

Summary Document on the Use of High-Speed Handpieces in the Removal of Coronal Adhesive

HB 372 in the 2025 General Legislative Session, sponsored by Representative Ariel Defay, created expanded functions for dental auxiliaries, including the maxillofacial administration of botulinum toxin, the placement of direct restorations, and the removal of coronal adhesive. HB372 directed DOPL to create rules regarding the education and minimum qualifications to obtain a certification and the parameters for performing an expanded function. While writing the rule, the Utah Dentist and Dental Hygienist Licensing Board reviewed and discussed whether dental auxiliaries should be able to use high-speed handpieces when removing coronal adhesive multiple times. DOPL appreciates and recognizes the substantial work, time, and effort of the Board Members on this issue. This document provides a brief summary of the previous discussions and current arguments for and against the requirement. This document also includes a list of questions that DOPL Director Mark Steinagel needs additional information on during the March Dentist and Dental Hygienist Licensing Board Meeting to make a final determination on this question.

Director Review Process:

This topic is returning to the Utah Dentist and Dental Hygienist Licensing Board for the review and education of DOPL Director Mark Steinagel. DOPL gives significant deference to the professional expertise of the relevant licensing boards during the rulemaking process. The DOPL Director needs to approve all final rules, ensuring that they adhere to the stature and reflect sound public policy. While most rules are able to be approved without substantial involvement from the DOPL Director, direct involvement is required when there is potential for controversy around the rule. After orthodontists reached out to Mark following the December Board Meeting, Mark determined that the question of whether dental auxiliaries could use high-speed handpieces in the removal of coronal adhesive could create enough controversy that it was important for Mark to be personally involved in the rulemaking process. When reviewing this topic internally, Mark developed a number of questions that he needed additional education on to confidently make a final decision. Mark and DOPL recognize the time and effort that the Board has put into this discussion over the past year, and appreciate all of the Board Members' work. This topic is being revisited to ensure Mark is fully educated on the topic, including all of the previous work and discussion of the Board, so that Mark is comfortable enough to make a determination on the final rule.

Authority to Create Rules on Expanded Functions of Dental Auxiliaries:

Utah Code 58-69-608, which was added to statute by HB372 in the 2025 General Legislative Session, creates three new expanded functions and requires DOPL to create rules to implement the new functions. The rules are required to include the education and minimum qualifications to obtain a certification and the parameters for performing the new expanded functions.

Scopes of Practice:

HB372 did not change the scope of practice for dental auxiliaries without expanded functions. The only changes that have been made to the scopes of practice for dentists, dental hygienists,

and dental assistants are creating exceptions for dental auxiliaries operating with expanded functions certifications. While HB372 did not include limits on what can be classified as an expanded function in the future, the Utah Dentist and Dental Hygienist Licensing Board and DOPL are creating a Dental Education Advisory Committee that will review any requests for new expanded functions. The Dental Education Advisory Committee will determine whether proposed expanded functions can be safely performed by dental auxiliaries and what an appropriate amount of training would be to ensure those functions can be performed safely. The Dental Education Advisory Committee will include dental educators, which will ensure all future expanded functions will be fully vetted and have sufficient training requirements developed before reaching the Board. The goal of the expanded function certifications is to make dental care more accessible, while ensuring dental auxiliaries that perform expanded functions have adequate training and experience to protect public safety.

Resolution of Other Disagreements:

The Utah Dentist and Dental Hygienist Licensing Board and DOPL have worked together during the rule writing process to resolve other disagreements. This includes the work that the Board did when reviewing the training requirements for dental auxiliaries to perform maxillofacial administration of botulinum toxin. The training requirements that were recommended by the Board were higher than the required training for dentists to perform the same procedure. To solve this, the Board agreed to raise the training requirements for dentists to ensure everyone performing the procedure had adequate and equal training. DOPL appreciates the Board's tireless work resolving this issue, among others, while developing the draft rule.

Summary of Previous Board Discussions:

The Utah Dentist and Dental Hygienist Licensing Board has discussed the question of whether to allow the use of high-speed handpieces in coronal adhesive removal 4 times. In their December meeting, the Board voted against allowing the use of high-speed handpieces, with the public member and the orthodontist dissenting from the Board's vote. The primary concern that led the Board to vote against the use of high-speed handpieces was that high-speed handpieces increase the risk of significant enamel damage during coronal adhesive removal. Enamel damage is permanent and irreversible, with substantial damage to enamel resulting in pain, increased sensitivity, and structural weakness in a patient's tooth. The removal of coronal adhesive is a balancing act of removing the most adhesive residue possible while damaging enamel as little as possible. The removal of coronal adhesive is widely accepted in academic literature to cause some enamel damage.^{1, 2} The arguments for and against the requirement listed below come from internal research, stakeholders, and previous Board discussions.

Arguments for the Slow-Speed Handpiece Requirement:

- While academic research is inconclusive, studies typically find that slow-speed handpieces with a 12-fluted tungsten-carbide bur damages enamel less than high-speed handpieces with the same bur in the removal of coronal adhesive.^{1, 2, 3} It is important to consider that some studies have found that high-speed handpieces damage enamel less⁴ and that this area of research is still evolving.
- Due to the higher RPM of high-speed handpieces, mistakes are easier to make and more significant when they occur.

- The Board has indicated it is a current practice for orthodontic assistants to remove coronal adhesive with a high-speed handpiece, and provided their first-hand experiences with patients who have had significant enamel damage due to this practice.
- The 119 hour training requirement proposed in the December Board meeting does not adequately replicate the substantial supervised repetition required before dentists are able to use high-speed handpieces.
- Allowing the use of high-speed handpieces but only at low speeds is difficult to enforce, which could lead to dental auxiliaries pushing the limit of low speed.

Arguments Against the Slow-Speed Handpiece Requirement:

- The way that high-speed handpieces are used in the removal of coronal adhesive is substantially different from the way high-speed handpieces are used in general dentistry. High-speed handpieces used for the removal of coronal adhesive are configured specifically for the removal of coronal adhesive and are operated at a slow speed. This use of high-speed handpieces does not pose a more significant risk of enamel damage compared to low-speed handpieces.
- Current high-speed handpieces have features that improve the quality of care that can be provided compared to slow-speed handpieces, which lack these features. The primary example is the airflow being routed through the tip of the handpiece to clear debris and improve visibility during the removal of coronal adhesive.
- It is too prescriptive for DOPL to regulate the specific tools used, and will lead to the Administrative Rule needing revisions anytime there is a new technology.
- High-speed handpieces are more comfortable for the patient. Slow-speed handpieces feel like a jackhammer on the patient's tooth and require the patient to be in the chair for longer.
- The extra time taken for each patient reduces the efficiency of orthodontic work, making orthodontic care less accessible.
- Many orthodontists indicate the use of a high-speed handpiece is in-line with the current best practices. 85% of respondents to a survey sent to all active American Association of Orthodontists members in 2014 indicated they used a high-speed handpiece for adhesive removal, most frequently using a 12-fluted carbide bur.⁵

Comparison to Other States:

There is a wide variety of approaches in other states, including whether the removal of coronal adhesive is considered an expanded function or a regular function of dental auxiliaries. Some states only allow dental auxiliaries to remove coronal adhesive using mechanical tools, some states only allow low-speed rotary handpieces, and some states allow high-speed rotary handpieces. The states that allow the use of high-speed rotary handpieces typically do not provide specification on instrumentation. There has not been reporting of substantial enamel damage due to the use of high-speed handpieces in the states that currently allow dental auxiliaries to use high-speed handpieces, however, this does not necessarily mean that substantial enamel damage is not an issue occurring in those states.

Remaining Questions:

1. Would requiring instruction on the use of UV lights to differentiate between adhesives and enamel be beneficial?
2. What specific configurations make high-speed handpieces used for the removal of coronal adhesive safer than high-speed handpieces used for other procedures? When high-speed handpieces are operated at slow speeds, what speed are they being operated at?
3. Could high-speed handpieces be regulated to only be used at slow speeds? Would this require an RPM limit? Would this require an additional enforcement or liability provision to ensure the regulation is being appropriately followed?
4. Would requirements on the burs used, like a prohibition on the use of diamond burs, reduce the risk of enamel damage?
5. Could the Administrative Rule require dental auxiliaries to switch from a high-speed handpiece to a low-speed handpiece at a certain point in the removal of coronal adhesive?
6. What would sufficient training for the use of high-speed handpieces only for the removal of coronal adhesive look like? How would this change based on additional requirements, like requiring high-speed handpieces to be operated only at slow speed or requiring a switch to low-speed handpieces?

Citations:

1. Bosco E, Potrubacz MI, Arrizza L, Chimenti C, Tepedino M. Enamel preservation during composite removal after orthodontic debonding comparing hydroabrasion with rotary instruments. *Dent Mater J*. 2020 Jun 5;39(3):367-374. doi: 10.4012/dmj.2019-053. Epub 2019 Dec 11. PMID: 31827057.
2. Janiszewska-Olszowska J, Szatkiewicz T, Tomkowski R, Tandecka K, Grocholewicz K. Effect of orthodontic debonding and adhesive removal on the enamel - current knowledge and future perspectives - a systematic review. *Med Sci Monit*. 2014 Oct 20;20:1991-2001. doi: 10.12659/MSM.890912. PMID: 25327612; PMCID: PMC4211420.
3. Ahrari F, Akbari M, Akbari J, Dabiri G. Enamel surface roughness after debonding of orthodontic brackets and various clean-up techniques. *J Dent (Tehran)*. 2013 Jan;10(1):82-93. Epub 2013 Jan 31. PMID: 23724206; PMCID: PMC3666068.
4. Yassaei S, Joshan N, Abdolahi S, Abadi AHR. Comparative evaluation of three methods of adhesive remnant removal after orthodontic bracket debonding. *Dental Press J Orthod*. 2023 Mar 27;27(6):e2220352. doi: 10.1590/2177-6709.27.6.e2220352.oar. PMID: 36995841; PMCID: PMC10042465.
5. Webb BJ, Koch J, Hagan JL, Ballard RW, Armbruster PC. Enamel Surface Roughness of Preferred Debonding and Polishing Protocols. *Journal of Orthodontics*. 2016;43(1):39-46. doi:10.1179/1465313315Y.0000000009