Intraoperative Indocyanine Green Fluorescence Angiography Decreases Postoperative Wound Complications in Soft Tissue Sarcoma Surgery

Benjamin K Wilke MD, Douglas S Schultz MD, Maria T Huayllani MD, Daniel Boczar MD, Aaron C Spaulding PhD, Courtney Sherman MD, Peter Murray MD, Antonio J Forte MD PhD
Division of Orthopedic Surgery and Division of Plastic Surgery
Mayo Clinic, Jacksonville, Florida

We found statistically significant lower rates of postoperative infection (11.8% versus 38%; \( p=0.03 \)) and wound dehiscence (11.8% versus 42.3%; \( p = 0.02 \)) in the ICG angiography cohort compared to the historical controls.

A prospective study was conducted from 10/2017 – 9/2019, using ICG angiography during sarcoma resection surgery.

Following wound closure the incision was evaluated using ICG angiography to evaluate areas of hypoperfusion.

Areas of hypoperfusion were then excised until only well-perfused tissue remained on subsequent scans.

Rates of postoperative wound complications (defined as dehiscence and infection) were compared to historical controls consisting of surgeries prior to utilization of ICG angiography.

Table I: Patient demographics compared to historical controls (Abbreviations: BMI, body mass index; PVD, peripheral vascular disease; CAD, coronary artery disease)

Table II: Tumor characteristics and postoperative complications

Figure 1: Intraoperative angiography images demonstrating adequate perfusion (A), and hypo-perfusion (B) along the incisions.

Conclusion

We found statistically significant lower wound complication rates for infection and wound dehiscence following sarcoma resection when using intraoperative indocyanine green angiography.

This is promising technology and warrants further investigation to help reduce postoperative complications following soft tissue sarcoma resection.