

Orthodontic Treatment to Improve Hip Joint Mobility and Balance

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Abstract: The case subject is a 10-year-old girl with a history of strong left hip joint flexibility issues and milder right hip joint flexibility issues. The main cause of this disorder was confirmed to be the misalignment of her lower front teeth. As soon as dental orthodontic devices were attached on her lower teeth, the movement of her left hip joint improved. The mobility of both hip joints further improved as the orthodontic treatment progressed. Furthermore, she was able to maintain her balance for longer periods of time. However, the underlying mechanism, which leads to such a quick and extensive improvement, is unclear. Further studies are required.

Keywords: Orthodontic treatment, Hip joint mobility, Balance.

INTRODUCTION

It seems that there is a close relationship between dental occlusal conditions and over all physical condition [1-8]. However, the author has been unable to find any academic reports which describe the relationship between orthodontic treatment and improved hip joint mobility. In the case presented in this study, the close relationship between biting situation, hip joint movement, and balance can be seen.

CASE

Subject

The subject was a 10-year-old girl. She was an elementary school student and wanted to be a professional ballerina.

Chief Complaint

She was not able to raise her left leg as high above her head as her right leg, due to limited flexibility in her left hip joint (Figure 1 and 2). She wanted to be able to touch her ear with her left leg.

INITIAL PHYSICAL CONDITION

The subject was a ballerina. It was easy for her to raise her right leg. The distance between her right leg and her ear was a little less than 10 cm when raising her right leg (Figure 1). On the other hand, it was hard for her to raise her left leg to the same position. The distance between her left ear and leg was about 30 cm (Figure 2).



Figure 1: She was able to raise her right leg to within 10 cm of her ear.



Figure 2: She was only able to raise her left leg to about 30 cm from her ear.

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INITIAL ORAL CONDITION

The subject had 24 adult teeth. Her lower front teeth were misaligned (Figure 3). The subject's gums and oral membranes appeared healthy. Moreover, she did not report any discomfort in her mouth.



Figure 3: Her lower front teeth were misaligned.

TREATMENT AND PROGRESS

The cause of the subject's stiffness was determined to be the misalignment of her lower front teeth. This conclusion was made after applying a variation of the Bi-Digital O-Ring Test [9] known as the Two Points Time Lag Stimulation Method [10] (<https://www.youtube.com/watch?v=Q1UpDzoXYds>. Last checked 07/Nov/2014). Following this diagnosis an orthodontic appliance with brackets, a main wire, and an expansion coil was attached to her lower teeth. The expansion coil was placed to make a space to move her right second incisor forward (Figure 4). Interestingly, the subject's left hip joint mobility improved almost immediately after her orthodontic appliance was attached (Figure 5).



Figure 4: An orthodontic appliance with brackets, main wire, and an expansion coil to correct the subject's lower front teeth. The expansion coil was placed to make space to move her left second incisor forward.



Figure 5: Just after the orthodontic appliance was attached, her left hip joint mobility improved.

Forty-three days later, her hip joint mobility had improved even more. The right coil was removed, the brackets were attached to both second incisors, and the main wire was inserted (Figure 6).



Figure 6: The right coil was removed, the brackets were attached to both second incisors, and the main wire was inserted.

Just after this treatment: she could touch her ears with both her right and left legs (Figure 7).



Figure 7a,b: Just after this treatment: the subject was able to raise both her left leg and right leg to touch her ears.

Moreover, she could maintain her poses longer because her balance improved. Following the completion of the subject's orthodontic treatment about three years after her initial treatment, her lower front teeth were properly aligned (Figure 8). She has continued to experience the positive results of this treatment for more than three years.

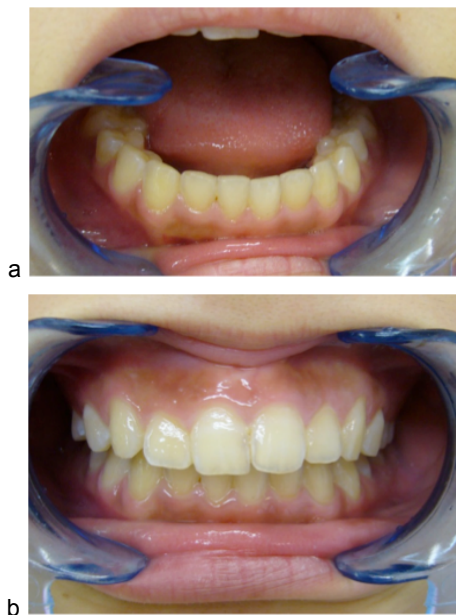


Figure 8a,b: The subject's lower front teeth were properly aligned about three years after her initial orthodontic treatment. She has continued to experience the positive results of this treatment.

DISCUSSION

Many reports point to the relationship between biting situation and overall physical condition [1-8]. However, little, if any, research has been published on the effectiveness of orthodontic treatments for improving hip joint mobility. This report clearly shows the link between occlusal situations and hip joint mobility. However, the author has been unable to clarify why such a direct link exists. Furthermore, the author cannot explain why the results of the orthodontic treatment on this subject were so immediate. Further investigation with contributions from dentistry and the medical field are needed.

CONCLUSION

Orthodontic treatment was very effective for improving hip joint mobilization. The positive effects started as soon as the orthodontic appliance was attached. This mechanism has not been explained yet, so more study is needed with the cooperation of the dental and medical fields.

ADDITIONAL INFORMATION

The details of this case can be observed in the following YouTube video.

Orthodontic treatment to improve hip joint mobility and balance. <https://www.youtube.com/watch?v=MjkmVjXxTEo&list=UUqAoDvLMJAJ-H-HLCF4V8-A> (Last checked 11/10/2014).

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