

# Use of tragal cartilage grafts in rhinoplasty: An anatomic study and review of the literature

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## Abstract

*We conducted a cadaveric study to determine the size of cartilage grafts that can be taken from the tragus without distorting tragal anatomy. Our subjects included 7 fresh cadavers—3 male and 4 female (age at death: 61 to 87 yr). Tragal cartilage grafts were harvested while leaving the lateral 3 mm of the tragal cartilage in situ to preserve the anatomic shape of the tragus. The grafts were measured and their dimensions recorded. The craniocaudal dimensions of the tragal cartilages ranged from 15 to 30 mm (mean: 21.6), and the width of each specimen ranged from 10 to 23 mm (mean: 15.3). The thickness of the cartilage was approximately 1 mm. The grafts were slightly curved along their long axis. We also review the literature regarding the dimensions of different grafts used in rhinoplasty, knowledge of which can help in preoperative planning. Tragal cartilage grafts have been used as shield, alar contour, alar batten, lateral crural onlay, dorsal onlay, and infratip lobule grafts. When a straight and/or thick graft is needed, two strips of tragal cartilage can be sutured in a mirror-image configuration.*

## Introduction

The use of cartilage grafts in rhinoplasty has been instrumental in improving aesthetic and functional outcomes. Septal cartilage has been traditionally the graft

of choice. However, while it is often sufficient in primary cases, it may be inadequate in secondary cases. When a patient's septal cartilage is deficient because of previous surgery or a large septal defect, conchal cartilage and/or rib cartilage have been popular second-line options.

The ideal graft material should be pliable, durable, easily harvested and contoured, biocompatible, and of adequate supply, and its harvesting should cause minimal donor-site morbidity. Although allografts have been described for use, they are costly and have the potential for extrusion and infection. Homografts are prone to resorption, warping, extrusion, and infection, and graft safety is questionable.<sup>1</sup> A wide variety of grafts have been described for rhinoplasty, indicating that the ideal graft material has yet to be found.<sup>2</sup>

Tragal cartilage has been used in rhinoplasty as a grafting material in various settings.<sup>3-5</sup> Tragal cartilage may be a valuable option for secondary rhinoplasty cases when septal cartilage is perforated or missing, and in patients who have previously undergone septal surgery.

There is a paucity of anatomic data in the literature regarding tragal cartilage size and use in rhinoplasty. In this article, we describe our study to determine the maximum graft size that can be dissected from the tragus without distorting tragal shape. In addition, we review the literature related to tragal cartilage grafts used in rhinoplasty.

## Materials and methods

Tragal cartilage grafts were harvested from 14 ears obtained from 7 fresh cadavers—3 male and 4 female (age at death: 61 to 87 yr). For each tragal cartilage harvest, a curvilinear skin incision was made on the posterior surface of the tragus 3 to 4 mm from the free margin. The incision extended along the entire anterior wall of the external auditory meatus and down through the perichondrium. An iris scissors was used to dissect the

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