

## THE USE OF 0.018" SPECIAL PLUS WIRE FOR FABRICATING "Z-SPRINGS" FOR CORRECTION OF ANTERIOR CROSS BITES

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**ABSTRACT:** Double helical cantilever springs of "Z-springs" are frequently used to correct one or two teeth anterior crossbites. Different wire sizes of round stainless steel wires have been suggested by various authors for the fabrication of these springs. The 0.018" Special Plus Australian wire is an excellent choice for the fabrication of the "Z-spring" because of its hardness and resilience. This case report shows the rapid resolution of a single tooth anterior crossbite of an upper central incisor using an appliance that incorporates such a "Z-spring".

**KEYWORDS:** Case report, "Z-spring", 0.018" Special Plus wire

### INTRODUCTION

Active plates incorporating "Z-springs" are frequently used for the correction of anterior cross bites involving one or two incisors in the mixed dentition. Different authors have recommended different wire sizes in the fabrication of the "Z-spring". We present a case report of a single tooth cross bite corrected with an appliance incorporating a "Z-spring" fabricated with a 0.018" Special Plus Australian wire.

### Case Report

An 8 year old female patient presented with tooth number 21 in cross bite (**Fig.1**). There was developing crowding and since tooth number 62 was exfoliated, there was adequate space for the cross bite correction. (**Fig.2**) shows the upper cast with the "Z-spring" fabricated along with the other wire components. The appliance was fabricated with a posterior bite plane and delivered after activating the spring by 2 mm. (**Fig.3**) shows the appliance in the mouth immediately after delivery, demonstrating adequate clearance of the anterior teeth. When the patient was seen after 4 weeks, the cross bite was corrected (**Fig.4**).

### Discussion

Appliances incorporating the "Z-spring" are the mainstay of treatment designed to correct anterior cross

bites involving one or two incisors in the mixed dentition. Various authors have recommended various wire sizes for its fabrication. White, Gardiner and Leighton recommend the use of hard drawn round stainless steel wire varying in gauge between 0.3 mm (0.012") to 0.5 mm (0.020"), the gauge being proportional to the number of teeth engaged by the spring. Fields suggests the use of 22 mil steel wires for the fabrication of the double helical cantilever spring for the correction of a two teeth cross bite. We have used the 0.018" Special Plus wire for the fabrication of the "Z-spring" for a number of years. Its hardness and resilience make it an excellent choice for this purpose. The hardness prevents distortion of the spring while the excellent springiness ensures constant forces from one appointment to the next. One can expect to see a rapid resolution of the problem which may require just one or two activations.

### CONCLUSION

The 0.018" Special plus Australian wire is an excellent choice for the fabrication of the "Z-Spring".



Fig.1 Intraoral view showing 21 in cross bite



Fig.2 Cast showing the wire components of the appliance



Fig.3 Intraoral view showing the appliance in place



Fig.4 Intraoral view after cross bite correction

#### References

1. White TC, Gardiner JH, Leighton BC. Orthodontics for Dental Students. 3<sup>rd</sup> ed, Macmillan India Ltd., New Delhi, 1976, pp 198.
2. Proffit WR, Fields HW, Sarver DM. Contemporary Orthodontics. 4<sup>th</sup> ed, Elsevier, Noida, 2007, pp 440-444.
3. Begg PR, Kesling PC. Begg Orthodontic Theory and Technique, 3<sup>rd</sup> ed, WB Saunders, Philadelphia, 1977

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