CLINICAL:ERGONOMICS

ARE DENTAL LOUPES IMPROVING OR WORSENING YOUR NECK HEALTH?

Knowing how to choose the right loupes could make a big difference for your health. [by Bethany Valachi, PT, MS, CEAS]

Imagine spending $1,500 on new loupes, and you suddenly begin to develop neck pain, or, your existing neck pain worsens. This is an all-too-common problem that I frequently encounter in my dental ergonomic consultations. On the other hand, I have repeatedly seen well-designed ergonomic loupes improve or completely resolve neck pain. So how do you know if your loupes are improving or worsening your health?

Of all the criteria for selecting loupes (working distance, frame size, scope position, declination angle, coaxial adjustment), declination angle is the most important ergonomic factor that can make or break your health.

Consider that working with the neck flexed forward only 20 degrees or more for 70 percent of the working time has been associated with neck pain. While no loupe systems provide completely neutral head posture (ear-over-shoulder), loupes with a steep declination angle may significantly improve operator working postures in dentistry, thereby lessening risk of musculoskeletal disorders and improving clinician comfort. Therefore, to prevent musculoskeletal injury, loupes should enable you to work with less than 20 degrees of forward head posture.

The importance of declination angle

The angle that your eyes are inclined downward toward the work area is the declination angle. (**Fig. 1**) This angle should be steep enough to help you attain a comfortable working position with minimal forward head posture. To stay within this safe head posture requires a loupe with a steep declination—from 40 to 50 degrees. Vertically adjustable flip-up loupes are the only option on the market that I have seen that consistently keep operators within this safe head posture.

Many team members opt for through-the-lens loupes, which typically cannot achieve greater than a 30-degree declination angle, and very often force the operator into unsafe forward head postures. Among my dental students, I have repeatedly measured the declination angle of TTL loupes that were promised to have a declination angle of 40-45 degrees, only to discover they had only a 20-25 degree declination angle. (**Figs. 2-3**)

In the past, many female dentists and hygienists have steered clear of flip-up loupes due to the heavier weight. With the new ultra-light weight flip-ups on the market today, weight is a no longer an issue. Sales reps often dissuade customers from purchasing flip-up loupes, saying they can come out of adjustment. Yes, if you sit on them or run over them with you chair, you may need to readjust them. However, if you follow the manufacturer's guidelines for adjustment and securely tighten the hinges with the enclosed wrench, they should stay adjusted for quite some time.

When assessing flip-up loupes, keep in mind that scope position is critical. You can have loupes with the best declination angle on the market, but if they sit high in relation to your pupil, you will lose much of the ergonomic benefit, since you must lean further forward to look through the scopes. There are several non-ergonomic flip-up loupes on the market are not vertically adjustable, which will cause the same poor postures as seen with most TTL loupes. Therefore, vertical adjustability is an essential feature on flip-up loupes. Companies achieve this with a vertical slide mechanism (**Fig. 4**), an 'extender' or a ball-and-socket system. All of these vertical adjustability systems greatly improve declination angle and head posture. At the time of this writing, there are only four loupes manufacturers that make vertically adjustable loupes.

To further improve your declination angle, make sure your flip-up scope is mounted on frames with a pantoscopic tilt feature. A pantoscopic tilt feature angles the bottom of the lenses toward the cheek which allows a steeper downward angle of the scope.

October is Ergonomics Month! Loupes are an expensive investment that should last you many, many years. Take the time, do the research and find a loupe that will improve your health … not make it worse! ●

For a free list of manufacturers and models of vertically adjustable flip-up loupes that meet the author's ergonomic criteria, please email info@posturedontics.com.

ABOUT THE AUTHOR

Bethany Valachi, PT, MS, CEAS is author of the book, "Practice Dentistry Pain-Free: Evidence-based Strategies to Prevent Pain and Extend your Career" and clinical instructor of ergonomics at OHSU School of Dentistry in Portland, OR. A physical therapist who has worked exclusively with dental professionals for nearly 20 years, she is recognized internationally as an expert in dental ergonomics, and has provided over 700 lectures worldwide. She has published more than 50 articles in peer-reviewed dental journals and has developed patient positioning and exercise DVDs specifically for dental professionals. She offers free newsletters, articles, videos and product reviews on her website at www.posturedontics.com. Bethany can be reached at info@posturedontics.com.

1 ***Vertically adjustable flip-up loupes*** *enable the steepest declination angle (45 degrees shown).*

2 ***These TTL Loupes*** *were promised to have a 40-degree declination angle, but were actually only 20 degrees.*

3 ***Vertically adjustable flip-up loupes*** *can be adjusted as steeply as needed, easily providing a safe head posture.*

4 ***A vertical slide feature*** *ensures that the scope sits low enough in relation to the pupil to maximize declination angle.*