
Letters to the Editor

Sentinel Lymph Node Radiolocalization in Head and Neck Squamous Carcinoma: Curious Methods

Dear Editor:

For head and neck squamous cell carcinoma, as well as for most solid tumors, the presence of lymph node metastasis is the most important prognostic factor. The morbidity, and possibly the lack of therapeutic benefit, of elective lymph node dissection in N0 patients for breast cancer and melanoma have made minimally invasive approaches attractive. In this context, the sentinel node (SLN) concept was formulated, first by Cabanas¹ for penile squamous cell and later by Morton² for melanoma and Giuliano³ for breast carcinoma.

The SLN concept supposes that the oncologic status of one or few lymph nodes can predict the presence of metastatic disease in the remaining lymph nodes of the draining basin. The strongest point in the SLN concept is that a negative SLN biopsy should predict the absence of metastatic cells in the entire regional lymph basin. The SLN concept can be considered validated for breast carcinoma,⁴ and although it has been accepted as the standard of care for melanoma, it has not been formally validated.⁴⁻⁶

The sentinel node concept is a hypothesis and as such has to be validated or proven before it can be applied for every type of cancer histology and location. Early studies in head and neck squamous cell carcinoma⁷⁻⁹ were not very successful in identifying the SLN, probably because of inadequate timing of injection and dissection and the difficulty of separating the gamma signal of the primary from that of the SLN. In a recent study, Alex et al.¹⁰ have reported a 100% SLN detection rate and no false-positives in eight patients. ^{99m}Tc sulfur colloid was used as the sole tracer and the detection was performed with a handheld gamma probe, without preoperative lymphoscintigraphy. Although these results are encouraging and should incite others to pursue the technique, several points need clarification:

1. In this study, the SLN was determined and excised on the neck dissection specimen rather than in vivo. We are surprised that pioneers of the SLN technique, such as Alex and Krag,¹¹ would use such an approach and not even mention it in the discussion. Although this technique might be used during a training phase, it should not be recommended and is not useful to validate the SLN concept.
2. The SLN concept is thoroughly tested only when the dissection of the regional basin reveals other metastatic lymph nodes, as pointed out by Krag⁵

and others.⁴ For the article by Alex et al., this amounts to no false-negatives in one patient!

3. Despite these shortcomings, the authors propose a nice and logical algorithm that is used in breast carcinoma, after its validation by numerous studies, and prematurely in melanoma.

We would like to warn head and neck surgeons that the SLN concept should be considered as experimental for head and neck squamous cell carcinoma and needs to be proven before it can be used routinely in clinical practice. Let us learn the mistakes of others and not take the shortcut that melanoma surgeons might regret. The standard of care in head and neck squamous cell carcinoma is still a neck dissection, until a large and preferably multi-institutional study validates the SLN concept.

PAVEL DULGUEROV, MD, PD
IGOR LEUCHTER
WILLY LEHMANN
Hôpital Cantonal
Geneva, Switzerland

BIBLIOGRAPHY

1. Cabanas RM. An approach for the treatment of penile carcinoma. *Cancer* 1977;39:456-466.
2. Morton DL, Wen DR, Wong JH, et al. Technical details of intraoperative lymphatic mapping for early stage melanoma. *Arch Surg* 1992;127:392-399.
3. Giuliano AE, Kirgan DM, Guenther JM, Morton DL. Lymphatic mapping and sentinel lymphadenectomy for breast cancer. *Ann Surg* 1994;220:391-398.
4. McMasters KM, Giuliano AE, Ross MI, et al. Sentinel-lymph-node biopsy for breast cancer—not yet the standard of care. *N Engl J Med* 1998;339:990-995.
5. Krag D, Moffat F. Nuclear medicine and the surgeon. *Lancet* 1999;354:1019-1022.
6. Dulguerov P, Leuchter I, Lehmann W, Allal AS. The sentinel lymph node—from theory to practice. *Cancer (in press)*.
7. Koch WM, Choti MA, Civelek AC, Eisele DW, Saunders JR. Gamma probe-directed biopsy of the sentinel node in squamous cell carcinoma. *Arch Otolaryngol Head Neck Surg* 1998;124:455-459.
8. Pitman KT, Johnson JT, Edington H, et al. Lymphatic mapping with isosulfan blue dye in squamous cell carcinoma of the head and neck. *Arch Otolaryngol Head Neck Surg* 1998;124:790-793.
9. Shoaib T, Soutar DS, Prosser JE, et al. A suggested method for sentinel node biopsy in squamous cell carcinoma of the head and neck. *Head Neck* 1999;21:728-733.
10. Alex JC, Sasaki CT, Krag DN, Wenig B, Pyle PB. Sentinel lymph node radiolocalization in head and neck squamous cell carcinoma. *Laryngoscope* 2000;110:198-203.
11. Alex JC, Krag DN. Gamma-probe guided localization of lymph nodes. *Surg Oncol* 1993;2:137-143.

Sentinel Lymph Node Radiolocalization in Head and Neck Squamous Cell Carcinoma: A Potentially Valuable Clinical Tool

Dear Editor:

Our article entitled "Sentinel Lymph Node Radiolocalization in Head and Neck Squamous Cell Carcinoma" was written in response to several other studies which suggested that radiolocalization of the sentinel lymph node (SLN) could not be consistently performed for squamous cell carcinoma. Based on our experience with the eight cases presented, we came to a different conclusion as to the feasibility of sentinel node localization in the head and neck region.

We agree wholeheartedly with Drs. Dulguerov, Leutchter, and Lehmanns' warning that this technique is experimental. We hope that no one who closely read the article mistook our eight cases and subsequent theoretical discussion of the SLN's potential use in squamous cell carcinoma as being a prospective randomized study with sufficient power to mandate sentinel localization and biopsy as a standard of care. Precisely because this technique is experimental, we chose to record several different measurements: the SLN in vivo, both on the skin surface and after flap elevation; the SLN ex vivo after the intraoperatively marked node had been dissected from the lymphadenectomy specimen on a side table in the operating room; and the lymphatic basin of the neck after lymphadenectomy.

In accordance with our Human Investigation Committee approved protocol, we intraoperatively placed the stitch immediately adjacent to the SLN to precisely mark its location. In the lymphadenectomy specimen shown in Figure 3 of our original paper, a chromic stitch clearly notes the intraoperative location of a mid-cervical chain SLN to be dissected and counted. This is an important point that we are happy to have clarified.

Finally, we would like to emphasize that this technique is investigational and our article was intended to stimulate further investigation by other authors. Clearly, until prospective randomized studies of sufficient power are presented in literature, the "potential algorithm" as stated in our paper should not be confused with a "proposed algorithm" as referred to by Dulguerov, Leutchter, and Lehmann.

JAMES C. ALEX, MD
CLARENCE T. SASAKI, MD
Section of Otolaryngology
Yale University School of Medicine
New Haven, Connecticut, U.S.A.

Nasal Irrigation

Dear Editor:

I was disappointed in the article "Clinical Study and Literature Review of Nasal Irrigation" in the July issue of *The Laryngoscope* by Lance T. Tomooka et al.

The article goes to great lengths to talk about hypertonic saline. Then they describe how they did their study" 1/2 teaspoon of salt to 250 mL of water. This happens to be isotonic saline.

They quote an article by Adams (reference 19) that recommends hypertonic saline for nasal symptoms. If you read the article, he found it of no value and that patients would not use it.

They quote an article by Shoseyov (reference 17) who cured all the kids with chronic sinusitis with hypertonic spray. If you think that, you might as well believe in Santa Claus. If this were even 25% true, there would not be any more kids with sinusitis left.

The article gives the impression that irrigation with the Water Pik was developed by Davidson. It goes on in the last paragraph to praise the method as "an effective tool in improving symptoms etc." No mention of me as the originator of this method. No mention of the scientific displays I have given at the Academy and the AMA telling about mucociliary flow and the methods of improving it.

Yes, I have a company that markets the original Grossan attachment to the Water Pik. Tomooka et al. did not mention Hydro Med specifically as a source for this: "nasal adaptor available from Anthony Products, Ethicare...The Grossan nasal adapter is available from HydroMed (Los Angeles, CA) and Kenwood Therapeutics (Fairfield, NJ)."

1) Hydro Med is in Sherman Oaks, not in Los Angeles.

2) The Grossan irrigator is NOT available from Kenwood. They make a knock off that does not work.

3) When it comes to recommending the Neti pot and SinuCleanse, there he gives the web addresses. No mention of the Hydro Med address except to give the wrong city.

This has nothing to do with money. If it did, I would have exercised my patent on the Grossan irrigator and taken Anthony, Ethicare, and Kenwood out. I did not because I felt it was better for patients to have the advantage of pulsatile irrigation.

What galls me is the snubbing of all my work and effort in promoting this method of sinus treatment. By ignoring my contribution to popularizing the importance of mucociliary flow and the nasal irrigator, I feel that other originators are also hurt.

Water Pik has changed their handpiece since May 1999 and currently Hydro Med is the only company that makes the adapter that fits the current Water Piks. At the time this article was submitted, this fact was known. So you have doctors needlessly looking for adapters that fit the new Water Pik from the companies listed who do not make them! And no way for them to locate Hydro Med or know that the new adapter is even available. I get personal calls from doctors who cannot find the adapters at the other places. Most conclude that it simply is not available any more.

What further disappoints me is that of the 37 references cited, 13 are from my bibliography, so my articles and works were certainly known.

In all fairness, in keeping with medical ethics, I feel a supplement to the above article should be published in *The Laryngoscope* clarifying certain facts:

Murray Grossan, MD, is the originator of the adapter to fit the Water Pik® for nasal irrigation: Grossan. *A Device for*

MW NaCl (g/mol)	500 cc Normal Saline (isotonic)		
	Teaspoon	Heaping Teaspoon	
	58.44		
Weight (g)	8.0	11.5	4.5
Moles	0.137	0.197	0.077
Concentration (g/L) of 500 cc sol'n	16.0	23.0	9.0
Molarity (mol/L) of 500 cc sol'n	0.274	0.394	0.154
Osmolarity (mOsmol/L) of 500 cc sol'n	548	787	308
% NaCl (g/100 ml) of 500 cc sol'n	1.60%	2.30%	0.90%

Fig. 1. Tonicity of nasal irrigants: It is assumed that table salt is 100% NaCl. This is a decent assumption based on the table salt used, which is reported to be >99% NaCl and <1% calcium silicate. One teaspoon is 5 cc.

NeilMed Products: Sinus Rinse

This company offers a simple product that includes an irrigation bottle and 50 packets of a NaCl mixed with bicarbonate. Cost: bottle—\$8.95, packets (100)—\$9.95. 1221 Farmers Lane, Suite 500, Santa Rosa, CA 95405; TEL: (707) 525-3784; FAX: (707) 525-3785; Toll-Free: (877) 477-8633. Mail questions to QUESTIONS@NEIMED.COM. Web site: <http://www.nasalrinse.com>

SaltAire

The SaltAire irrigating solution is made of purified water, sodium chloride, sodium bicarbonate, dibasic sodium phosphate, trisodium EDTA, and thimerosal. The product comes prepared in either a 12.5-oz irrigating bottle or a 32-oz refill bottle. Cost: irrigation bottle (12.5 oz)—\$12.50, refill bottle (32 oz)—\$15.00. Web site: <http://www.saltairsinus.com>

Health & Yoga: Netipot

This product includes a stainless steel pot with a conical end that is filled with warm, slightly salted water. The spout of the pot is inserted into one nostril and the position of the head and pot are adjusted to allow the water to flow out of the other nostril. Cost: \$13.95. Web site: <http://www.healthandyoga.com>

Parnell Pharmaceuticals: Pretz Nasal Products

This company provides a different irrigating solution that includes glycerin and saline formula with an added organic compound called "yerba santa." Yerba santa has not been demonstrated in the medical literature to provide benefit in nasal irrigation. Cost: irrigation bottle (8 oz)—\$15.00, refill bottle (32 oz)—\$29.95. Web site: <http://www.parnellpharm.com/pretz.htm>

Teledyne WaterPik

A pulsating liquid delivery system formerly engineered for use as an oral irrigator and is currently being used for nasal irrigation. This product requires the use of a nasal adapter that can be purchased from various companies including, Ethicare, ENTsol, Kenwood, and HydroMed. Cost: approx. \$40–50 (available at most retail stores). Note that the adjustable model is required. Web site: <http://www.waterpik.com>

Kenwood Laboratories: ENTsol

This line of nasal irrigation products provides a wide selection. The ENTsol reusable 8 oz. bottle for use as a nasal wash irrigation device can be used with powdered solutions such as ENTsol™ Packets or ENTsol™ Solution. Cost: irrigation bottle—\$30.91, packets (10) \$7.16, nasal adapter \$28.48 (for use with a WaterPik oral irrigator). Web site: <http://www.entsolwash.com>

Ethicare: Hydro-Flo

This delivery system is motorized and provides a steady flow (nonpulsatile) of irrigating solution from a sealed 1.5-liter container. Flow rate can be controlled during irrigation. Cost: \$78.90 (not including irrigating solution). Web site: <http://www.ethicare.com>

Hydromed: Grossan Sinus Irrigator

The irrigating device employs pulsating irrigation delivered through a cone-shaped silicon nasal tip adapter attached to a WaterPik oral irrigator. Cost: \$78.75 (includes a Professional WaterPik oral irrigator). Europe—<http://www.immunotek.com/xitek3.html>; USA—<http://www.sinus-relief.com/what-sirr.html>

Fig. 2. Nasal irrigation products.

Nasal Irrigation. Transactions of the American Academy of Ophthalmology and Otolaryngology. 78: July 1974.

The patients cited in this study were treated with Water Pik® using isotonic saline.

The original Grossan attachment that fits the current Water Pik® is available at 800-560-9007 and <http://www.sinus-relief.com>

MURRAY GROSSAN, MD
Cedars Sinai Medical Towers
Los Angeles, California, U.S.A.

Authors' Reply

Dear Editor:

I appreciate Dr. Grossan's thoughtful comments regarding nasal irrigation. I fully agree with Dr. Grossan that pulsatile irrigation is more likely to dislodge mucus and particulate matter, but recognize that many individuals successfully use non-pulsatile systems and report similar benefits.

My impression is that the most important aspect of nasal irrigation is that the patient irrigates on a regular

basis. Just as it does not matter whether people use water, salt, baking soda, or toothpaste to brush their teeth, I believe that the additive in nasal irrigation is of less importance than the practice.

We all know that patients do whatever is comfortable and easy. To answer the question regarding salt concentration, Dr. Homicz, one of the head and neck surgery residents, calculated the isotonicity of various salt solutions. These are shown in Figure 1. A level teaspoon of salt in 500 mL of water is hypertonic.

To be fair to all, enclosed is a list of companies that provide nasal irrigation products (Fig. 2). I continue to be

amazed by the benefit nasal irrigation provides and the unsolicited thankful comments that I receive regularly from patients introduced to nasal irrigation.

TERENCE M. DAVIDSON, MD
Department of Surgery
Nasal Dysfunction Clinic
Division of Head and Neck Surgery
University of California, San Diego
and the VA San Diego Healthcare System
San Diego, California, U.S.A.