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Mally et al[1] have examined subjects in an upright and supine position, smiling and in repose. Observing that many of the signs of aging—cheek flattening, prominent nasolabial folds, malar bags, tear troughs, and steatoblepharon—were reduced by lying supine (recumbent) and smiling (P = .0001), they conclude that the effects of gravity must therefore have caused these aging signs. They contend that because altering the direction of gravity's pull by 90 (not 180) degrees makes the face look improved, the force of gravity must have created these changes of aging.

If the question at hand is the effect of gravity and its reversal on the soft tissues of the midface, then one would expect to compare the upright face with the upside-down face. If so, there is a clear gravitational opposite, a model that might shed some light or at least some informed discussion on the question. By placing the patient in a recumbent position, the force of gravity pulls posteriorly on the face. This is an altogether different proposition.

The soft tissues of the face are quite mobile[2]; a finger can push the skin of the face in ovals of various sizes, regardless of age. In an upright position, the face generally sits at its lowest limits of excursion, except for over the jowl, where there might be a few millimeters of give. When recumbent, the soft tissues slide posteriorly, much as a breast will slump laterally when supine.[3] It is no accident that the authors found that the smile as well as recumbency had similar effects on the face. By the vagaries of evolution, the smile muscles have a posterior and superior pull; hence, when smiling, the cheek mass gets pushed posteriorly and superiorly. As it happens, lying supine has very similar effects. One effect is muscular, the other positional.

These similarities are noted by the authors. The differences are not: a smile exaggerates the nasolabial folds, and the recumbent position smoothes them. The supine cheek, particularly in a heavy face, falls over the ears, severely widening the face: the nostrils expand, the mouth stretches, and the eyebrows can rise to abnormal levels. The whole face can look plethoric. The longer one looks at the supine face, especially a heavy one, the more abnormal it appears. (An animated image is available at www.aestheticsurgeryjournal.com.)

As a demonstration of the effects of a facelift, placing a patient supine lasts for a few seconds, allowing people to see only the nasolabial fold changes without giving them time to focus on the rest of the face. A plastic surgeon looking at position changes as a model for aging should be aware of the negative changes as well. As a detailed model for facial aging, this maneuver is highly imperfect to close inspection.

The observation that pulling back on the face (the mirror lift) makes an aspect of it look better probably dates to the invention of the first mirrors in the Bronze Age. It is a therapeutic model, the basis of the facelift and a commercial success. The fact that this maneuver might improve the appearance of some (certainly not all) faces does not necessarily mean that the mechanics of aging are the opposite of that maneuver.

Studying the aging face is frustrating. Faces in various stages of aging are all around us, but it is extraordinarily difficult to get usable information about them. It has made sense to me to look at individual faces over time, charting the differences by using old images and comparing them with newly taken ones.

This method lends itself best to the periorbital area, where the bony and soft-tissue fixed points are reproducible and close together.

Having some experience with matching serial photographs, I can attest that getting meaningful results is difficult. A rigorous approach is needed; in trying to match a simple face-on photograph, I might take 15 or more new images to get usably close to duplicating the original camera position

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relative to the face (a 3-dimensional camera makes this easier). Tiny changes in head position make large changes in conclusions.

It is common to use celebrity images from the Internet to track facial aging changes—some people seem to make a hobby of it—but making valid comparisons is considerably more difficult than matching photos as described above. There are usually big smiles that distort the entire face. The light is different, the images may have been Photoshopped, and position is never exactly the same. In my experience, it is rare to find such image pairs close enough in position to make valid judgments about changes of a few millimeters on the subjects' faces.

Soon after beginning to look at highly aligned image pairs in 2001, I was surprised to find that contrary to my expectations (and the facial aging literature), there was very little geographic movement of the soft tissues of the upper cheeks and lower periorbital area, even after decades of aging. Although orbicularis wrinkles moved abundantly within the lower lid itself, moles on the cheekbones and cheek orbicularis wrinkles moved minimally—a few millimeters or not at all. The tear trough was remarkably stable. This is not to say that these structures and skin markers are immobile; they are not, but they do not move nearly the amount that the mirror lift, a facelift, or recumbency would move them.[4] Ongoing study has not changed this essential finding.

If the face slides medially and inferiorly with age as this article implies, then points on the skin should slide with it and then be restored to their original positions by traction or recumbency. There is no evidence to indicate that this actually happens. *Observed points on the skin of aging faces simply do not move enough to be consistent with the recumbent model.*[4] The motion of skin markers with positional and facelift maneuvers is much larger than the observed drift of skin markers with age. If the recumbent model is true, then the sideburn should start immediately adjacent to the ear when young and move anteriorly away from the ear with age.

Most of us live in a world of vertical light. When a face is photographed in vertical light and then photographed recumbent, the light changes from tangential to full face, visually flattening wrinkles and folds. This is one of the reasons for the improvement of the face when supine. The authors discuss this phenomenon. Still, the photographs in this article are so different in lighting, size, camera position, and perspective that I find it difficult to draw any conclusions from them. To evaluate subtle physical findings, the photographs must be as similar as possible to compare the study variables. One simply cannot draw valid conclusion about millimeter changes of the face using pictures that are centimeters apart.

Demonstrating the putative results of a facelift by placing a patient supine has a time-honored place in plastic surgery. It is a harmless demonstration that patients may benefit from. On the other hand, I think that position change comparisons are misleading and not particularly relevant for a rigorous analysis of the mechanics of aging. The model does not fit the observations.

Studying facial aging is challenging because it is difficult to get detailed information about large numbers of faces over time. All input is valuable to study this phenomenon, which is so familiar yet so poorly understood. I commend the authors for their sincere interest and diligent and detailed study, and I look forward to seeing their results using the 3-dimensional camera.

Disclosures

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