

Measurement of Nasal Septal Cartilage in Adult Filipinos Using Computed Tomography

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Abstract : Background: The nasal septal cartilage is an autologous graft that is widely used in different otolaryngologic procedures of the different subspecialties, such as in septorhinoplasty and ear rehabilitation procedures. The cartilage can be easily accessed and harvested to be utilized for such procedures. However, the dimension of the nasal septal cartilage differs, corresponding to race, gender, and age. Measurements can be done via direct measurement of harvested septal cartilage in cadavers or utilizing radiographic imaging studies giving baseline measurement of the nasal septal cartilage distinct to every race. A preliminary baseline measurement of the dimensions of Filipino nasal septal cartilage was previously established by measuring harvested nasal septal cartilage in Filipino Malay cadavers. This study intends to reinforce this baseline measurement by utilizing computed tomography (CT) scans of adult Filipinos in a tertiary government hospital in the City of Manila, Philippines, which will cover a larger sampling population. Methods: The unit of observation and analysis will be the computed tomography (CT) scans of patients ≥ 18 years old who underwent cranial, facial, orbital, paranasal sinus, and temporal bone studies for the year 2019. The measurements will be done in a generated best midsagittal image (155 subjects) which is a view through the midline of the cerebrum that is simultaneously viewed with its coronal and axial views for proper orientation. The view should reveal important structures that will be used to plot the anatomic boundaries, which will be measured by a DICOM image viewing software (RadiAnt). The measured area of nasal septal cartilage will be compared by gender and age. Results: The total area of the nasal septal cartilage is larger in males compared to females, with a mean value of 6.52 cm² and 5.71 cm², respectively. The harvestable nasal septal cartilage area is also larger in males with a mean value of 3.57 cm² compared to females with only a measured mean value of 3.13 cm². The total and harvestable area of the nasal septal cartilage is largest in the 18-30 year-old age group with a mean value of 6.47 cm² and 3.60 cm² respectively and tends to decrease with the advancement of age, which can be attributed to continuous ossification changes. Conclusion: The best time to perform septorhinoplasty and other otolaryngologic procedures which utilize the nasal septal cartilage as graft material is during post-pubertal age, hence surgeries should be avoided or delayed to allow growth and maturation of the cartilage. A computed tomography scan is a cost-effective and non-invasive tool that can provide information on septal cartilage areas prior to these procedures.

Keywords : autologous graft, computed tomography, nasal septal cartilage, septorhinoplasty

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