

A Professional Courtesy of:

ORTHODONTIST



DR. DAVID SHAPIRO

BA, DDS, MS (ORTHO) FRCD(C)

9200 Bathurst St, Suite 28 Thornhill, ON L4J 8W1  
T. 905 731-9699 F. 905 731-7993 smile@mybraces.ca

www.mybraces.ca

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# Orthodontics *Alert*<sup>TM</sup>

## Patients' Self-perception of Attractiveness Using Facial Photographs

In modern society, a great emphasis is placed on physical attractiveness. Most patients seek orthodontic care because of a desire to improve their facial appearance. Patients' perceptions of their own appearance is determined by looking in a mirror. Therefore, a frontal view and smile represent their major concern, while the orthodontist, who evaluates the face in 3 dimensions, is concerned with the profile appearance as well. Bonetti et al from the University of Bologna, Italy, performed a study to determine whether pretreatment smile and profile photographs would influence patients' perception of dental and facial attractiveness and willingness to undergo orthodontic treatment.

The study sample consisted of 100 participants (54 women, 46 men) referred for orthodontic treatment. An additional group of 100 patients, closely matched for

gender and age, served as controls. All participants were >18 years of age. Frontal and profile photographs of each individual were taken, and each participant filled out a questionnaire designed to elicit perception of dentofacial attractiveness and willingness to undergo orthodontic treatment at the initial observation (T0) and an average of 30 days later (T1). The participants in the study group were given printed copies of their photographs and were asked to show them to friends and relatives for discussion.

In the control group, no differences in the questionnaire rating at T0 and T1 were found, which indicates that participants not exposed to their photographs did not change their self-perception of attractiveness or willingness to undergo treatment within the 30-day period. In the study group, at T1, 50% of the participants had a lower opinion of their profiles than at T0; 11% were willing to undergo more comprehensive treatment to improve their smiles, and 45% were willing to undergo more comprehensive treatment to improve their profiles.

### *Conclusion*

The authors concluded that laypeople are not generally aware of their pro-

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files unless exposed to photographs and that exposure to pretreatment photographs would reduce the differences in actual and perceived levels of facial attractiveness. This would help bring patients' and orthodontists' views of facial esthetics more in line with one another. **Q1**

*Bonetti GA, Alberti A, Sartini C, Parenti SI. Patients' self-perception of dentofacial attractiveness before and after exposure to facial photographs. Angle Orthod 2011;81:517-524.*

## Prediction of Mandibular Canine And Premolar Widths

**D**uring the mixed dentition stage of dental development, it is important that the dentist be able to estimate the total width of the mandibular canines and premolars to properly manage impending arch-length deficiencies and to make decisions regarding space maintenance and serial extraction procedures. The objective of this study by Memon and Fida from the Aga Khan University Hospital, Pakistan, was to develop a regression equation to accomplish this.

The study sample consisted of 288 dental casts (182 females, 106 males; mean ages 14.4 and 14.3 years, respectively). The mesiodistal widths of all the mandibular teeth from first molar to first molar were measured with digital calipers. Pearson's correlation coefficient was used to assess the correlation between the total canine and premolar widths (TCPW) and the total widths of the mandibular first permanent molars and incisors (TWFMI). A paired *t*-test was used to compare the actual and predicted widths of the mandibular canine and premolars. A weak correlation was found to exist between the TWFMI and age, and between gender and the other 2 variables.

In this study, males were found to have greater tooth widths than did females. Because gender dimorphism

existed in this as well as other studies, the data were analyzed separately for males and females (Table 1).

Some previous studies have used only incisor width to estimate TCPW. This study is in agreement with other studies that found that including the mandibular molar width with the incisor widths is a better predictor for canine and premolar widths.

### Conclusion

The authors found a linear relationship between the total widths of the mandibular first molars and the incisors and the widths of the canines and premolars. The regression equations proposed in this study are a good prediction method to determine the widths of the unerupted canines and premolars. **Q1**

*Memon S, Fida M. Development of a prediction equation for the estimation of mandibular canine and premolar widths from mandibular first permanent molar and incisor widths. Eur J Orthod 2011;doi:10.1093/ejof/ejr015.*

## Effectiveness of Piroxicam and Ibuprofen Premedication

**S**ome surveys of orthodontic patients have shown that pain is among the most often cited negative effects of orthodontic treatment. In some cases, it has led to refusal or termination of treatment. This pain is produced by compression of the periodontal ligament as teeth move, which causes an inflammatory response by release of chemical mediators such as histamines, cytokines and prostaglandins. Attempts to alleviate this pain response have focused on prescribing analgesics such as aspirin and ibuprofen postoperatively.

More recently, research has concentrated on preoperative administration of analgesics to block the initial pain response and prevent or lessen postoperative

Table 1. Actual and predicted TCPW values

Gender	n	Actual values of TCPW		Predicted values of TCPW		Difference (predicted minus actual values of TCPW)		
		Mean	SD	Mean	SD	Mean	SD	p value
Female	100	41.14	2.10	41.12	2.11	0.02	0.30	.84
Male	100	41.96	2.17	41.98	2.18	-0.01	0.39	.67

Paired sample *t*-test. SD, standard deviation.

**Table 2. Mean pain scores of experimental groups**

Experimental groups	2 hours	24 hours	7 days
<b>Chewing</b>			
Placebo	4.1 ± 3.09	6.66 ± 2.19	2.69 ± 1.45
Ibuprofen	3.18 ± 2.99	5.32 ± 1.87	2.55 ± 1.88
Piroxicam	1.13 ± 2.66	3.05 ± 2.92	0.99 ± 2.73
<b>Biting</b>			
Placebo	6.41 ± 2.78	7.69 ± 2.84	2.93 ± 1.72
Ibuprofen	3.15 ± 2.44	7.08 ± 3.38	2.79 ± 2.54
Piroxicam	1.54 ± 3.15	5.01 ± 3.20	1.02 ± 1.67
<b>Fitting the front teeth</b>			
Placebo	4.81 ± 3.03	7.63 ± 2.91	3.57 ± 1.97
Ibuprofen	3.03 ± 2.52	7.27 ± 2.75	4.88 ± 3.62
Piroxicam	1.31 ± 2.72	4.32 ± 2.81	1.11 ± 2.72
<b>Fitting the back teeth</b>			
Placebo	4.41 ± 3.01	6.22 ± 3.32	2.44 ± 1.46
Ibuprofen	3.20 ± 2.19	5.90 ± 3.92	2.22 ± 2.38
Piroxicam	1.01 ± 2.59	2.36 ± 2.93	1.70 ± 2.24

Data are mean ± SD.

pain. Thus far only aspirin, ibuprofen and naproxen sodium have been studied.

Kohli and Kohli from Hitkarini Dental College and Hospital, India, compared the efficacy of ibuprofen, the gold standard for postoperative pain, with that of piroxicam, a nonselective cyclooxygenase inhibitor. The sample consisted of 90 patients between the ages of 13 and 20 years who were scheduled to have fixed orthodontic appliances placed. They were divided into 3 groups:


- Patients in the first group were given a placebo.
- Patients in the second group received 400 mg of ibuprofen preoperatively.
- Patients in the third group received 20 mg of piroxicam preoperatively.

The patients were asked to mark their pain experience on a visual analog scale (VAS)—with 0 indicating no pain at all and 100 indicating their worst pain experience—when chewing, biting, and fitting front and back teeth together at 2 hours and 6 hours, post-surgery, and at bedtime on the appointment day. Pain scores were also recorded at 24 hours and 2, 3 and 7 days after separator placement.

The results of the study showed that for pain from chewing, piroxicam significantly decreased pain scores compared with the placebo group. For pain on

biting, piroxicam reported lower pain scores than did both the placebo and ibuprofen groups. The piroxicam group also had the lowest VAS scores for fitting both the front and back teeth together.

### Conclusion

The authors concluded that 20 mg of piroxicam administered preoperatively resulted in a significant reduction in pain compared with ibuprofen and a placebo. Piroxicam also showed a longer duration of pain relief at 2 hours, 6 hours, bedtime, 24 hours, and 2 and 3 days after separator placement, compared with ibuprofen. The authors recommended the use of 20 mg of piroxicam 1 hour prior to separator placement. 

*Kohli SS, Kohli VS. Effectiveness of piroxicam and ibuprofen premedication on orthodontic patients' pain experiences: a randomized control trial. Angle Orthod doi:10.2319/022411-134.1.*

## Effects of Orthodontic Treatment on Diet and Behavior

This qualitative study consisted of interviews with 10 patients (4 boys, 6 girls; aged 11 to 14 years) who had fixed orthodontic appliances placed in both arches. Abed Al Jawad et al from Queen Mary University of London, United Kingdom, conducted interviews within 4 to 6 weeks following appliance placement. The patients were in good health with no chronic diseases or syndromes. The interviews were semistructured in a nonclinical setting with no time constraints.

Two main themes were identified from the interviews. The first was patient experience related to pain, and the second was patient experience related to dietary changes. All patients reported some pain and discomfort during the first few days. Seven of the 10 reported pain duration lasting only the first few days; 3 reported a longer duration of pain. The severity of the pain was rated as mild to severe, with only 3 patients reporting to have taken analgesics. With regard to diet, 9 patients reported difficulty biting and chewing harder foods, and 3 reported discomfort from food getting stuck in their appliances.



All patients reported that their diets had changed due to treatment and that they were eating less. The majority of the patients moved to a soft diet because it was easier to chew and less painful. Eight patients reported changing their diets because of the instructions given to them by their orthodontist, and 7 felt that their diets were healthier because they were eating fewer snacks, avoiding hard and high sugar-content foods, and practicing better oral hygiene.

### Conclusion

Patients reported adopting a healthier diet in response to their treatment. The findings of this study show the need to explore the issues of dietary changes in response to orthodontic treatment in a qualitative manner in a larger population. **OI**

*Abed Al Jawad F, Cunningham SJ, Croft N, Johal A. A qualitative study of the early effects of fixed orthodontic treatment on dietary intake and behaviour in adolescent patients. Eur J Orthod 2011;doi:10.1093/ejokjr032.*

## Evaluation of Children's Masticatory Performance

The digestive process begins with the breaking down of food to produce greater surface area and facilitate gastric emptying. To determine differences in masticatory performance related to age, gender and type of malocclusion present, Barrera et al from CES University, Colombia, performed a study of 450 children and adolescents (244 boys, 206 girls) who were divided into 4 age cohorts:

- Children in cohort 6 were between the ages of 5.5 and 6.5 years.
- Children in cohort 9 were between the ages of 8.5 and 9.5 years.
- Children in cohort 12 were between the ages of 11.5 and 12.5 years.
- Children in cohort 15 were between the ages of 14.5 and 15.5 years.

The participants were also broken up into normal occlusion, class 1 and class 2 malocclusion groups. Annual measurements taken over 3 consecutive years were made on study models. Approximately 22% and

14% of the original sample was lost after the first and second years, respectively, of the study. The peer assessment rating (PAR) index was computed for each set of models. Each participant was asked to place 3 tablets of CutterSil, a condensation silicone impression material 5 mm thick and 20 mm in diameter, on the tongue and to chew naturally for 20 chews. The process was repeated until 10 grams of the material had been chewed and expectorated onto a paper filter. After drying, the median particle size was calculated.

Results showed that median particle size (MPS) decreased from age 6 to 17 years and though there was no difference in MPS between the 3 occlusion groups nor did changes in the PAR index show any differences, girls had significantly smaller MPS than did boys at ages 12 and 16 years. Age was the most important factor affecting mastication in this study. This may result from increase in size and strength of the masticatory muscles. This finding is in agreement with other studies, which showed greater masticatory efficiency in older children and in adults. There was a slower increase in chewing efficiency between ages 9 and 12, which may be related to the transition from the mixed to the permanent dentition.

### Conclusion

Masticatory performance improves with age, an improvement related to eruption of the first and second permanent molars. Mild forms of class 1 and class 2 malocclusion have no effect on masticatory efficiency, and gender differences in this study were related to the earlier eruption of molars and bicuspid in girls. **OI**

*Barrera LM, Buschang PH, Throckmorton GS, Roldán SI. Mixed longitudinal evaluation of masticatory performance in children 6 to 17 years of age. Am J Orthod Dentofac Orthop 2011;139:e427-e434.*

### IN THE NEXT ISSUE

- E-space preservation and mandibular second molar impaction
- Motivational techniques for oral hygiene and gingival health
- Rapid palatal expander and speech

Do you or your staff have any questions or comments about **Orthodontics Alert**? Please call or write our office. We would be happy to hear from you.