

Suture assessment and surgical recovery of sub-adult striped bass implanted with acoustic transmitters



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INTRODUCTION

Telemetry coupled with intra-peritoneal implantation of acoustic transmitters has become a valuable tool in fisheries research. Due to the high cost, it is imperative to select suture materials with the greatest transmitter retention and fastest healing rates for the species, its developmental stage, and the physical and chemical properties of the surrounding water. However, few papers address suture material performance and migration studies do not usually recapture transmitter implanted fish, eliminating the possibility of obtaining any information about suture success, incision healing rates, and transmitter retention.

As part of an upcoming acoustic telemetry study, we assessed the performance of different suture materials to close incisions in sub-adult striped bass.

OBJECTIVES

Determine if differences exist between suture materials, transmitter retention, and overall suture performance.

Determine if differences exist between incision healing rates and suture materials.

Determine the best suture material to close incisions in sub-adult striped bass inhabiting the San Francisco Estuary.

METHODS

•50 sub-adult striped bass (FL 199-375mm) were salvaged from USBR Tracy Fish Facility, housed in five 890-L circular fiberglass tanks filled with 16 C well water, fed ad libitum with live goldfish (40mm), and held for 30 days postoperative.

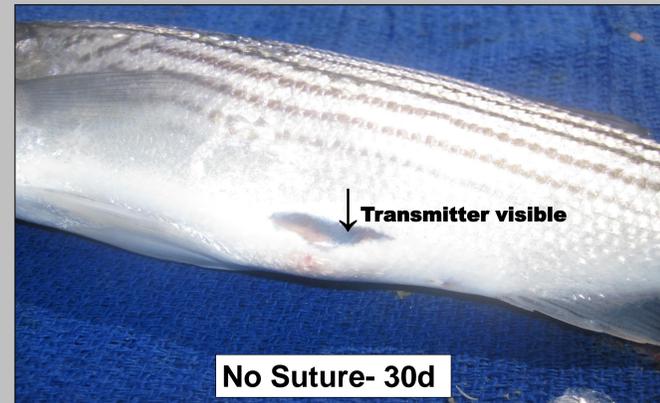
•Treatments: No suture, Surgi-Loc™ adhesive, absorbable monofilament Monocryl* Plus (poliglecaprone 25), absorbable braided Vicryl* Plus (polyglactin 910), and the MS222 (Tricaine methanesulfonate) only control. * refers to embedded antibacterial agents within the suture material which kill and inhibit bacteria.

•MS222 was used for surgical and maintenance anesthesia, all fish were weighed and measured, and surgeries were performed by one surgeon to eliminate variability.

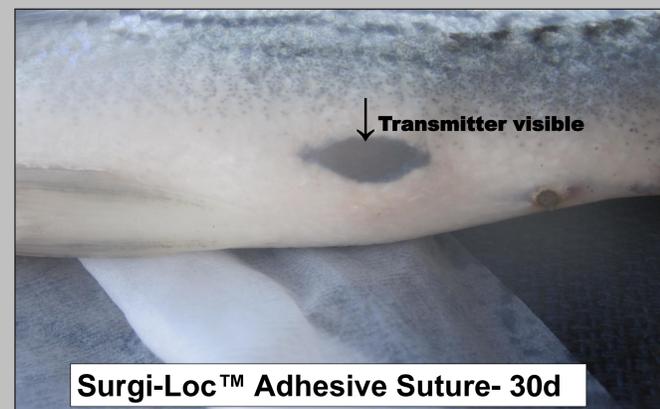
•Dummy Vemco V-9 transmitters were implanted into the posterior peritoneal cavity.

•Suture performance, transmitter retention, incision closure and growth were recorded weekly over a one month postoperative period.

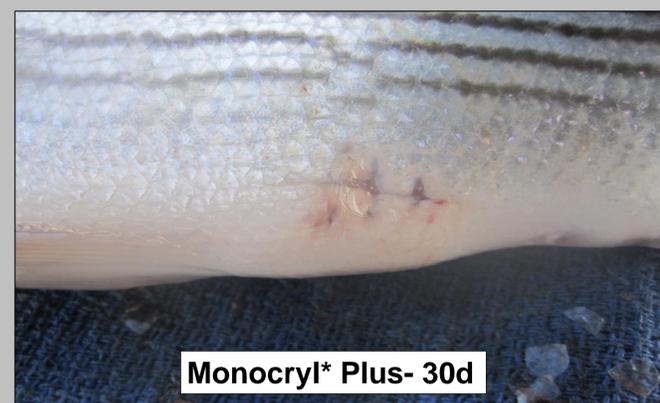
•Necropsies were performed to access external and internal healing, tissue-transmitter encapsulation, and overall health.



No Suture- 30d



Surgi-Loc™ Adhesive Suture- 30d



Monocryl* Plus- 30d



Vicryl* Plus- 30d

CONCLUSIONS

•Performance differed among the suture types by 7d. Surgi-Loc™ dissolved (70%) by 7d. Monocryl* Plus and Vicryl* Plus were present at 30d, but the Vicryl* Plus had begun to absorb.

•Transmitter retention was equal between No Suture and Surgi-Loc™ (70%) and Monocryl* Plus and Vicryl* Plus (90%) at 30d.

•Surgery time was fastest for Surgi-Loc™ and equal between Monocryl* Plus and Vicryl* Plus. All surgery recovery times were similar.

•Not suturing slowed incision healing and increased ulceration. Vicryl* Plus showed less inflammation and ulceration, and greater incision closure than Monocryl* Plus by 30d.

•All fish increased in length. No Suture and Surgi-Loc™ groups lost weight while the Monocryl* Plus and Vicryl* Plus gained.

•Internal tissue health and transmitter encapsulation and were greatest when sutures were used.

•Initial analyses indicate that braided Vicryl* Plus is the best suture material for sub-adult striped bass inhabiting the San Francisco Estuary.

SELECTED REFERENCES

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