

# GA

GUEST ARTICLE

*E. P. C. M. S.*

## The Transtracheal Catheter: A Personal Perspective

Richard J. Harris, M.D., FACS

I am a retired general surgeon, having practiced in El Paso from 1965 until 1994. I served as the first Chief of Staff of Sierra Medical Center in 1975 and held numerous other positions at both Sierra and Providence Hospitals. I also smoked and despite quitting in 1980, I developed Chronic Obstructive Pulmonary Disease that became more symptomatic in 2001 requiring nocturnal oxygen for the next 8 years. I used a nasal cannula and during that time experienced ear irritation, sinus infection, dry eyes, cannula dislodgement and epistaxis, requiring several visits to the emergency room. When my condition worsened following an acute exacerbation in March, 2010, I was told that I would require oxygen full time. This presented a problem as I had resorted to placing the cannula in my mouth at night to eliminate epistaxis. The idea of going public, with a cannula in my mouth was not an attractive option.

A search led me to Transtracheal Systems located in Englewood, CO. My contact was, and remains, John Goodman, Executive V.P./ Technical/Professional Services. John is an internationally recognized Registered Respiratory Therapist (RRT) who has lectured extensively and authored or co-authored many articles on transtracheal oxygen. The idea of having a small catheter inserted into my trachea was most appealing.

The catheter can be inserted by either the modified Seldinger technique, or preferably with the "Fast Tract" procedure which is most commonly utilized today. Both create a tracheocutaneous fistula. The Seldinger method is performed under local anesthesia either by a pulmonologist or ENT surgeon. A needle is inserted into the trachea, followed by a guide wire over which a stent is placed that must remain for at least 7 days before a working catheter can be inserted. The second, or Fast Tract technique, is performed in the OR by an ENT surgeon under local anesthesia and conscious sedation and results in a marsupialized tract. An overnight stay is required with discharge the following morning after the trochar is removed and a functioning catheter inserted. Follow up for either procedure is by a team composed of a pulmonologist, ENT surgeon, RN, and a RRT. The RN and RRT instruct and assist the patient in cleaning the catheter until satisfied that the patient is capable of self care. I could not find a transtracheal program anywhere between Houston and California. An ENT surgeon in Phoenix had done the Fast Tract procedure on several patients, and I elected to go there, not knowing that a dedicated transtracheal team did not exist. I would have benefitted from a team for instruction and encouragement during the post-procedure course.

*A Program for Transtracheal Oxygen Delivery* was published in the *Annals of Internal Medicine* in 1986, describing the program

currently in use.<sup>1</sup> The acronym "SCOOP" is taken from the lead authors of that article, Drs. B.T. Spofford and Kent Christopher, adding to that "Oxygen Optimizing Program" and thus the acronym, "SCOOP". A more recent article is in the February 2011 issue of *Chest* by Drs. Kent Christopher and Michael Schwartz entitled *Transtracheal Oxygen Therapy*.<sup>2</sup>

The transtracheal catheter has been FDA approved and clinically available since 1986. There are approximately 170 references in the medical literature, and numerous patient experiences recorded. All of this helps build the case for the transtracheal catheter being one of the best kept secrets in medicine today.

The use of a transtracheal catheter for long term oxygen therapy (LTOT) is a procedure that has not gained wide acceptance in the medical community since its introduction almost twenty-five years ago.

Advantages of the transtracheal catheter are many. Dead space is markedly decreased as oxygen flows directly into the trachea and oxygen consumption is decreased allowing the patient more time on a pulsed portable oxygen device. There is evidence that the nasal cannula can only be worn about 18 hours a day due to discomfort and the common adverse reactions referred to above.<sup>3</sup> The transtracheal route is a true full time modality and the difference between 18 and 24 hour oxygen usage has been shown to add approximately 2 years to life expectancy.<sup>4</sup> In my case, dyspnea is almost non-existent while on pulsed oxygen at 2L/min sedentary and 3L/min ambulatory. Exercise tolerance is also increased. Hgb and Hct values have long been accepted as sensitive indicators of the body's overall ability to oxygenate. Chronic hypoxemia results in increases in the Hgb and Hct, while a normal oxygen saturation will result in a subsequent normalization of Hgb and Hct. This, in turn, decreases the strain on the right heart and may have a direct salutary effect on pulmonary hypertension that could be developing. Since placement of the TT catheter, my Hgb has dropped from 17.5 to 14.5 and Hct from 51 to 41. There was no appreciable change in the elevated Hgb and Hct on nocturnal oxygen using the nasal cannula. A recent doppler electrocardiogram showed normal blood flow with no evidence of pulmonary hypertension. An overnight oximeter test at 2.5L/min continuous LOX (liquid oxygen) was in the 98 percent saturation range. I play golf and perform pulmonary rehabilitation twice weekly, and have been able to do most of my desired activities to include travel and woodworking.

Widespread reticence still exists on the part of pulmonologists to

Continued on page 15



## The Transtracheal Catheter: A Personal Perspective (Continued)

become involved in a transtracheal program, and the reason for this is not at all clear. Perhaps it is considered as a treatment of last resort and this is certainly not the case. It does allow those patients desiring to remain active an opportunity to do so, and it should be offered earlier rather than later in the course of LTOT. The pulmonologist is the linchpin in the program as most patients are generated from that practice. Once several patients have had satisfactory results from catheter placement more patients are to be expected. The El Paso-Juarez corridor represents over 1.5 million population and certainly is large enough to provide a sufficient number of eligible patients to support such a program. Contraindications to placement of the catheter are few and are to be found on the web page of Transtracheal Systems ([www.tto2.com](http://www.tto2.com)) where there is also a wealth of information for both the patient and clinician.

The purpose of this paper is to bring the SCOOP program to the forefront and to encourage pulmonologists and ENT surgeons to become involved in the formation of a true transtracheal team. It is my hope that this article will help to achieve that goal.

### REFERENCES

1. Christopher, KL; Spofford, BT; Branin, PK; Petty, TL: *Transtracheal Oxygen Therapy for Refractory Hypoxemia. JAMA* 1986; 256: 494-497
2. Christopher, KL; Schwartz, MD: *Transtracheal Oxygen Therapy Chest* Feb. 2011; 139:435-440

3. *Continuous or Nocturnal Oxygen Therapy in Hypoxemic Obstructive Lung Disease. Annals of Internal Medicine: 1980;93:391-398*

4. Clifford D, Mender J, Worley P, Goodman, JR: *Transtracheal oxygen improves survival and reduces hospital costs (Abstract) Amer J Critical Care Med. April 1995 51:4:A681*

### ABSTRACT

A personal experience with COPD (Chronic Obstructive Pulmonary Disease) ultimately requiring 24/7 oxygen is presented along with problems encountered using a nasal cannula. The transtracheal catheter for LTOT (long term oxygen therapy) was chosen and the difficulty of finding a transtracheal team is discussed. The purpose of this article is to interest pulmonologists in proposing SCOOP to patients requiring LTOT rather than as a last resort when the patient can no longer remain active. Metropolitan El Paso-Juarez is a large enough area to support this modality and to justify the creation of a Transtracheal team and to be the first in the southwest to offer this program.

---

**Richard J. Harris, M.D., FACS, Retired General Surgeon, El Paso, Texas.**

AD