Evaluation of Radioprotective Efficacy of ADM and DFO in Tissue Expansion Followed by Radiation

Ariel E. Figueroa, MD, Umer Qureshi, MEd, Taylor Hallman, BS, Bianka Progrí, MS, Joanna Ledwon PhD, Arun K. Gosain, MD
Division of Plastic Surgery, Ann and Robert H. Lurie Children’s Hospital, Chicago, IL

INTRODUCTION
- Tissue expansion (TE) expansion induces cell proliferation and blood vessel formation.
- TE are widely used in the reconstructive surgeries to produce extra skin.
- Complications are not rare especially in patients receiving radiation treatment.

We sought to investigate two modalities to improve TE in irradiated skin:
1. Deferoxamine (DFO)
2. Acellular Dermal Matrix (ADM)

METHODS
- Four 10x10cm grids tattooed on the back of the pig.
- Each pig received one expander without ADM, one expander covered in ADM, and one expander with DFO.
- TE was performed with 2 weekly injections of 30ml of saline.
- Skin samples were harvested at 2 weeks and 8 weeks after radiation.

RESULTS
- ADM has positive effect on the distribution of vascularity and elasticity along expanded skin.
- DFO also improves vascularity and elasticity, however this agent does not seem to improve these parameters as much as TE and ADM alone.
- Future directions include evaluating the effect of ADM and DFO on skin growth.

CONCLUSIONS