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Title: Improving Middle Ear Ventilation in the Cleft Palate Patient: The Tensor Veli Palatini Tenopexy.

Purpose: Children born with cleft palate have poor middle ear ventilation secondary Eustachian tube dysfunction. These patients typically have compromised hearing and multiple episodes of otitis media, requiring several myringotomy procedures, well into childhood. An intervention, which may improve to Eustachian tube function in the cleft palate patient, consists of isolating the tensor veli palatini during cleft palate repair, and suturing the muscle, under tension, to the hamulus (tensor tenopexy). In theory, affixing the tensor veli palatini tendon in a flexed position, will more likely maintain the Eustachian tube in an open conformation, improving middle ear ventilation. An improvement in Eustachian tube function resulting from tensor tenopexy could be observed by an earlier graduation from myringotomy tubes.

Methods: A retrospective review of all patients undergoing cleft palate repair by a single surgeon between 1997 and 2001. Patients who were syndromic or over 16 months of age at the time of surgery were not included in the study. The control group consisted of 33 consecutive cleft palate repairs without tensor tenopexy (1997-1999). This group was compared to 47 consecutive cleft palate repairs with tensor tenopexy (1999-2001). Surveys were sent to the parents of all study patients inquiring the age at which the patient stopped needing myringotomy tubes. Non-responders were sent another survey and received a follow-up phone call. The percentages of patients in both groups requiring myringotomy tubes were compared at each age by ANOVA analysis.

Results: 42 patients were successfully contacted (52.5% response rate): 16 control patients and 26 case patients. A total 83 ears were analyzed: 31 controls (a unilateral perforation was not analyzed) and 52 case patients. Compared to patients who had undergone traditional cleft palate repair, patients who had the tensor tenopexy procedure during cleft palate repair stopped needing myringotomy tubes at an earlier age. This trend was statistically significant by age 4 {control 68%, tenopexy 42.3% ($p<0.05$)}. The difference between the two groups increased as the patients matured, until the age of 7 when our analysis ended {61% control, 23.1% tenopexy ($p<0.001$)}.

Conclusion: In patients who undergo cleft palate repair, the tensor tenopexy procedure provides a statistically significant decrease in the need for myringotomy tubes compared to patients who do not undergo tensor tenopexy.

Significance: Tensor tenopexy is an adjunctive procedure that may improve Eustachian tube function after cleft palate repair. We provide evidence that patients who undergo tensor tenopexy are less dependent on myringotomy procedures.

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