The cricothyroid joint—functional aspects with regard to different types of its structure.

Abstract:

The cricothyroid joint (CTJ) plays a key role in pitch adjustment of the human voice. It allows an external elongation of the vocal fold performed by the cricothyroid muscle with a consecutive stretching and increasing of tension. Phonosurgical methods such as cricothyroid approximation need sophisticated investigations on anatomical and functional principles because of the low satisfaction rates. Fifty cadaveric specimens were analyzed to reveal the morphological and functional anatomy of the CTJ focusing on possible gliding movements in a horizontal and vertical direction. The cartilaginous surfaces of the CTJ were categorized according to Maue and Dickson into three different types (type A: well-defined facet; type B: no definable facet; type C: flat cartilage surface or protuberance) and functional correlations examined. Side different statements and intraindividual differences between male and female specimens were included. Besides from rotational movements, the CTJ allowed horizontal and vertical gliding movements depending on the different types of the cartilaginous surfaces. Especially the difference concerning mobility between type A and the others was highly significant (P<0.001). Two thirds of our specimens showed a similar type in both CTJs, whereas in one third it was asymmetric. In comparison to the possible change of distances between horizontal gliding movements and rotation, rotation caused significant elongation of the vocal folds, which
should be proposed in phonosurgical methods for cricothyroid approximation.