the corresponding Author.

Authorship

To be identified as an author, the participant should have contributed to the conception and design of the project, drafted substantive portions of the paper or edited or revised same, and taken responsibility for the analysis and conclusions of the paper.

Other participants with less responsibility for example those who merely assisted in carrying out the research should be identified and acknowledged for their contributions.

Disclosure Statement

All authors must disclose any affiliations that they consider to be relevant and important with any organization that to any author's knowledge has a direct interest, particularly a financial interest, in the subject matter or materials discussed. Such affiliations include, but are not limited to, employment by an industrial concern, ownership of stock, membership on a standing advisory council or committee, a seat on the board of directors, or being publicly associated with a company or its products. Other areas of real or perceived conflict of interest would include receiving honoraria or consulting fees or receiving grants or funds from such corporations or individuals representing such corporations. This requirement will apply to every sort of article submitted to the journal, including original research, reviews, editorials, letters to the editor, and any others, and should be disclosed at the time of submission.

Authors are required to indicate whether there is any financial or other conflict of interest. If none, authors should make a positive statement to the effect that "The authors declare that they have no competing financial interests."

The editorial board has the authority to make necessary revisions in the format of the manuscript (without making any revision in the context) that does not comply with the above-mentioned requirements.

TYPES OF ARTICLES

The studies submitted to the Journal are accepted in Original research, Short papers, Case report, Review articles, Letter to the Editor, Surgical Technique, Differential Diagnosis, Original images, what is your diagnosis? And Questions and Answers categories

a) Original research: Prospective, retrospective and all kinds of experimental studies

Structure

English title, author names and institutions.
Abstract (average 200-400 word)
Introduction
Methods
Results
Discussion and conclusion
References (most 30)
Whole text should not exceed 4500 words except for resources and English summary.

b) Short papers: Prospective, retrospective and all kinds of experimental studies

Structure

English title, author names and institutions.
Abstract (average 200-400 word)
Introduction
Methods
Results
Discussion and conclusion
References (most 20)
Whole text should not exceed 2700 words except for resources and English summary.

c) Case Report: They are rarely seen articles which differs in diagnosis and treatment. They should be supported by enough photographs and diagrams.

Structure

English title, author names and institutions.
Abstract (average 100-300 word)
Introduction
Case report
Discussion and conclusion
References (most 20)
Whole text should not exceed 2200 words except for resources and English summary.

d) Review articles: should be prepared directly or by the invited authors. It can be prepared can be prepared as to include the latest medical literature for all kinds of medical issues.
Particularly, the authors who have publications about the subject should be the reason of preference.

Structure

English title, author names and institutions.
Abstract (average 200-400 word)
Introduction
The compilation text also including appropriate sub-headings,
Conclusion
References (most 35)
Whole text should not exceed 4550 words except for resources and English summary.

e) Letter to the Editor
English title, author names and institutions.
Abstract (average 100-300 word)
There is no need to open sub part in the letter text, it must be written as to include the main text and results.
Discussion and conclusion
References (most 15)
Whole text should not exceed 1200 words except for resources and English summary.

f) Surgical technique: Are the articles in which the surgical techniques are processed in details.
Structure
Abstract (average 200-400 word)
Surgical technique
Conclusion
References (most 15)

g) Differential Diagnosis: Are the case reports which have current value. Includes reviews for similar diseases.
Structure
Abstract (average 100-150 word)
Topics related to the subject.
Conclusion
References (3-5 inter)

h) Original Images: Rarely seen annotated medical images and photographs in the literature.

Structure

300 words of text and original images about the subject

References (3-5 inter)

ı) What is Your Diagnosis?: Are the articles prepared as in questions and answers about rarely seen diseases which differ in the diagnosis and treatment .
Structure
Topics related to the subject.
References (3-5 inter)

i) Questions and Answers: Are the texts written in form of questions and answers about scientific educative –instructive medical issues.

MIDDLE BLACK SEA JOURNAL OF HEALTH SCIENCE

APRIL 2017 **VOLUME 3** **ISSUE 1**

CONTENTS

EDITORIAL

Beginning of the third year ...

We are in happiness as we achieve to perform our goal including publications from all areas of health sciences which is in our journal plans significantly. In our first year, we had publications in the field of nursing, parasitology, internal medicine, cardiology, dentistry and general surgery. Also, in our second year we will try to create an internationally respected journal with a similar editorial policy.

In this issue, there are three original articles and two a case report. The articles' branches are Orthopedic and Traumatology, Pathology, Dentistry, Physical Education and Sport.

In our journal publications process, I extend my thanks to our authors, article assessment referees, our editorial board members and our technical team for their support.

See you soon…

PhD. Asst. Prof. Ülkü KARAMAN

Editor

Middle Black Sea Journal of Health Science April 2017; 3(1): 1-10

RESEARCH ARTICLE

Training Status and Gender Effects on Sternocleidomastoid and Abdominal Muscles Activity during Curl-Up Exercise with Different Respiratory Cycle

Hasan Sözen
Ordu University, Department of Physical Education and Sport, Ordu, Turkey.

Received: 28 September 2016, Accepted: 08 December 2016, Published online: 25 April 2017

Abstract
Objective: This study aims to investigate sternocleidomastoid muscle (SCM) during curl-up exercise with different inspiration and expiration cycle among subject with different training status and gender, and the abdominal muscles in the targeted area.
Methods: 24 healthy subjects volunteered to participate in the study. The data were gathered from bilateral SCM, rectus abdominis (RA), external oblique (EO) and transversus abdominis/internal oblique (TrA/IO) muscles via surface electromyography (EMG).
Results: The analysis of all the data gathered from the participants shows that the muscle activation in EO right, TrA/IO right, TrA/IO left and RA right during curl-up exercise with expiration is higher than activation during curl-up exercise with inspiration. A comparison of sedentary and mean scores of participants during curl-up exercise with expiration did not reveal any significant difference. A comparison of mean scores of men and women during curl-up exercise with expiration showed that the scores derived from females' EO left and RA right muscles is higher than the scores derived from the same muscles group of males. However, when the average scores of male and female participants in the curl-up movement with inspiration were compared, the scores derived from the same muscle group of females is higher than that of males'.
Conclusion: As there is no difference between genders and the contraction rates of SCM muscle, no gender-specific suggestions can be made about respiration during curl-up for the health of neck and cervical zone
Key words: Curl-up exercise, abdominal muscles, sternocleidomastoid, electromyography.

Address for correspondence/reprints:

Hasan Sözen

Telephone number: +90 532 784 9129
E-mail: sozenhasan@yahoo.com, hasansozen@odu.edu.tr

DOI: 10.19127/mbsjohs.309373

Introduction

Exercise and sport scientists and experts of sport medicine acknowledge that abdominal muscle is an important element for health and success in athletic performance. Abdominal muscles are also essential for proper alignment of axial skeleton, daily life and activities such as work or athletic performance in supporting extreme upper and lower movement (Hildenbrand and Noble, 2004). Therefore, weak abdominal muscle strength causes disruption of balance of the body. Particularly stability in pelvic girdle and its unison between the limbs depend on abdominal muscle strength and endurance (Lahad et al.1994). Backache, one of the physical

problems seen frequently amongst adults in industrialized societies, is regarded as a serious health problem, and it is known to be caused by lower abdominal muscles which are highly weakened or used poorly or incorrectly in daily life. Many researchers emphasize the importance of abdominal muscle in both postural control and waist injury (Janda and Schmid 1980; Foster and Fulton 1991; Rodriguez et al. 1992; Johannsen et al. 1995; McGill 1998; Garcia et al. 2000; Critchley et al. 2011; Hides et al. 2011).

As abdominal muscle is the central point of the body, the importance of abdominal muscle is great for each sport branch. An average sportsman takes care to work on abdominal muscles sufficiently in comparison to other muscle group (Beim et al. 1997). Although abdominal muscle group is important, incorrect training methods used to develop these muscle groups may cause harm for spinal health (Norris 1993).

As can be seen, body balance which is highly important for daily life and sportive activities can be brought up to optimum level by strengthening abdominal muscles. Exercise types performed to strengthen abdominal muscles are inadequate and the most common exercise type is curl-up. That is why, curl -up has been the center of attention for researchers for decades. One of the most important points in the research on curl-up is the health of spinal cord and strengthening abdominal muscles by including the spinal cord to the movement at the minimum level. Therefore, researchers interested in health and sport sciences put emphasis on curl-up's muscle activation which is done on condition of stabilizing lumber spine of the subjects who do sports for health or performance (Axler and McGill 1997; Yoon et al. 2014). Otherwise, failing to stabilize lumber spine zone leads to serious injuries on waist and strain during the exercise which is done to train abdominal muscles, especially transversus abdominis/internal oblique (TrA/IO) muscles because of its anatomy (Hodges 2003; Goldby et al. 2006). In practice, the strengthening exercises which are strength-oriented for the abdominal zone vary a lot. Abdominal curl-up is frequently used for strengthening abdominal muscles and stabilization of lumbar zone in sport sciences and rehabilitation programs (Axler and McGill 1997).

Cervical spine is covered by complex regulation of muscles which contribute to static and dynamic control of head and neck (Falla et al. 2004). During deep cervical flexion longus capitis and longus colli supply segmental stabilization and support to cervical spine (Kelly et al. 2013). Sternocleidomastoid muscle has primary importance in the control of the head position by holding mastoid process and occiput. Superficial cervical flexors like sternocleidomastoid and front scalene muscle play a great role for cervical stabilization (O'Leary et al. 2007). Sternocleidomastoid muscle is directly stimulated by the cervical segments of spinal accessory nerve and cervical C2, C3 and C4. This muscle has a great role in important pathologies like headache and vertigo (Clark et al. 1993). As seen in certain studies, when the neck is stabilized, activation of neck flexor muscle is higher in the subjects having cervical pain when compared to healthy subjects (Jull 2000; Sterling et al. 2001). During curl-up, SCM muscle is suitable for redundant use. However, during curl-up exercises targeting abdominal muscles, along with unnecessary strain of SCM muscle, neck and spinal cord strains may occur. SCM becomes more active in situations where respiration is more frequent, such as respiration against a force, like coughing (Adams et al. 1989; Elvis 2008; Neumann 2009). Therefore, respiration type (expiration-inspiration) which occurs at the moment of strain during curl-up may cause SCM muscle strain at different levels. Nevertheless, the number of studies examining the activities of SCM muscles in different respiration types during curl-up exercises is not sufficient in the literature.

The hypothesis of this study is the idea that there is a difference in the inspiration and expiration by subjects with different sportive capacities and gender during curl-up, and in the participation level of SCM muscles and abdominal muscles in the target area during the activity. Therefore, this study investigates inspiration and expiration done during curl-up in the subjects with different sport capacities and sexes, and the participation of SCM muscles and abdominal muscles in the target area during exercise.

Methods

Study participants

Twenty-four healthy volunteer subjects (12 male (6 sedentary, 6 athlete); 12 female (6 sedentary, 6 athlete)) participated in the study (Table 1). All participants approved the volunteering form approved by the University of Ordu Ethical Committee.

Table 1. General Characteristics of Subjects

Variables	Male (n=12)	Female (n=12)	Total (n=24)
Age (years)	20.3 ± 1.3	20.9 ± 2.8	20.6 ± 2.2
Height (cm)	176.7 ± 3.8	172.6 ± 6.8	174.6 ± 5.8
Weight (kg)	71.7 ± 8.3	58.0 ± 8.1	64.8 ± 10.6
BMI (kg/m^2)	22.9 ± 2.6	19.4 ± 1.9	21.1 ± 2.9

Abbreviations: BMI; body mass index
Values are presented as mean ± SD.

Procedure and Measurements

Bilaterally silver/silver chlorine (Ag/AgCI) bipolar surface electromyography electrodes (Blue Sensor P-00-S Ambu, Denmark) were placed bilateral on the central points of rectus abdominis (RA), external oblique (EO), transversus abdominis/internal oblique (TrA/IO), and sternocleidomastoid (SCM) muscle in a parallel fashion to their muscle fibrils. Before the electrodes were placed, they were cleaned with an alcohol solution to prevent artefacts, and the skin was shaved to make it smooth (Konrad 2005; De Luca 2008; Criswell 2011). External gel was not used as electrodes placed on the muscles already had gel on them. Cables and electrodes were fixed with plaster to prevent the formation of any artefact during curl-up. ME 6000 (Mega Electronics Ltd, FI-70460, Kuopio, Finland) portable EMG device was used to measure muscle activation. After electrode placement finished, MVIC values for each 5 seconds were gathered from each muscle (RA, EO, TrA/IO and SCM). MVIC values were collected to normalize EMG data derived during curl-up. Data sampling speed was arranged as 1000 Hz. The root-mean-square (RMS) value was calculated in EMG records software program (Mega Win 3.0).

Training Procedure

At the beginning of curl-up, legs were on the floor, knees bent 90o and thumbs near ears, hands in the air near the head. Participants did the exercise until their heads, shoulders and scapulae broke contact off the ground. A target bar was placed above participants' chest line so that each participant completed the exercise with the same angle (until scapulae was off the ground), and each participant was asked to touch the bar in every repetition of the exercise (Hildenbrand and Noble 2004; Yoon et al. 2014). Participants did the curl-up at two different phases of respiration and two different stages: (one set 10 repetitions) and inspiration (one set 10 repetitions). Each curl-up repetition (head, shoulders, and scapulae breaking contact off the ground respectively) took 3 seconds in inspiration or expiration. Participant's movement started with a set of inspiration with 10 repetition or a set of expiration with 10 repetition, and they paused for a 30-minute break at the end of the each set before moving on to the other respiration phase so that muscle tiredness could be averted.

Statistical analysis

For all statistical analysis, the mean scores of the percentage of values gathered from muscles during one set 10 repetition curl-up with inspiration or expiration to the values of MVIC. Kolmogorov-Smirnov Z-test was performed to investigate whether continuous data approximated a normal distribution and a paired t-test was used to compare the differences in normalized EMG muscle activity of the bilateral SCM, RF, EO, and TrA/IO muscles between abdominal curl-up with inspiration and expiration in all subjects, training status and gender status. The level of significance was $p<0.05$. SPSS 16.0 software was used for all data analysis (SPSS, Inc., an IBM Company, Chicago, Illinois, USA).

Results

All of the continuous variables were found to approximate a normal distribution (Kolmogorov–Smirnov Z test, $p > .05$).

There was significantly lower EMG activity of right EO, 33.56 ± 10.315 %MVIC; right TrA/IO, 26.14 ± 9.771 %MVIC; left TrA/IO, 31.42 ± 10.573 %MVIC; right RA 31.87 ± 8.535 %MVIC; left RA 32.30 ± 7.647 %MVIC and greater EMG activity of right SCM, 29.58 %MVIC 11.887; left SCM, 28.39 %12.226 %MVIC during abdominal curl-up with inspiration compared with the EMG activity of right EO, 34.97 ± %MVIC; right TrA/IO, 28.13 ± 9.933 %MVIC; left TrA/IO, 32.74 ± 9.812 %MVIC; right RA 33.79 ± 8.828 %MVIC; left RA 34.36 ± 7.897 %MVIC and right SCM 27.23 ± 9.924 %MVIC; left SCM 25.53 ± 10.763 %MVIC during abdominal curl-up with expiration (*$p < .05$) (Table 2).

Table 2. Comparing abdominal curl-up with expiration and inspiration in all subjects.

Muscle	Type of respiration	N	M	SD	t	p
EO right	Expiration	24	34.97	10.359	2.401	.021*
	Inspiration		33.56	10.315		
EO left	Expiration	24	39.17	18.669	1.351	.184
	Inspiration		37.93	19.023		
TrA/IO right	Expiration	24	28.13	9.933	3.362	.002*
	Inspiration		26.14	9.771		
TrA/IO left	Expiration	24	32.74	9.812	2.169	.036*
	Inspiration		31.42	10.573		
RA right	Expiration	24	33.79	8.828	3.785	.001*
	Inspiration		31.87	8.535		
RA left	Expiration	24	34.36	7.897	3.674	.001*
	Inspiration		32.30	7.647		
SCM right	Expiration	24	27.23	9.924	-3.503	.001*
	Inspiration		29.58	11.887		
SCM left	Expiration	24	25.53	10.763	-5.064	.000*
	Inspiration		28.39	12.226		

There was only significantly lower EMG activity of left RA, 31.43 ± 7.433 %MVIC during abdominal curl-up with expiration in athletes subjects compared with the EMG activity of left RA, 37.29 ± 7.396 %MVIC during abdominal curl-up with expiration in sedentary subjects (*p < .05) (Table 3).

Table 3. Comparing abdominal curl-up with expiration in training status.

Muscle	Training Status	N	M	SD	t	p
EO right	Sedentary	12	33.86	10.330	-.674	.504
	Athlete	12	36.08	10.533		
EO left	Sedentary	12	35.78	15.956	-1.155	.255
	Athlete	12	42.57	20.895		
TrA/IO right	Sedentary	12	30.58	7.171	1.589	.120
	Athlete	12	25.68	11.769		
TrA/IO left	Sedentary	12	34.54	8.251	1.163	.252
	Athlete	12	30.95	11.080		
RA right	Sedentary	12	35.59	7.438	1.297	.202
	Athlete	12	32.00	9.892		
RA left	Sedentary	12	37.29	7.396	2.498	.017*
	Athlete	12	31.43	7.433		
SCM right	Sedentary	12	28.68	8.133	.923	.362
	Athlete	12	25.78	11.472		
SCM left	Sedentary	12	27.04	8.901	.884	.382
	Athlete	12	24.02	12.400		

There was no significantly EMG activity during abdominal curl-up with expiration between athletes and sedentary subjects (Table 4).

Table 4. Comparing abdominal curl-up with inspiration in training status.

Muscle	Training Status	N	M	SD	t	p
EO right	Sedentary	12	31.71	9.556	-1.141	.261
	Athlete	12	35.41	10.947		
EO left	Sedentary	12	32.88	15.034	-1.722	.093
	Athlete	12	42.99	21.518		
TrA/IO right	Sedentary	12	28.53	8.759	1.577	.123
	Athlete	12	23.75	10.354		
TrA/IO left	Sedentary	12	32.99	9.151	.941	.353
	Athlete	12	29.84	11.853		
RA right	Sedentary	12	32.81	6.846	.695	.491
	Athlete	12	30.92	10.038		
RA left	Sedentary	12	34.39	6.013	1.775	.084
	Athlete	12	30.21	8.642		
SCM right	Sedentary	12	30.16	8.958	.303	.763
	Athlete	12	29.01	14.461		
SCM left	Sedentary	12	29.59	9.520	.619	.540
	Athlete	12	27.18	14.598		

There was significantly lower EMG activity of left EO, 30.69 ± 16.037 %MVIC ; right RA, 30.26 ± 8.404 %MVIC during abdominal curl-up with expiration in male compared with the EMG activity of left EO, 47.66 ± 17.511 %MVIC ; right RA, 37.32 ± 7.945 %MVIC during abdominal curl-up with expiration in female (*p < .05) (Table 5).

Table 5. Comparing abdominal curl-up with expiration in gender status.

Muscle	Training Status	N	M	SD	t	p
EO right	Male	12	32.82	9.649	-1.328	.192
	Female	12	37.13	10.835		
EO left	Male	12	30.69	16.037	-3.197	.003*
	Female	12	47.66	17.511		
TrA/IO right	Male	12	25.91	9.854	-1.428	.161
	Female	12	30.34	9.753		
TrA/IO left	Male	12	30.53	9.041	-1.445	.157
	Female	12	34.96	10.276		
RA right	Male	12	30.26	8.404	-2.728	.010*
	Female	12	37.32	7.945		
RA left	Male	12	33.51	9.143	-.675	.504
	Female	12	35.21	6.548		
SCM right	Male	12	25.39	11.109	-1.181	.245
	Female	12	29.08	8.462		
SCM left	Male	12	24.75	10.562	-.455	.652
	Female	12	26.32	11.177		

There was significantly lower EMG activity of left EO, 29.75 ± 14.561 %MVIC ; right RA, 28.66 ± 7.537 %MVIC during abdominal curl-up with inspiration in male compared with the EMG activity of left EO, 46.12 ± 19.744 %MVIC ; right RA, 35.08 ± 8.425 %MVIC during abdominal curl-up with inspiration in female (*p < .05) (Table 6).

Table 6. Comparing abdominal curl-up with inspiration in gender status.

Muscle	Training Status	N	M	SD	t	p
EO right	Male	12	31.88	9.144	-1.030	.310
	Female	12	35.24	11.351		
EO left	Male	12	29.75	14.561	-2.984	.005*
	Female	12	46.12	19.744		
TrA/IO right	Male	12	23.76	8.250	-1.570	.125
	Female	12	28.52	10.769		
TrA/IO left	Male	12	29.29	9.154	-1.282	.208
	Female	12	33.54	11.668		
RA right	Male	12	28.66	7.537	-2.541	.015*
	Female	12	35.08	8.425		
RA left	Male	12	31.79	8.630	-.424	.674
	Female	12	32.82	6.709		
SCM right	Male	12	27.32	13.282	-1.210	.234
	Female	12	31.85	10.144		
SCM left	Male	12	27.43	12.238	-.488	.628
	Female	12	29.34	12.454		

Discussion

In this study, activation of abdominal muscles and SCM muscles at different respiration phases during curl-up were compared and differences according to subjects having different sportive capacity and gender were analyzed.

The analysis of the data gathered from all the subjects show that there is higher level of muscle activation in EO right, TrA/IO right, TrA/IO left and RA right during curl-up with expiration than curl-up with inspiration. However, the analysis also shows that the values derived from SCM right and SCM left muscles during curl-up with inspiration is higher than the values in curl-up with expiration. According to the results of the study, sternocleidomastoid muscle in the neck area which has a great role for cervical stabilization during curl-up with inspiration gets more active than it does during curl-up with expiration. In a similar study, Yoon et al. (2014) found that SCM muscle gets more active in slow inspiration than it does in slow expiration. The results of their study resemble ours. These results indicate that the muscle group to be the primary active during curl-up is the muscle group in the abdominal area. Therefore, trying to do curl-up at the moment of contraction by doing inspiration may run a risk for neck and cervical zone. For the health of the neck and cervical zone, doing expiration during curl-up at the moment of contraction makes this area less active, which is important to prevent the area from being forced too much at the following phases of the activity with the increase in tiredness. In one of their study, Nepomuceno et al., (2014) compared SCM muscle in supine position and in normal and forced respiration using EMG, and found SCM muscle to be more active during forced respiration. It was particularly reported that this difference was much more at the moment of inspiration (cycle). This shows that SCM muscle shows different

contraction rates according to respiratory type not only at the moment of curl-up but also in other body positions.

A comparison of mean values of sedentary and athlete participants during curl-up with expiration show that sedentary subjects have higher contraction rates only with at the RA left muscle. However, there is no significant difference in terms of curl-up with inspiration between muscles when sedentary and athlete participants are compared.

Subjects' being active or sedentary and the respiratory type during curl-up do not change the contraction rates of muscles.

A comparison of the mean values of male and female participants during curl-up with expiration indicates that the values derived from females' EO left and RA right muscles are higher than the values derived from the same muscle group of males. However, when the mean values of male and female participants during curl-up with inspiration are compared, it is seen that the values derived from the same muscle group (EO left and RA right) of females are higher than that of males'.

It is seen that females have more strain in some parts of their abdominal muscles in comparison to males during curl-ups which are done at the same level of intensity and density. However, this difference is found to be at the same level in both respiratory types. Consequently, it can be said that this difference does not change according to respiratory types. It can be supposed that the reason why this difference occurs is that males can tolerate curl-ups more which are done at the same level of intensity and density. As there is no difference between genders and the contraction rates of SCM muscle, no gender-specific suggestions can be made about respiration during curl-up for the health of neck and cervical zone

Ethics Committee Approval: Ethics committee approval was received for this study from the approval was obtained from the local Ethical Committee

Author Contributions: İdea- H.S; Design H.S; Supervision- H.S; Funding- H.S; Materials- H.S.; Data Collection/Data Process- H.S, Analyze or Comment- H.S, Literature Scanning- H.S.; Writer of Paper-H.S.; Critical Review- H.S.

Conflict of Interest: No conflict of interest was declared by the author.

Financial Disclosure: The author declared that this study has received no financial support.

References

Adams L, Datta AK, Guz A. Synchronization of motor unit firing during different respiratory and postural tasks in human sternocleidomastoid muscle. The Journal of Physiology, 1989: 413:213-231.

Axler CT, McGill SM. Low back loads over a variety of abdominal exercises: searching for the safest abdominal challenge. Medicine & Science in Sports & Exercise, 1997: 29: 804-8011.

Beim GM, Giraldo JL, Pincivero DM, Borror MJ, Fu FH. Abdominal strengthening exercises: A comparative EMG study. Journal of Sport Rehabilitation, 1997: 6: 11-20.

Clark GT, Browne PA, Nakano M, Yang Q. Co-activation of sternocleidomastoid muscle during maximum clenching. Journal of Dental Research, 1993: 72: 1499 – 1502.

Critchley DJ, Pierson Z, Battersby G. Effect of pilates mat exercises and conventional exercise programmes on transversus abdominis and obliquus internus abdominis activity: pilot randomized trial. Manual Therapy, 2011: 16: 183-189.

De Luca CJA. Practicum on the Use of sEMG Signals in Movement Sciences. Delsys Inc; 2008.

Criswell E. Cram's Introduction to Surface Electromyography. Second Edition, Jones and Bartlett Publishers; 2011.

Ellis H. The ribs and intercostal spaces. Anaesthesia & Intensive Care Medicine, 2008: 9: 518-519.

Neumann D. Kinesiology of the musculoskeletal system: foundation for physical rehabilitation. 2nd ed. Philadelphia: Mosby; 2009.

Falla DL, Jull GA, Hodges PW. Patients with neck pain demonstrate reduced electromyographic activity of the deep cervical flexor muscles during performance of the craniocervical flexion test. Sine, 2004: 29: 2108-2114.

Foster DN, Fulton MN. Back pain and the exercise prescription. Clinical Journal of Sport Medicine, 1991: 10(1):197-209.

Garcia FJV, Grenier SG, McGill SM. Abdominal muscle response during curl-ups on both stable and labile surfaces. Physical Therapy, 2000: 80: 564-569.

Goldby LJ, Moore AP, Doust J, Trew ME. A randomized controlled trial investigating the efficiency of musculoskeletal physiotherapy on chronic low back disorder. Sine, 2006: 31:1083-1093.

Hides JA, Lambrecht G, Richardson CA, Stanton WR, Armbrecht G, Pruett C, Damann V, Felsenberg D, Belavy DL. The effects of rehabilitation on the muscles of the trunk following prolonged bed rest. European Spine Journal, 2011: 20: 808-818.

Hildenbrand K, Noble L. Abdominal muscle activity while performing trunk-flexion exercises using the Ab roller, AB slide, FitBall, and conventionally performed trunk curls. Journal of Athletic Training, 2004: 39(1): 37-43.

Hodges PW. Core stability exercise in chronic low back pain. Orthopedic Clinics North America, 2003: 34: 245-254.

Janda V, Schmid HJA. Muscles as a pathogenic factor in back pain. Proceedings of the Fourth Conference of the International Federation of Orthopaedic Manipulative Therapists. Christchurch, New Zealand, February, 1980. p. 17-18.

Johannsen F, Remvig L, Kryger P, Beck P, Warmig S, Lybeck K, Dryer V, Larson LH. Exercise for chronic low back pain: A clinical trial. Journal of Orthopedic & Sports Physical Therapy, 1995: 22(2): 52-59.

Jull GA. Deep cervical flexor muscle dysfunction in whiplash. Journal of Musculoskeletal Paint, 2000: 8: 143-154.

Kelly M, Cardy N, Melvin E, Reddin C, Ward C, Wilson F. The craniocervical flexion test: an investigation of performance in young asymptomatic subjects. Manual Therapy, 2013: 18: 83-86.

Konrad P. The ABC of EMG – A Practical Introduction to Kinesiological Electromyography. Noraxon, Arizona, USA; 2005.

Lahad A, Malter AD, Berg AO, Deyo RA. The effectiveness of four interventions for the prevention of low back pain. Journal of the American Medical Association, 1994: 272: 1286-1291.

McGill SM. Low back exercises: evidence for improving exercise regimens. Physical Therapy, 1998: 78: 754-765.

Nepomuceno VR, Nepomuceno EM, Regalo SCH, Cerqueira EP, Souza RR. Electromyographic study on the sternocleidomastoid and pectoralis major muscle during respiratory activity in humans. Journal of Morphological Science, 2014: 31(2): 98-102.

Norris CM. Abdominal muscle training in sport. British Journal of Sports Medicine, 1993: 27(1): 19-27.

O'Leary S, Falla D, Jull G, Vicenzino B. Muscle specificity in tests of cervical flexor muscle performance. Journal of Electromyography and Kinesiology, 2007: 17:35-40.

Rodriguez AA, Kilkey WJ, Agre JC. Therapeutic exercise in chronic neck and back pain. Archives of Physical Medicine and Rehabilitation, 1992: 73: 870-875.

Sterling M, Jull G, Wright A. Cervical mobilization: concurrent effects on pain, sympathetic nervous system activity and motor activity. Manual Therapy, 2001: 6: 72-81.

Yoon T, Kim K, Cynn H. Slow expiration reduces sternocleidomastoid activity and increases transversus abdominis and internal oblique muscle activity during abdominal curl-up. Journal of Electromyography and Kinesiology, 2014: 24: 228-232..

Middle Black Sea Journal of Health Science April 2017; 3(1): 11-15

RESEARCH ARTICLE

Assessment of Two-Year Bladder Biopsy and Cystectomy Outcomes

Havva Erdem[1], Mürüvvet Akçay Çelik[1], Betül Duygu Şener[1], Abdullah Çırakoğlu[2], Erdal Benli[2]

[1]Department of Pathology, Ordu University of Medical Faculty and Education and Research Hospital, Ordu, Turkey
[2]Department of Urology, Ordu University of Medical Faculty and Education and Research Hospital, Ordu, Turkey

Received: 21 November 2016, Accepted: 5 December 2016, Published online: 26 December 2016

Abstract

Objective: To evaluate the outcome of bladder biopsy and resection evaluated in pathology department in 2014-2015.

Material and methods: A total of 78 cases from 2014 to 2015 were included in this study. Reports of the cases were removed from the archive and the age, gender, diagnosis and prognostic parameters of the cases were recorded. The distribution of cases according to age and gender was evaluated.

Results: 65 of the cases were male, 13 of the cases were female. The average age of cases is between 39 and 90. Twenty-one cases were cystitis and squamous metaplasia. The mean age of benign lesions is between 41 and 85. Five cases of dysplastic lesions were observed. The average age is 61.6 and all of them are male. 52 of the cases were malignant. 49 of the cases were male, 3 of the cases were female. 19 cases of non-invasive papillary urothelial carcinoma, 1 case of low malignant potential urothelial neoplasm, 2 of the prostate adenocarcinoma metastasis, 30 of invasive carcinoma. 20 of the cases were pT1, 9 of the cases were pT2, 1 of the case was pT4 and 19 of the cases were pTa. The mean age was 64.5. Invasive tumors are all male. The mean age was 74.6.

Conclusion: In this study, tumors and non-tumoral lesions were seen spreading to a wide range of age in bladder. Benign and malignant lesions were observed in males. Benign lesions were more common in females than malignant lesions in females.

Key words: Bladder, tumors, non-tumoral lesions, distribution.

Address for correspondence/reprints:

Havva Erdem
Telephone number: +90 (452) 226 52 14
E-mail: drhavvaerdem@gmail.com

DOI: 10.19127/mbsjohs.294961

Note: This article was presented as a poster at the 26th national pathology & 7th national congress of cytopathology. 02-06,November 2016, Antalya, Turkey

Introduction

Urinary system mucosa is covered with urothelial epithelium. Urotelium-derived lesions composed of cell layers of different structures may be malignant pathologies called bladder tumors as well as benign lesions (Sampson et al., 2007).

Most of bladder tumors are urothelial carcinomas (> 90%). Some urothelial or non-urothelial lesions mimic carcinoma and may cause problems in differential diagnosis (Young et al., 2009). It is very important to distinguish these lesions, which are similar to the tumors with their clinical and pathological features, in terms of the treatment and follow-up of the patient.

Although malignant lesions are more researched, benign lesions are frequently encountered in the routine.

Early diagnosis of bladder cancer will increase the chance of successful treatment. However, there is no screening test just for early detection of bladder cancer. For this reason it is usually diagnosed when symptoms occur. This causes a late diagnosis of bladder cancer. However, most cases are diagnosed as non-invasive.

Painless hematuria is an important symptom. It may be the only symptom in the majority of patients with bladder cancer in particular (Fernandez et al., 2008). For this reason, any degree of painless hematuria in adults should be seen as a symptom of malignancy unless otherwise proven (Amling et al., 2001).

The cases in this study were biopsy and resection materials. Resection materials were previously diagnosed with cancer. Biopsies were samples of suspicious areas as a result of cystoscopic examination. Cystitis, dysplasia, noninvasive and invasive tumor diagnoses were present in biopsy or resection examinations of these cases.

In this study, biopsy and resection results of bladder specimens evaluated in pathology department between 2014-2015 were evaluated.

Methods

A total of 78 cases from 2014 to 2015 were included in this study. The distribution of cases according to age and gender was evaluated.

Results

65 (84%) of the cases were male, 13 (16%) of the cases were female. The age range was 39-90 and the averages were 67. Twenty-one cases were cystitis (with subtypes) (figure 1) and squamous metaplasia.

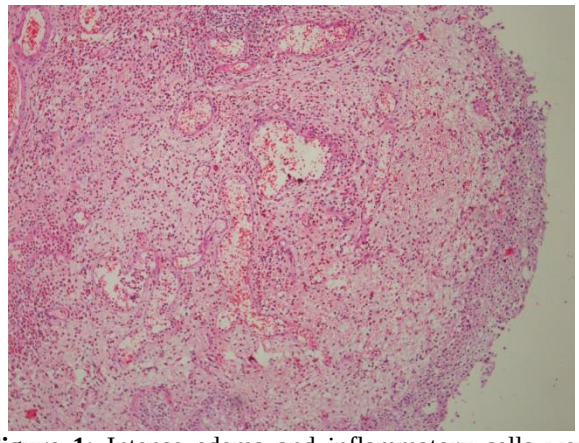

Figure 1: Intense edema and inflammatory cells were observed in the stroma (H&EX100)

The mean age of the benign lesions were 59 (range 41-85) and the gender distribution was as follows: 11 (52 %) of the cases were male and 10 (48 %) of the cases were females. Five cases of dysplastic lesions (not associated with invasive tumor) were observed (figure 2a,b, 3). The average age is 61.6 (54-73) and all of them are male.

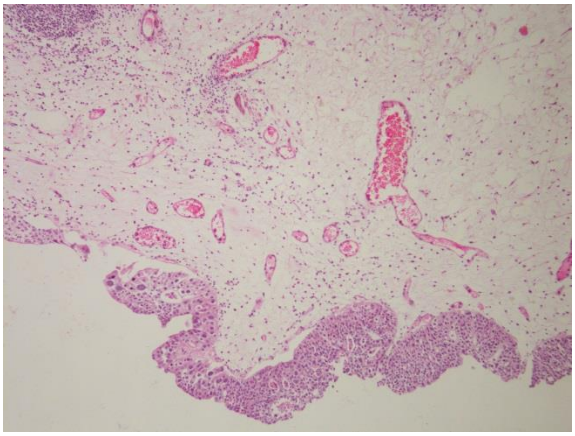

Figure 2a: Disorganisation and increase of nucleus cytoplasm ratio of urothelial epithelium was observed (H&E x 100)

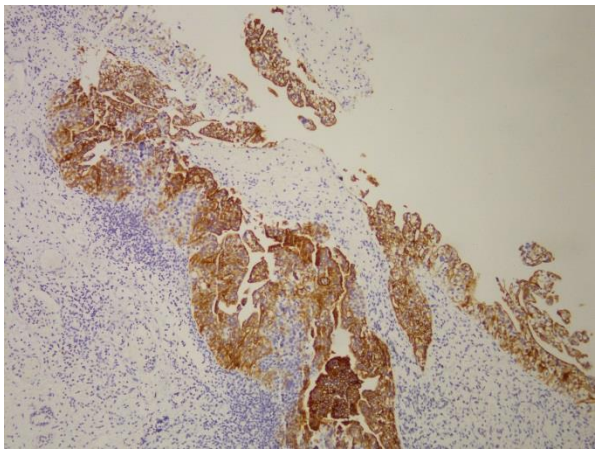

Figure 2b: Positive staining with CK20 was observed in the dysplastic epithelium (CK20X200)

52 (66 %) of the cases were malignant. 49 (94 %) of the cases were male, 3 (6 %) of the cases were female. 19 (37 %) cases of non-invasive papillary urothelial carcinoma, 1(2 %) case of low malignant potential urothelial neoplasm, 2 (4 %) of the prostate adenocarcinoma metastasis, 30 (57 %) of invasive carcinoma (figure 3). 1 (3.3 %) case of invasive tumors was adenocarcinoma, 2 (6.6 %) of the cases were micropapillary, 1 (3.3 %) of the case was nested variant, 3 (10 %) of the cases were squamoid variant, 23 (76.6 %) of the cases were papillary. 20 (66 %) of the cases were pT1, 9 (30 %) of the cases were pT2, 1 (3 %) of the case was pT4 and 19 (63.3 %) of the cases were pTa.

Noninvasive urothelial carcinoma distribution is as follows: 16 (84 %) of the cases were male and 3 (16 %) of the cases were females. The mean age was 64.5 (39-90). Invasive tumors are all male. The mean age was 74.6 (60-89).

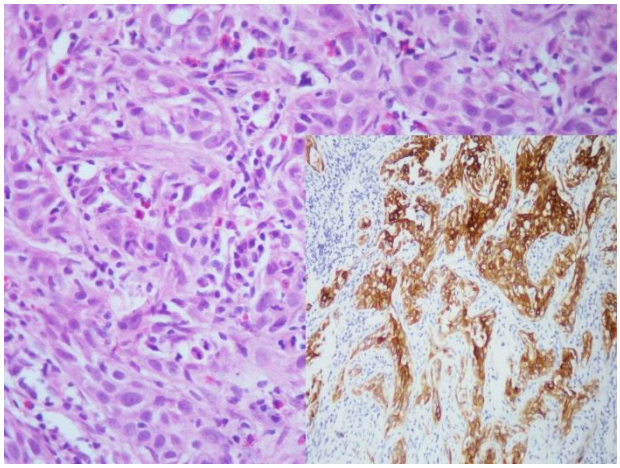

Figure 3: Invasive, atypical cells were observed (H&E x 400), small figure: invasive areas stained positively with Pan CK (Pan CK x 200).

Discussion

Urothelial carcinomas are the 5th most common type of cancer in the world. It is three times more common in men (Eble et al., 2004; Jemal et al., 2005; Spiess et al., 2006).

More than 90% of bladder cancers are transitional cell carcinomas, others are adenocarcinoma and squamous cell carcinoma. At the time of diagnosis, most cases (80%) are superficial tumors (Messing et al., 2007). Mostly, they show recurrence and about 10-15% become muscle invasive (Messing et al., 2007). In this study, 9 (30%) of the cases were pT2 (muscle invasive).

In this study, there were 40 % non-invasive categories. 84 % of these cases were male and 16 % of these cases were female patients.

Bladder cancer can be seen at any age, including childhood. However, it is usually middle-aged and elderly. The mean age of diagnosis of transitional cell carcinoma is 69 in males and 71 in females (Lynch et al., 1995).

In this study, malignant tumors in women were non-invasive and the mean age of these cases was 64.5. Invasive tumors are all male and the mean age of these cases was 74.6.

In addition, the incidence of bladder cancer increases with age. A similar tendency is seen in squamous cell carcinomas. The mortality rate in the elderly is also high. In young people, the prognosis is much better because it is seen as more superficial, low grade tumors; When compared with the grade, the risk of progression of the disease to the young and the elderly is the same (Lynch et al.,1995).

In this study, all patients with invasive urothelial carcinoma were male and the mean age was 74.6 and invasive urothelial carcinoma was not observed in women.

Studies in the etiology and pathogenesis studies have shown that a variety of etiological agents, such as smoking, aromatic amines, play a role in the development of bladder cancer (Johansson et al., 1997; Negri et al., 2001).

Cystitis can be evaluated in two groups as infectious and non-infectious. It is the most common cystitis among bacterial infections in adults. All age groups and both gender are encountered. According to the clinic case, it is divided into acute and chronic, and according to its etiology it is classified as bacterial, radiation, chemical and eosinophilic cystitis (Ucer et al., 2012).

When evaluated as urinary system infections, it is more frequent in females than males and 50% of infections recur. In the majority of these patients there is a history of urinary tract infections in childhood (Nicole et al., 2005).

Adults may develop renal insufficiency as a result of progressive renal damage and recurrent infections in the presence of obstruction (Hooton et al., 2000).

In this study, all benign inflammatory cases were categorized collectively. The cases were 26 % of all cases. It was seen that the ratio of women / men in these cases was similar (10/11). This is because the group is heterogeneous. Due to the small number of cases, they were not separated into subtypes. When we evaluated all the cases, 65 of the cases were male and 13 were female. We think that the reason for male dominance may be related to smoking.

Interventional procedures such as urinary system catheterization may cause reactive changes in the mucous membrane of the urinary system due to irritation caused by pathologies such as stone disease or infections. It may be difficult to distinguish reactive changes from atypia (Yüksel et al., 2014). Cytokeratin (CK) 20 can be a guide in this distinction. In this study, positive staining with CK 20 was observed in areas considered to be dysplasia.

Five cases with dysplasia were present in this study and constituted 6 % of all cases.

Non-keratinized squamous metaplasia is considered a normal variant of urothelial mucosa. It is usually seen in women and in the trigonal region with the bladder neck (Wiener et al., 1979). Keratinized squamous metaplasia can be seen in both men and women, but occurs with chronic irritants such as persistent urinary catheterization or recurrent chronic infections (Guo et al., 2006; Khan et al., 2002). It may be associated with squamous cell carcinoma (Guo et al., 2006; Khan et al., 2002; Ahmad et al., 2008). In this study keratinization was not observed in squamous metaplasia cases.

In this study, 30 of the cases were invasive urothelial carcinoma. 3.3% case of invasive tumors was adenocarcinoma, 6.6% of the cases were micropapillary, 3.3% of the case was nested variant, 10 % of the cases were squamoid variant, 76.6% of the cases were papillary. 66% of the cases were pT1, 30% of the cases were pT2, 3% of the case was pT4. The age-average of invasive tumors in this study was higher than the literature (Lynch et al., 1995).

The incidence of muscularis propria invasion (pT2) in this study was about twice that of the literature (Messing et al., 2007).

Pan CK, immunohistochemical staining in the differential diagnosis of invasive tumor groups, can be used. In this study, invasion areas with Pan CK were also shown.

Interestingly, all of the invasive tumors and displastic lesion were male. This may be related to etiologic factors.

Conclusion

In this study, bladder-related tumors and non-tumoral lesions were seen spreading to a wide range of age. Benign and malignant lesions were observed in males. Benign lesions were more common than malignant lesions in females. The age distribution of invasive carcinoma was found to be higher than that of noninvasive urothelial carcinoma and higher in males than females.

Acknowledgment: This article was supported by the Ordu University Scientific Research Coordination Unit as project numbered YKD-535.

Informed Consent: Written informed consent was obtained from students who participated in this study.

Ethics Committee Approval: Ethics committee approval was received for this study from Clinical Research Ethics Committee of Ordu University.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept –H. E., Design H. E, M.A.Ç; Supervision H. E, B. D. Ş; Materials – A. Ç., E. B; Data Collection and/or Processing – B. D. Ş; Analysis and/or Interpretation – H.E; Literature Review – B. D. Ş, A. Ç; Writing – H. E, M. A. Ç, E. B; Critical Review- H. E, M.A.Ç

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study has /hasn't received no financial support.

References

Ahmad I, Barnetson RJ, Krishna NS. Keratinizing squamous metaplasia of the bladder: a review. Urol Int. 2008;81(3):247–251.

Eble JN, Sauter G, Epstein JI, Sesterhenn IA, editors. World Health Organization classification of tumours. Pathology and genetics of tumours of the urinary system and male genital organs. Lyon: IARC Pres; 2004.

Guo CC, Fine SW, Epstein JI. Noninvasive squamous lesions in the urinary bladder: a clinicopathologic analysis of 29 cases. Am J Surg Pathol. 2006;30(7): 883–891.

Hooton TM. Pathogenesis of urinary tract infections; an update. J Antimicrob Chemother 2000; 46(1): 1-7.

Jemal A, Murray T, Ward E, Samuels A, Tiwari RC, Ghafoor A et al. Cancer statistics 2005. CA Cancer J Clin 2005;55: 10-30.

Johansson SL, Cohen SM. Epidemiology and etiology of bladder cancer. Semin Surg Oncol 1997;13:291-8.

Khan MS, Thornhill JA, Gaffney E, Loftus B, Butler MR. Keratinising squamous metaplasia of the bladder: natural history and rationalization of management based on review of 54 years experience. Eur Urol. 2002;42(5):469– 474.

Lynch CF, Cohen MB: Urinary system. Cancer 1995;75(suppl):316.

Messing EM. Urothelial tumors of the bladder. In: Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA, editors. Campbell's urology Philadelphia: Saunders Co; 2007. p. 2407-47.

Negri E, La Vecchia C. Epidemiology and prevention of bladder cancer. Eur J Cancer Prev 2001;10:7-14.

Nicole LE, Bradley S, Colgan R, Rice JC, Schaeffer A, Hooton TM. Infectious Diseases Society of America guidelines for the diagnosis and treatment of asymptomatic bacteriuria in adults. Clin Infect Dis 2005; 40: 643–54.

Sampson N, Untergasser G, Plas E, Berger P. The ageing male reproductive tract. J Pathol.2007;211(2):206–218

Spiess PE, Czerniak B. Dual-track pathway of bladder carcinogenesis: practical implications. Arch Pathol Lab Med 2006;130: 844-852.

Uçer Oktay, Gümüş Bilal. Cystites. Turkiye Klinikleri J Urology-Special Topics 2012;5(2):1-6.

Wiener DP, Koss LG, Sablay B, Freed SZ. The prevalence and significance of Brunn's nests, cystitis cystica and squamous metaplasia in normal bladders. J Urol. 1979;122(3):317 321.

Young RH. Tumor-like lesions of the urinary bladder. Mod Pathol 2009;22:37-52.

Fernandez D. Hematuria evaluation. Cleve Clin J Med. 2008;75:328.

Amling CL. Diagnosis and management of superficial bladder cancer. Curr Probl Cancer. 2001;25:219–78.

Yüksel Mehmet Bilgehan, Albaz Ali Can, Karaköse Ayhan. Mesanenin Tümöral Olmayan Lezyonları. The Cystoscope 2014:1;58-62

Middle Black Sea Journal of Health Science April 2017; 3(1):16-22

RESEARCH ARTICLE

The Evaluation of Gender Effect in Treatment of Alveolar Cleft with Iliac Bone Graft By Means of Volumetric Analysis

Nesrin Saruhan[1], Ümit Ertaş[2]
[1] Oral and Maxillofacial Surgery, Sakarya, Turkey.
[2] Ataturk University Faculty of Dentistry, Department of Oral and Maxillofacial Surgery, Erzurum, Turkey.

Received: 21 April 2017 Accepted: 25 April 2017, Published online: 25 April 2017

Abstract
Objective: The purpose of this study was to evaluate of gender effect in treatment of alveolar cleft with iliac bone graft by means of volumetric analysis.
Methods: In this study; 22 patients with alveolar cleft including 13 unilateral, and 9 bilateral were treated with anterior iliac crest bone graft. Patients were divided into subgroups according to their gender. Cone Beam Computed Tomography scans were obtained preoperatively and postoperatively. 3D reconstruction of Cone Beam Computed Tomography images was made by using Mimics software. Preoperative alveolar cleft volume and postoperative newly formed bone volume was assessed volumetrically.
Results and Conclusion: The percentage of preoperative alveolar cleft volume in female ranged from 0.51 to 1.45 cm3 with a mean volume of 0.89±0.27 cm3, in male ranged from 0.72 to 2.04 cm3 with a mean volume of 1.11±0.36 cm3. The percentage of newly formed bone in female ranged from 47.02% to 80.09% with a mean percentage of %68.23±%9.43, in male ranged from 50.70% to 77.49% with a mean percentage of 63.09%±10.72%. There is no statistically significant difference between the female and male for postoperative newly formed bone in treatment of alveolar cleft with iliac bone graft (p>0.05).
Key words: Congenital abnormalities, gender, three-dimensional imaging.

Address for correspondence/reprints:

Nesrin Saruhan
Telephone number: +90 264 278 10 21
E-mail: dt_nesrin@yahoo.com

DOI: 10.19127/mbsjohs.307346

Introduction

One of the most commonly encountered congenital anomalies of the head and neck region is the cleft lip and / or palate. It occur approximately 1 in 1000 births. Its prevalence varies depending on some factors such as race, geographical location, ethnic origin and gender. In our country, the rate of cleft lip and / or palate is 0.95 in 1000 and the rate of isolated cleft palate is 0.77 in 1000. (Tunçbilek, Alikaşifoğlu, & Akdallı, 1996) Alveolar clefts also accompany cleft lip and / or palate anomalies. (Ersoy, 2015)

There are many donor sites that are used as autogenous bone grafts in alveolar cleft treatment. However, among those, the most commonly used and the one that is accepted as gold standard is the iliac crest. Its advantages include low morbidity, creating an aesthetically acceptable scar, availability in sufficient amounts even in children, containing high amount of osteoblastic cells

(cancellous bone) and enabling two teams to operate at the same time. (Brattstrom & McWilliam, 1989)

For the assessment of the success of bone grafts in alveolar cleft treatment, clinical findings as well as radiological examinations are necessary. In order to assess the changes in bone volume, 3D imaging is definitely necessary.(Feichtinger, Mossbock, & Karcher, 2007)

The aim of this study is to evaluate the effect of gender on the postoperatively obtained new bone volume via the method of 3D volumetric analysis in the treatment of alveolar cleft with platelet-rich fibrine (PRF) application and iliac bone graft.

Methods

Our study included 22 patients who were diagnosed radiologically and clinically with alveolar cleft were admitted to the Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Ataturk University between the years of 2013 and 2016. The scientific ethical conformity of this study was approved by the dated 27.09.2013 and numbered 21 decision of the Ethics Committee of the Faculty of Dentistry of Ataturk University.

Patients included in this study were free of systemic diseases, particularly platelet disorders (thrombocytopenia, thromboasthenia); had no other craniofacial anomaly except cleft lip and / or palate; had no any syndrome or congenital malformation that may influence the treatment or results of the study; had good oral hygiene; had no history of jaw irradiation; had no local pathology in maxilla that could interfere with surgery (Figure 1).

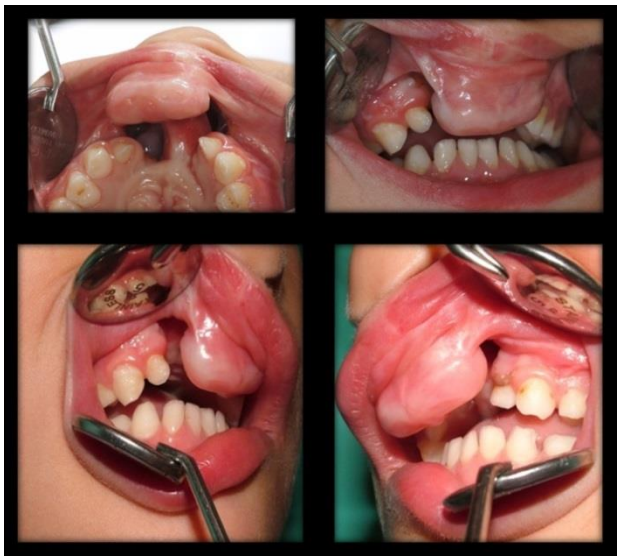

Figure 1: Oral image of the patient with bilateral alveolar cleft

The patients who underwent previous alveolar cleft repair but needed revision, who had any kind of medical or cooperation problem that may contradict the operation were excluded.

This study was conducted on a total of 31 alveolar cleft segments of 22 patients of whom 9 were male and 13 were female and 9 had bilateral and 13 had unilateral alveolar cleft. Their ages ranged between 6-28 years. The patients who were examined within the scope of this study were divided into groups according to their operation (group 1 and 2) and gender. They were grouped as following:

Group 1: A total of 17 segments which were used in 12 patients of whom 7 had unilateral, 5 had bilateral alveolar clefts and in whom only corticocancellous autogenous bone grafts harvested from the anterior iliac crest were used for alveolar cleft repair

Group 2: A total of 14 segments which were used in 10 patients of whom 6 had unilateral, 4 had bilateral alveolar cleft and in whom corticocancellous autogenous bone grafts harvested from the anterior iliac crest along with PRF were used for alveolar cleft repair.

The patients were taken into operation under general anesthesia with nasal endotracheal intubation. Oral and nasal mucosa was identified in the cleft region and the nasal mucosa was separated from the oral mucosa via dissection. Then the nasal mucosa was repaired using a 4.0 vicryl suture (Figure 2).

Figure 2: Preparation of the mucoperiostal flaps and repair of the nasal mucosa

In the anterior iliac crest, skin, subcutaneous, fascia and muscle layers were dissected with an incision of 4 cm which is distal and lateral to the superior spinal iliac so that the lateral femoral cutaneous nerve is

protected. Corticocancellous block bone graft according to the amount of cleft was harvested from the medial surface of iliac crest by osteotom (Figure 3).

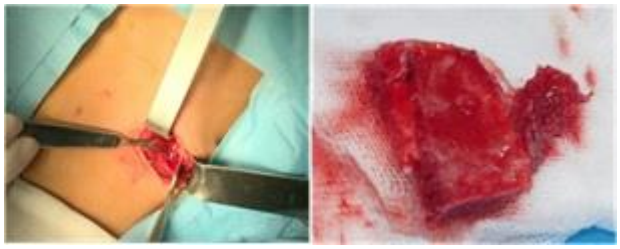

Figure 3: Corticocancellous bone graft harvesting from anterior iliac crest with osteotomy

Whereas cancellous bone graft was harvested from the medial part of the crest with the aid of curettes. Bone wax was placed in the medial region of anterior iliac crest where the bone graft was harvested. After hemostasis control, hemovac drain was placed and the wound area was closed primarily using 4.0 vicryl for subcutaneous tissues and 4.0 polypropylene sutures for skin in a manner that no dead space would be left.

After the corticocancellous bone grafts that were harvested from the anterior iliac crest were shaped according to the size of cleft line or lines, alveolar bone width was placed in a way that it would fill in the lower border of the anterior nasal aperture and lower border of the alveolar bone. In the patients of Group 2, PRF which was prepared at 3000 rpm for 10 minutes was applied as a membrane on the bone graft. The lateral gingival mucoperiosteal flaps were slid in a manner that they would cover the graft and entire cleft.

The preoperative alveolar cleft volume and postoperative newly formed bone volume were calculated using Mimics Medical 17.0 software.

Statistical analysis was performed using the IBM SPSS Statistics 20 package program (Armonk, NY: IBM Corp.). The normal distribution of the data was assessed by the Kolmogorov-Smirnov test in the subgroups. The t-test was used for the independent samples to compare the binary subgroups. Two-way analysis of variance was used to compare the interactions between subgroups.

Results

Our study was carried out on 22 patients whose ages ranged between 6 and 28 years (mean age: 17.71 ± 5.4 years). Of them, nine (40.9%) were male and 13 (59.1%) were female. Nine patients (40.9%; six were female, three were male) had bilateral and 13 patients (59.1%; seven were female, six were male) had unilateral alveolar cleft. Of 12 patients in group 1, 7 (58.3%) had unilateral and 5 (41.7%) had bilateral alveolar cleft which was 17 in total. Of 10 patients in group 2, 6 (60%) had unilateral and 4 (40%) had bilateral alveolar cleft which was 14 in total. Each cleft was considered as a segment and the preoperative cleft volumes and the postoperative newly formed bone volumes of 31 alveolar cleft segments from a total of 22 patients were measured in terms of cm3.

Age, preoperative alveolar cleft volume, postoperative newly formed bone volume and percentage values were calculated. These data were evaluated by taking the groups and gender into account.

In this study, preoperative cleft volume, postoperative newly formed bone volume and the distribution of percentage variables were analyzed by Kolmogorov-Simirnov test and the distribution in each of three variables was found to show normal distribution ($p > 0.05$). Also, no difference was detected between the groups in terms of the variable of preoperative alveolar cleft volume. Therefore, the groups were considered equal in terms of preoperative cleft volume preoperatively. Since there was normal distribution, parametric tests were performed and t-test was performed in independent groups.

The percentage of newly formed bone in group 2 ranged from 50.70% to 80.09%, with a mean percentage of 68.21%±10.80 percent. In group 1, the percentage of bone formation ranged from 47.02% to 79.23%, with a mean percentage of 64.62%±9.49 percent.

Descriptive statistics were performed for gender data (Table 1). In the binary comparison of the data, no statistically significant difference was found between the genders in terms of age, preoperative alveolar cleft volume, postoperative newly formed bone volume and percentage values ($p > 0.05$) (Table 2).

There was no statistically significant difference between the groups and gender in terms of percentage value ($p > 0.05$) (Table 3). Also, in the two-way analysis of variance, group gender interaction was not found to be statistically significant but marginally ($p < 0.10$) (Table 4).

Tablo 1: Descriptive values of gender data

Gender		n	Average	Standard deviation	Minimum	Maximum
Male	**Age**	12	19.17	4.85	13	28
	Preoperative	12	1.11	0.36	0.72	2.04
	Postoperative	12	0.68	0.16	0.52	1.08
	Percent	12	63.09	10.72	50.70	77.49
Female	**Age**	19	16.69	5.60	6	23
	Preoperative	19	0.89	0.27	0.51	1.45
	Postoperative	19	0.61	0.22	0.32	1.01
	Percent	19	68.23	9.43	47.02	80.09

Tablo 2: Binary comparison of gender data

	Average test of equality		Equality test of the averages (t test)		
	F	**p**	**t**	**p**	**Average Difference**
Age	1.692	0.204	1.210	0.236	2.377
Preoperative	.041	0.842	1.927	0.064	0.22142
Postoperative	4.740	0.038	0.861	0.396	0.06396
Percent	0.699	0.410	1.402	0.172	-5.13531

***** Statistically significant difference. ($p<0.05$).

Tablo 3: Percentage values by groups and gender

Group	Gender	Average	Standart deviation	n
Group 1	**Male**	61.08	6.77	4
	Female	65.70	10.16	13
	Total	64.62	9.49	17
Group 2	**Male**	64.10	12.54	8
	Female	73.69	4.49	6
	Total	68.21	10.80	14
Total	**Male**	63.09	10.71	12
	Female	68.23	9.43	19
	Total	66.24	10.09	31

Tablo 4: Variance analysis of the percentage values for group and gender factors

Variation Source	df	Squares average	F	p
Group	1	196.118	2.055	0.163
Gender	1	326.991	3.426	**0.075**$^{+}$
Gruop * Gender interaction	1	39.721	0.416	0.524
Error	27	95.456		
Total	31			

$^{+}$ Marginally significant difference ($p<0.10$)

Discussion

Cleft lip and / or palate are the most common congenital malformations of the head and neck region. (Bahr & Coulon, 1996) As it can be formed separately in the lip and palate, it may involve both of them. (HALICIOĞLU & KOÇAL, 2016) Alveolar clefts accompany these malformations. (Ersoy, 2015) There are many treatment protocols for alveolar cleft, and alveolar bone grafting constitutes the basis of these treatment protocols. (Baqain, Anabtawi, Karaky, & Malkawi, 2009)

In addition to clinical evaluations, especially radiological assessments are needed in order to objectively evaluate the postoperative newly formed bone after alveolar bone grafting. Conventional or 3D radiological methods can be used for this purpose. (Amanat & Langdon, 1991) Recently, the use of computerized tomography (CT) for the assessment of bone grafts that is used in the treatment of alveolar clefts has become increasingly popular. (Tai, Sutherland, & McFadden, 2000) Since CT does not have anatomic superimpositions compared to conventional radiographs, it yields more accurate results and has better image quality. However, considering the relation of traditional conventional CT procedures with high levels of radiation dose, alternative CT procedures were investigated in an attempt to perform bone imaging and modeling so as to decrease the effective radiation dose for patients without causing a significant loss in image quality. From this point of view, cone-beam computerized tomography (CBCT) constituted a promising potential for oral and craniofacial imaging. (Sukovic, 2003) In our study, CBCT was preferred to CT because of its abilities of reconstructing three-dimensional images with a single low radiation dose and its easy application.

Numerous 3D software programs are used for volumetric calculations of alveolar clefts. Among these, SimPlant, Mimics, Radipia, Amira, Maxilim, Vitrea, Ondemand, Allura, V-Works, Romexis are the most frequently used ones. (Choi et al., 2012) In our study, Mimics software was preferred because it gives very precise results especially in 3D volume calculations.

There are many donor sites that are used as autogenous bone grafts in alveolar cleft treatment. However, among those, the most commonly used and the one that is accepted as gold standard is the iliac crest. Bone grafts can be harvested from both the anterior and posterior part of iliac crest. Posterior iliac crest is usually preferred in the cases with large clefts and in the situations which require a greater amount of bone graft.(Brattstrom & McWilliam, 1989) In our study, alveolar cleft volume was measured preoperatively and there was no need for bone graft to be harvested from the posterior iliac, thus corticocancellous bone graft was harvested from the anterior iliac crest in all cases.

Another autogenous bone donor site that is used for alveolar cleft repair is the mandibular symphysis region. In the studies of Kilinc et al.(Kilinc, Saruhan, Ertas, Korkmaz, & Kaymaz, 2017) on the children and adults with unilateral or bilateral alveolar clefts, they reported that the mandibular symphysis zone had adequate bone volume in adult patients with unilateral alveolar cleft.

The most important point of alveolar cleft treatment is the postoperative success of bone grafts. Tai et al. (Tai, et al., 2000) carried out the follow-up of a total of 14 patients with unilateral or bilateral cleft lip and palate (a total of 17 alveolar clefts) who were operated with iliac bone grafting, in the preoperative, early postoperative period and at one year with CT. When the volumetric analysis of bone resorption was performed on coronal and axial sections, the bone loss ranged between 42.5% and 43.7% with a mean of 43.1%. In other studies, it was reported that high-rate resorption was observed especially within the first year after grafting.(Shawky & Seifeldin, 2015)

There are many factors which affect postoperative bone volume in alveolar cleft treatment. Considering that gender may be one of affecting factors, the effect of gender on alveolar cleft repair that was performed with the corticocancellous bone grafting which was harvested from the iliac crest was investigated. Twelve segment alveolar clefts in males and 19 segment alveolar clefts in females were evaluated. In the gender subgroups, the parameters of age, preoperative alveolar cleft volume, the postoperative newly formed bone and percentage values were evaluated and no statistically significant difference was found in any of these data. However, the postoperative newly formed bone volume was found to be 68.25% in the females and 63.09% in the males. Therefore, although percentage values were not statistically significant but they were higher in the females than the males. The reason of this was considered to be due to the fact that the mean age of the females (16.69 ± 5.6 years) was lower than that of the males

(19.17 ± 4.85 years) or the preoperative cleft volume in females (mean 0.89 cm3) was lower than that of the males (mean 1.11 cm3). Also, no statistically significant difference was found between the groups and genders, but in group 1, in group 2 and in total, the success in the females was found to be higher than that of the males in terms of postoperative newly formed bone volume. Therefore, whether there was an interaction between the groups and gender or not was evaluated and no statistically but a marginally significant difference was detected. Thus, it was considered that in case of conducting studies which include higher number of cases, a statistical significance could be obtained between the genders and groups.

Conclusion

When the effect of gender on the postoperative newly formed bone volume in alveolar cleft treatment with iliac bone grafting and PRF was examined with volumetric analysis in the patients of group 1 and 2, no statistically significant difference was found between the females and males in terms of the postoperative newly formed bone volume.

Ethics Committee Approval: Ethics committee approval was received for this study from Faculty of Dentistry Clinical Research Ethics Committee of Ataturk University.
Peer-review: Externally peer-reviewed.
Author Contributions: Concept – U.E. Design UE; Supervision U.E.; Materials - UE; Data Collection and/or Processing – N.S.; Analysis and/or Interpretation – N.S.; Literature Review – N.S.; Writing –N.S.; Critical Review – U.E.
Conflict of Interest: No conflict of interest was declared by the authors.
Financial Disclosure: The authors declared that this study hasn't received no financial support.

References

Amanat, N., & Langdon, J. D. (1991). Secondary alveolar bone grafting in clefts of the lip and palate. Journal of cranio-maxillo-facial surgery : official publication of the European Association for Cranio-Maxillo-Facial Surgery, 19(1), 7-14.

Bahr, W., & Coulon, J. P. (1996). Limits of the mandibular symphysis as a donor site for bone grafts in early secondary cleft palate osteoplasty. International journal of oral and maxillofacial surgery, 25(5), 389-393.

Baqain, Z. H., Anabtawi, M., Karaky, A. A., & Malkawi, Z. (2009). Morbidity from anterior iliac crest bone harvesting for secondary alveolar bone grafting: an outcome assessment study. Journal of oral and maxillofacial surgery : official journal of the American Association of Oral and Maxillofacial Surgeons, 67(3), 570-575. doi: 10.1016/j.joms.2008.09.023

Brattstrom, V., & McWilliam, J. (1989). The influence of bone grafting age on dental abnormalities and alveolar bone height in patients with unilateral cleft lip and palate. [Review]. European journal of orthodontics, 11(4), 351-358.

Choi, H. S., Choi, H. G., Kim, S. H., Park, H. J., Shin, D. H., Jo, D. I., . . . Uhm, K. I. (2012). Influence of the alveolar cleft type on preoperative estimation using 3D CT assessment for alveolar cleft. Archives of plastic surgery, 39(5), 477-482.

Ersoy, U. (2015). Kemik Grefti ile Rekonstrüksiyon In F. Özgur (Ed.), Dudak-Damak Yarıkları (pp. 199-210). Ankara: Atlas Kitapçılık.

Feichtinger, M., Mossbock, R., & Karcher, H. (2007). Assessment of bone resorption after secondary alveolar bone grafting using three-dimensional computed tomography: a three-year study. The Cleft palate-craniofacial journal : official publication of the American Cleft Palate-Craniofacial Association, 44(2), 142-148. doi: 10.1597/06-047.1

Halicioğlu, k., & Koçal, g. k. (2016). Damak yarikli hastalarda alveoler kemik greftlemesi. Atatürk Üniversitesi Diş Hekimliği Fakültesi Dergisi, 26(1).

Kilinc, A., Saruhan, N., Ertas, U., Korkmaz, I. H., & Kaymaz, I. (2017). An Analysis of Mandibular Symphyseal Graft Sufficiency for Alveolar Cleft Bone Grafting. Journal of Craniofacial Surgery, 28(1), 147-150.

Shawky, H., & Seifeldin, S. A. (2015). Does Platelet-Rich Fibrin Enhance Bone Quality and Quantity of Alveolar Cleft Reconstruction? The Cleft palate-craniofacial journal.

Sukovic, P. (2003). Cone beam computed tomography in craniofacial imaging. [Comparative Study Research Support, U.S. Gov't, P.H.S.]. Orthodontics & craniofacial research, 6 Suppl 1, 31-36; discussion 179-182.

Tai, C. C., Sutherland, I. S., & McFadden, L. (2000). Prospective analysis of secondary alveolar bone grafting using computed tomography. [Evaluation Studies Research Support, Non-U.S. Gov't]. Journal of oral and maxillofacial surgery : official journal of the American Association of Oral and Maxillofacial Surgeons, 58(11), 1241-1249; discussion 1250. doi: 10.1053/joms.2000.16623

Tunçbilek, E., Alikaşifoğlu, M., & Akdallı, B. (1996). Türkiye'de konjenital malformasyon sıklığı, dağılımı, risk faktörleri ve yenidoğanların antropometrik değerlendirilmesi. Ankara TÜBİTAK Matbaası, 94.

Middle Black Sea Journal of Health Science December 2017 ; 3(1): 23-25

CASE REPORT

Simultaneous Bony Mallet Fingers of Two Phalanx in a Patient: A Rarely Seen Case Report

Erdal Uzun[1]
[1]Orthopedic and Traumatology Clinic, Kayseri Research and Training Hospital, Kayseri, Turkey.

Received: 25 April 2016 Accepted: 15 June 2016, Published online: 25 April 2017

Abstract
Mallet finger deformity is a common hand injury and usually occurs after a direct impact of sudden and extreme trauma forcing the distal interphalangeal joint to get flexion with an extended proximal interphalangeal joint. Deformity is especially associated with ball use disrupting the extensor mechanism at the base of distal phalanx. Mallet finger deformity in acute stage can be treated by immobilization of distal interphalangeal joint with hyperextension splints. But the surgery becomes the choice in delayed cases and if there is a fracture including more than one third of articular surface of distal interphalangeal joint or distal phalanx volar subluxation. In the literature there are great sum of studies including mallet finger deformities as simultaneous, bilateral or multiple variations and treatment strategies. But in the literautre there is no study about simultaneous bony mallet fingers deformity reported. Here, we present the case of a 30 year old female with simultaneous bony mallet fingers in the third and fourth ray and the conservative treatment of with splinting for six weeks. At the last time follow up the patient was able to use her hand without any diffuculty and she had full range of motion of distal interphalangel joint.
Key words: Bony mallet finger, Simultaneous, Treatment, Conservative

Address for correspondence/reprints:

Erdal Uzun
Telephone number: +90 (352) 336 8884
E-mail: nuzuladre@gmail.com

DOI: 10.19127/mbsjohs.309375

Introduction

Mallet finger is a common fingertip injury with a prevalence of 1:10,000 that involves disruption of the extensor mechanism at its terminal insertion, resulting in inability to actively extend the distal interphalangeal joint (Bloom et al., 2013). The injury is most commonly sustained during sporting activity activity especially associated with ball use (Er et al., 2014). The dominant hand middle, ring, and little fingers are most often affected (Bloom et al., 2013). If the mallet deformity is not treated appropriately it can lead to permanent deformities like flexion deformity and inability to actively extend the distal interphalangeal (DIP) joint and swan neck deformity (Kanaya et al., 2013). Surgery is reserved in delayed cases and if there is a fracture including more than one third of articular surface of distal interphalangeal joint, distal phalanx volar subluxation, conservative management failure, avulsed fragment that fails

reduction, and absence of full passive extension of the joint (Anderson, 2011). In the literature there are great sum of studies including mallet finger deformities as simultaneous, bilateral or multiple variations and treatment strategies (Bloom et al., 2013; Er et al., 2013; Kanaya et al., 2013; Miranda et al., 2015). But simultaneous bony mallet fingers deformity is not reported. Here, we present the case of a 30 year old female with simultaneous bony mallet fingers in the third and fourth ray and our treatment strategy.

Case Report

A 30-year-old healthy female admitted to our outpatient clinic with a traumatic injury that had occured while playing volleyball one day before. She gave the history of the ball hit of her dominant right hand both the middle and ring digits on the outstretched position. She had no personal or family history of previous mallet fingers. On physical examination her third and ring fingers were both in flexion position. She was unable to extend her right DIP joint of the third and ring fingers and she had the complaint of extreme pain and deformity on both DIP joints. The mallet deformity of both fingers were obvious at physical examination and the diagnose was confirmed radiologically. There was bony mallet of the third and ring fingers on the direct rontgenogram without subluxation (Figure). On the lateral radiographs it could be seen that avulsion fractures identified were containing less than one third of DIP joint surface. So we considered conservative treatment with application of splinting both the third and ring fingers' DIP joints in extention position for 6 weeks period. After 3 months at the last follow-up a full recovery was achieved for both fingers.

Figure: There was bony mallet of the third and ring fingers on the direct rontgenogram without subluxation.

Discussion

Avulsion injuries are most commonly sustained during sporting activity (Çıraklı et al., 2013). Mallet finger is one of avulsion injuries and a common fingertip injury with a prevalence of 1:10,000 (Bloom et al., 2013). The dominant hand middle, ring, and little fingers are most often affected (Bloom et al., 2013). Deformity occurs disrupting the extensor mechanism with or without bony fragment of distal phalanx. Mallet finger deformity in acute stage can be treated by immobilization of distal interphalangeal joint with hyperextension splints. Surgery is reserved in delayed cases and if there is a fracture including more than one third of articular surface of distal interphalangeal joint, distal phalanx vo¬lar subluxation, conservative management failure, avulsed fragment that fails reduction, and absence of full passive extension of the joint (Anderson, 2011). There are different techniques reported for bony mallet deformities as extansor bloc pinnig, percutaneous blunt needle reduction, internal fixation using hook plate and screws (Er et al., 2014; Miranda et al., 2015). But some devastating complications can occur performing surgical strategy such as pin-site infections and potentially osteomyelitis. Stern et al. suggested that outcome of conservative treatment by splinting for a minimum of six weeks is equal to operative treatment and has a significantly lower complication rate (Stern and Kastrup, 1988). Similarly Hamas et al. supported the idea that bony injury can be treated conservatively with splinting

of the distal phalanx in extension for 6-8 weeks where the bony fragments appear to afford better tendon healing (Hamas et al., 1978). The patient in this report had bony simultaneous mallet fingers of both the middle and ring digits with containing less than one third of DIP joint surface. So we considered splinting instead of surgical treatment. At the last follow-up a full recovery was achieved for both fingers reducing surgical complication riscs.

Mallet finger deformity is offen seen in a single digit, but simultaneous mallet deformity is quite rare. In the literature we couldn't see any study about simultaneous bony mallet deformity of the dominant hand, to our opinion this is the first study reported.

In conclusion, where there is no definitive evidence that outcomes are better with anatomical reduction of mallet deformities, conservative treatment may be a choice also for simultaneous bony mallet deformities with reducing surgical complication riscs. And also patients must be more careful with the ball use where it threatens not only the sportsman particularly prone to hand injuries but also the peaple have no personal risc factor or familial history.

Informed Consent: Necessary information using the patient information form and consent form was taken from the patients
Peer-review: Externally peer-reviewed.
Author Contributions: Concept- EU, Design- EU, Supervision EU, Funding- EU, Materials- EU, Data Collection and/or Processing- EU, Analysis and/or Interpretation- EU, Literature Review- EU, Writing- EU, Critical Review- EU.
Conflict of Interest: No conflict of interest was declared by the author.
Financial Disclosure: The author declared that this study hasn't received any financial support.

References

Anderson D. Mallet finger-Management and patient compli¬ance. Aust Fam Physician 2011;40:47-8.

Bloom JM, Khouri JS, Hammert WC. Current concepts in the evaluation and treatment of mallet finger injury. Plast Reconstr Surg 2013;132:560-6.

Çıraklı A, Zengin EÇ, Sezgin H, Çıraklı S, Erdoğan M. Avulsion fracture of the anterior inferior iliac spine among amateur soccer players. JAEMCR 2013;4:136-8.

Er MS, Erten RA, Eroğlu M, Altınel L. Bilateral simultaneous mallet finger: An unusual case. Dicle Medical Journal 2014;41(1):231-3.

Hamas RS, Horrell ED, Pierret GP. Treatment of mallet fi nger due to intra-articular fracture of the distal phalanx. J Hand Surg Am 1978;3:361-3.

Kanaya K, Wada T, Yamashita T. The Thompson proce¬dure for chronic mallet finger deformity. J Hand Surg Am 2013;38:1295-1300.

Miranda BH, Murugesan L, Grobbelaar AO, Jemec B. Percutaneous Blunt Needle Reduction of Bony Mallet Injuries. Tech Hand Up Extrem Surg 2015;19(2):81-3.

Stern PJ, Kastrup JJ. Complications and prognosis of treatment of mallet finger, J Hand Surg 1988;13:329-34.

Middle Black Sea Journal of Health Science December 2017 ; 3(1): 26-31

CASE REPORT

The Superiority of the Anterior Transposition Surgical Method to Decompression Proceduresin a Case of Secondary Cubital Entrapment Neuropathy

Ertuğrul Allahverdi[1], Tülay Diken Allahverdi[2]
[1]Kafkas University Department of Orthopedics and Traumatology, Kars, Turkey
[2]Kafkas University Department of General Surgery, Kars, Turkey

Received: 13 September 2016, Accepted: 01 December 2016, Published online 25 April 2016

Abstract
Cubital Entrapment Neuropathy (cubital tunnel syndrome) is a peripheral entrapment neuropathy coming right after the carpal tunnel syndrome in terms of frequency. It is twice as common in adult males as in females. We report our surgical experience with the anterior transposition method. A 41-year-old male patient presented to our clinic with symptoms of functional weakness of the right hand hypothenar region and 3rd- 4th intrinsic lumbrical muscles together with atrophy and claw finger symptom in the 4th and 5th fingers (Grade III) that had been increasing for the last 19 months. The patient underwent ulnar nerve decompression. There was no improvement 5 months after the surgery and anterior transposition of the ulnar nerve was therefore performed as secondary surgery. No complication occurred afterwards.The anterior transposition method used in our case with secondary cubital tunnel syndrome has a high success rate when performed properly although it is a more invasive intervention.While the only accepted treatment for idiopathic cubital tunnel syndrome is decompression, the anterior transposition method can be used for posttraumatic secondary cubital tunnel syndrome. Surgical Methods of Anterior Transposition for Secondary Cubital Entrapment vs. Decompression Procedures.
Key words: Cubital tunnel syndrome, Anterior intramuscular transposition, decompression, Ulnar nerve

Address for correspondence/reprints:

Ertuğrul Allahverdi

Telephone number: +90 (506) 631 96 51
E-mail: ertugrulallahverdi@hotmail.com

DOI: 10.19127/mbsjohs.309377

Introduction

Cubital tunnel syndrome is a peripheral entrapment neuropathy where the sensory or motor part or both parts of the ulnar nerve are affected. It is the second most common peripheral entrapment neuropathy following the carpal tunnel syndrome (Keineret al.,2009; Flores, 2010; Anderton and Webb, 2010). It is twice as common in adult men as in women. The etiology includes past fractures, luxation's, cubits valgus deformity, contractures in the elbow area, high body mass index, alcohol, smoking addiction, increased duration and frequency of mobile phone use (mobile phone elbow), weight holding-catching, work involving lifting weights with the elbow in flexion over the long term, diabetes, thyroid diseases, renal failure, inflammatory arthropathy, pregnancy, malnutrition, and tumoral masses (ganglion, lipoma, hemangioma

etc.). However, many cases are idiopathic (Dhia andJaddue,2009; Keiner et al.,2009; Andertonand Webb, 2010). Thoracic outlet syndrome, C8 / Th 1 radiculopathy (cervical rod compression), brachial plexus pathologies, pathologies in Guyon's canal at the wrist (artery aneurysm, venous thromboses, Villon nodular synovitis, etc.) ulnar nerve entrapment, double crush syndrome, and Pancoast tumor should be considered and investigated in the differential diagnosis (Uysal et al.,2007; Dhia and Jaddue,2009; Anderton and Webb,2010).

The main symptom can be pain. The symptoms can start insidiously and can be temporary at the beginning. The pain occurs in the hypothenar section of the hand, little finger, and ulnar half of the ring finger at the early period. Disruption in finger functions, dropping objects, difficulties in catching and squeezing objects occur if the compression continues or increases in severity. The Wartenberg symptom can be seen in advanced cases where symptoms are marked. The Froment test, Tinel percussion test, elbow flexion test, two-point differentiation, and the pinprick test are used for the diagnosis. The Bishop evaluation is also conducted. In addition to the specific tests mentioned above, MR, EMG and high-resolution ultrasonography are used for clinical research and evaluations (Kutlay et al.,2009; Schnablet al.,2010;Ibaet al.,2010; Thatte and Mansukhani,2011; Kılıç and Özçakar,2011). While conservative treatment protocols are primarily used in the treatment of patients with mild cubital tunnel syndrome, surgical procedures are preferred in advanced severe cases. In general, only ulnar nerve interior tunnel decompression is implemented in patients with idiopathic cubital tunnel syndrome and anterior transposition (subcutaneous, intramuscular, submuscular). The endoscopic in situ cubital tunnel relaxation-decompression or medial epicondylectomy methods are used in severe cases with a history of trauma (Asamoto et al.,2005; Keineret al.,2009;Dhia and Jaddue, 2009; Sreedbaran et al,2010; Tubbs et al.,2010).

Case Report

A 41-year-old male patient presented to our clinic with symptoms of numbness in the right hand hypothenar area, pain in the medial epicondyle area and elbow movement restriction for the last 21 months. The personal history revealed that he was exposed to the interventions of a bonesetter and osteopath after a supraepicondylarhumerus fracture at the age of 7. Flexion contracture and cubitus valgus deformity of the right elbow had developed afterwards. No vascular, neurologic, or muscular function loss was present except for mild valgus disorder and extension restriction at the elbow during childhood and puberty. There was right elbow medial epicondyle pain, positive signs on the Tinel percussion test and Froment test, positive Wartenberg symptom, 14 degrees of cubitus valgus deformity, and 20 degrees of flexion contracture of the right elbow on the physical and radiological examination MR revealed no pathology of the humerus, forearm or wrist, but there was medial epicondyle pseudoarthrosis at the elbow and edema around the ulnar nerve at the cubital tunnel. The patient was started on oral NSAIDs, flexion restriction, and oral B1, B6, and B12 vitamins as conservative treatment. In the meantime, he was directed to the neurology clinic. Two separate controlled EMG evaluations revealed severe cubital tunnel syndrome. Guyon canal neuropathy was not found. No pathology was found in cranial, cerebrovascular, cervical vertebrae and nerve roots or the brachial plexus on cervical and cranial MRI. No pathology was observed in the chest graph. According to the classification of McGowan and Dellon, the cubital syndrome was Grade III (severe, advanced) in our case (Figure 1 and 2).

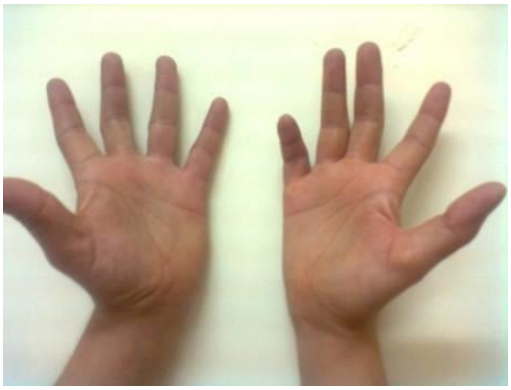

Figure1: Right hand hypothenary atrophy, thumb flexion status in 5th, 4th and 3rd fingers (pre op.)

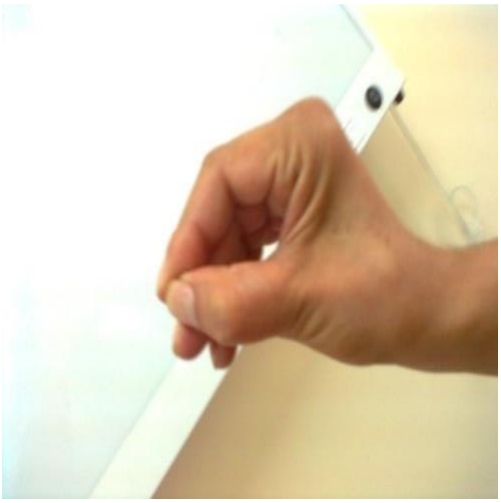

Figure 2: Froment sign; Hyperflexion of the in the holding, catching position (pre op.).

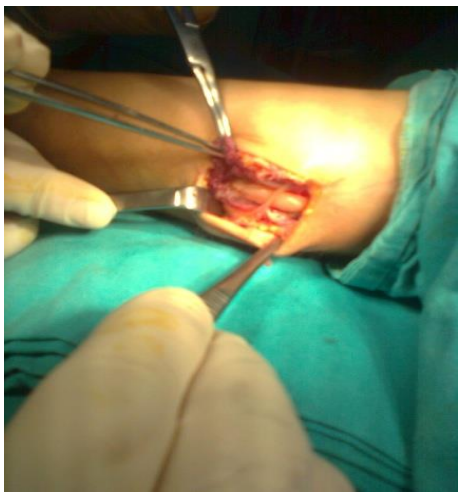

Figure 3: Intro op Ulnar nerve cubital tunnel during decompression

Only ulnar nerve decompression was performed during the initial surgical intervention (Figure 3 and 4)

Figure 4: Intro op final state of cubital tunnelat and ulnar nerve at decompression

Minor improvement was obtained in hypothenar sensation at the post-operative 3rd and 5th months. However, the cubital tunnel syndrome continued in EMG repeated after the post-operative 3rd month. Revision surgery was scheduled as the symptoms of the patient continued during work and social activities. Anterior transposition was performed as revision surgery (Figure 5,6,7).

Figure 5: Release of ulnar nerve from cubital tunnel during anterior transposition (intra. Op.)

Figure 6: Sliding of ulnar nerve from the cubital tunnel to the during anterior transposition (intra op.)

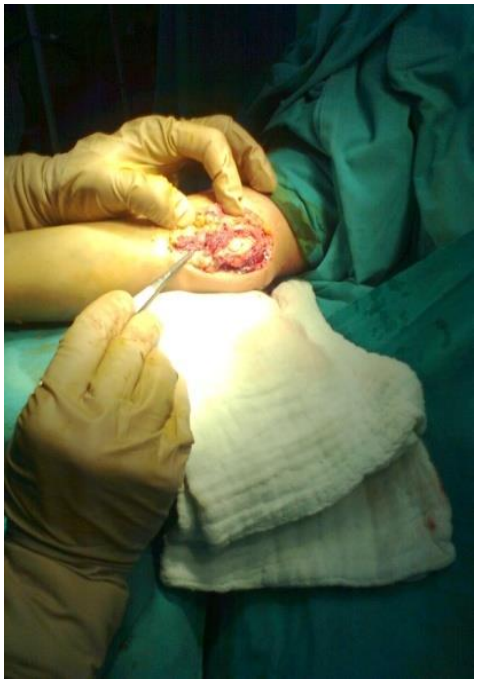

Figure 7: Subcutaneous and intramuscular transposition. Final intraoperative state

The patient was seen to fully open the ring finger and the claw to disappear completely in the post-operative 3rd month follow-up. The hypoesthesia at the hypothenar area decreased together with 50% improvement in the extension limitation of the small finger (Figure 8).

Figure 8: 3 months after Anterior Transposition the right 3rd, 4th and 5th fingers can be extended at the interdigital joints.

The two point distinction test result was 25 cm pre-operatively and 3 mm after the second surgery. Tinel percussion and Flexion tests were completely negative at the right elbow. The Bishop evaluation system score was 7, indicating “a good level” of success. Improvement was observed in the postoperative 6th month EMG as well.

Discussion

Cubital Tunnel Syndrome is the second most common entrapment neuropathy of the upper extremities. The most important symptom can be pain and the symptoms can start insidiously and can be temporary at the beginning. Sensory disorders due to microvascular compression and neural ischemia occur at early stage in the hypothenar section of the hand, the small finger, and the ulnar half of the ring finger. If demyelination, axonal loss and motor symptoms occur with continuing compression or increased severity, these can lead to disorder of finger functions, dropping objects, and difficulties with catching and squeezing objects. Extension and adduction failure in small finger, and claw formation with the ring finger occur (Wartenberg sign). The Froment test is positive with weakness and atrophy in the interosseous muscles (lumbrical 3 and 4), adductor pollicis muscle and thehypothenar muscles. The Tinel percussion test and elbow flexion test are positive. Among objective tests, the two-point differentiation (< 6 mm is normal) and pinprick tests are also positive (Dhia and Jaddue, 2009; Andertonand Webb, 2010; Thatte and

Mansukhani, 2011). The Bishop score was evaluated over 12 points and the pre and post-operative results were compared (Asami, 2001; Dhia and Jaddue, 2009). Entrapment of ulnar nerve can develop in five anatomic locations: Struther's arcade, medial intermuscular septum, medial epicondyle, cubital tunnel, and deep flexor pronator aponeurosis. Specific tests as well as MRI, EMG, and high-resolution ultrasonography are used in clinical studies (Keineret al., 2009; Kutlay et al.,2009; Schnablet al., 2010; Iba et al.,2010; Thatte and Mansukhani, 2011; Kılıç and Özçakar, 2011). The Tinel percussion test, two-point differentiation test, Froment test, and Wartenberg sign were positive in our case. MRI and EMG were conducted. MRI revealed a supracondylar fracture-related malunion and edema in the ulnar nerve route while EMG showed severe ulnar nerve entrapment.

The use of decompression techniques alone in cases with idiopathic cubital tunnel syndrome is preferred, primarily as they are less invasive with less possibility of complication development (Keiner et al.,2009; Flores,2010). The anterior transposition technique is one of the less invasive surgical procedures and is used in cases with secondary cubital tunnel neuropathy due to cubitus valgus deformity, an elbow flexion contracture of Grade 3according to the clinical classification of

McGowan and Dellon, significant weakness of the hand, or paralysis of interosseallumbrical muscles (Nikitinset al., 2002; Asamoto et al.,2005;Dhia and Jaddue , 2009;Keiner D et al.,2009;Flores 2010;Sreedbaran S et al.,2010). We first performed ulnar nerve decompression in our case. We planned decompression only so that the patient could recover quickly and return to work and social life in a short time with a smaller rate of complications. However, this treatment was not successful as seen in the follow-up and we then performed anterior transposition surgery for revision and used the subcutaneous technique proximally and the intramuscular technique distally. This approach is also supported with other studies where positive results were obtained (Dhia and Jaddue, 2009; Thatte and Mansukhani, 2011). Postoperative complete or near complete improvement was obtained with early intervention in our case with severe (Grade 3) entrapment neuropathy. However, improvement in symptoms has been reported to occur over a long period such as 2 to 5 years in delayed cases in the literature (Keiner et al., 2009; Dhia and Jaddue, 2009; Anderton and Webb, 2010; Sreedbaran et al., 2010; Thatte and Mansukhani, 2011).The symptoms of our patient were found to have mostly improved during the five years of follow-up. These cases need long-term follow-up.

Ethics Committee Approval: Ethics committee approval was received for this study from **Clinical Research Ethics Committee of:** No Verbal Confirm of Patient

Author Contributions: İdea-EA ; Design TDA; Supervision- TDA; Funding-EA ; Materials-EA,TDA ; Data Collection/Data Process-TDA.; Analyze or Comment-EA; Literature Scanning-EA; Writer of Paper-EA,TDA..

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study hasn't received any financial support.

References

Anderton M, Webb M, Cubital tunnel syndrome. British Journal of Hospital Medicine, November. 2010.Vol 71.No 11.

Asami A, The evaluation of pre and post operative classification system for cubital tunnel syndrome. HandSurgery, December 2001, Vol.6 No.2,187-190.

Asamoto S, Böker D.K, Jödicke A. Surgical treatment of ulnar nerve entrapment at the elbow. Neurol Med Chir (Tokyo) 2005:45(5);240-244:discussion 244-245.

Dhia A, Jaddue K, et al. Subcutaneous vs.submuscular ulnar nerve tranposition in moderate cubital tunnelsyndrome. The Open Orthopaedics Journal, 2009, Vol 3,78-82.

Flores L.P, Endoscopically assisted release of the ulnar nerve for cubital tunnel syndrome. ActaNeurochir.2010,152;619-625.

Iba K, Wada T, Tamakawa M et al. Diffusion-weighted Magneticresonance imaging of the ulnar nerve in cubital tunnelsyndrome. Hand Surgery, 2010. Vol.15 No.1, 11-15.

Keiner D, Gaab M.R, Schroeder H.W.S, Comparison of the long-term results of anterior transposition of the ulnar nerve or simple decompression in the treatment of cubital tunnel syndrome-aprospective study. ActaNeurochir.2009,151;311-316.

Kılıç E, Özçakar L, Ulnar nerve compression possibly due to aberrant veins:sonography is elucidatory for idiopathic cubital tunnel syndrome. RheumatolInt,2011,31;139-140.

Kutlay M, Çolak A, Şimşek H et al. Use of ultrasonography in ulnar nerve entrapment surgery-a prospective study. NeurosurgRev ,2009,12;225-232.

Nikitins M.D, Griffin P.A, Rice N. J, A dynamic anatomical study of ulnar nerve motion after anterior transposition for cubital tunnel syndrome. Hand Surgery,December 2002, Vol.7 No.2,177-182.

Schnabl S.M, Kisslinger F, Schramm A, etal. Objective outcome of partial medial epicondylectomy in cubital tunnel syndrome. Arch Orthop Trauma Surg. 2010,130;1549-1556

Sreedbaran S, Yam A.K.T, Tay S.C, Self-reported outcome following anterior transposition of ulnar nerve in the elderly. Hand Surgery, 2010, Vol 15 No 3,169-172.

Thatte M.R, MansukhaniK.A ,Compressive neuropathy in the upper limb.Indian Journal of Plastic Surgery, May-August, 2011, Vol 44 Issue 2.

Tubbs S.R, Loukas M, Apaydın N et al. Correlation between the lengths of the upper limb and cubital tunnel: potential use in patients with proximal ulnar nerve entrapment. SurgRadiolAnat, 2010,32;239-242.

Uysal M, Özkoç G, Tandoğan R et al. Combined unlar and carpal tunnel syndrome caused by pigmented villo-nodular tenosynovitis: a rare case. Arch Orthop Trauma Surg, 2007,127;563-565.

APRIL – 2017 REFEREES INDEX

In our journal publications process, extend our thanks to article assessment referees.

Uğur TÜRKTAŞ	Gazi Hospital, Ankara
Atilla ÇITLAK	Karadeniz Technical University, Trabzon
Ozhan PAZARCI	Ondokuz Mayıs University, Samsun
Hasan GÖÇER	Ondokuz Mayıs University, Samsun
Tuncay ÇOLAK	Kocaeli University,Kocaeli
Sebiha GÖLÜNÜK	Kocatepe University, Afyon
Melih ÖMEZLİ	Ordu University, Ordu
Ali ASLANTÜRK	Ordu University, Ordu
Ferhat AYRANCI	Ordu University, Ordu
Emine TÜRKMEN	Inonu University, Ordu