Commentary on: The Osseocartilaginous Vault of the Nose: Anatomy and Surgical Observations

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The study by Palhazi, Daniel, and Kosins is a thorough anatomical and clinical analysis of the osseocartilaginous vault of the nose. The authors begin the article with some of the finest anatomical dissections of the nose currently in the literature. Their photography and measurements provide a high level of detail. On the basis of the data they collected in the cadaver laboratory, they were able to draw evidence-based conclusions with substantial clinical implications for humpectomy—a persistent problem for many surgeons.

For example, they clearly show that whereas the shape of the hump is determined largely by the cartilaginous component prehumpectomy, the sides of the resultant nasal bones, posthumpectomy, determine the dorsal aesthetic lines. This anatomic finding reinforces the need to fashion the bones as much as or more than the cartilages to create the desired dorsal aesthetic lines.

They also introduce the concept that the bony component of the dorsal hump should be thought of as a “cap” covering the cephalic part of the cartilaginous hump. They make the case that this cap can be removed easily enough with a rasp, although they indicate later in the paper that they occasionally use a power tool. This description is, perhaps, the single most important practical contribution from their anatomic studies. It provides encouragement for the beginning rhinoplasty surgeon to duplicate this seemingly atraumatic technique that leaves the cartilaginous hump in good condition to be able to construct spreader flaps. One of the most potentially frustrating problems of humpectomy is damage to the cephalic component of the upper lateral cartilages (ULC) (of the hump). Following bone removal, the cartilaginous component should have sufficient integrity so that it can support noncollapsing spreader flaps.

Evidence for removing the bone cap with only a rasp and thereby exposing an intact cartilaginous hump is corroborated by a number of studies by the senior author, Daniel. Here, the authors recommend using an exceedingly sharp rasp for the function. Sheen has also commented that it is possible to remove the bony component of the hump without damaging the cartilages if a Foman rasp is used (using a closed technique). Presumably the shape of the cartilaginous hump was palpated to be unaltered after the cap was rasped off.

Tebbetts has acknowledged, however, the potential for inadvertent trauma, avulsion, or abrasion to adjacent tissues (presumably the cartilages) when using a rasp. For that reason, he recommended a rasp or power burr, preferring the latter instrument under direct visualization for greatest accuracy, specifically an angled electric-powered low torque, low revolutions per minute (rpm) hand piece. Concerns for soft tissue and cartilage damage from rasps have prompted a number of surgeons to use power tools in this region of the nose when removing a large quantity of bone.

Our personal experience with rasps has not been as successful as that of the authors, which should not be interpreted as a reason for the beginning rhinoplasty surgeon not to attempt the authors’ technique first. Quite the contrary, the authors’ success rate of 100% is not in dispute and is a good reason to attempt their method. Unfortunately, we damaged the cartilaginous hump in the process of removing the bony hump, perhaps because of using inappropriate...
rasps or less than gentle handling of the tissues. Consequently, we chose to separate the ULC from the underside of the bone rather than separate the bony cap from the underlying cartilages. First, the ULC is released from the dorsal septum.7-9 Next, it is disarticulated from the bony/cartilaginous junction. A Freer elevator is needed on occasion to separate the underlying cartilage from the overlying bone. The cartilage and the rest of the ULC are folded over to make spreader flaps. With the flaps out of the way, the dorsal septum of the cartilaginous hump and bony hump are removed as one piece using a knife, followed by an osteotome, under direct vision. The single specimen (which typically resembles a planaria) contains the bone cap at the cephalic end of the specimen (Figure 1). A small component of perpendicular plate can often be found on the underside of the cap.

One other reason we may have had difficulty rasping is our impression that the cartilaginous hump underlapping the bony cap seems to thin out, even become attenuated, at the very cephalic end, making it vulnerable to the teeth of a rasp. Several studies10-13 have evaluated the extent to which the cartilaginous hump (including the ULC) extends cephalically beneath the bony hump (cap). The extent is quite variable. Potter et al14 found 8.63 mm (mean), which seems substantial when the hump is removed; however, the range was 2-15 mm. A total of 2 mm of underlapping cartilage is not a lot beneath the bone and could account for the occasional paucity or weakness of cartilage in the cephalic end of the cartilaginous hump that we have noted.

Rasping the bone is a potential problem after the hump is removed and spreader flaps have been made. When lowering the dorsum further, a rasp is even more likely to damage the cartilage unless precautions are taken. We use a push rasp or, preferably, a bone clipper (Figure 2). Other than this caveat, the authors’ initial approach to using a rasp on the cap is effective.

Finally, only a few minor debatable issues arise from this study. First, stating that an osteotome removes more bone than is necessary is generally true. In our experience, however, it is because of two avoidable reasons: (1) not sharpening the osteotome before each use and (2) not performing the osteotomy under direct vision. Second, stating that “there is no bony hump, just a bony cap” may, at first glance, seem to be a matter of semantics. On the other hand, it is an important and stark reminder and outstanding visual means of envisioning the anatomy of the keystone area. The study is one of the hallmark features of this study for which the authors are to be commended. Unlike many forgettable anatomic studies, this one describes anatomy in a memorable fashion.

**Disclosures**

The authors declared no conflicts of interest with respect to the research, authorship, and publication of this article.

**REFERENCES**


