Jaw Range of Motion in People With TMD

INTRODUCTION

- The temporomandibular joint (TMJ) is the joint that allows a person open and close their mouth. If this joint and/or the muscles that control it are in a state of dysfunction or pain this is called temporomandibular joint disorder (TMD). It has been estimated that approximately 5-12% of the population have TMD.

PURPOSE

The purpose of this project was to use a skeletal model examine the range of motion of the TMJ while chewing various foods.

HYPOTHESIS

It is expected that people with TMD will have a reduced range of motion of their jaw for all motion directions while chewing.

METHODS

- There were 9 subjects; 3 TMD subjects and 6 control
- Of the TMD group, one was male and two were female; of the control group, four were male and two were female
- Reflective markers were placed at eight positions on the subjects’ faces (5 on the skull and 3 on the mandible)
- Subjects were first asked to do maximal jaw extension, protrusion, retraction, and right and left lateralization movements
- Subjects were asked to chew each of three foods: an apple, gum, and cereal
- Jaw movements were tracked using an 8-camera Peak/ Vicon motus motion analysis system
- Motion data was then analyzed using MatLab
- Using MatLab it was possible to create a model showing subject jaw movements

RESULTS

- The apples produced the largest amount of jaw movement, with the exception of jaw lateralization
- TMD and control groups showed similar jaw extension range of motion
- TMD subjects had greater range of motion during jaw protrusion, retraction, and lateralizations
- Figure 1 illustrates the average jaw movements for both groups with units of millimeters
- Figure 2 shows the jaw extension movement for both groups with units of degrees

DISCUSSION

- The purpose of this project was to measure jaw movement during chewing and determine whether those with TMD have a different range of motion when compared to those without diagnosed TMD
- Although this experiment was not able to address statistical significance because of a lack of power, the mean values support the hypothesis that the range of motion for people with TMD is different, with the exception of jaw extension
- Contrary to the hypothesis, the TMD subjects appeared to have increased range of motion compared to the control
- These results could indicate that those with TMD may have an unstable joint rather than restricted TMJ
- This project indicated differences between jaw range of motion and food groups, further research should be done to determine whether foods that increase range of motion are detrimental to those with TMD
- Further research should be done to consider the question as to what causes those with TMD to have a greater range of motion

REFERENCES