

A photograph of four surgeons in an operating room, all wearing blue scrubs, masks, and hairnets. They are focused on a surgical site, illuminated by bright blue surgical lights. The surgeon in the foreground on the right is wearing a hairnet and a mask, and is using surgical instruments. The other three surgeons are also wearing masks and are looking down at the patient. The background is slightly blurred, showing the sterile environment of the operating room.

T-Stat

T-Stat for Reconstructive Plastic Surgery

When you need a reliable and accurate bedside monitor, choose T-Stat white light technology for real-time tissue perfusion.

T-Stat

T-Stat for Reconstructive Free Flap Monitoring

The T-Stat continuously monitors StO₂% at the micro-vascular level, reading only 2-3 millimeters below the surface within the capillary bed, providing a better understanding of how much oxygen is reaching the flap.

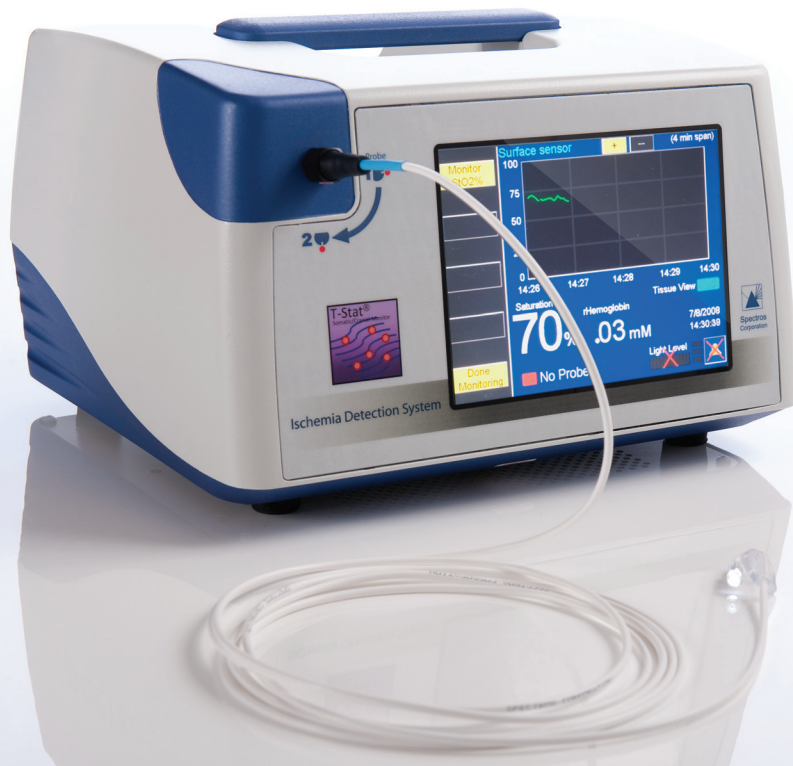
The sensitivity of T-Stat can detect issues hours prior to flap loss, earlier than any other means of detection. The ability to diagnose potential complications earlier can vastly improve the probability for flap salvage. No other device is as sensitive to changes in perfusion.

"T-Stat technology allows for continuous instead of episodic monitoring and is sensitive to venous congestion, both advantages over traditional hand held Doppler. Early detection of vascular compromise is one of the most critical factors in the success of free flap salvage."

Jesse C. Selber, MD, MPH, FACS
MD Anderson Cancer Center

"T-Stat's ability to also monitor the flap's hemoglobin concentration has helped me identify venous outflow issues way before any visible clinical changes, greatly speeding up return to the OR and maximizing the opportunity for flap salvage. Our flap success rate is almost 100%."

Minas Chrysopoulos, MD, FACS
PRMA Plastic Surgery



With T-Stat you can improve patient outcome and satisfaction, lower costs, while minimizing potential liability.

T-Stat provides assurance to you, your team, and your patients when you need it most. Improve your standard of care today by using T-Stat with white light technology.

"T-Stat is a reliable method of flap monitoring that uniquely measures both oxygen saturation as well as hemoglobin levels, enabling differentiation between an arterial and a venous compromise. This device provides a dynamic assessment of flap perfusion, therefore improving microsurgery outcomes. I have found it to be a very accurate method of flap monitoring and enjoy the ability to see the graph on my mobile phone, and nurses find the device to be user-friendly."

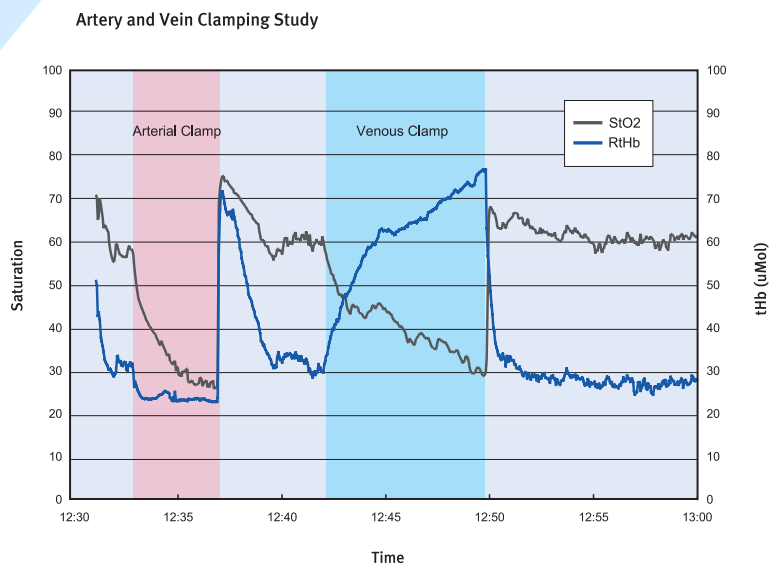
Aldona J. Spiegel, MD
Houston Methodist Institute for Reconstructive Surgery

Hemoglobin Monitoring

Additional monitoring of Hemoglobin allows the surgeon to decipher arterial vs. venous occlusions.

Venous vs. arterial – what is the difference? When we study venous vs. arterial occlusion it is imperative that we evaluate both StO2% and Hmg. Here (see chart) we can see that an arterial occlusion (simulated by clamping the artery before lifting the flap) shows a rapid drop in both StO2% and Hmg over the course of minutes.

A venous occlusion (shown on the right) which is often more difficult to detect, displays a drop in StO2% and an INCREASE in Hmg. This is relative to the amount of blood that is pooling within the flap.



Sensors

Noninvasive sensors available in multiple sizes

Sensors come in two surface sensor sizes, 1cm and 2.5cm and buccal. Multiple sensor sizes allow surgeons to utilize T-Stat on even the smallest of exposed skin paddles on a buried flap, a larger DIEP flap, or a complex intraoral case.



1 CM SURFACE SENSOR

2.5 CM SURFACE SENSOR

OnCall

Remote access with OnCall monitoring

Users have the ability to log onto oncall.com for private and secure data monitoring. OnCall utilizes a web-based system allowing easy access from any wifi-enabled or cellular device to check immediate results for both StO2% and Hemoglobin. Users have access to an unlimited number of T-Stats that are easily added to and removed from one's account.

Technology

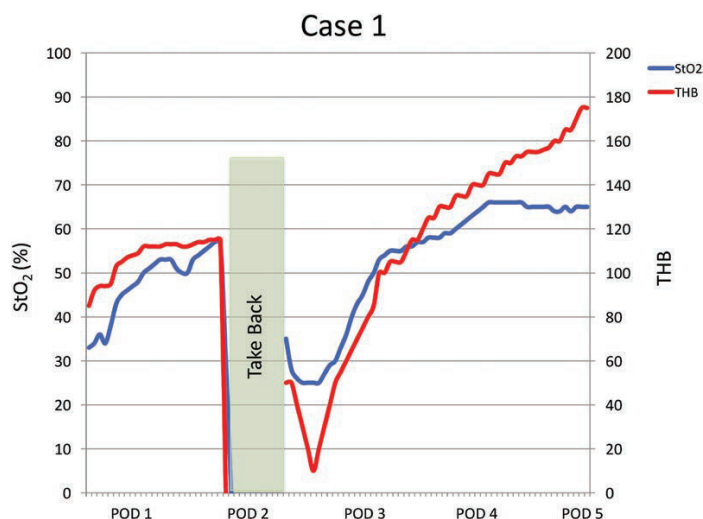
SD of +/-2 with T-Stat white light technology

T-Stat uses broad-band white light to evaluate up to 260 wavelengths, including Hemoglobin in its 5 natural states. T-Stat then provides a saturation value that correlates with mixed venous saturation. With a standard deviation of only +/-2, this accuracy gives the surgeon a clear understanding of what is actually occurring at the capillary level.

Case Report

A Prospective Clinical Trial Comparing Visible Light Spectroscopy to Handheld Doppler for Postoperative Free Tissue Transfer Monitoring.

Department of Plastic Surgery
University of Texas M. D. Anderson Cancer Center



Case 1

A 41-year-old woman underwent bilateral delayed breast reconstruction with DIEP flaps (Fig. 3). Before any identified change with clinical examination or Doppler signal, the tissue oxygen saturation signal fell to 0 percent on postoperative day 1, prompting a return to the operating room. An arterial thrombus was evacuated and the flap was salvaged successfully.

"Based on these cost-benefit estimates, we believe visible light spectroscopy is cost-effective."

Conclusion

Visible light spectroscopy is a reliable, continuous adjunct to free tissue transfer monitoring. We found the accuracy and sensitivity of visible light spectroscopy to be superior to intermittent physical examination and Doppler ultrasonography, even in one of the busiest microsurgical centers in the world. In this prospective series, visible light spectroscopy identified three flap perfusion abnormalities, prompting an early return to the operating room and salvage of all three flaps. Visible light spectroscopy technology provides reconstructive surgeons with an additional method for postoperative flap monitoring, which may improve early detection of perfusion complications.

"The T-Stat allows for accurate and precise continuous flap monitoring. This translates to earlier detection of flap malperfusion, which equates to a greater likelihood of flap salvage. The device is easy to use and interpret for the nursing staff, and the online interface essentially allows the surgeon to check in on the flap from anywhere in the world, 24 hours a day."

Alexander F. Mericli, MD
MD Anderson Cancer Center

T-Stat can be purchased directly from Spectros or from any of our distributors.
For more information, please visit our website www.spectros.com, or call 650.851.4040

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