THE EDITOR'S CORNER

Ortho-Heuristics

Heuristics are mental shortcuts that enable a person to solve problems quickly and efficiently. Think of them as rule-of-thumb strategies to shorten decision-making time. For example, children learning to spell English are taught the mnemonic (a kind of heuristic), "i before e, except after c." As orthodontists, we employ heuristics every day to help us solve challenging malocclusions and manage our busy schedules. Here are six of my favorite *ortho-heuristics*.

1. "Avoid fixed functional appliances when IMPA (the mandibular-incisor-to-mandibular-plane angle) exceeds 105°." An ideal IMPA of 90-95° is the cornerstone of Charles Tweed's diagnostic facial triangle, determining the denture's anterior limit.[1] Because a fixed functional appliance advances the lower dentition, a pretreatment malocclusion with excessive overjet and mandibular-incisor proclination should be treated instead with distalization, extractions, or surgery.

2. "Mandibular-incisor spacing in the presence of retrognathia indicates that a functional appliance may be ineffective." Although it is tempting to treat such a patient during adolescence with a Herbst, the overjet will likely return once the appliance is removed—especially if the patient is also brachycephalic. Therefore, a patient presenting with excessive overjet and mandibular-incisor spacing should be forewarned of the potential need for mandibular-advancement surgery.

3. "Create 150%, or 'tooth-and-a-half,' space for impacted canines." Labially displaced maxillary canines (LDC) are associated with arch constriction and dental crowding. Excess canine space should be opened first with an expander or an open-coil spring before the tooth's surgical exposure, even if this step temporarily pushes the maxillary dental midline away from the facial midline. If an LDC fails to erupt, greater canine spacing is probably needed.

4. "Cantilever arms save lateral incisors." Orthodontists commonly bring in LDCs by distalizing before extruding to avoid damaging the lateral incisors, but this approach does not always guarantee success. The safest direction to move the canine initially is labially, off and away from the lateral-incisor root. This is accomplished by incorporating buccal cantilever arms into expanders or holding arches. The canine should be activated to the cantilever arm instead of directly to the archwire.

5. "Remain in round wires to resolve incisor rotations." Orthodontic technicians often advance into rectangular nickel titanium archwires prematurely, before all incisor rotations are resolved. Since elastomeric ties cannot fully engage the rectangular wire into the bracket slots, the rotations fail to correct. While segmental elastic chains or interbracket open-coil springs on rectangular archwires are somewhat effective, a better solution is to step back into a lighter, round .018" nickel titanium archwire.

6. "Ten-millimeter-wide central incisors or 10mm of crowding indicates the need for premolar extractions."[1] Rapid maxillary expansion produces only about 5mm of arch length and cannot obviate the need for premolar extractions. Therefore, if a preadolescent patient presents with extra-wide central incisors or bilaterally impacted canines, I will initiate serial extraction to allow for "driftodontics" during the recall phase, rather than initiating Phase I treatment.[2]

Heuristics allow you to make reasonable decisions based on a modicum of information, but they can also lead to errors if you are unaware of their limitations. For example, while "i before e, except after c" may be a useful reminder of typical spelling patterns, there are more than 900 exceptions to the rule. A personal set of ortho-heuristics can be a valuable tool for improving practice efficiency, as long as you remember that the only rule-of-thumb absolute is to "never say 'never,' and never say 'always.'" NDK

REFERENCES

1. Kravitz, N.D.: Calculating crowding, J. Clin. Orthod. 57:317, 2023.
2. Kravitz, N.D.: Phase None treatment, J. Clin. Orthod. 57:85, 2023.