

*

() 68
: .2004 -2002 Wuerzburg
23 :
45 :

*

Hegkimo

(DGZMG)

- - :

Le Fort I

-

The Orthognathic Surgery and its Effects on Temporomandibular Joint

Issa Wehbeh *

Abstract

Every osteotomy and every surgical correction of dentofacial deformity has influences on the whole orofacial system including the TMJ. This study aimed evaluate the effect on the TMJ after the orthognathic surgery (bimaxillary osteotomy).Furthermore, a comparison was made between the results obtained by bimaxillary osteotomy without condylar positioning and the pre-operation centric position of the condyle.

This study included 68 patients who underwent bimaxillary osteotomy from 2002-2004 in Wuerzburg (Germany).These patients were divided into tow groups, the first one (23 patients) underwent surgery without condyle positioning ,the second group (45patient) underwent surgery with preoperative centric condyle positioning in sagittal ramus osteotomy of the mandible.

The number of patients with TMJ complaints (TMJ symptoms) increased after surgery in both groups but the TMJ dysfunctions improved in the second group.

The results confirm the indication for preoperative centric condyle positioning in mandibular sagittal ramus osteotomy.

Keywords: Le Fort I Osteotomy. mandibular sagittal ramus osteotomy. bimaxillar osteotomy. centric condyle positioning.

* Ass. Professor- Dept. of Maxillofacial Surgery- Faculty of Dentistry-Damascus University.

:

-1

: ()

Limberg 1925 Caldwell and
Letterman 1954
Obwegeser 1957 Dal pont
1959

1934 Axhausen

.Le Fort I

1965 Obwegeser

Le fort I

Epker Bell

. Down Fractur 1975

Bimaxillar Ostoetomy (Hullihen 1849)

Le fort I
Obwegeser Dal Pont

:
-
:
-3
:
1-3
(68)
)

Weurzburg ((4)(Ellis

1999)

:
23 :

: -2

)
(

2001 DGZMk
(2)

1974 Helkimo(5)

(DYSFUNCTION INDEX) : 2-3

: Helkimo

-1

Anamnestic Dysfunction) Ai
(Index

-2

Clinical) Di

(Dysfunction Index

Ai

:

) Ai o

(

) Ai I

(1)

- :

(6)Helkimo

-

:

)

Ai II

0 :

1 -

2

-

-

-

:

Di o :

0

Ai o

Di I

4-1 2 1

Ai I

Di II

.3

9-5 5 4

Ai II

Di III

.7 6

25-10

Di

Di

Criteria	Symptoms
0) I * (
1	
5	
2> Deviation 0	II
2< Deviation 1	
5	
0	III
3-1 1	
4 5	
0	IV
1	
5	
0	V
1	
5	

1972 Helkimo

≥ 40 mm	0	()	A
30-39 mm	1			
< 30 mm	5			
≥ 7 mm	0			B
4-6 mm	1			
0-3 mm	5			
≥ 7 mm	0			C
4-6 mm	1			
0-3 mm	5			
≥ 7 mm	0			D
4-6 mm	1			
0-3 mm	5			

)

D - A

(

0 = 0
 4 - 1 = 1
 20 - 5 = 5

3-3

1985 LUHER (10)

:

LUHER(10)

WUERZBURG

: : (15)(Reuther)

:



T

1 " ") (

" : 4-3

" :
:
:
:



	-	:	5-3
(14)OBWEGESER-DAL		:	-
1961	PONT		
	(2)AXHAUSEN		
	LE FORT I	1934	

3

3

:

: - 4

68

OBWEGESER(14)

LE FORT I "

OBWEGESER

"

2004-2002

WUERZBURG

.()

"

:

44

68

24

% 64

25

%36

15

49

25

. 24

: 44 68
 " 24 % 64
 " 25 %36
 15
 .-3- 49
 25
 . 24
 -3
 ()

() n=45		() n= 23		
5 %12	4 %10	1 %4	1 %4	-1
1 %3	1 %3	-	-	-2
2 %7	3 %9	1 %4	1 %4	-3
4 %10	5 %12	2 %9	3 %13	-4
14 %32	11 %25	6 %26	6 %26	-5
7 %18	5 %12	1 %4	3 %13	-6
1 %3	1 %3	-	-	() -7

(-4-)

Helkimo Ai

() n=45		() n=23		Ai		-4-
(57%) 25	(64%) 28	(16%) 16	(70%) 16			Ai O
(28%) 13	(17%) 8	(17%) 4	(17%) 4			Ai I
(15%) 7	(19%) 9	(13%) 3	(13%) 3			Ai II

%25

%52.2 -12-

)

-11-

16 (

%47

-4-

n=23

Ai

-5-

	Ai II	Ai I	Ai o	
(63,6%)16	(66,7%) 2	(50%) 2	(75%) 12	Ai o
(17,4%)4	-	(50%) 2	(12%) 2	Ai I
(13%)3	(33,3%) 1	-	(12%) 2	Ai II
(100%)23	(100%) 3	(100%) 4	(100) 16	

28

"

"

- %32

9

:

(%57.2) (%42) 19

-6 -

26

n=45 Ai -6-

	Ai II	Ai I	Ai o	
(56,1%) 26	(51,9%) 4	(24%) 2	(67,5) 19	Ai o
(28%) 12	(25,9%) 3	(65%) 5	(17,5) 5	Ai I
(15,9%) 7	(22,2%) 2	(12%) 1	(15%) 4	Ai II
(100%) 45	(100%) 9	(100%) 8	(100%) 28	

: Ai

26

7

%15.2 :

26

8

:

%18.6 %13 11 3

26

11

%24 11 4

-7-

%17.4

11 4

: %17.4

-7-

n=25		n=11	
(15,2%) 7		(13%) 3	
(18,6%) 8		(17%) 4	
(23,4%) 11		(17%) 4	

:

. 8

Di

-8-

n=45		n=23		Di
(11%)	5	(20%)	5	Di o
(26%)	26	(20%)	5	Di I
(20%)	22	(60%)	13	Di II
(9%)	4	-	-	Di III

-9 -

:

n=45				n=23					
DiIII	DiI	DiI	Di0	DiIII	Di II	Di I	Di 0		
1	5	14	4	-	-	5	-	Ai o	Ai
1	2	5	-	-	5	-	-	Ai I	
2	3	7	1	-	9	-	5	Ai II	
-	6	19	4	-	8	5	5	Ai o	Ai
4	3	4	1	-	5	-	-	Ai I	
-	1	3	-	-	-	-	-	Ai II	
-	3	13	3	-	-	5	-		
1	2	5	-	-	5	-	-		
2	3	7	1	-	8	-	5		
1	2	1	1	-	-	-	-		

%20

5

:

Di I

-

Aio

23

%20

5

Ai

Di o

Di

N=45	N=23		
15	5		I
25	8		
5	10		
30	-		II
15	9	2	
-	14		
35	14		III
5	3	3 - 1	
5	6	4	
36	19		IV
3	4		
6	-		
39	18		V
3	-		
3	5	3-2	

()						
n=45			n=23			
35			18			<40mm
9			5			30-39mm
1		-				<30mm
17	4	39	19	32	23	7mm
24	14	5	4	12	-	4-6mm
4	5	1	-	-	-	0-3mm

14 : :

26 %31

5 %58 :

. %11 4 :

2 %17

44 43.7 2 %9

. %9

%20 PROTRUSION
.PROTRUSION 4.9
%38 . 6.1
6-4 . EXKURSION
.%53 %60 9
3-0 . 8.3
%20 PROTRUSION - 17 -
%9

2	1	2	1	2	1	2	1	
(93%)42	(100%)23	(91%)41	(100%)23	(89%)40	(100%)23	(84%)38	(60%)15	
(7%)3	-	(9%)4	-	(11%)5	-	(16%)7	(40%)8	
2	1	2	1	2	1	2	1	
(93%)42	(80%)18	(96%)43	(80%)18	(100%)45	(100%)23	(89%)40	(100%)23	
(7%)3	(20%)5	(4%)2	(20%)5	-	-	(11%)5	-	

-12 -

.SUBOCCIPITAL

%40

%

%16

%5

%20

:

4

:

SUBOCCIPITAL

%20

%16

%11

%9

%11

.- 13-

%7

n=45	n=23	45=n	n=23	
(89%) 40	(82,6%) 19	(84%) 38	(82,6%) 19	
(11%) 5	(19,4%) 4	(16%) 7	(19,4%) 4	

-5

Magnussom (12) . 68

20 1986 .

1990 Simonls (16) :

. 12

. 23

68 . 25

% 64 44

%36 24

LUHER(10)

25 . 45

49 15

25

. 24

1986 Magnussom(12)

20 Ai

:

1991

Zimmer

:

Di
(17 - 16 - 14)

.1

.2 (1997) Helm (7)

30

.3 ()

.4

.5

Umstade (17)

12 : 24 1998

12

.5

.1

:

.2

.()

.6

.3

.7

Le

Fort I

.4

. :
.8 -
() -
. 2 -
() -
Hydroxyl apatite

(1)

-1-

	:				.1
.....	-	□	:	□	□
.....	-	□			
.....	-	□			
:					.2
.....	-	□	:	□	□
.....	-	□			
.....	-	□			
:					.3
.....	-	□	:	□	□
.....	-	□			
.....	-	□			
:					.4
.....	-	□	:	□	□
.....	-	□			
.....	-	□			
:					.5
.....	-	□	:	□	□
.....	-	□			
.....	-	□			
:()				.6
.....	-	□	:	□	□
.....	-	□			
.....	-	□			

.7

..... - □ : □ □
..... - □
..... - □
(2)
/ / -2-

- -
- -
- -

: .1

□ □

: () :

-

: .2

= 2 = 1

: .3

Parafunction - .4

: □ □

: .5

..... -

- 1-Arbeitsgemeinschaft für Funktionslehre in der DGZMK(2001)
www.dgzmk.de/formulare/funktionsstatus.pdf
- 2-Axhausen G :Corrigierende Osteotomie der Maxilla .
 Dtsch Z Chir 248,515-522
- 3-Ellis III E: Condylar positioning devices for orthognathic surgery: are they necessary? J Oral Maxilloface Surg 52,1994, 536-552.
- 4-Ellis III E :Bimaxillary surgery using an intermediate splint to position the
 Maxilla. J Oral Maxilloface Surg 57,1999,53-56.
- 5- Helkimo M.: Studies on function and dysfunction of the masticatory system. II index for anamnestic and clinical dysfunction and occlusal state.
 Swed Dent J 67,1974(a),101-121.
- 6- Helkimo M.: Studies on function and dysfunction of the masticatory system.
 III Analysis of anamnestic and clinical recording of dysfunction with te aid of indices. Swed Dent J 67,1974(b),165-181.
- 7-Helm G,Stepke M.Th: Maintenance of the preoperative condyle position in orthognathic surgery. J Craniomaxillofac Surg 25,1997,34-38.
- 8-LindorfH.H.: Doppelsplintmethode, chirurgisch- schaedelbezueglische Einstellung des Ergebnisses.Dtsch Zahnaerztl Z32,1977,260-261.
- 9-Lindorf H .H.,Steinhaeser E. W.:Correction of jaw deformities involving simultaneous ostoeotomy of the mandible and maxilla.
 J Maxillofac Surg 6,1978,239-244.
- 10-Luhr H. G.: Skelettverlagernde Operationen zur harmonisierung des gesichtprofilssprble der stabilen Fixation von Osteotomiesegment.
 In :Pfeifer G(Hrsg.),Die Asthetik von form und funktion in der plastischen-undwiederherstellungschirurgie.
 Springer,Berlin,Heidelberg,New York 1985,87-92 .
- 11-Magnuson T.,Ahlborg G: Changes in temporpmandibular joint pain-dysfunction after surgical correction of dentofacial anomalies.
 Int. J Oral Maxillofac Surg 15,1986,707-714.
- 12-Magnuson T.,Ahlborg G:Function of the masticatory system in patients with mandibular hypo or hyperplasia after correction by asagitt split osteotomy . Int J Oral Maxillofac Surg 19,1990,289-293.

-
- 13-Michel C.: Zur Problematik der Gelenkposition in der orthopaedischen Chirurgie des Kiefer-Gesichtsschaedels.
.Habilitationsschrift. Wuerzburg 1990.
- 14-Obwegeser H., Traumer R.: Zur Operationstechnik bei der Progenie und anderen Unterkieferanomalien.
Dtsch Zahn Mund Kieferheilkd 23, 1955, 2-13.
- 15-Reuther J.: Orthognathe Chirurgie: skelettverlagende Operationen.
Mund Kiefer Gesichtschirurgie 4, 2000, 237-248.
- 16-Simonis A., Kraemer A.: Funktionelle Befunde bei Patienten vor und nach kieferorthopaedisch-chirurgischer Operation.
Dtsch Zahnärztl Z 45, 1990, 67-70.
- 17-Umstadt He., Lalyko G.: Kiefergelenkfunktion und Morphologie nach Unterkieferumstellungsosteotomien mit und ohne Positionierungsplatten.
Mund Kiefer Gesichtschirurgie 2(suppl), 1998, 177-182.
- 18-Zimmer B., Heinrichs E.: Longitudinale Veränderungen von akustischen Kiefergelenksymptomen durch verschiedene Verfahren der orthognathe Chirurgie. Fortschr Kieferorthop 52, Nr 6, 1991, 346-352.

.2006/1/16 :

.2006/5/7 :