Otoplasty Outcomes with Different Suture Materials in a Rabbit Model

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Introduction
- Otoplasty frequently relies on sutures to re-create the antihelical fold.1,2
- Permanent sutures and cartilage fibrosis produce and maintain a more desirable configuration.
- Clear nylon and Mersilene sutures are the most commonly employed suture material in otoplasty.3,5
- Objective: to determine which suture in a rabbit ear provides the most consistent, resilient, and lasting results.

Methods

Model
- 12 male New Zealand White Rabbits

Surgery
- Each ear randomized to 4-0 Mersilene vs 4-0 Nylon
- Mustardé Sutures Placed

Recovery
- 2 week recovery period

Analysis
- Sacrifice post operative day #14
- Mean bend angle measured
- Histologic section and analysis

Results
- Nylon mean bend angle: 135.8° (SD, 22.7°) and range, 119.9°-160.1°.
- Mersilene mean bend angle: 143.2° (SD, 19.7°) and range, 119.9°-160.1°.
- Overall, there was no significant difference between the nylon and Mersilene suture groups (independent samples t-test, P = 0.559).
- Histological analysis of the ears showed no significant differences between the nylon and Mersilene treated ears.

Discussion
- This study is the first prospective comparison between the two most commonly used sutures in otoplasty to re-create the antihelical fold.1,3
- Cartilage regeneration and remodeling begins within the first week, post-operatively.4
- By 2 weeks there is sufficient proliferation to stabilize the cartilage, with no further change seen between 2 and 6 weeks.4
- Early surgical failure is therefore often due to suture breakage or pulling through.
- Mersilene costs approximately $4.16 per suture compared to lesser expensive nylon, which costs approximately $1.67 per suture.
- Dissimilarity between species must be considered when using an animal model, and is a potential limitation.
- The rabbit ear is, however, a widely used model in otoplasty and has been described many times in the literature.5,6,7

Conclusion
- The two most common sutures used in otoplasty (Mersilene and Nylon) were compared directly in an animal model.
- There was no significant difference between these sutures with regard to mean bend angle or histological analysis two weeks post-operatively.
- Nylon is slightly less expensive, making it the preferred option.

References