

NAIL DRILLS - WET OR DRY?

The major concern when employing mechanical aids in nail and tissue reduction is control of the abraded products - dust and swarf. Such dust and swarf is composed not simply of nail and skin particles, unpleasant though this may be, but of fungal hyphae and spores, bacterial cultures, bits of the patient's socks and bedding, and enough assorted debris to keep a forensic laboratory technician very busy indeed. To this we must add particles of abrasive grit from our own stones and burs.

It is not desirable that the clinician should be exposed to this airborne biohazard. Ideally, it would also be preferable not to expose our patients to this assault either, and each operator ought to ask whether the 'I wear a mask' solution is really quite the solution it seems to be. Do we see the dust that settles on the furniture after our visit? The district nurse leaves no such legacy, and neither does the doctor.

Control of dust and debris is currently achieved by two methods:

DRY FILTRATION is accomplished by evacuating the air close to the site of dust creation, conduction of the contaminated air to a place of filtration, and release of the filtered air back into the environment.

Consideration of the above will reveal the failings of the system. For instance, does the dust-extraction handpiece really collect ALL of the contaminant? And how efficient is the filtration? Remember that the dust will vary in particle size and that the smaller elements will NOT be trapped by passing air through a fibrous paper dust bag typically less than 1mm thick.

THE WET METHOD approaches the task by spraying water at the point of production. This wets all particles, usually before they leave the surface, making them heavier, and makes no attempt to remove them to a remote place for processing. The entire area is damped and there is little or no spray ejected from the site...that which does escape being quickly deposited in close proximity to the source.

Other advantages are also apparent:

- the site is washed by fluid - good vision of the site is retained
- the site is irrigated by moving coolant - reduced heat sensation for the patient
- the abrasive instrument (usually a diamond bur) is continually washed allowing full effect of the grit with no clogging, hence:

faster rotation speeds can be used (less vibration)

smoother grits can be employed (better finish)

extended motor technique (less blade work).

There are disadvantages to the wet way, it must be admitted. The dust dries around the working area and may form a white 'mud' which must be wiped away with a wet swab. The working area is always cooled, and the operator's fingers are frequently wetted and cooled too. The technique is quite different to the dry technique, as different as microwaving is to conventional cookery.

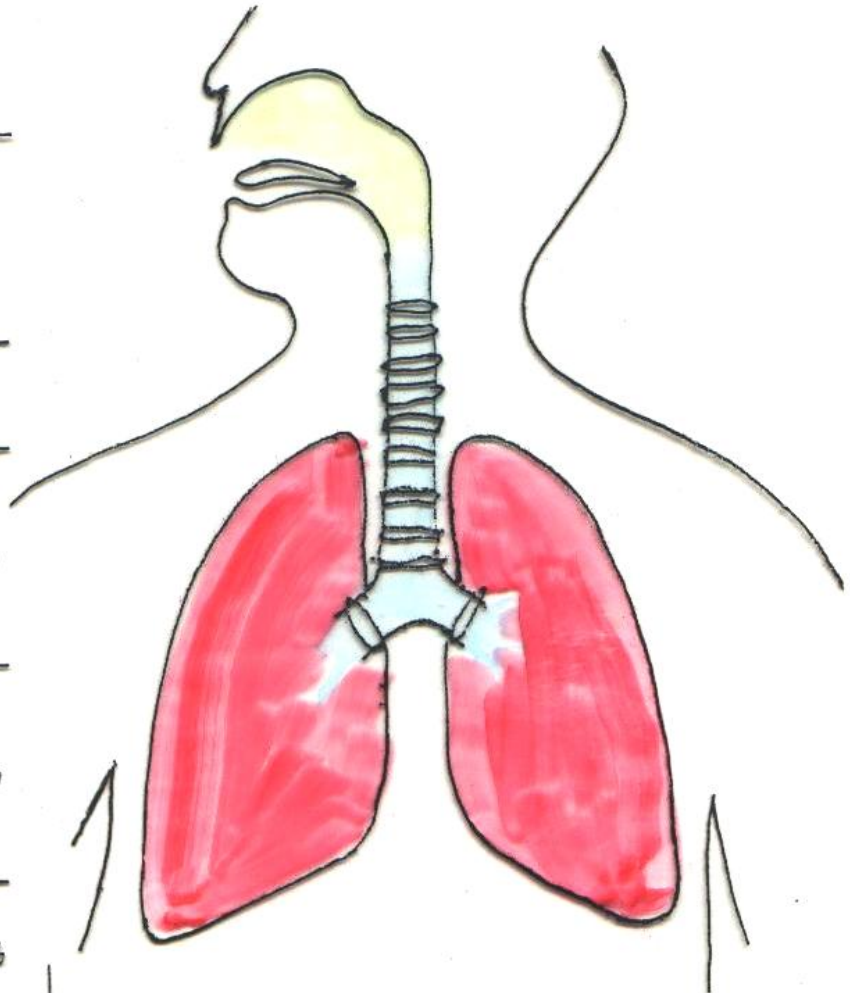
Wet working allows the nail drill to be used in situations in which the dry drill would generate too much heat or too much sensation to be tolerated by the patient. Examples of this extended versatility are use of the wet drill in subungual situations, heel fissure work and reduction of verrucae. The wet drill can also be used following scalpel reduction of embedded lesions in order to ensure total enucleation.

Important to the discussion is that patients like the wet technique. Present it as 'state of the art' and there is no resistance. On the contrary, clients appreciate the 'new technology' and the operator's effort and investment on their behalf.

- by John Falkner-Heylings BSc(Podiatric Medicine), DipPodM, FPSPract, Podiatrist

PARTICLE SIZE IS SIGNIFICANT

Potential deposition site of particles	Particle size range	
Retained in nose or upper respiratory tract	10.0 μ m and over	7.0%
Trapped in bronchioles	5-10 μ m	6.5%
Capable of deposition in alveoli and fine bronchioles	1.6-5.0 μ m	42.5%
Maximal deposition in alveoli and fine bronchioles	0.8-1.5 μ m	32.0%
Decreased deposition in alveoli	< 0.8 μ m	12.0%



**BECAUSE FINER PARTICLES ARE DRAWN DEEPER
IN TO THE LUNGS**

***86% of particles measure less than 5 microns
most fungal spores measure 1 - 2 microns***

A micron (μ) is 1,000th of a millimeter

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The questions on this sheet are based upon the above-named paper. Answers should be submitted on A4 paper and should be of sufficient length to demonstrate full understanding of the topic. Single word answers are not permissible. Try to answer in one or two short paragraphs, not more than 1/4 page per answer.

- Q1. What substances might be present in the dust produced by nail and skin reduction?

- Q2. Is the wearing of a face-mask beneficial?

- Q3. What methods of dust control are currently available?

- Q4. Identify some of the failings of the dry dust extraction method

- Q5. Does the dry extraction dust bag stop all of the dust particles?

- Q6. How does the wet method control the dust?

- Q7. List three advantages of the wet technique

- Q8. List three disadvantages to the wet way

- Q9. Are there instances in which a wet drill can be used where a dry drill is contraindicated?

- Q10. What percentage of dust particles can enter the fine bronchioles and alveoli?

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