

Canine Retraction by using Poul Gjessing Spring : A Case Report

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Abstract

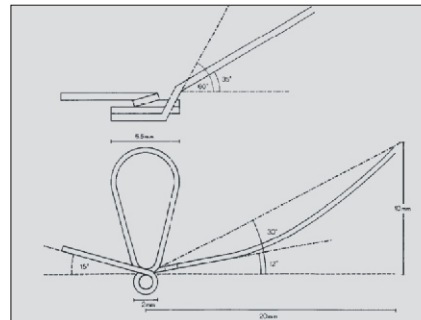
Both friction (sliding) and frictionless (loop) mechanics are used for space closure in extraction therapy. In sliding mechanics, the wire and position of the bracket give control of tooth movement, whereas in a loop-spring system, control is built into the spring. Both methods have its own advantages and disadvantages. One of the major advantages of frictionless (loop) mechanics is that a known force system is delivered to teeth because there is no dissipation of force by friction. This is a case report of 16 year old female patient with a class I malocclusion in which canine retraction was done using Poul Gjessing Spring in three and half months after upper and lower premolars extraction with fixed mechanotherapy (ROTH 0.018).

Key Words: Spring, Canine retraction, Sliding mechanics, Loop mechanics.

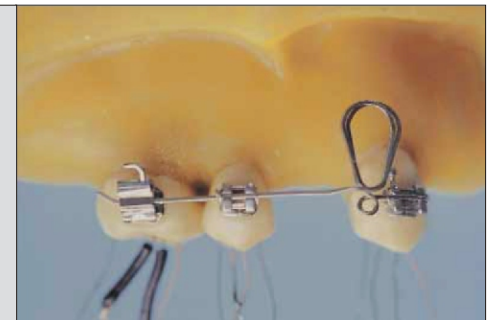
Introduction

Retraction of the maxillary canines represents a fundamental stage in orthodontic treatments. Correct positioning of the canine after retraction, recognized to be of uppermost importance for function, stability, and esthetics, can be obtained either by uprighting after uncontrolled tipping or by means of biomechanically predetermined & controlled movement.

The present report deals with considerations of importance in optimizing the biomechanical advantages of Poul Gjessing spring for canine-retraction. The basic spring design : (1) promotes translation sagittally and horizontally through an antitip moment- to-force ratio of approximately 11: 1 and an antirotation moment-to-force ratio of approximately 4 : 1, both being relatively constant over a certain range of activation; (2) results in a low load-deflection ratio during generation of retraction forces in the range of 50 to 200 gm; (3) results in no adverse interaction between antitip and antirotation moments during activation;



Poul Gjessing spring's basic design



(4) could be used in both 0.018 and 0.022 inch edgewise systems; and (5) have limited dimensions and allow for faciolingual adjustments without altering the above mentioned characteristics.

Case Report

A 16 years old girl reported to department of Orthodontics with the chief complain of forwardly position front teeth. On Clinical examination showed Angle's class I molar as well as canine relationship. Profile was convex with 100% incisal exposure. She had undergone root canal treatment with

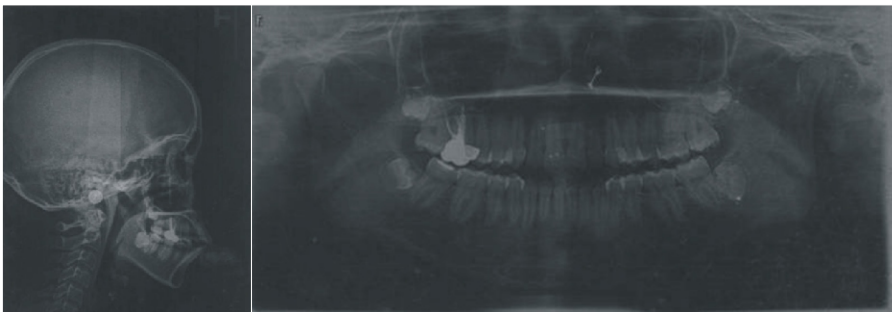
upper right first molar and metallic crown was given after treatment.

Treatment Plan

After model and cephalometric analysis, extraction with upper and lower first premolars was done. Fixed mechanotherapy with Roth 0.018 Prescription was started. The anchorage was reinforced by using trans-palatal arch in the maxillary arch and banding lower second molars on both sides in mandibular arch. For initial 1 month, alignment was done with 0.016 NiTi wires in upper and lower arches. This was followed by 0.016 x 0.022



Pretreatment Intraoral and Extraoral Photographs Of Patient



Pretreatment Lateral Cephalogram & OPG Of Patient



Poul Gjessing Springs Given For Canine Retraction

rectangular NiTi wires. Then canine retraction was started 2 month after extraction using Poul Gjessing springs made with 0.016x0.022 stainless steel wire. Spring was cinches back after every 3 week.

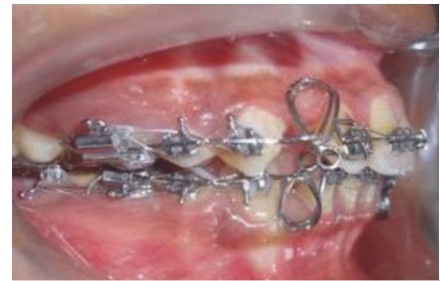
Discussion

To retract a canine into an extraction site without tipping and rotation, a spring

must generate not only a closing force, but also moments to bring the root apices together at the extraction site and to maintain proper rotation. Many types of retraction springs have been developed to overcome these problems, including Ricketts's maxillary canine retractor, Nickel titanium T-segment connected to a stainless steel arm, as in Burstone's T



Activated Poul Gjessing spring



Anterior Retraction by Poul Gjessing Spring

loop. Poul Gjessing spring holds the basic advantage of ant-tilt and anti-rotation bends. When optimum force is applied it generates maximum cellular and biochemical activities responsible for tooth movement.⁴ Extension of the load beyond this level can lead to root resorption, loss of anchorage, and alteration of the M/F ratio.³ Force control of the Poul Gjessing spring¹ is recognized by change in morphology taking place during activation; loading of approximately 160 gm is obtained when the two sections of the double helix are separated 1 mm.²

Current Status

After three and half months canine retraction was completed. Anterior retraction was followed by same spring.

References

References are available on request at editor@healtalkht.com

