



Timed-release Dexamethasone Safely Minimizes Scar Contracture And Adhesion In Fat-first Burn Reconstruction

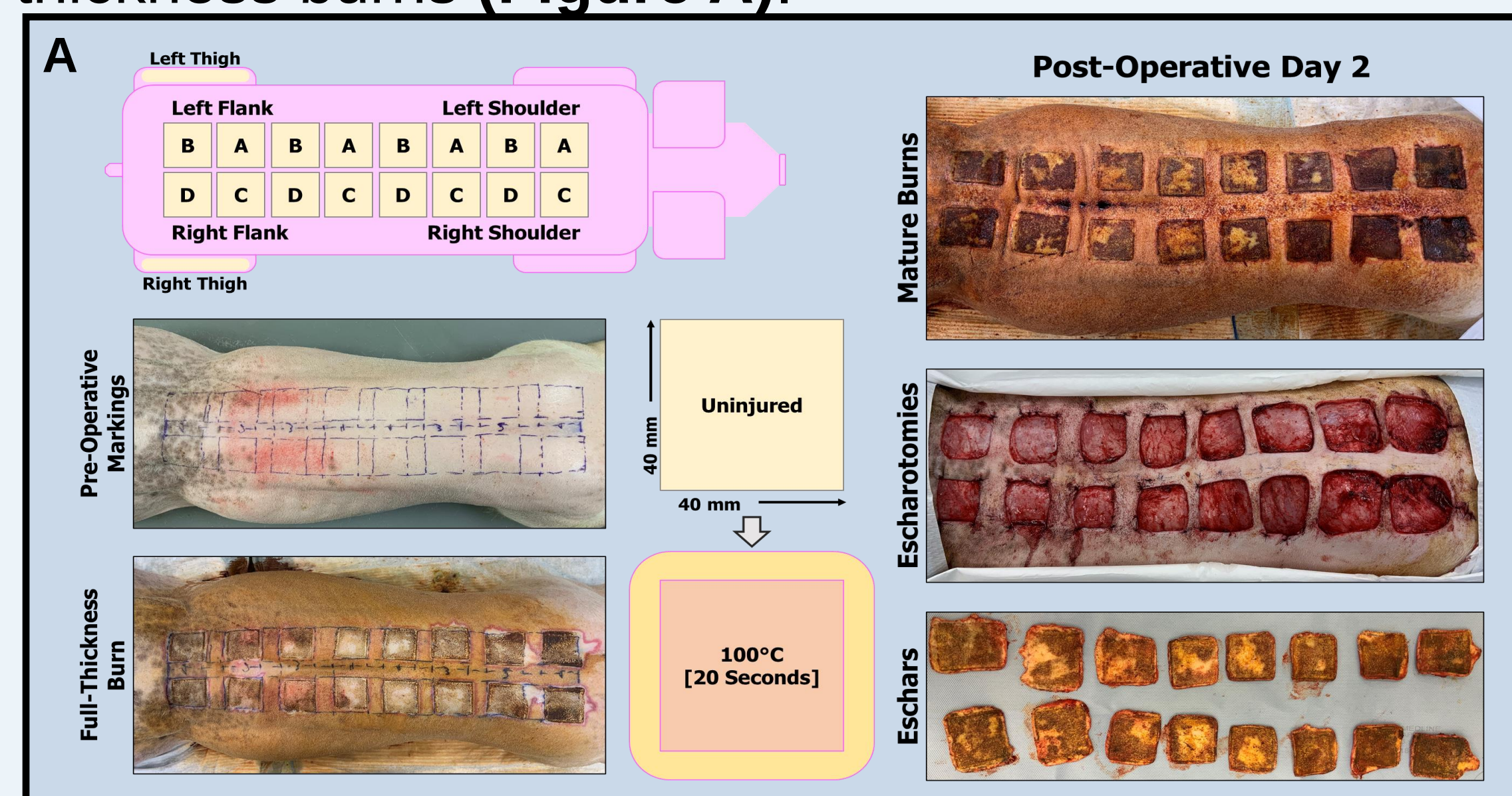
Shawn J. Loder, Phoebe Lee, Matthew Cannon, Caroline Fedor, Patricia Leftwich, Wayne Nerone, Kacey Marra, Lauren Kokai, J Peter Rubin.

Background/Aims

- Soft-tissue loss after complex burns are limited by contracture, adhesion, and soft-tissue deficit.
- Fat-first reconstruction minimizes adhesions and tissue deficits, but is limited by contracture
- Here we describe additional timed- and pulse-release dexamethasone to further mitigate contracture

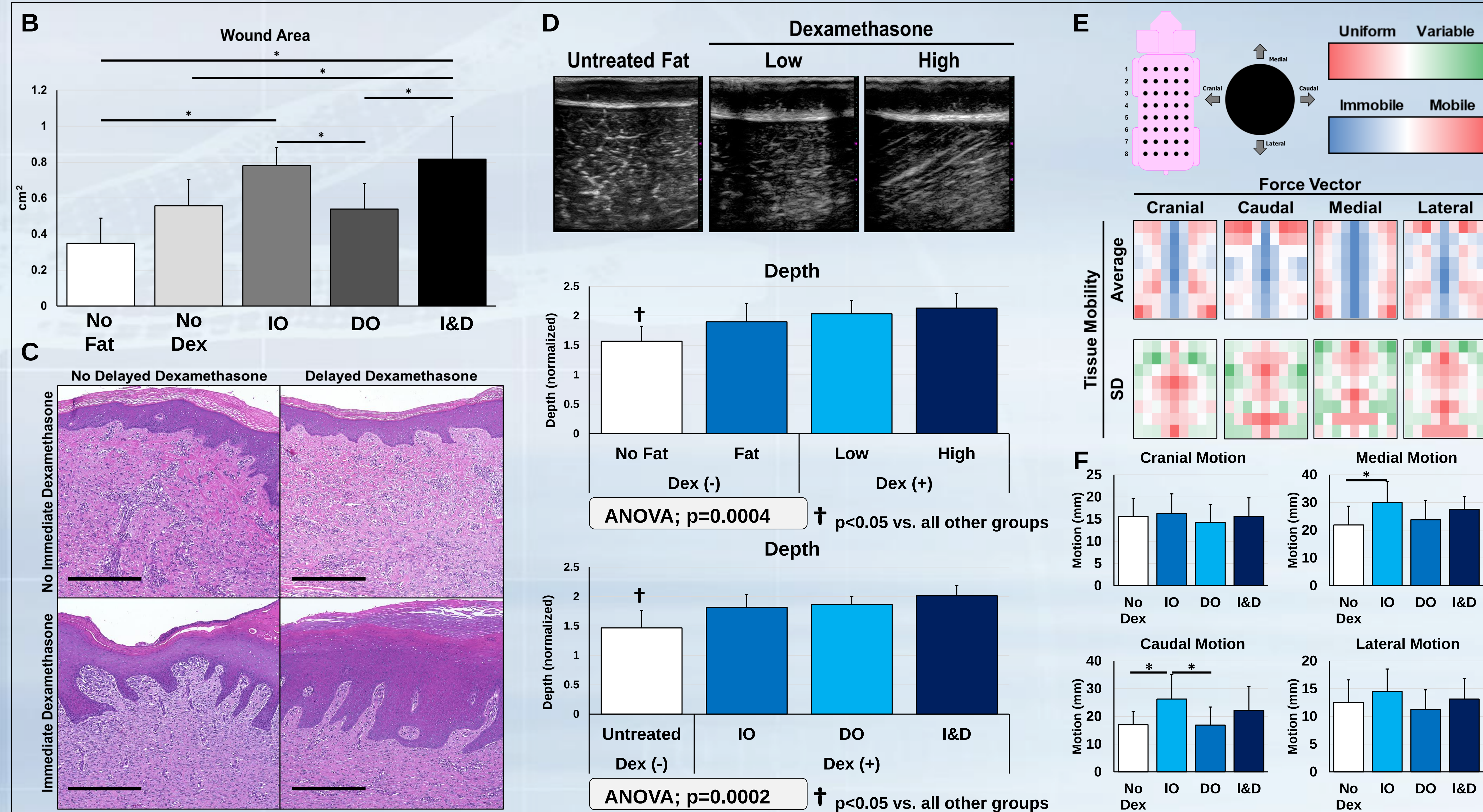
Methods and Materials

- Female, Yorkshire swine received 16, 4x4 cm full-thickness burns (**Figure A**).



- Wounds were stratified to receive: 1) Empty Microspheres or Dexamethasone as follows 2) Continuous/Sustained, 3) Immediate-Pulsed, 4) Delayed-Pulsed, or 5) Bimodal-Pulsed.
- At 8-weeks post-engraftment animals were sacrificed and all wounds were collected for photography, ultrasound, and histology.

Data



Results

- Pulsed-dexamethasone significantly reduced contracture in this model ($p<0.05$).
- Pulsed-dexamethasone further mitigated adhesions and soft tissue deficit vs. untreated comparison groups ($p<0.05$).

Figure Legends

- Schematic of Complex/Burn Model
- Contracture over time by dexamethasone treatment.
- Representative histologic images of the dermal-epidermal junction of dexamethasone treated wounds.
- Representative ultrasound (*top*) and depth measures (*bottom*) of reconstructed wound sites by treatment. $*=p<0.05$
- Schematic of tissue mobility/adhesion assessment with heat map representing normal porcine zones of adhesion
- Tissue mobility over time by direction of applied tension and reconstructive algorithm. $*=p<0.05$

(IO: Initial Dexamethasone Only); (DO: Delayed Dexamethasone Only); (I&D: Initial and Delayed Dexamethasone)

Conclusions

- Timed-release fat-loaded dexamethasone mitigates contracture, adhesion, and soft-tissue deficit.

Disclosure Statement

- No Disclosures to Report for this Work