Abdominal Dermis Tensile Strength in Aesthetic and Massive Weight Loss Patients and Its Role in Ventral Hernia Repair: A Cross-Sectional Study
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Disclosure: Nothing to disclose.
INTRODUCTION

Bariatric Surgery → Incisional hernia + Abdominal skin excess

Post-bariatric patient → ↑ Risk of infection → Avoidance of mesh
OBJECTIVES

• To compare the maximum tensile strength of abdominal skin to commercial meshes.

• To verify whether or not it varies between aesthetic patients and massive weight loss patients.
MATERIALS AND METHODS

• Experimental cross-sectional study

  15 abdominoplasties
  10 panniculectomies

  Skin samples sized 32x20 mm

• Vertical and horizontal tensile tests
MATERIALS AND METHODS

Figure 1: Samples positions
MATERIALS AND METHODS

Figure 2: System of clamps and screws used for graduated distension of the skin
MATERIALS AND METHODS

• Commercial meshes were also tested.

• Results were analyzed using the Generalized Estimating Equation (GEE).

• The study was approved by the local ethics committee.
RESULTS

Figure 3: Abdominal Skin Tensile Strengths
RESULTS

• There were no differences between the groups with regard to the maximum tensile strength \( (p = 0.472) \).

• Statistically, if a difference between aesthetic and post weight loss patients exists, it is lesser than 100 N \( (\beta=0.15) \).

• The strengths between traction directions were significantly different \( (p < 0.001) \).
Table 1. Maximum tensile strength of commercial meshes tested.

<table>
<thead>
<tr>
<th>Mesh</th>
<th>Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-density polypropylene</td>
<td>104.6 N</td>
</tr>
<tr>
<td>Low-density polypropylene</td>
<td>54.4 N</td>
</tr>
<tr>
<td>PTFE</td>
<td>82.2 N</td>
</tr>
<tr>
<td>Hydrated porcine small-intestinal submucosa</td>
<td>60.6 N</td>
</tr>
</tbody>
</table>

N: Newtons; PTFE: polytetrafluorethylene
CONCLUSION

• Tensile strength of samples, both aesthetic and post-bariatric, were superior to commercial meshes.

• Clinical studies are needed to clarify the dermis role during ventral hernias repair in post-bariatric patients.