Radiofrequency & Microdebrider Turbinate Reduction in Sheep: A Pilot Study

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OBJECTIVES

• To compare the histologic and volumetric effects of bipolar radiofrequency (RFA) and microdebrider turbinate reduction in a sheep model.
• To evaluate the response of nasal mucosa in sheep to Compound 48-80 (Sigma Aldrich), a histamine releasing agent.
• To further develop a sheep model of endonasal surgery.

METHODS

To induce nasal hypertrophy, two sheep received Compound 48-80, and two sheep were controls. The right middle turbinate was treated with RFA, the left turbinate with microdebrider. In each group, one sheep was sacrificed immediately, the other at three weeks. Acoustic rhinometry, endoscopic photography and histologic analysis were performed.

RESULTS

Endoscopic treatment of the sheep turbinates was feasible with standard endoscopic telescopes and equipment. There were similar increases in nasal volumes between the microdebrider and RFA groups immediately and at 3 weeks. Histologic analysis revealed that the RFA device resulted in a qualitatively increased amount of mucosal damage when compared to the microdebrider. At three weeks there was more squamous metaplasia in the RFA group. Endoscopic evaluation revealed similar effects in turbinate reduction between the two groups. Compound 48-80 resulted in the expected decrease in nasal volume and increase in nasal secretions in one of two sheep.

Conclusion:

This pilot study suggests that the heat-independent method of the microdebrider results in less mucosal injury and squamous metaplasia than RFA. Both methods result in turbinate reduction. Continuation of this pilot study is planned to further define these modalities and the effects of Compound 48-80.

REFERENCES