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Title (type in  
CAPITAL  
LETTERS)A BIOMECHANICAL COMPARISON OF ALLOGRAFT  
FASCIA LATA AND ACELLULAR DERMAL GRAFTS

**Aims of Study:** The pubovaginal sling using allograft fascia lata (AFL) has gained widespread popularity in the treatment of stress urinary incontinence. Acellular dermal allografts (ADA) have been proposed as an alternative to AFL since the resulting acellular dermal matrix may help stimulate angiogenesis and promote graft integration. The purpose of this study was to compare the biomechanical properties of these two tissues in an effort to determine which tissue would be more advantageous for the pubovaginal sling.

**Methods:** All testing was performed on an Instron model 1321 material test system (Instron Corp., Canton MA). Load and elongation data were recorded on a digital oscilloscope and transferred to computer for analysis. 12 samples of ADA (LifeCell Corp., The Woodlands, TX) and 12 samples of solvent-dehydrated AFL (Mentor Corp., Santa Barbara, CA) were tested. All specimens measured 2 x 4 cm in diameter and were of comparative thickness (range 0.5-0.82 mm). Additionally, 3 samples of double-thickness ADA were tested. After hydration, the samples were gripped in slack position in pneumatic clamps within the apparatus. The ends were then distracted at a constant rate of 1mm/s and constantly monitored for maximal tensile strength (MTS) at specimen failure as well as elongation.

**Results:** The AFL group (N=12) had a mean MTS of 668.7 newtons, (S.D.=100.4). The ADA group (N=12) had a mean MTS of 240.4 newtons, (S.D.= 59.8). The differences were statistically significant ( $p < 0.001$ ). When the ADA samples were double-thickness (N=3), the mean MTS increased to 449.6 (S.D.=78.3). The percent elongation of the ADA group was greater than the AFL group (126.6%, S.D.=28.0 and 36.4%, S.D.=6.8, respectively).

**Conclusions:** The ADA group failed at a significantly lower threshold than the AFL group. Doubling the thickness of the ADA improved MTS. The elongation of the ADA was superior. It is not evident, at this point, what degree of tissue elongation is clinically desirable. Further studies are needed to define the most advantageous characteristics for material used in the pubovaginal sling procedure.

Dermal and fascial grafts provided by LifeCell Corp., The Woodlands, TX and Mentor Urology, Santa Barbara, CA.