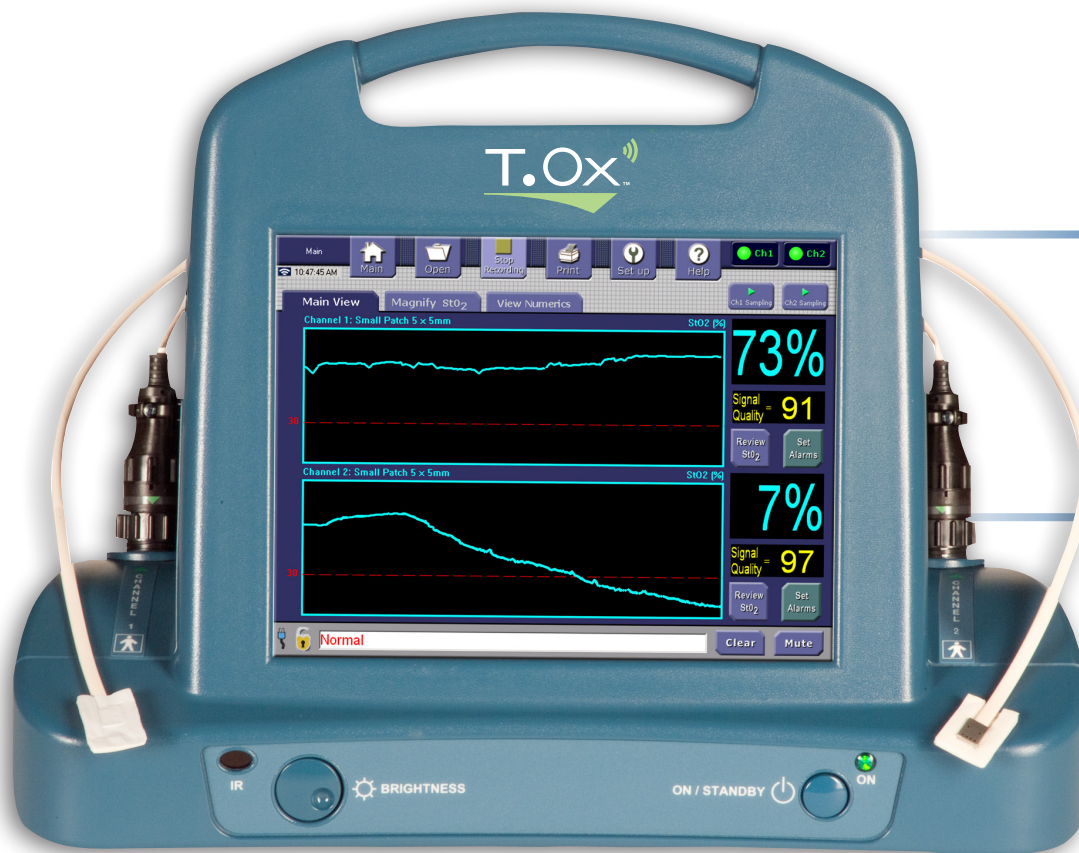


Assessing Tissue Viability with StO₂

Enables Early Intervention to Improve Patient Outcomes.



Remote Access



Objective Data: StO₂ • Early Detection • Clinical Confidence



T.Ox Tissue Oximetry

The T.Ox System uses near-infrared spectroscopy to provide continuous, real-time tissue oxygen saturation (StO_2) measurements that facilitate identification of flap complications and their causes before clinically evident.¹

The T.Ox System provides clinicians with alerts in two key ways:

- 1. Number:** real time StO_2 reading that is updated every four seconds.*
- 2. Trending Graphs:** provide insight as to what type of problem exists, its onset, and its duration.

Two Different Sensors for Versatility

T.Ox^{SP}
Sensor

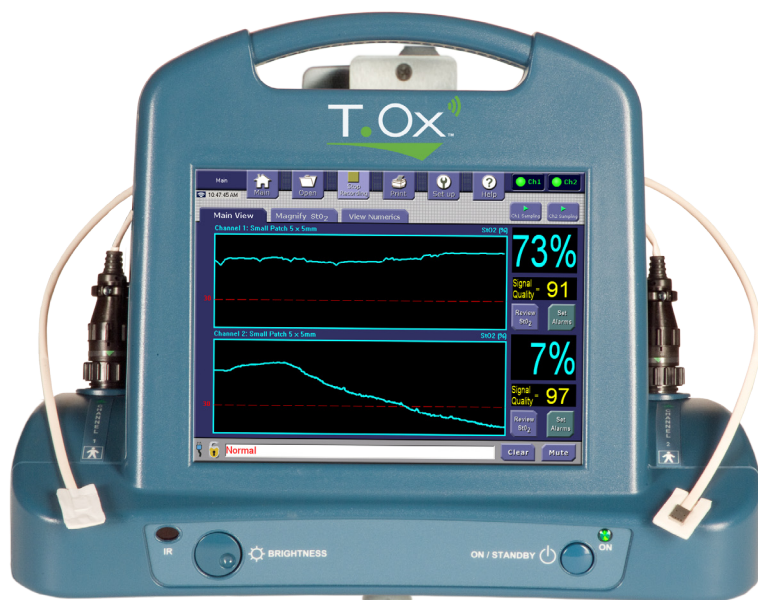


T.Ox SP with Adhesive Pad

T.Ox^{SS}
Sensor



T.Ox SS with Silicone Surround



Nurse Call

T.Ox Console-Single or Dual Channel

Roll Stand

*Single Channel mode updates every 4 seconds, in Dual Channel mode each channel updates every 8 seconds

Remote Access...Anywhere, Anytime



- Wi-Fi transmitter lets you view from any web browser
- Adds convenience and saves time
- Early identification of flap complications improves patient outcomes

Objective Data: StO₂



Venous Congestion

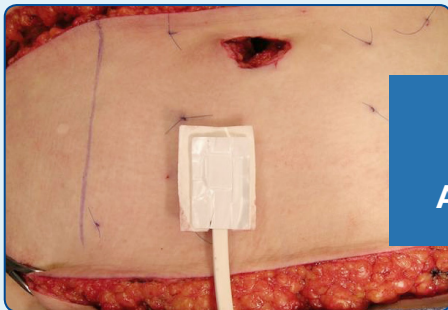
Local venous outflow obstruction can allow a region of a flap to inflate with fresh arterial blood leading to a transient rise in local oxygen saturation. The StO_2 will then fall to the extent to which the obstruction impairs perfusion, or to the extent to which the flap metabolizes the oxygen over subsequent hours.



Arterial Obstruction

Arterial obstruction can lead to a drop in StO_2 over a period of minutes or hours, depending on the extent of the occlusion.

Flap Monitoring Starts in the OR



Last / First Check of Anastomosis



Intra-Op Assessment

- Identify tissue with best chance of survival.
- Assists with design, harvest and inset of flaps.²

Post-Op Monitoring

- Early warning of flap perfusion loss.¹
- Identify complications before clinically evident.



Clinical and Economic Benefits

T.Ox can be used during various stages of tissue transfer surgery to positively affect clinical and financial outcomes

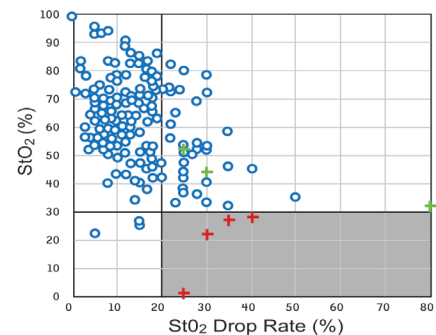
- Reduces take-backs when used for intraoperative flap assessment.¹
- Potential reduction in early take-backs avoids cost of OR turnover expense and supplies.¹
- Improvement in flap loss rate reduces expenses associated with failed flaps.
- Lowers hospital costs by allowing patients with continuous flap monitoring to recover on a standard surgical floor or through earlier transfer to step down unit.^{3,4}
- Saves staff time via remote access to monitoring and alarm data.

Patient Benefits

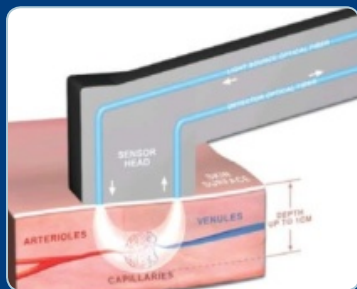
- Non-invasive sensor is safer for the patient as there's no need to remove an invasive implanted device.
- Reduces patient discomfort caused by repeated post-op clinical examination of the flap.
- Patients say they love the T.Ox system because it gives them ownership in their care.
- Physicians have reported that patients feel more engaged in their own recovery and are comforted by having the monitor by their bedside.
- Patients monitored with T.Ox can move to the more familiar environment of a standard floor sooner.

Clinically Validated

- In a study of 208 monitored flaps, five patients exhibited complications that were predicted by T.Ox before clinically evident.¹
- Tissue Oxygen Saturation and its drop rate can be combined to indicate possible hypoxia in a flap.¹
- All flaps with StO₂ less than or equal to 30% and a drop rate greater than or equal to 20% per hour, both sustained more than 30 minutes, were flaps with complications.¹



How T.Ox Works



- Non-invasive T.Ox Sensors are placed on the flap during surgery.
- Lasers shine near-infrared light into the tissue, detect and adjust for reflection and absorption.
- Automatically compensates for skin pigmentation.
- Measures red cells in all vascular structures under the sensor: arteries, veins and capillaries.
- Signal Quality lets you know sensor is placed correctly.



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Lit. No. 90-0104C

¹ Keller, Alex. A New Diagnostic Algorithm for Early Prediction of Vascular Compromise in 208 Microsurgical Flaps Using Tissue Oxygen Saturation Measurements. Annals of Plastic Surgery, Volume 62, Number 5, May 2009.

² Churgin, Samara, Lohman, Robert, Bernard, Steven, Galiczynski, Heather, PA C; Djohan, Risal. A Novel Approach to Intraoperative Perforator Selection in DIEP (Deep Inferior Epigastric Perforator Artery) Flaps using Near Infrared Spectroscopy (NIRS) in Conjunction with Preoperative CT Angiography. Work performed at the Cleveland Clinic. Presented at the Ohio Valley Society of Plastic Surgery, May 2009.

³ Lohman, Robert; Djohan, Risal; Langevin, Claude Jean; Bernard, Steven; Alam, Daniel; Siemionow M. Methods of Free Flap Monitoring in a Non Specialized Unit. Presented at the American Society for Reconstructive Microsurgery, January 2009.

⁴ Tseng C.Y., Song D.H. Early Results of a Prospective, Randomized Cost and Outcome Analysis of ICU vs. Surgical Floor Monitoring in Free Flap Breast Reconstruction. Presented at the American Society for Reconstructive Microsurgery Annual Meeting, January 2008.