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**Cephalometric Evaluation of  
Mandibular Relapse following  
Vertical Subsigmoid Osteotomy**

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**1995**

*Awarded 1995*

## TABLE OF CONTENTS

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LIST OF FIGURES.....	8
LIST OF TABLES.....	11
SUMMARY.....	14
STATEMENT.....	16
ACKNOWLEDGMENTS.....	17
<b>I INTRODUCTION.....</b>	<b>18</b>
<b>CHAPTER 1. Cephalometric evaluation of relapse following vertical subsigmoid osteotomy.....</b>	<b>19</b>
1.1 Overview.....	19
1.2 Vertical ramus osteotomy.....	21
<b>II REVIEW OF THE LITERATURE.....</b>	<b>22</b>
<b>CHAPTER 2. Mandibular prognathism.....</b>	<b>23</b>
2.1 Definition.....	23
2.2 Classification of mandibular prognathism.....	23
2.3 Incidence of mandibular prognathism.....	27
2.4 Surgery for the treatment of mandibular prognathism.....	30
2.5 Complications of vertical subsigmoid osteotomy.....	36
2.5.1 Intraoperative complications.....	38
2.5.2 Immediate postoperative complications.....	42
2.5.3 Delayed postoperative complications.....	45
2.5.4 Complications associated with extraoral approach.....	48

<b>CHAPTER 3.</b>	<b><i>Relapse following vertical subsigmoid osteotomy</i></b>	<b>51</b>
3.1	<i>Defining postsurgical relapse</i>	51
3.2	<i>Measurement of postsurgical relapse</i>	53
3.3	<i>Early, intermediate and long term relapse</i>	56
<b>CHAPTER 4.</b>	<b><i>Factors associated with postsurgical relapse following vertical subsigmoid osteotomy</i></b>	<b>60</b>
4.1	<i>Introduction</i>	60
4.2	<i>Orthodontics and occlusion</i>	62
4.2.1	<i>Postoperative management</i>	65
4.3	<i>Magnitude of mandibular setback</i>	66
4.4	<i>Condylar position</i>	67
4.5	<i>Proximal and distal segment positioning</i>	71
4.5.1	<i>Rotational effects between fragments</i>	72
4.5.2	<i>Medial displacement of proximal segment</i>	73
4.5.3	<i>Wire osteosynthesis between the proximal and distal segments</i>	74
4.6	<i>Maxillomandibular fixation</i>	76
4.6.1	<i>Period of maxillomandibular fixation</i>	76
4.6.2	<i>Maturity of bone union</i>	77
4.6.3	<i>Wires</i>	79
4.6.4	<i>Skeletal fixation</i>	79
4.6.5	<i>Nutritional aspects of healing</i>	80
4.7	<i>Muscular interactions</i>	82
4.7.1	<i>Tongue pressure after reduction of tongue space</i>	82
4.7.2	<i>Bite force and its vector components</i>	87
4.7.3	<i>Masticatory muscles</i>	87
4.8	<i>Vascular considerations of osseous segments</i>	89

4.8.1	<i>Healing of osseous segments</i> .....	89
4.8.2	<i>Viability of osseous segments</i> .....	90
4.9	<i>Growth</i> .....	90
4.9.1	<i>Normal growth</i> .....	90
4.9.2	<i>Hemimandibular elongation and hemimandibular hyperplasia</i> .....	95
4.10	<i>Single jaw versus bimaxillary procedures</i> .....	96
4.11	<i>Coronoidectomy</i> .....	97
4.12	<i>High angle mandibles</i> .....	97
✓	<b>CHAPTER 5. Cephalometry</b> .....	99
5.1	<i>Introduction</i> .....	99
5.2	<i>Errors of projection</i> .....	101
5.3	<i>Errors of superimposition</i> .....	103
5.4	<i>Errors of landmark identification</i> .....	105
5.5	<i>Errors of digitising</i> .....	107
5.6	<i>Errors of measurement</i> .....	108
5.7	<i>The selection of a suitable line of reference</i> .....	109
III	<b>MATERIALS AND METHODS</b> .....	112
	<b>CHAPTER 6. Evaluation of postsurgical relapse</b> .....	113
6.1	<i>Selection of patient records</i> .....	113
6.2	<i>Radiographic technique</i> .....	116
6.3	<i>Tracing and digitising procedure</i> .....	119
6.4	<i>Reference points and lines</i> .....	122
6.4.1	<i>Hard and soft tissue points</i> .....	122
6.4.2	<i>Cephalometric lines</i> .....	125
6.4.3	<i>Calculation of linear and angular variables</i> .....	127
6.5	<i>Statistical analysis</i> .....	130

<b>CHAPTER 7.</b>	<b><i>Errors of the method</i></b> .....	132
7.1	<i>Materials and methods</i> .....	132
<b>IV</b>	<b>RESULTS</b> .....	136
<b>CHAPTER 8.</b>	<b><i>Early, intermediate and long term dentoskeletal effects following vertical subsigmoid osteotomy</i></b> .....	137
8.1	<i>Introduction</i> .....	137
8.2	<i>Analysis of variables by groups</i> .....	137
8.2.1	<i>Horizontal mandibular movement at Point B</i> .....	139
8.3	<i>Analysis of variables</i> .....	139
8.3.1	<i>Mandibular movement</i> .....	140
8.3.1.1	<i>Horizontal set back and relapse</i> .....	140
8.3.1.2	<i>Vertical movement and relapse</i> .....	141
8.3.1.3	<i>Angle SNB</i> .....	142
8.3.2	<i>Proximal and distal segment alteration</i> .....	142
8.3.2.1	<i>Condylar displacement (S-HA)</i> .....	142
8.3.2.2	<i>Posterior facial height</i> .....	143
8.3.2.3	<i>Anterior facial height</i> .....	144
8.3.2.4	<i>Mandibular plane angle (SN-Go-Me)</i> .....	144
8.3.3	<i>Segmental inter-relationships</i> .....	145
8.3.3.1	<i>Gonial angle (Ar-Go-Me)</i> .....	145
8.3.3.2	<i>Ramal angle</i> .....	145
8.3.4	<i>Dentoskeletal changes</i> .....	146
8.3.4.1	<i>Maxillary incisal angle</i> .....	146
8.3.4.2	<i>Interincisal angle</i> .....	146
8.3.4.3	<i>Lower incisal angle</i> .....	147
8.3.4.4	<i>Overjet</i> .....	148
8.3.4.5	<i>Overbite</i> .....	148
8.3.5	<i>Sex of patients</i> .....	149

8.3.6	<i>Period of maxillomandibular fixation</i> .....	150
8.3.7	<i>Age of patient at time of surgery</i> .....	151
8.3.8	<i>Orthodontics versus no orthodontics</i> .....	151
8.3.9	<i>Influence of maxillary surgery</i> .....	152
8.3.9.1	<i>Horizontal movement and relapse</i> .....	152
8.3.9.2	<i>Vertical movement and relapse</i> .....	153
8.3.9.3	<i>Angle SNA</i> .....	153
8.3.10	<i>Influence of hyoid position</i> .....	154
8.3.10.1	<i>Horizontal movement and relapse</i> .....	154
8.3.10.2	<i>Vertical movement and relapse</i> .....	155
8.3.11	<i>Pharyngeal depth (AP-PP)</i> .....	155
8.3.11.1	<i>Horizontal movement and relapse</i> .....	156
8.3.11.2	<i>Vertical movement and relapse</i> .....	156
8.4	<i>Complications following vertical subsgmoid osteotomy</i> .....	157
8.4.1	<i>Intraoperative complications</i> .....	157
8.4.1.1	<i>Haemorrhage</i> .....	157
8.4.2	<i>Immediate postoperative complications</i> .....	157
8.4.2.1	<i>Condylar dislocation</i> .....	157
8.4.3	<i>Delayed postoperative complications</i> .....	158
8.4.3.1	<i>Postoperative infection</i> .....	158
8.4.3.2	<i>Sequestration of proximal segment</i> .....	158
<b>CHAPTER 9. Results: Errors of the method</b> .....		159
9.1	<i>Error of the method</i> .....	159

<b>V</b>	<b>DISCUSSION</b> .....	173
<b>CHAPTER 10.</b>	<b>Discussion</b> .....	174
10.1	<i>Patient selection</i> .....	174
10.2	<i>Materials and methods</i> .....	176
<b>CHAPTER 11.</b>	<b>Discussion - Factors in relapse of vertical     subsigmoid osteotomy</b> .....	178
11.1	<i>Definition of relapse</i> .....	178
11.2	<i>Orthodontics and occlusion</i> .....	178
11.3	<i>Magnitude of mandibular setback</i> .....	180
11.4	<i>Condylar position</i> .....	181
11.5	<i>Rotational effects between fragments</i> .....	183
11.6	<i>Wire osteosynthesis between the proximal and distal segments</i> .....	184
11.7	<i>Maxillomandibular fixation</i> .....	185
11.8	<i>Muscular interactions</i> .....	187
11.9	<i>Growth</i> .....	189
11.10	<i>Single jaw vs bimaxillary procedures</i> .....	192
11.11	<i>Coronoidectomy</i> .....	192
11.12	<i>High angle mandibles</i> .....	192
<b>VI</b>	<b>CONCLUSIONS</b> .....	194
<b>CHAPTER 12.</b>	<b>Conclusions</b> .....	195
<b>VII</b>	<b>APPENDIX</b> .....	197
	<i>Appendix - Intraoral vertical subsigmoid osteotomy</i> .....	198
<b>VIII</b>	<b>BIBLIOGRAPHY</b> .....	204
	<i>Bibliography</i> .....	205

## LIST OF FIGURES

<b>Figure 2.1</b>	<b>Variations of skeletal pattern of Class III malocclusions. ....</b>	<b>26</b>
<b>Figure 2.2</b>	<b>Surgical techniques performed in the vertical rami of mandible to correct mandibular prognathism. ....</b>	<b>31</b>
<b>Figure 2.3</b>	<b>Mandibular divergence angle. ....</b>	<b>34</b>
<b>Figure 2.4</b>	<b>Panoramic radiograph showing anterior dislocation of the right mandibular condyle.....</b>	<b>41</b>
<b>Figure 4.1</b>	<b>Average growth curves for males and females.....</b>	<b>93</b>
<b>Figure 5.1</b>	<b>Reference lines. ....</b>	<b>111</b>
<b>Figure 6.1</b>	<b>Calculation of the enlargement factor for points lying on the mid-sagittal plane. ....</b>	<b>118</b>
<b>Figure 6.2</b>	<b>Hard and soft tissue points listed in order of digitising sequence.....</b>	<b>121</b>
<b>Figure 6.3</b>	<b>Cephalometric lines. ....</b>	<b>126</b>
<b>Figure 6.4</b>	<b>Angular and linear variables used to evaluate dentoskeletal changes following vertical subsgmoid osteotomy. ....</b>	<b>129</b>
<b>Figure 7.1</b>	<b>Hard and soft tissue points listed in order of digitising sequence.....</b>	<b>133</b>
<b>Figure 9.1</b>	<b>Differences between digitised double determinations for nasion (N). ....</b>	<b>163</b>
<b>Figure 9.2</b>	<b>Differences between digitised double determinations for porion (Po). ....</b>	<b>163</b>
<b>Figure 9.3</b>	<b>Differences between digitised double determinations for orbitale (Or). ....</b>	<b>164</b>
<b>Figure 9.4</b>	<b>Differences between digitised double determinations for condylion (Co). ....</b>	<b>164</b>

<b>Figure 9.5</b>	<b>Differences between digitised double determinations for hinge axis (HA).</b>	<b>165</b>
<b>Figure 9.6</b>	<b>Differences between digitised double determinations for articulare (Ar).</b>	<b>165</b>
<b>Figure 9.7</b>	<b>Differences between digitised double determinations for gonion (Go).</b>	<b>166</b>
<b>Figure 9.8</b>	<b>Differences between digitised double determinations for menton (Me).</b>	<b>166</b>
<b>Figure 9.9</b>	<b>Differences between digitised double determinations for pogonion (Pg).</b>	<b>167</b>
<b>Figure 9.10</b>	<b>Differences between digitised double determinations for Point B.</b>	<b>167</b>
<b>Figure 9.11</b>	<b>Differences between digitised double determinations for Point A.</b>	<b>168</b>
<b>Figure 9.12</b>	<b>Differences between digitised double determinations for ANS.</b>	<b>168</b>
<b>Figure 9.13</b>	<b>Differences between digitised double determinations for PNS.</b>	<b>169</b>
<b>Figure 9.14</b>	<b>Differences between digitised double determinations for upper incisal tip (IS).</b>	<b>169</b>
<b>Figure 9.15</b>	<b>Differences between digitised double determinations for upper incisal apex (AS).</b>	<b>170</b>
<b>Figure 9.16</b>	<b>Differences between digitised double determinations for lower incisal tip (AI).</b>	<b>170</b>
<b>Figure 9.17</b>	<b>Differences between digitised double determinations for lower incisal apex (II).</b>	<b>171</b>
<b>Figure 9.18</b>	<b>Differences between digitised double determinations for upper molar crown (MS).</b>	<b>171</b>

**Figure 9.19 Differences between digitised double determinations  
for lower molar crown (MI)..... 172**

**Figure 11.1 Mandibular relapse identified on clinical review. .... 191**

## LIST OF TABLES

Table 1.1	Synonyms used to describe the vertical subsgmoid osteotomy.....	21
Table 2.1	Prevalence of Class III malocclusions (Jacobsen et al. 1974).....	29
Table 2.2	Prevalence of Class III malocclusions (Lew et al. 1993).....	29
Table 2.3	Historical review of surgery to treat mandibular prognathism.....	35
Table 2.4	Percentage of complications with mandibular surgery.....	36
Table 2.5	Incidence of neurosensory deficit - sagittal split osteotomy of the mandible.....	42
Table 2.6	Incidence of neurosensory deficit - horizontal osteotomy of the mandible.....	42
Table 3.1	Amount of mandibular setback and landmarks used for measurements.....	53
Table 4.1	Period of maxillomandibular fixation.....	76
Table 6.1	Procedures performed in conjunction with vertical subsgmoid osteotomy.....	115
Table 6.2	Age at operation.....	116
Table 6.3	Statistical analysis of mandibular relapse following vertical subsgmoid osteotomy.....	130
Table 7.1	Statistical analysis of the experimental error.....	134
Table 8.1	Comparison of relapse at point B(x) for group I.....	138
Table 8.2	Comparison of relapse at point B(x) for group II.....	138
Table 8.3	Comparison of relapse at point B(x) for group III.....	139
Table 8.4	Comparison of relapse at point B(x) for group IV.....	139
Table 8.5	Comparison of relapse at point B(x) between groups.....	140
Table 8.6	Comparison of relapse at point B(y) between groups.....	140
Table 8.7	Comparison of relapse at point B(x) - pooled data.....	141

Table 8.8	Comparison of relapse at point B(y) - pooled data.....	141
Table 8.9	Comparison of relapse for angle SNB - pooled data. ....	142
Table 8.10	Comparison of relapse for distance S - HA(y) - pooled data.....	143
Table 8.11	Comparison of relapse for distance S - HA(x) - pooled data.....	143
Table 8.12	Comparison of relapse for distance PFH - pooled data.....	144
Table 8.13	Comparison of relapse for distance AFH - pooled data.....	144
Table 8.14	Comparison of relapse for mandibular plane angle (SN-Go-Me) - pooled data.....	145
Table 8.15	Comparison of relapse for gonial angle (Ar-Go-Me) - pooled data.....	145
Table 8.16	Comparison of relapse for ramal angle ( SN-Ar-Go) - pooled data.....	146
Table 8.17	Comparison of relapse for angle Mx 1 SN - pooled data.....	146
Table 8.18	Comparison of relapse for interincisal angle - pooled data.....	147
Table 8.19	Comparison of relapse for angle IMPA - pooled data.....	147
Table 8.20	Comparison of relapse for overjet - pooled data.....	148
Table 8.21	Comparison of relapse for overbite - pooled data.....	149
Table 8.22	Comparison of differences in relapse at point B(x) for sexes.....	149
Table 8.23	Comparison of differences in relapse at point B(y) for sexes.....	149
Table 8.24	Period of maxillomandibular fixation. ....	150

Table 8.25	Comparison of relapse with different periods of maxillomandibular fixation.....	150
Table 8.26	Comparison of relapse at point B(x) for age and sex. ....	151
Table 8.27	Comparison of relapse between orthodontics <i>versus</i> no orthodontics.....	152
Table 8.28	Comparison of relapse for point A(x) - pooled data.....	153
Table 8.29	Comparison of relapse for point A(y) - pooled data.....	153
Table 8.30	Comparison of relapse for angle SNA - pooled data.....	154
Table 8.31	Horizontal movement of hyoid bone and subsequent relapse.....	154
Table 8.32	Comparison of relapse for point H(x) - pooled data.....	155
Table 8.33	Comparison of relapse for point H(y) - pooled data.....	155
Table 8.34	Comparison of relapse for pharyngeal depth [AP - PP(x)] - pooled data.....	156
Table 8.35	Comparison of relapse for pharyngeal depth [AP - PP(y)] - pooled data.....	156
Table 9.1	Error for hard tissue points (horizontal axis) by double determination.....	161
Table 9.2	Error for hard tissue points (vertical axis) by double determination.....	162

## SUMMARY

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A retrospective cephalometric study was undertaken to evaluate the long term relapse potential following surgical setback of the mandible using the technique of intraoral vertical subsigmoid osteotomy.

The investigation involved a detailed analysis of 24 sets of serial cephalometric records consisting of 12 males and 12 females, in the Oral and Maxillofacial Surgery Unit, The University of Adelaide. Of the 24 sets of patient records, 19 had longitudinal radiographs which had been taken a minimum of two years following surgery. This series was studied for long term relapse.

The 24 records were assigned to one of four groups:

- Group I: consisted of bimaxillary osteotomies in which a **standard Le Fort I** maxillary osteotomy was performed in conjunction with the **intraoral vertical subsigmoid osteotomy** (n = 14).
- Group II: consisted of bimaxillary osteotomies in which a **segmental Le Fort I** maxillary osteotomy was performed in conjunction with the **intraoral vertical subsigmoid osteotomy** (n = 6).
- Group III: consisted of bimaxillary osteotomies in which a **quadrangular Le Fort II** maxillary osteotomy was performed in conjunction with the **intraoral vertical subsigmoid osteotomy** (n = 2).

Group IV: consisted of **intraoral vertical subsigmoid osteotomies only** (n = 2).

Relapse was measured over the short, intermediate, and long term and correlated with selected cephalometric variables. The results of the short term study showed that minimal relapse occurred. The long term results showed a further setback of the mandible occurring at the skeletal level, measured at point B. The occlusion was maintained and was clinically acceptable. In one patient only, significant relapse did occur and this was attributed primarily to surgery being undertaken prior to the completion of growth.

In correlating factors which were associated with skeletal relapse following mandibular setback, muscle forces, in particular the tongue, were identified to be an important secondary factor. The hyoid bone was investigated to determine its role in the relapse potential of the mandible following surgery as its position reflects the position of the tongue which has been implicated as a causative factor in relapse. A general trend was found whereby the hyoid bone position initially moved down and backwards with the setback of the mandible, presumably to maintain airway patency, but this slowly returned towards its former position, although only in the horizontal direction. In the vertical direction, the tongue occupied a more superior position and this was maintained in the long term analysis.

## STATEMENT

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This thesis is submitted in partial fulfilment of the requirements for the degree of Master of Dental Surgery. I declare that the text of this thesis has not been previously published or written by another person except where due reference is made. The findings are the result of my personal investigations. No part of this work has been previously submitted for a degree in any University.

I give consent to this copy of my thesis, when deposited in the University Library, being available for photocopying and loan.

Martin Ching, B.D.Sc. (Melb.)  
The University of Adelaide,  
January 1995.

## ACKNOWLEDGMENTS

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I wish to acknowledge the opportunity, given to me by Professor Alastair N. Goss in 1989, to pursue a career in Oral and Maxillofacial Surgery. I thank you sincerely. He has devoted considerable time and effort to ensure that I complete my training in the specialty of Oral and Maxillofacial Surgery and I am very appreciative of his leadership and guidance. To Dr. R.H.B. Jones, I thank you for fostering in me all your surgical and clinical skills and expertise (1989-1993). My sincerest thanks also go to Professor Tasman Brown whose assistance was most valuable in collating and formatting the computer data.

I wish to also thank the Consultant Surgeons who have taught me so much clinically and personally and to all the surgical Registrars with whom I have been associated. In particular, I am indebted to Dr. Richard Hing for giving me the impetus to pursue this topic as my Masters degree.

To my mother and father, I am gratefully indebted for all their trust and support over all the difficult and trying years.

To all the assistants who helped in this research, I thank you.

And finally to my grandmothers, Mrs. Lee Shee Ching, to whom I promised I would complete medicine, passed away on 23rd April 1979 and Mrs. Siu King Cheung, who passed away on 10th December 1993, during which time I was preparing this thesis:

**" This one's for you ! "**