



Quick Ceph Systems, Inc.

info@quickceph.com

858-404-0808

Treatment Planning with Quick Ceph Studio™

Quick Ceph is the essential treatment planning tool. No more mental acrobatics. Visually plan, track, and advertise your treatment plans. This minimizes errors during treatment, and best of all, it is available with just a few clicks! Distinguish yourself from other practitioners by becoming a treatment planning powerhouse.

Dear Doctor,

March 1, 2015

During your orthodontic training you have learned how to take dental and medical records, diagnose and trace radiographs, design treatment plans, band and bond teeth and apply and adjust wires and retainers. Some of these procedures you can delegate to a trained assistant, but treatment planning is not one of them. Since you spend a considerable amount of time writing treatment plans in your professional life, you should use the best available tools to help you to be as precise and accurate as possible without wasting time.

Treatment planning is the core skill of an orthodontist. You will always have to do it yourself. You cannot delegate it.

Traditional treatment planning is done by writing down the diagnostic findings, the objectives of a mental treatment simulation and the treatment sequence.

Here is an **abbreviated example** of a 12 year old girl:

1. Diagnostic Findings: Mild dolichofacial, severe class II skeletally, severe class II/1 dentally, mild prognathic mx, normal md, severe protrusive mx1, slight protrusive md1, moderate protrusive lower lip, -1.0mm overbite, ALD -6mm, 0mm Bolton discrepancy.
2. Treatment objectives (the traditional way): Non-extr., correct class II, close open bite, recline upper incisors, procline lower incisors, round out mx & md arches.
3. Treatment Sequence: Bond mx and md, high pull head gear, retainer.

Since most nonclinical diagnostic findings are algorithmically or computer generated from cephalometric and dental landmarks you do not have a lot of work to do especially if a trained assistant traces lateral radiographs and models.

But how do you best derive the patient's treatment objectives from the diagnostic findings? Traditionally you concentrate, mentally combine and calculate the multiple diagnostic findings. First you think about solving the arch length

discrepancy (ALD) without extraction. You imagine what skeletal and dental movements will occur with growth as well as various headgears, functional appliances, elastics and TADs. You are very careful not to make the patient more dolichofacial. Additionally, you mentally picture the required anchorage and how to move the upper and lower incisors. At last you think about the effect of the orthopedic and dental movements to the profile. Now you keep this first mental treatment draft in mind and try the same case with extraction of four first bicuspid. Subsequently, you imagine a scenario with extraction of upper first bicuspid only. Lastly, you imagine the outcome with surgery. At the end you choose the best treatment draft out of the four imagined, write the objectives of this mental simulation down and call it treatment objectives.

Why would you force yourself through all these mental acrobatics and record the result in an inadequate form? An architect's attempt to record a text based plan for a house would be absurd—house with two stories facing south, 7 windows in first story plus door, 8 windows in second story, 4 bedrooms, 3 baths, flat roof, yellow paint. By the same measure a supermarket cashier does not add the cost for your groceries by hand on scratch paper?

It is absurd that most practitioners still perform this mental balancing act every day. Instead, modern practitioners should use computer algorithms with visualization to help them get and record multiple treatment options. **Treatment planning with Quick Ceph Studio is faster, more precise and incredibly reproducible.** Furthermore, these plans can easily be communicated to patients, referring doctors and third party payment entities. To be clear, Quick Ceph Studio does not make any decisions for clinicians, but it automates nearly everything else. It is strange that most orthodontists use computers to store and manipulate images, trace cephalometric radiographs and organize textual diagnostic information but stop there. This is like buying a car, turning on the engine to heat the cabin when it is cold, but putting a horse in front of it to drive to town. It is stranger still that most orthodontic residencies do not treatment plan this way because it provides an improved understanding of changes due to growth and therapy.

Interactively simulating orthodontic and surgical treatment options with Quick Ceph is faster and more accurate than performing mental arithmetic for the same task. It makes sense to **generate various treatment options for all patients**, not just the apparently difficult ones that require surgery. This way you will start to recognize patterns in your patients that help to determine a case's difficulty. You will be surprised how often some at the first glance "easy" cases become really fairly difficult. This saves chair time and improves planning. After all, you do not wear a seatbelt only when you know you will be involved in an accident.

A large number of orthodontists use Quick Ceph Studio. **Those that regularly generate treatment simulations enthusiastically claim that Quick Ceph has the biggest impact of all technology in their practice, and that their patients are very impressed.**

Here is a **step by step abbreviated sample guide** on how to generate four different treatment simulations of the dolichofacial and crowded case summarized earlier. Less complicated cases typically require only one or two treatment simulations.

Treating our patient is difficult because she is growing and she is dolichofacial. Since dolichofacial and severe brachyfacial cases are very difficult to treat we need to carefully choose a non-extraction, extraction or surgical treatment plan. Additional considerations include: choosing the best class II corrector, deciding on the appropriate level of anchorage and correcting the profile if possible.

Examining the diagnostic findings reveals additional complications. The mandibular crowding is 6mm. Options for creating this space without extractions include any combination of the following: moving the lower molars posteriorly, proclining the incisors, inclining posterior teeth buccally, stripping and maintaining pre-existing E-spaces. In dolichofacial cases it is difficult to gain this 6mm without extraction. Almost every movement will tend to open the facial axis which then makes it more difficult to correct the class II and the open bite. Also, moving the incisors forward will move the lips forward and might result in a profile that is too full.

Extractions, on the other hand, will create $2 \times 7.5\text{mm}$ (approximate size of bicuspid) - 6mm (crowding) = 9mm. Closing a space of 9mm is also difficult, especially in brachyfacial cases. The movements necessary to close large spaces—moving the molars forward and the incisors backward—tend to flatten the lips and could create a dished-in profile. This is a particular problem for girls as they grow older.

Let us assume we would like to simulate these steps in Quick Ceph starting with new patient records. First, your assistant imports the radiographs and pictures, aligns the photos and digitizes all lateral and dental landmarks. Now you review all records and especially the Summary Description, the ALD and the Bolton discrepancy.

Look at the lateral tracing, go to the Session menu and select New Growth Forecast. This creates a forecast tracing for a chosen amount of years without treatment. Enter 3 for a three year Growth Forecast because dolichofacial patients usually require a longer treatment time than the default two years.

Go to the Session menu of Quick Ceph Studio and select New Treatment. This creates a copy of the Growth Forecast tracing and is named Treatment 1.

1. The first treatment attempt simulates a cervical headgear for class II correction without extraction. Go to the Show Reference button and superimpose the initial tracing. You will see how the upper molar grows forward and downward. Since a cervical headgear will hold the mx6 against growth but will unfortunately extrude it, choose the Treat tool and move the molar back to the pre growth position (depending on your anchorage) but extrude it about 2mm. As you know cervical headgears extrude the upper molars in dolichofacial but not in brachyfacial cases.

Open rotate the mandible around the hinge axis so mx6 and md6 do not overlap. Eliminate the 6mm ALD in the Steiner Box to the right of the treatment tracing window. Move md1 forward about 2mm and md6 backward about 1mm for a total space gain of 6mm (3 mm right + 3mm left). Torque and move mx1 to touch md1. Observe or change the interincisor angle and the distance md1 to the APo line. Slightly adjust the profile lines around the lips. Morph the lateral photo. You will see clearly that this treatment simulation is unacceptable: The class II was not corrected, the bite opened more, the interincisor angle became too obtuse and the profile looks worse than in the initial tracing and photo.

2. The second treatment attempt simulates a high pull headgear or TADs with maximum anchorage and the extraction of upper and lower first bicuspid.

Hold mx6 against growth and do not open the facial axis. As before, superimpose the initial tracing but move mx6 back to the original position without extrusion. By mainly retracting mx1 and protracting md6 class I can be achieved. This treatment simulation demonstrates an acceptable occlusion with a balanced profile.

3. The third treatment attempt simulates a high pull headgear or TADs as before but with extraction of only the upper first bicuspid. This solution requires less cooperation.

4. The fourth treatment attempt simulates surgery by impacting the maxilla and advancing the mandible. While it might achieve the best facial esthetics it is complex, riskier and more expensive.

Each of the previous four **treatment simulations take only a few seconds of your time**. All four options are stored and documented ready for a detailed discussion with your patient, your referring dentist and surgeon. You can explain the effect to the face and why extraction is required or why surgery is a reasonable option.

Stop performing mental acrobatics and stop forecasting natural growth and the effect of various appliances in your mind. **Fully document your thought process. Advertise your knowledge to your patients.** Show dentists that there is more to orthodontic treatment than prescribing removable appliances. After all, we live in a modern age—you use an interactive word processor and not a pencil on scratch paper.

Sincerely,
The Quick Ceph Team