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Histopathological findings in freeze-dried and fresh-frozen preserved human amniotic membranes.

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Purpose: To evaluate and compare histopathologic results obtained from freeze-dried (FD) and fresh-frozen (FF) preserved human amniotic membranes. **Materials and Methods:** A total of 64 samples of amniotic membranes, obtained from 4 immediate post-partum women, were evaluated. For each amniotic membrane, 8 samples were FD and 8 were FF. After 1, 7, 30 and 90 days, 2 samples from each group (freeze-dried and fresh-frozen) were analyzed by Hematoxylin & Eosin (HE) and Periodic Acid-Schiff (PAS) staining. The samples were classified semi-quantitatively according to degree of epithelial vacuolization (0 - 3), autolysis (0 - 3) and integrity of basement membrane (0 - 2). The mean scores of each feature were compared between each method and each placenta using independent samples *t* test and Anova test. A *p*-value of less than 0.05 was considered to be statistically significant. **Results:** The average score and standard deviation for the three semi-quantitative characteristics were calculated. Each of the FD and FF groups contained 32 samples (n=32). Epithelial vacuolization: 1.25±0.84 (FD) and 2.38±0.79 (FF); autolysis: 0.41±0.50 (FD) and 1.53±0.88 (FF); integrity of basement membrane: 1.87±0.34 (FD) and 1.28±0.46 (FF). Analysis of each of the semi-quantitative characteristics yielded statistically significant differences (*p*<0.001).

Conclusions: Freeze-drying and fresh-freezing are effective methods for human amniotic membrane preservation. Upon histopathological evaluation of the specimens, freeze-drying proved to be superior.