

# THE READERS' CORNER

JOHN J. SHERIDAN, DDS, MSD

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*(Editor's Note: The Readers' Corner is a quarterly feature of JCO in which orthodontists share their experiences and opinions about treatment and practice management. Pairs of questions are mailed periodically to JCO subscribers selected at random, and the responses are summarized in this column.)*

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1. In diagnosing arch-length discrepancies, do you use a Bolton analysis? If so, how do you use it?

Forty-seven percent of the respondents routinely used a Bolton analysis to aid in the determination of arch-length discrepancies, while 10% used the analysis occasionally.

In general, clinicians used the Bolton analysis to measure tooth-size discrepancies and evaluate how they would affect their treatment plans. A particularly comprehensive reply was submitted by Dr. Christopher Matthews of Grants Pass, Oregon:

- "I measure the combined mesiodistal width of the maxillary and mandibular incisors and compare this to the Bolton standards. If the discrepancy is small, I will note it and plan to reproximate in the arch with excessive tooth mass at the end of treatment. It is routine for me to reproximate the anterior region to correct these minor discrepancies. If there is an excess in tooth mass in the lower arch greater than about 2.5mm, I will determine if it's due to diminutive maxillary lateral incisors. If the crown form is unacceptable, I will plan to have these teeth built up with

bonding or a porcelain facing at the end of treatment. If the discrepancy cannot be traced to the lateral incisors and the crown form of the maxillary anterior teeth is acceptable, I will consider removing one lower incisor and do a tooth setup to determine if a satisfactory treatment result can be obtained."

*Do you use the Peck analysis? If so, how do you use it?*

Only one respondent used the Peck analysis. He felt it made a valuable contribution to his diagnosis and treatment planning, with emphasis on the estimation of post-treatment stability. In his opinion, if the ratio of the faciolingual and mesiodistal dimensions of the mandibular anterior teeth (MD/FL) is greater than .9, a reduction in the mesiodistal dimension of anterior teeth would be advisable, after checking the amount of available enamel by x-ray.

*Do you use any other tooth-size analysis? If so, how?*

The vast majority (91%) did not use any tooth-size analysis other than the Bolton analysis. Those who did rely on other analyses tended to use a setup when they were suspicious of an impending tooth-size problem. Ten percent said they felt confident enough in their experience to rely on visual appraisal of crowding.

*Do you strip anterior teeth? When and why?*

All respondents stripped anterior teeth either routinely or occasionally. The predominant reason was to alleviate mild-to-moderate crowding. Other reasons, in descending order of frequency, were:

- To achieve better incisal relationships.



Dr. Sheridan is an Associate Editor of the *Journal of Clinical Orthodontics* and a Professor of Orthodontics, Louisiana State University School of Dentistry, 1100 Florida Ave., New Orleans, LA 70119.

- To improve stability and reduce the tendency for relapse, due to the altered morphology of the stripped proximal surfaces.
- To reshape malformed teeth and unusual proximal surfaces to a more normal morphology.
- To correct slightly deviated midlines.
- To reduce or eliminate triangular interproximal spaces.
- To avoid extractions in selected cases, usually adult.

Representative comments included:

- "With screwdriver-shaped maxillary anterior teeth, I reduce the mesiodistal dimension at the gingival one-third to allow space to bring the incisal one-third together."
- "Stripping anterior teeth helps correct discrepancy cases at the end of treatment. It also flattens the contact points of the incisors, and this, I believe, is beneficial for retention."
- "I find this very helpful to create space for post-treatment movement of incisors when retainers are not worn as directed. Also for lower anterior crowding when I have achieved Class I cuspids with acceptable incisal relationships."
- "I strip anterior teeth when there is a mandibular excess due to microdontia of the upper lateral incisors. I can't get Class I cuspid relationships without doing this."

*Do you strip posterior teeth? When and why?*

Although 78% of the clinicians said they stripped posterior teeth, most of these added the qualifier "occasionally", "sometimes", or "seldom". The primary reason for posterior stripping (mentioned by 71%) was to gain arch length in crowded cases, with strong emphasis on trying to avoid extractions in adults. The air-rotor stripping technique advocated by Sheridan was frequently involved. Additional reasons for posterior stripping, in descending order of frequency, were: to reduce oversize posterior teeth, especially second premolars; to achieve better buccal and incisal relationships; to simplify the mechanics; and to achieve treatment goals more quickly, especially in adults. Some interesting replies:

- "This is an invaluable tool in treating mild-to-moderate crowding in my adult patients. I find

extractions in adults inevitably result in opening of post-treatment extraction spaces. Stripping substantially shortens treatment time, and that is an important factor when treating adults."

- "I strip posterior teeth less frequently than mandibular anterior teeth. I use this treatment option to gain arch length in a borderline extraction case that I am treating on a nonextraction basis."

*Are stripped teeth stable?*

All the respondents thought stripped teeth were stable, although modifiers such as "usually", "more", and "probably" were often added. The most common rationale was that the flattened proximal surfaces of the incisors promoted a more stable environment. Typical comments were:

- "After stripping, the anterior teeth are probably more stable. The posterior teeth should be equilibrated after stripping to preclude the possibility of space opening."
- "Answering this question is difficult because there are so many variables associated with stability. I believe that stripping can improve stability, but it is certainly not a major element in the overall picture. It's probably just an aid, but I'll settle for what I can get."

*How do you treat an arch-length discrepancy of less than 5mm?*

The majority of respondents (81%) used a combination of techniques. By far the most prevalent involved stripping and slight expansion. Twelve percent opted for the extraction of either bicuspid or a lower incisor. Less common techniques, in descending order of frequency, were: holding leeway and "E" space in the mixed dentition, headgear, lip bumper, selective torquing, and settling for a compromised result. Individual comments included:

- "This depends on multiple factors. One formula that I use is: 5mm of crowding + incisor protrusion (cephalometric discrepancy) + lip incompetence = extractions."
- "I will strip interproximally with possibly some anterior flaring if the lower incisors are behind or at the facial line (Na to Po)."

2. *Do you use serial extraction, and, if so, what is your usual regimen?*

Seventy-two percent of the respondents occasionally used one form or another of serial extraction; 12% used it frequently, and 18% reported that they never used serial extraction procedures.

Nearly half of the clinicians who used serial extraction followed the classical sequence of deciduous cuspids, deciduous first molars, and permanent first premolars. Eight percent favored extraction of only deciduous first molars and first bicuspid, while an equal percentage extracted only deciduous cuspids. Another 28% used various sequences of deciduous and permanent tooth removal, but the permanent teeth were always first premolars. The remaining 8% had no set protocol, but extracted teeth "to the demands of the situation and as the case developed".

There was a general tendency to use lingual arches in conjunction with serial extraction and to monitor space requirements throughout the sequence. Several clinicians noted that their purpose in initiating serial extraction was to resolve an impending crowding situation and to encourage the premolars to erupt prior to the permanent cuspids. Some individual comments were:

- "I can't imagine a contemporary orthodontist not having a serial extraction program among their applicable treatment plans."
- "I think it terribly important to constantly monitor the serial extraction case and to initiate in-course alterations whenever it becomes obvious that the initially projected outcomes will not come about."

*What are your criteria for extracting permanent teeth?*

While all respondents listed multiple criteria for removing permanent teeth, 92% indicated that two factors—the degree of crowding and the degree to which protrusion affected the profile—were the most important. Additionally, 18% said they would extract teeth due to extant or potential pathology if there were faulty restorations, obvious decay, or periodontal involvement with certain teeth. A surprising number of other rea-

sons were listed, including, in descending order of frequency:

- To obtain the necessary room for Class II or III correction.
- To position the mandibular incisors more favorably.
- To gain a favorable periodontal environment.
- To resolve subdivision cases.
- To avoid second molar impaction.
- To improve the vertical dimension, especially in open-bite cases.
- To avoid excessive expansion in adolescent patients.
- To assist in midline correction.
- To avoid expansion in adult patients.
- To correct lip incompetence.
- As an alternative in borderline uncooperative patients.

One thoughtful response:

- "The days of thinking that the extraction of permanent teeth would eventually lead to a stomatognathic crisis are thankfully over. This reasoning was supported by a bridge of anecdotes that proved to be too flimsy and insubstantial to support the heavy traffic of data and observation."

*What are your criteria for the choice of teeth to be extracted?*

The general guidelines for the majority of clinicians were:

- Four first bicuspid in Class I crowded cases.
- Maxillary first bicuspid and mandibular second bicuspid in Class II crowded cases.
- Maxillary second bicuspid and mandibular first bicuspid in Class III cases.
- Maxillary first bicuspid in Class II patients with good mandibular archform and maxillary protrusion.

A few orthodontists felt that extractions would increase post-treatment stability, and that the removal of one incisor might be the best way to achieve acceptable anterior arch alignment, especially in adults. Some individual comments:

- "I would extract a second bicuspid with a large amalgam in lieu of a perfectly good first bicuspid."

• “I believe no tooth is sacred. At one time or another I have probably ordered the extraction of every tooth in the dental arch. It all depends on the demands of the case. This is especially true with adult orthodontics, where accepted tooth-removing formulas may not be in the best interest of the patient.”

*Do you ever extract second molars, and, if so, how do you proceed?*

Two-thirds of the respondents indicated that they never extracted second molars. The remainder of the respondents did so “rarely” or “infrequently”. These clinicians said they removed second molars when they were impacted, had large restorations of doubtful longevity, or were periodontally involved.

About one-quarter of those who extracted second molars did so only in the maxillary arch, for the purpose of distalizing the first molars into the created space using compressed-coil springs or headgear. A frequently mentioned criterion was the presence of acceptable third molars that could be identified on radiograph or had actually erupted in older patients. Comments of interest were:

- “Occasionally I extract second molars if they are impacted, decayed, or malformed, or if there is no opposing tooth and it’s supererupted.”
- “I extract maxillary second molars only, and infrequently. I do this in instances where there is a mild Class II with moderate overjet, there is little remaining mandibular growth, and the upper third molars are in good position.”
- “I have extracted second molars, and always with apprehension—lots and lots of apprehension.”

*When and why would you extract only second bicuspid?*

Most clinicians gave multiple reasons for extracting second bicuspid, the most prevalent being mild-to-moderate lower crowding coupled with mild-to-moderate protrusion. Other purposes were as an aid in correcting an open bite or a Class II molar relationship, or as an alternative treatment plan for the uncooperative patient. The majority of respondents extracted mandibular

second bicuspid in Class I and II cases, while maxillary second bicuspid were generally removed in Class III cases to obtain an acceptable molar shift into a Class I relationship.

*Do you believe in the extraction of third molar tooth buds? If so, how do you decide, and if not, what are your main objections to enucleating third molar buds?*

More than 80% of the respondents did not endorse the extraction of third molar tooth buds, and of those who did, it was only on a selective basis. In these cases, the clinicians believed they would eventually cause more severe problems than simple impaction—for example, the third molars were going to develop on top of the second molars or could impact the second molars.

The most common objection to removing third molar tooth buds was that there is no way to predict the eventual fate of the buds, so why try to second-guess the dentoalveolar development process? Closely following this was a concern about submitting a young patient to a potentially traumatic surgical procedure.

A few clinicians preferred to wait until there was some definite root development of the third molars prior to extraction, and several mentioned the lack of supporting data for the procedure. Some individual comments were:

- “Third molar enucleation is usually performed quite early, and not all third molars are a problem. In some cases third molars can provide an additional ‘ace in the hole’ if posterior teeth are lost due to trauma, caries, or periodontal problems.”
- “When I ordered enucleation of third molar buds, I observed too many dental cysts or bits of teeth forming in the removal sites. I believe this resulted from inadequate enucleation. I don’t do this any more.”

*Do third molars contribute to mandibular anterior crowding?*

Nearly three-fourths of the clinicians did not believe this to be so, but many of them commented that third molars were just one of many factors that contribute to lower anterior crowding. About 20% thought third molars did con-

tribute to anterior crowding, and the remainder said they didn't know. Again, many respondents noted that there is no definitive data to substantiate the relationship of third molars to mandibular anterior crowding. Interesting replies included:

- "It's possible for third molars to play a part in lower anterior crowding. However, this can be used as a convenient excuse for the faulty mechanics that was the real reason for post-treatment incisor relapse."
- "I still believe they do contribute, in spite of the lack of supportive data."

*If you start treatment before the eruption of the second molars, do you strap them up later?*

Seventy percent of the respondents said they banded or bonded the second molars before finishing a case. Of these, however, 62% did so on an "as needed" basis. Many clinicians indicated that they were more likely to band or bond mandibular second molars than maxillary second molars. One comment was:

- "I have heard it said that good orthodontists always strap up the second molars. I don't think that's true. I believe good orthodontists strap up second molars when they need to be strapped up."

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- Dr. Michael D. Adkins, Jasper, IN
- Dr. John P. Anderson, Atascadero, CA
- Drs. R. Scott Anderson and Richard H. Portalupi, Vacaville, CA
- Dr. Kevin J. Andrews, Sparks, NV
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- Dr. Bartley H. Benson, Hermitage, TN
- Drs. Jackie Berkowitz and Ewa Byczek,

Columbus, OH

- Dr. Steven P. Billings, Parkville, MO
- Dr. Joel F. Brodsky, Lakewood, CA
- Dr. D. Gregory Brooks, Dunn, NC
- Dr. Robert D. Callahan, Camillus, NY
- Dr. George M. Ciavola, Rutland, VT
- Dr. Dennis B. Claridge, Lincoln, NE
- Drs. Stanley S. Conner and Albert J. Apicella, Mechanicsburg, PA
- Dr. William E. DeVries, Jenison, MI
- Dr. Dawes Edwards, Orangeburg, SC
- Dr. Joel Elfman, Voorhees, NJ
- Dr. Richard A. Farmer, Liberal, KS
- Dr. John T. Forrester, Aberdeen, WA
- Dr. Myron D. Guymon, Logan, UT
- Dr. William E. Harrell, Jr., Alexander City, AL
- Dr. Paul C. Hermanson, Marshalltown, IA
- Drs. James R. Hugg and Teresa Salino-Hugg, Burlington, IA
- Dr. Greg Jorgensen, Rio Rancho, NM
- Dr. Michael G. Kelley, Indianapolis, IN
- Dr. William R. Koplun, Franklin, MA
- Dr. Matthew F. Linaker, Tucson, AZ
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- Dr. Michael L. Ovens, Phoenix, AZ
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- Dr. Chester E. Spencer, Jr., Grand Prairie, TX
- Dr. Michael G. Steinberg, Millburn, NJ
- Dr. Goodwin G. Thomas, Jr., Rock Hill, SC
- Drs. Don J. Thompson, Jeffrey J. Thompson, and Douglas J. Thompson, Overland Park, KS