Breath Treatment Made Simple(r)
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The diagnosis and treatment of halitosis should be on the "menu" of every dental practice. Having offered this treatment myself for five years and having taught it to many dentists and hygienists over this time, I've noticed the common dental reaction of complicating a very straightforward process. The purpose of this article is to get back to basics—to present breath treatment in its simplest and most direct form. Once we understand the mechanism of the cause and treatment we will be better equipped to offer help to our patients.

Let's begin by looking at some statistics. In the United States alone, surveys show at least 60 million people report having at least occasional bad breath. Americans spend some $10 billion (that's **billion** with a **B**) dollars a year trying to treat this problem by buying mints, rinses, gum, pills, pastes, and other advertised breath remedies. Most of these are a complete waste of money. Many are only temporary cover-ups and others actually make the problem worse.

Although much discussion has been made about the causes of oral malodor, the simple fact is that the majority (90+ percent) comes from the mouth itself. Very little comes from the stomach, unless regurgitation is a problem. The esophagus is a one-way street and odors do not come back up. In some cases, odors may arise from the sinuses, nose, lungs or even the skin. These may not respond to dental treatment, but neither will they be made worse. Our ethic of "first do no harm" will be kept intact since any treatment we will attempt will be totally innocuous in nature. Some odors may also arise secondary to disease processes, but in most cases, these patients would be so ill with life-threatening maladies that they would not find their way to our dental chairs.

Having stated that most oral odors originate in the mouth itself, where exactly do they begin? The answer to this, and the key to successful treatment, is the surface of the tongue. The dorsal

surface of the tongue in cross-section is like a shag rug—papillae forming deep crevasses which defy thorough cleaning. What collects in this surface is plaque—identical to that found on the teeth. This collection of sticky bacteria, cellular debris and food particles is a perfect medium to produce the anaerobic incubator of malodor. The breakdown of these cells and proteins is aided by gram-negative bacteria to produce Volatile Sulfur Compounds (VSC's).

In the periodontally healthy mouth, the majority of odors are produced on the tongue. In the periodontally compromised mouth, additional odors are contributed by the periodontal pockets, where a similar reaction is taking place. However, due to the much greater relative area of the tongue surface, it remains the major odor source. A variety of odors are produced, but the major VSC's involved here are hydrogen sulfide, methyl mercaptan and dimethyl sulfide.

Now that we know what causes halitosis and we know there are tens of millions of people worried about their breath, how do we go about treating them? The answer is quite simple, really. Education of the public—marketing if you will—is sufficient to begin a constant flow of patients both new and old seeking treatment. Once the word is out, a definitive diagnostic and treatment protocol must be put into effect. Patients calling the office with questions about breath treatment are scheduled for a "Halitosis Examination." At this visit, a careful examination procedure will be done, a diagnosis will be made and treatment will be presented.

In order to obtain a valid, unbiased pre-treatment evaluation of the patient's breath, certain instructions are given to the patient to be followed before he is seen in the office. The patient is instructed not to brush, floss or use mouthwash for 12 hours preceding the appointment. No food or drink—except water—is allowed for 5 hours. Tobacco and alcohol products must not be used for 12 hours, and onions, garlic and cabbage are forbidden for 48 hours. These foods actually have odors which are picked up by the blood system and are exhaled through the lungs for several days after a meal. This would give us a false positive reading of oral odor. The patient must not use antibiotics for 3 weeks so as to not artificially change the micro-organism population in the body. In addition, perfumes, aftershaves and other scents are discouraged.

At the Halitosis Examination, a complete medical history and interview is done, just as it would be for any new patient. Likewise, a complete oral examination, periodontal charting and radiographic survey are done. The purpose of this is to rule out any obvious factors that could be causing an odor problem. These include food traps, open contacts, open margins, poorly-fitting restorations, fistulas, impactions, dry mouth, pocketing, plaque accumulations and tongue coating. Our interview questions include information about when, how long and how often the patient has a perceived

breath problem.

Many people think they have a breath problem because they experience an occasional bad taste or dry mouth. This is **NOT** an accurate indication of an odor problem. Also, one cannot successfully determine one's own breath quality. The nose accommodates to the oral odor as a mere background reference. Only a second party can judge the quality of one's breath. A common finding is that the patient feels their breath is at its worst in the morning and this may be supported by a spouse or significant other. The reason for this is that while we sleep salivary flow is decreased and an increase in protein debris collects. pH shifts to alkaline as gram-negative bacteria increase. This leads to a putrefaction of the debris and a resultant increase in malodor.

There are two ways to determine odor levels at the patient exam. One is to use the human nose—yours, not the patient's. An increase in VSC's will produce a characteristic unpleasant odor, the evaluation of which can be developed through experience and repetition. A more scientific approach to odor measurement is to use a chemical monitoring device. The most common machine used for this purpose today is the Halimeter®. The Halimeter® does not measure bad breath, it measures its major component—volatile sulfur compounds, in parts per billion. In rough terms, readings below 100 ppb are not detectable by the average human nose and are considered "normal." Above 100 ppb, a noticeable odor begins to build and at 300-400 ppb, the unpleasant odor can be smelled from several feet away. It is not absolutely necessary to have a Halimeter® in order to treat halitosis, but it does give us a scientific basis on which to compare our results. Normally, if a patient expresses concern about their breath, we accept the possibility of malodor and offer our assistance.

Our objectives in treatment are several fold. We must increase general oral hygiene, of course, to improve gingival health. The key to the entire program is the mechanical removal of all malorodorous material and the chemical neutralization of remaining debris. Just as we learned in school—the first step in cleansing a wound is debridement. In the case of halitosis treatment, this means scraping of the tongue. Due to the soft, uneven, tufted surface of the tongue, using a toothbrush for this purpose is next to useless. Also of limited value is a flat-edged T-shaped scraper which resembles a disposable razor.

It is mandatory that the working edge of an efficient tongue scraper be somewhat flexible to follow the contours of the tongue, but also be rippled, ridged or "rake-like" in profile to do a proper job. Several passes of such an instrument scraped lightly over the tongue by the patient twice a day will effectively remove the majority of evil-smelling debris, food and bacterial residue. A dramatic display of how much more efficient a proper scraper is than a toothbrush for

this purpose can be seen by using a brush and then following it with the scraper. The remaining material left by the brush speaks volumes about its inefficiency.

We have found by far the most effective instrument for tongue "debridement" is the Oolitt scraper, a flexible plastic strip, which can be used by one or both hands easily and quickly. There is a new handled model (Elite) for those patients with a dexterity problem. Not only is tongue scraping essential for breath treatment, it is mandatory for all hygiene patients. This is a huge plaque deposit we are removing. No amount or brushing and flossing is going to be effective if this giant reservoir of plaque sitting nearby on the tongue is left in place to repopulate the mouth minutes after brushing is done. Not a pretty sight indeed!

The second part of our treatment to eliminate VSC's and the debris that produces them, is chemical in nature. We know that no amount of perfumes, mints or alcohol will affect sulfur odor. In fact, alcohol will dehydrate tissue and make the odor worse on the rebound. Yes, our patients are actually making their halitosis worse by constantly using various strongly alcoholed rinses. It is a vicious cycle which has additional consequences of soft tissue injury and composite breakdown. The most effective compound for odor control in the mouth today is chlorine dioxide. Used for many years in industry and water quality control, simply put, chlorine dioxide breaks the sulfur bond in VSC's, leaving innocuous, odorless end products.

Chlorine dioxide is not present in any consumer products available today in stores. It is available in a variety of products which can be obtained through the dental office or specially ordered. We prefer to use the original product line developed for this purpose some 16 years ago—Oxyfresh rinse and toothpaste. What we have seen in treating hundreds of patients over five years and in consulting with hundreds of other dentists around the country, is that the system works.

The tongue is debrided with a proper tongue scraper, the teeth are thoroughly brushed with a chlorine dioxide containing toothpaste, and then the entire mouth is rinsed for at least one minute with a chlorine dioxide mouth rinse. VSC's will be effectively eliminated for many hours and total gingival health will be optimized. The system is simple and inexpensive to use, completely safe (the products are non-toxic) and appropriate for all patients in the practice. As an extra step, we use a chlorine dioxide-aloe containing topical gel for local application to problem areas and gingival injuries to promote healing. A new addition to our armamentarium is a "professional strength" rinse which has zinc acetate added to the chlorine dioxide. Zinc acetate is effective against a group of odorous compounds (organic odors) which are unaffected by chlorine dioxide. This combination is patented and is only available from Oxyfresh.

Breath treatment is a service whose time has definitely arrived. It is much appreciated by our patients, is not subject to insurance scrutiny and can largely be delegated to staff members. We have found that by incorporating breath treatment into our practice, we have attracted a large number of new patients who appreciate our ability to eliminate what has been an embarrassing long-term problem for them. They readily refer family and friends to us as well as asking about other cosmetic services we offer. It is a win-win situation for the practice and the patients.