SYNCHRONIZED RF & HIFEM: FAT HISTOLOGY & SCANNING ELECTRON MICROSCOPY STUDY

SIMULTANEOUS APPLICATION OF HIFEM AND SYNCHRONIZED RADIOFREQUENCY FOR FAT DISRUPTION: HISTOLOGICAL AND ELECTRON MICROSCOPY PORCINE MODEL STUDY

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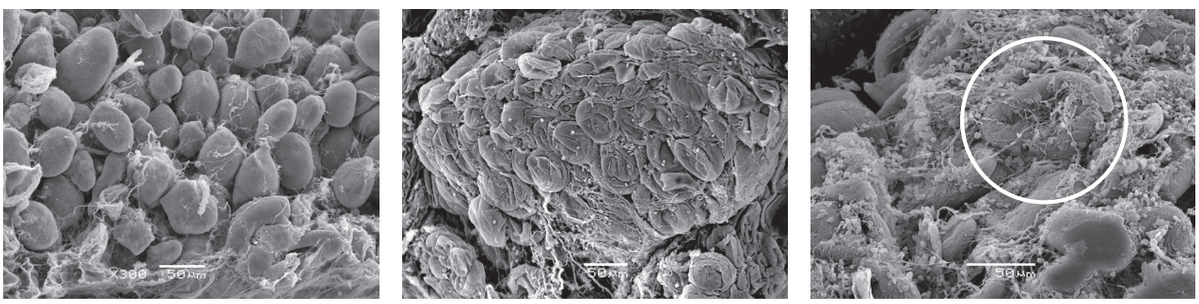
HIGHLIGHTS

- Both **histology** and **scanning electron microscopy** showed **damaged adipocytes** post-treatment due to apoptosis and lipolysis.
- **Adipocyte size** was **decreased by 31.1%** at 2 weeks post-treatment.
- The **temperature** in fat tissue was maintained **just below 45°C** for the entire treatment.
- **No necrosis** was seen in the tissue.



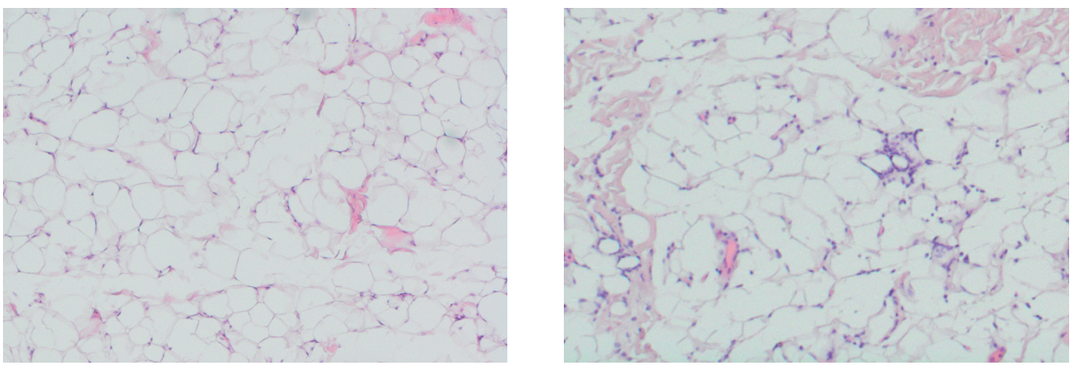
Healthy fat cells with well-defined shape at the baseline (left); shrunk adipocytes with noticeable membrane ruptures occurred at 4 days (center); disrupted adipocytes with extrusion of lipid droplets at two weeks (right)

STUDY DESIGN

- 7 Large White pigs (approximately 6 months old).
- All animals received three 30-minute treatments applied to abdomen.
- Biopsy specimens of fat tissue were collected at baseline, 4 days, 2 weeks, 1 month and 2 months post-treatment for each animal.
- Control specimens were collected from the site opposite to the treatment site.
- Evaluation included scanning electron microscopy and histology.

CONCLUSION

- The procedure elevates the **temperature** in subcutaneous fat to levels **necessary** for **apoptosis induction**.
- **Efficacy** of the procedure for **disruption of adipocytes** was documented in **252** analyzed tissue slices.
- Mild inflammatory response was present to promote the **apoptotic death cells removal**.
- The procedure was **safe, no burns, no necrosis** or other adverse events were documented.



Baseline histology (left) showed adipocytes without any damage. At 2 weeks (right), flattened adipocytes with delaminated membranes are seen along with immune cells clearing the damaged tissue.