

# MICHIGAN ORTHODONTICS EXAMINATION BROCHURE

THE EXAMINATION WILL BE ADMINISTERED AT THE  
UNIVERSITY OF DETROIT MERCY  
SCHOOL OF DENTISTRY

Be sure that you have submitted your examination application and appropriate fee to the Health Professions Licensing Division, Bureau of Health Care Services, Department of Licensing and Regulatory Affairs, prior to the deadline date of **April 10, 2014** in order to be scheduled for the examination. If you have questions regarding the application process, you may call the Bureau at (517) 335-0918 or send an e-mail to [BHCSHELP@michigan.gov](mailto:BHCSHELP@michigan.gov).

If you have not received an application, you can obtain one at the following web site: [www.michigan.gov/healthlicense](http://www.michigan.gov/healthlicense).

## 2014 MICHIGAN ORTHODONTICS EXAMINATION BROCHURE

### **INTRODUCTION:**

The licensing examination for Orthodontics is designed to measure the knowledge, skills and abilities deemed essential to protect the public's health, safety and welfare.

### **EXAMINATION SITE:**

The Orthodontics examination will be given on **June 2 – 3, 2014**. After the Bureau has approved you to take the examination, an Admission Letter will be sent to you approximately two weeks prior to the examination. This document will specify the room to which you must report for the examination. You must be in the examination room prior to **8:15 a.m.** on the first day.

**The test center is located at the University of Detroit Mercy, School of Dentistry, Detroit, MI.** Information regarding the location of the site as well as parking can be found at the back of this brochure. You should enter through the door that is immediately in front of you when you enter the visitor's parking lot off Martin Luther King Jr Blvd (a sign will be posted on the door). When you enter the building, please let the receptionist know that you are attending the dental specialty examination and you will be directed to the Public Safety Command Center.

Please arrive at the site by no later than 8:00 AM as you will need to obtain a Visitor's Badge that will permit you to enter the examination area as well as the elevators. You will need to leave your official school identification or some other piece of identification other than the identification you need to be admitted to the examination (**see Admission Requirements**) with Public Safety. IF you are a student at the school of dentistry and already have an ID badge, you do not need to sign in with Public Safety.

**THE VISITOR'S BADGE MUST BE TURNED IN BEFORE YOU LEAVE THE FACILITY EACH DAY.**

Once you have received your Visitor's Badge, follow the signs to the examination area.

<b>DATE</b>	<b>TIME</b>	<b>PROCEDURE</b>
Day 1	8:15 A.M.	Submission of Case Histories
	9:30 A.M.	Diagnosis & Treatment Planning (1 hour)
	10:30 A.M.	Wire Bending Exercise (1 hour)
	5:00 P.M.	Pick up cases from the room in which they were displayed originally. (The time shown is approximate.)
Day 2	8:30 A.M.	Oral Examinations (1 hour) - bring your cases to the oral exams. You should be at the site ½ hour prior to your scheduled oral exam time.

**NOTE:** The above time frame may be modified depending upon the number of candidates. It may be feasible, depending upon the number of candidates, to complete the entire examination in one day. You should, however, plan on being present for both days.

The State of Michigan no longer offers a written examination. All candidates for the Orthodontic license must pass the written examination offered by the American Board of Orthodontics (ABO). A letter from the ABO confirming passing the written examination must be submitted to the state. The letter should be submitted to:

Health Professions Licensing Division, Application Unit  
Bureau of Health Care Services  
MI Department of Licensing and Regulatory Affairs  
PO Box 30670  
Lansing, MI 48909

**SPECIAL ACCOMMODATIONS:**

If you require special accommodations because of a disability, a letter that specifies the disability and requested accommodation(s) must be submitted to the Bureau of Health Care Services. A physician or other licensed professional qualified to diagnose and treat the disability must provide detailed documentation of the disability. Requests for accommodations must be received no later than April 10, 2014. However, because of the time required to review documentation and the possible need for additional information, your request should be mailed as early as possible. A letter approving or denying your request will be sent following the review of the information submitted.

Submit your request for accommodation and relevant documentation to:

Lucinda Clark  
Health Professions Licensing Division  
Bureau of Health Care Services  
MI Department of Licensing and Regulatory Affairs  
PO Box 30670  
Lansing, MI 48909

**ADMISSION REQUIREMENTS:**

In order to be admitted to the examination on each day, you **MUST**:

1. **BE ON TIME.** You will **NOT** be admitted to the examination after it has begun.
2. **PRESENT THE ADMISSION LETTER** that will be sent to you approximately two weeks prior to the examination. If you have not received an Admission Letter one week prior to the exam, call the Bureau of Health Care Services, Department of Licensing and Regulatory Affairs, at (517) 335-0918 or send an e-mail to [bhcs-help@michigan.gov](mailto:bhcs-help@michigan.gov). If you do not have your Admission Letter, you may still be admitted to the examination provided that your name is included on the examination roster. If admitted, a substitute Admission Letter will be prepared for you at the time of check-in.

At the conclusion of the examination, your Admission Letter will be collected and retained. This letter serves as verification of your attendance at the examination. It is your responsibility to turn in the Admission Letter to the testing staff at the conclusion of the examination.

3. **PRESENT OFFICIAL SIGNED PHOTOGRAPHIC IDENTIFICATION.** Acceptable identification includes a valid Michigan driver license or another state issued driver license, Secretary of State Identification, passport, or government-issued identification. The identification presented **MUST** be an official document and include **BOTH** a photograph and signature. Without the required identification, you will not be permitted to take the examination.

If you do not present the required signed photographic identification or you are late to the scheduled examination section, you will **NOT** be allowed to take the examination/section and you will forfeit your examination fee. You will be required to submit a new examination application and fee for the next regularly scheduled administration.

**CANDIDATE ANONYMITY**

You will be assigned a unique candidate identification number that will be included in your Admission Letter. You should record **ONLY** your number on all examination materials to be scored. To maintain confidentiality, you should **NOT** introduce yourself by name to the examiners nor should your name or program appear on the cases submitted for evaluation.

## **EXAMINATION CONDUCT**

No reference materials may be utilized during any part of this examination. Textbooks, notebooks, briefcases, large purses, pagers, cell phones, and beepers should NOT be brought to your seat. Neither the State nor the University will be responsible for any loss of items brought to the examination site.

Cheating is defined as any activity, behavior or procedure that a candidate employs that would enable him/her to pass an examination by dishonest, fraudulent, or deceitful means. Examples of cheating would include, but are not limited to, obtaining answers from other candidates, copying from another's answer sheet, copying the examination, removing or attempting to remove test materials or notes from the examination room, using prepared notes during the examination, discussing the examination with others during the examination, referring to textbooks, informing other candidates of the oral questions prior to their taking that section, or having someone take the examination for another person.

Anyone found involved with any of the above activities or behaviors may be denied licensure.

You will be required to sign a statement, at the time of the examination, agreeing to not divulge the contents of the examination.

## **MATERIALS TO BE BROUGHT TO THE EXAMINATION**

You will need to supply the following items at the time of the examination:

1. A tape recorder and one (1) 90-minute cassette tape **OR** a digital recorder with 90 minutes recording capability.
  - If you bring a tape recorder, the tape will be retained at the conclusion of the oral examination.
  - If you bring a digital recorder with a removable SD card or other memory card, the card will be retained.
  - If you bring a digital recorder without removable memory, your recorder will be retained and returned to you with the recording erased from its memory when results are released. You should provide a self-addressed, stamped box for returning the recorder.
  - For all devices, you are encouraged to bring an external microphone to enhance recording quality.

**Make certain that the recorder works properly.** You are responsible for the quality and clarity of the recording. If you fail the oral examination, you will not be permitted to review or appeal the results of your oral examination if

- You fail to bring a recorder;
- Your recorder does not operate properly;
- You do not record the entire oral interview; or
- Your responses are not audible.

2. Ruler, compass, tracing paper, gauges and protractors for use during the Diagnosis and Treatment Planning section.
3. Instruments needed for the Wire Bending section.
4. Case Histories including pre and post-treatment records, models (either hard or digital) as described later in this brochure.
5. If bringing digital models, a laptop computer (power cord) with the appropriate software and virtual models.

### **EXAMINATION FORMAT**

The Orthodontic Examination includes several clinical sections in which candidates may be evaluated on topics such as:

1. Facial Growth
2. Human Genetics
3. Occlusal Development
4. Histology and Physiology
5. Radiographic Cephalometry
6. Dental Materials in Orthodontics
7. Diagnosis and Treatment Planning

#### **I. Diagnosis and Treatment Planning:** (1 hour)

The examiners will provide records of one patient, including relevant dental and medical history, for Diagnosis and Treatment Planning. A form will be provided on which your responses must be written. The final tracing must be submitted when you turn in your write-up of the case.

You must bring the following materials in order to evaluate and write up the case provided by the examiners:

1. Ruler
2. Compass
3. Tracing Paper
4. Gauges & Protractors (to analyze cephalometric films and study models)

You will be evaluated using the following criteria:

1. Diagnosis of the case
2. Treatment objectives
3. Treatment plan and mechanics

## II. Wire Bending: (1 hour)

You must provide adequate instruments, (e.g., pliers, marking pencil, wire cutters, etc.) to construct a set of coordinated maxillary and mandibular arch wires. Standard pre-formed rectangular arch wire blanks will be provided at the time of the examination.

You will be given a photocopy of an upper and lower study model on which to form your wires. You will be asked to place first, second, and third order bends, and omega tieback loops in the arch wires. Specific instructions and parameters for the arch wires will be given at the time of the examination.

You should refer to Clinical Orthodontics by Charles Tweed, published by C. V. Mosby in 1966, for information regarding construction of these arch wires.

Your final product will be scored on the following factors:

1. Arch form, coordination, symmetry and flatness
2. Accuracy and evidence of clear first, second and third order bends and tieback loops

## III. Oral Examination: (1 hour)

### You must record this portion of the examination.

You will be examined on an individual basis. You will need to bring your case histories with you to the oral examination.

You must be prepared to defend the diagnosis and treatment of your clinical cases and the diagnosis and treatment plan on the case provided by the examiners. You must also be prepared to exhibit a basic knowledge of cranio-facial growth, tooth movement and oral physiology.

## IV. Case Histories:

You **MUST** present five (5) completed comprehensive case histories in the format outlined below. Of the cases presented, at least one must be a **non-extraction case** and one must be a **permanent tooth extraction case**. These cases must be diagnosed, treated and retained by you. In cases that require multiple phase treatment, the final phase of full fixed appliance therapy must be initiated and completed by you.

**If you are a re-examination candidate, you must bring new or updated cases from those presented previously.**

If you completed your graduate training within the last two years, a **MINIMUM** of three (3) completed cases must be presented. For each of the remaining cases, two (2) incomplete cases must be submitted for each of the cases that is not complete. That is, you may

present five completed cases OR four completed cases and two incomplete cases OR three completed cases and four incomplete cases. No other combination of cases will be accepted.

Current progress reports including cephalometrics, tracings, panoramic radiographs, photos and study models MUST be included with the incomplete cases. Incomplete cases must demonstrate a minimum of one year of treatment. If you are submitting incomplete cases, you must submit study models of the work in progress. Write-ups for incomplete cases need to include a critical analysis of the proposed treatment as well as the progress to date. Additionally, there must be a detailed plan on how you intend to finish the case.

All pages of each case history are to be typed on 8.5" x 11" paper and placed in a separate loose-leaf binder. Each page should be placed in a transparent protective cover. Separate acetate lateral cephalometric tracings OR digital cephalometric tracings must be included for each case. See the sample write-up at the end of the brochure for the required cephalometric analysis. You may add additional measurements if you wish.

**NEITHER YOUR NAME NOR YOUR INSTITUTION SHOULD APPEAR ON ANY OF THE PAGES IN THE CASE HISTORY REPORTS OR ON ANY COMPUTERIZED MATERIAL. The only identifying information should be your assigned identification number.**

Each case history must include the following information:

1. Title Page: include your candidate ID #, the patient's first name and first initial of the last name, gender, age at start of treatment, age at end of treatment, Angle Classification, permanent teeth extracted, and length of treatment
2. Resume: One page summary including date of pre-treatment records, Angle Classification, a brief list of significant treatment events, date of post-treatment records, length of active treatment, retention protocol, and your evaluation of the post-treatment occlusion, occlusal function and facial balance
3. Pertinent medical history and patient's chief complaint(s):
4. Diagnosis: Include a brief description of the nature and extent of the anomalies using a specific problem list.
  - a. Intraoral findings, including clinical exam findings, function, oral habits and cast analysis
  - b. Skeletal findings, including a discussion of the lateral cephalometric analysis
  - c. Evaluation of radiographic survey, including Panorex, full mouth radiographs, CBCT, etc.
  - d. Etiology of malocclusion, if known
5. Problem list
6. Specific treatment objectives: Include treatment for the maxilla, mandible, maxillary dentition and mandibular dentition.
7. Treatment Plan: Outline your treatment plan, appliances to be used, anchorage considerations, type of retention, and any supplemental therapy.

8. Treatment Progress: Include a description of the actual treatment, frequency of the appointments, response to treatment, and complications, if any. Do not record what was done at each appointment from your treatment chart.
9. Retention: Include appliances, rationale, appointments and supplementary procedures.
10. Results Achieved: Include skeletal, facial, dental and functional changes and conditions revealed by the radiographic examinations. Discuss cephalometric superimpositions and the dental and skeletal changes observed. Also, discuss changes in cephalometric measurements as related to the superimpositions and clinical findings.
11. Final evaluation: include **ALL** pertinent findings, such as final occlusion, facial changes, cephalometric changes and function at the conclusion of active treatment. Discuss the prognosis for stability. Describe any post-treatment changes or relapses observed or anticipated. Minor relapses do not disqualify cases for presentation. Discuss what you learned from treating this case, and how you would handle the case differently if you had the opportunity to treat it again. **This component of the case report is critical.**

Case histories should be informative. They should tell what you did for each patient and explain why you did it. Avoid undue brevity or excessive length. Case history reports are about three to six pages. A sample case history, written section, is included at the end of the brochure for your assistance.

Scanned or digital photographs and scanned radiographs will be permitted provided that they are of high quality. Digital cephalometric tracings (dolphin imaging) are also acceptable.

#### Pre-Treatment Records (Designated by a **BLACK dot**)

1. Study models
2. Periapical or panoramic radiographs (if panoramic radiographs are submitted, maxillary and mandibular incisor periapical radiographs are recommended also)
3. Cephalometric radiographs
4. Cephalometric tracings
5. Facial photographs
6. Intraoral color photographs

#### Post-Treatment Records (Designated by a **RED dot**)

1. Study models
2. Periapical or panoramic radiographs (same recommendations as above)
3. Cephalometric radiographs
4. Cephalometric tracings and serial composite tracings
5. Facial photographs
6. Intraoral color photographs
7. Summary of cephalometric measurements

Supplemental records made at other stages of treatment may be included, but should be clearly labeled and designated by a **BLUE dot** so that they are not confused with the above records.

High quality study models, preferably white, should have the patient's first name and first initial of the last name on them in case a set of models and the write-up get separated. Digital models in lieu of study models are permitted. If using digital models, you must adhere to the following guidelines:

1. Initial models, final models or both may be submitted in the digital format.
2. You must furnish a laptop with power cord and mouse along with the appropriate software loaded as well as the virtual models.
3. Each case should be saved to a folder on the desktop, labeled with the patient's first name and last initial
4. A montage of the study models must be printed and included in the presentation binder
5. All software and digital models should be backed-up on a flash drive and brought to the examination
6. If passwords are required to open the computer, these must be provided to the chief administrator at the start of the examination
7. Digital models must be able to be manipulated by the examiners using the software provided.
8. All reasonable precautions will be taken to protect the examinee's personal property.

You must follow the guidelines included in the American Board of Orthodontics' (ABO) Examination Information. The booklet can be obtained by writing to the American Board of Orthodontics, 401 North Lindbergh, St. Louis, MO 63141 or call (314) 432-6130.

The sample write-up at the end of the brochure should be considered as assistance **ONLY**. It is not to be considered as the only way to present the material. Be sure that your write-ups follow the ABO guidelines as well as the above requirements.

### **A THESIS WILL NOT BE ACCEPTED IN LIEU OF THE REQUIRED CASES.**

A list of the patients treated and submitted for case presentation scoring must be sent prior to the examination. Examiners will **NOT** have access to these listings prior to or during the examination process. You need to submit the following information:

1. Patient names (first name and initial of last name plus patient's city and state),
2. A notation as to whether the case is complete or incomplete,
3. The name of your orthodontic program, and
4. Your graduation date.

The above information should be received by **May 8, 2014** and sent to:

KNK Consulting  
2956 Dobie Road  
Mason, MI 48854

The list can also be emailed to [karaschmitt@hotmail.com](mailto:karaschmitt@hotmail.com) or faxed to (517) 347-9695.

## **SCORING THE EXAMINATION**

You must achieve a score of 75% or above in **EACH** of the following two major categories:

1. **Case Histories**
2. **Oral Examination/Wire Bending/Case Diagnosis**
  - a. Oral Examination
  - b. Wire Bending
  - c. Case Diagnosis

### **ALL EXAMINER SCORES WILL BE USED IN THE FINAL TABULATION OF THE HAND-SCORED SECTIONS.**

Two or more examiners will evaluate the sections of the examination. Each examiner will evaluate the sections independently and the final score for each section will be the average of the examiners' scores.

During the course of the examination, the examiners may use expressions such as "That's okay" or "Fine". These comments should NOT be construed as anything other than a polite way of completing a checkpoint or the end to your response.

In order to pass the examination, you must receive a score of 75% on **EACH** section of the examination. Those sections in which you receive a score of **LESS** than 75% may be repeated once within an 18-month period. Should you not receive a 75% in each section during the second attempt, you will need to retake the entire examination.

Your score(s) will be released in approximately six weeks following the last day of your examination. Results will NOT be provided over the phone nor will they be released to a third party unless you provide a written request to the Bureau to have the results submitted to a specific third party.

If you receive a score of **PASS**, that will be the only information available as to your success on the examination. Actual numeric scores are NOT available.

If you **FAIL** the examination, your numeric score along with a breakdown of your performance on each section failed will be provided. This information is intended to assist you in preparing for the re-examination.

## **REVIEW OF FAILED EXAMINATION**

Should you fail an examination section, you may request a personal review of the examination documents.

1. Complete the Request for Review form that will be included with your Notice of Failure, along with a cashier's check or money order in the amount of \$50.00 made payable to "State of Michigan". Send the form and payment within thirty (30) calendar days of the Notice of Failure date to:

Dr. Kara Schmitt  
KNK Consulting  
2956 Dobie Road  
Mason, MI 48854

2. The review will be conducted in the Lansing area. The date of the review will be included with your Notice of Failure. The specific time and location will be submitted following receipt of your Request for Review form.
3. The review shall be limited to a sight review ONLY. You will be given one-half of the amount of time allocated for the administration of the failed section (*i.e.*, if two hours were allocated for the administration of a section, you would have one hour for the review of that section). Notes made by you during the review may not be removed from the room nor copied. Reference material may be brought to the review.
4. The review shall be limited to the area(s) of failure ONLY.
5. At the conclusion of the review, you must decide whether or not you wish to appeal your results. If you decide to appeal, you may submit for consideration any information or documentation that pertains to the failed section(s) of the examination.
6. All questions, comments, and documentation made by you will be submitted to the Orthodontics Examination Committee for review. The committee's decision will be forwarded to the Michigan Board of Dentistry.
7. The Michigan Board of Dentistry shall take action on the recommendation(s) presented.
8. Following the Board's decision, the Bureau of Health Care Services will notify you of the results of your appeal.

**Directions to**  
**UNIVERSITY OF DETROIT MERCY**  
**SCHOOL OF DENTISTRY**  
**2700 Martin Luther King Jr. Boulevard**  
**Detroit, MI 48208-2576**

The School of Dentistry is located near downtown Detroit, one block east of I-96 Jeffries Freeway and within minutes of I-94, I-75, and the Lodge Freeway.

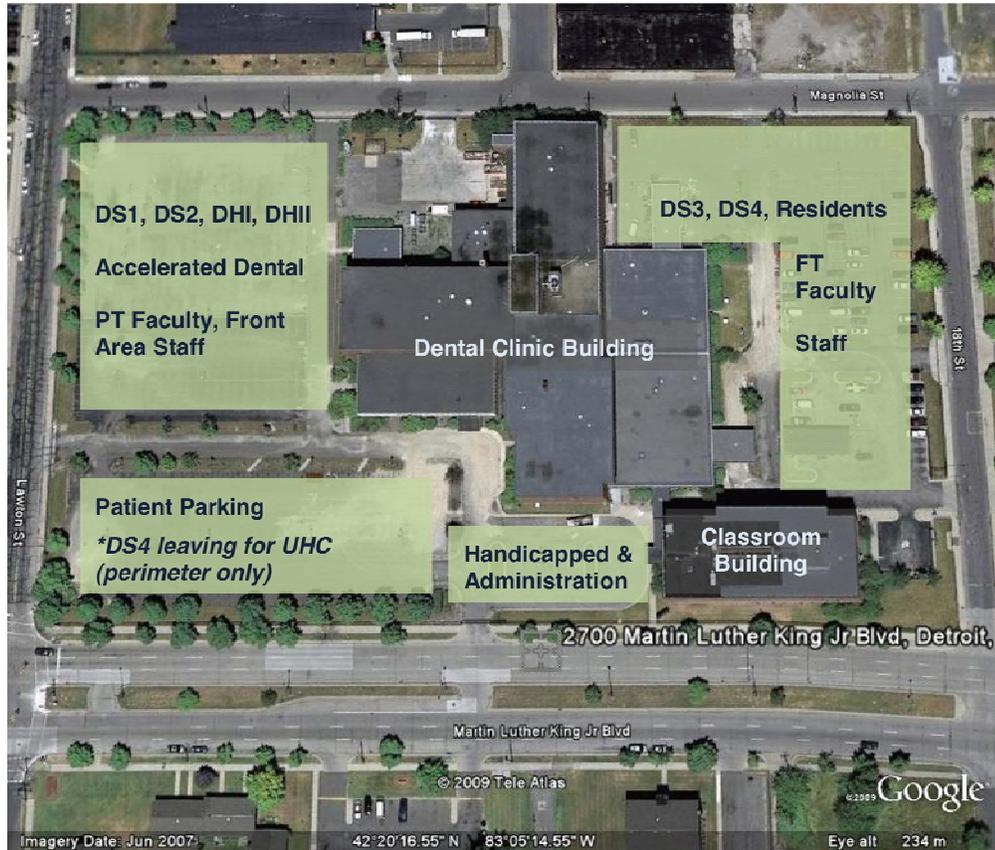
***Driving Directions***

- **From the Northwest, East and West:**  
From I-96 East/Jeffries Freeway, take exit 191 (US-12/ML King Jr. Blvd/Michigan Avenue). Turn left onto ML King Jr. Blvd/Myrtle St. Go one block; school is on your left.
- **From Downriver:**  
From I-96/Jeffries Freeway, take Michigan Ave/US-12 exit. Turn left onto Michigan Ave. Turn right onto Tillman St. Turn right onto ML King Jr. Blvd/Myrtle St. Make a U-turn onto ML King Jr. Blvd/Myrtle St.

Parking is available on the Dental School campus. You **MUST** park in the area labeled Patient Parking (shown on the next page). The entrance for the examination is in the building where the word “Dental” is shown on the next page (in the phrase Dental Clinic Building).

**UNIVERSITY OF DETROIT MERCY  
SCHOOL OF DENTISTRY**

**CORKTOWN CAMPUS PARKING GUIDELINES**



**Anyone experiencing problems accessing their assigned parking area should contact Ms. Dana Hart at (313) 494-6621 or [dana.hart@udmercy.edu](mailto:dana.hart@udmercy.edu) as soon as possible. Parking assignments will be strictly enforced. Your cooperation helps to ensure adequate parking for patients and is greatly appreciated.**

# **SAMPLE WRITE-UP FOR CASES**

**Please replace the phrasing in this document with your own words. The examiners expect descriptions to be appropriate to each individual case.**

**CASE REPORT  
Candidate #**

<b>Patient</b>	<b>Jeff J</b>
<b>Gender</b>	<b>Male</b>
<b>Age: Start</b>	<b>14-1</b>
<b>End</b>	<b>16-6</b>
<b>Angle Classification</b>	<b>Class II, Division 1</b>
<b>Permanent teeth extracted</b>	<b>None</b>
<b>Length of Treatment</b>	<b>27 months</b>

**Name:** Jeff J.  
**Date of Birth:** 9/22/86  
**Age:** 14 years 1 month

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## Resume

### Pretreatment Records

5/31/00

Classification:

Class II, Division 1

### Treatment:

Band and bond maxilla and mandible	11/14/00
Deliver combi-pull headgear	11/28/00
Band 7's	05/27/01
Deliver TPA and intrusion arch	09/27/01
Place maxillary closing loops, start Class II elastics	05/17/02
Appliances removed	03/04/03
Deliver retainers	03/05/03

**Active Treatment Time:**

27 months

**Post-treatment Records:**

03/04/03

### Retention:

Maxillary and Mandibular Hawley Retainers

### Assessment:

Posterior occlusion	Good
Overjet	Fair
Overbite	Excellent
Function	Excellent
Facial Profile	Excellent

**Name:** Jeff J.  
**Date of Birth:** 9/22/86  
**Age:** 14 years 1 month

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### **3. Pertinent Medical History and Chief Complaint**

Jeff J, accompanied by his mother, presented for treatment to the graduate orthodontic clinic on May 31, 2000 following a referral by his general dentist. Jeff was 14 years and 1 month old at the time of the initial exam. Mrs. J was concerned with the appearance of Jeff's teeth and his "overbite". Jeff was taking medication for asthma and Tourette's syndrome, both of which were under control.

### **4. DIAGNOSIS**

#### **A. Intraoral Findings**

Clinical examination revealed a symmetric face in the frontal view. Lips were slightly apart at rest. Jeff showed 3 mm of incisor at repose and 9 mm of incisor and no gingival display when smiling. He had a convex facial profile with a retrognathic chin, a slightly everted lower lip, and an acute mentolabial angle. He had a normal nasolabial angle.

The patient presented in the late mixed dentition with all permanent teeth present except maxillary left first and second premolars, and the third molars. The deciduous maxillary left first and second molars were present and loose. The molar relationship was Class II on both the right and left sides. Maxillary dental midline was coincident with the face and the mandibular midline was 2 mm to the right. Overjet was 9 mm and the overbite was 6 mm. There was 2 mm of crowding in the mandibular arch, while the maxillary arch contained adequate space. The curve of spee was approximately 2 mm. Oral hygiene was fair to poor and periodontal tissues had a mild gingivitis. No caries were present.

During the initial temporomandibular exam, no signs or symptoms were present. The maximum opening, left and right lateral movements and protrusive movements were within normal limits. There was no discrepancy between centric relation and centric occlusion. The mandibular path of opening and closure were straight with respect to the frontal and sagittal planes.

Analysis of the dental models revealed a Class II molar and canine relationship on the right and left sides. Overbite was 9 mm and overjet was 6 mm. The maxillary arch has adequate space and mandibular arch had 2 mm of crowding. The maxillary intermolar width was 31.0 mm. Maxillary permanent right and left first molars were rotated mesially.

**Name:** Jeff J.  
**Date of Birth:** 9/22/86  
**Age:** 14 years 1 month

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## **B. Radiographic Analysis**

The panoramic radiograph showed third molars developing normally. All other maxillary and mandibular permanent teeth were present and normal. No pathology was evident and alveolar bone height appeared to be normal.

## **C. Cephalometric Analysis**

The cephalometric analysis indicated a relatively orthognathic maxilla and mandible, SNA 80° and SNB 78°. The mandibular plane angle was normal, measuring 22° to Frankfort horizontal. The mandibular central incisors were retroclined and retruded (IMPA 84°; LI-NB 2 mm). The maxillary incisors were proclined to 113° to the anterior cranial base (Sella-Nasion). The nasolabial angle was average. The lips on the cephalogram were not closed and therefore some of the cephalometric soft tissue measurements such as upper and lower lips to E plane are inaccurate.

## **D. Etiology of malocclusion**

Mrs. J. states that her brothers have “big overbites”, and that Jeff resembles them. We can assume that heredity is a factor in Jeff’s malocclusion.

## **5. PROBLEM LIST**

1. Class II, Division 1 malocclusion
2. Mandibular midline 2 mm right of facial
3. Bolton excess of 2 mm in maxillary 3-3
4. Excess overjet and overbite
5. Moderate curve of spee
6. Mild crowding in mandible
7. Convex profile due to proclined maxillary incisors.
8. Poor oral hygiene

**Name:** Jeff J.  
**Date of Birth:** 9/22/86  
**Age:** 14 years 1 month

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## **6. TREATMENT OBJECTIVES**

After the initial examination and analysis of the records, the following treatment objectives were established:

1. Attain Class I molar and cuspid relationship
2. Level and align arches
3. Eliminate crowding and spacing
4. Reduce overjet and overbite
5. Coordinate and finish arches
6. Improve facial balance
7. Obtain a balanced, harmonious, and functional occlusion

## **7. TREATMENT PLAN**

1. Maintain adequate oral hygiene
2. Non-extraction treatment
3. Full banding and bonding of both arches with preadjusted fixed edgewise appliances
4. Bond maxillary and mandibular teeth
5. Combi-pull headgear for Class II correction
6. TPA to derotate 6's and anchorage
7. Coordinate and detail arches
8. Retain teeth with removable Hawley retainers

## **8. TREATMENT PROGRESS**

Jeff was seen on a monthly basis during active treatment. Jeff was initially fit with full bands and bonding of maxilla and mandible and a combi-pull headgear. Due to compliance issues, Jeff was fit with a TPA to de-rotate the maxillary 6's and an intrusion arch tied distal to the maxillary 2's to intrude the maxillary incisors and aid in Class II correction. Space was opened distal to the 2's and a maxillary 2 loop closing loop archwire was placed to close. Class II elastics were started at this time. Seven months into treatment the 7's were bonded. Headgear was continued throughout treatment.

Compliance and hygiene were a constant struggle for Jeff throughout most of the treatment period. Jeff had several emergencies due to bracket failure, and his headgear compliance and oral hygiene were poor. Jeff had vast improvement in his compliance in the last eight months of treatment.

**Name:** Jeff J.  
**Date of Birth:** 9/22/86  
**Age:** 14 years 1 month

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## **9. RETENTION**

Three days after the braces were removed, maxillary and mandibular hawley retainers were delivered, to be worn full time except while eating and brushing. After three months, Jeff was instructed to wear his retainers every night sleeptime until instructed otherwise. He will return in six months for a retention check. I plan to ask him to wear his retainers nightly until he's finished growing, and sleeptime as necessary to maintain alignment after growth is complete.

## **10. RESULTS ACHIEVED**

1. Bilateral Class I molars and cuspids
2. Maxillary and mandibular midlines are coincident with facial midline
3. Overjet is slightly excessive (3 mm) due to Bolton discrepancy
4. Overbite is ideal
5. Excessive curve of spee has been corrected
6. Mandibular crowding has been corrected, IMPA corrected to 90 degrees, L1-NB to 4 mm
7. Upper incisor proclination has been corrected to 103 degrees
8. Bilateral cuspid-protected lateral excursions without balancing interferences, incisor guidance on anterior protrusion without posterior interferences
9. Labial gingival decalcification on maxillary and mandibular cuspids due to poor oral hygiene
10. Facial convexity is decreased

## **11. FINAL EVALUATION**

The patient and his mom were extremely pleased with the results of orthodontic treatment. In retrospect, the treatment was appropriate. It yielded a highly acceptable esthetic and functional change to Jeff's dentition. The stability of Jeff's treatment result will be highly dependent on his continued cooperation with retainer wear.

If I were to treat this case again, I would help Jeff to improve his oral hygiene before starting orthodontic treatment. I would also discuss more thoroughly at the start of treatment with the patient and parent the need for excellent headgear wear. Stripping of the maxillary 2-2 could have addressed the Bolton discrepancy and excess overjet at time of deband.

**Name:** Jeff J.  
**Date of Birth:** 9/22/86  
**Age:** 14 years 1 month

<b>Jeff J</b>	<b>Initial</b>	<b>Final</b>	<b>Standard</b>
<b>Age</b>	14-1	16-6	
<b>Maxilla</b>			
A-N Perpendicular (mm)	0.6	0.4	0 ± 2
SNA (°)	83.4	81.7	82 ± 4
<b>Mandible</b>			
Pog-N Perpendicular (mm)	1.5	5.4	-5 ± 3
SNB (°)	83.1	81.1	80 ± 3
Pog - NB (mm)	0.9	5.7	1.9 ± 2
<b>Intermaxillary</b>			
ANB (°)	0.3	0.6	2 ± 2
Wits Appraisal (mm)	-2.2	-2.9	-1 ± 1
<b>Vertical</b>			
Facial Angle (FH-NPo) (°)	90.8	92.6	88 ± 7
FMA (MP-FH) (°)	21.1	21.8	22 ± 5
Y-Axis -- Downs (SGn-FH) (°)	57	54.3	61 ± 3
<b>Dental</b>			
Interincisal Angle (U1-L1) (°)	135.7	126.1	130 ± 5
IMPA (L1-MP) (°)	88.4	92.9	95 ± 7
L1 - NB (mm)	3	5.5	4 ± 2
L1 Protrusion (L1-APo) (mm)	2.5	3.1	2.7 ± 2
U1 - SN (°)	107.7	110.5	103 ± 6
U-Incisor Protrusion (U1-APo) (mm)	4.7	6.9	6 ± 2
U1 Most Labial-A (perp to FH) (mm)	5.7	9.6	3.5 ± 1
<b>Facial</b>			
Nasolabial Angle (Col-Sn-UL) (°)	113.2	106	102 ± 8
Lower Lip to E-Plane (mm)	-6.5	-6.7	-4 ± 2
Upper Lip to E-Plane (mm)	-4.6	-5	-2 ± 2