Gender Reassignment
Feminization and Masculinization of the Neck

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KEYWORDS

• Mandibular angle reduction • Genioplasty • Chondrolaryngoplasty • Maxillofacial prosthesis
• Rhytidectomy • Transgender

KEY POINTS

- Facial features are strongly correlated with one's gender and is particularly important for transgender patients who seek social integration and gender congruity.
- Facial procedures related the feminization and masculinization have long been recognized as crucial to this process.
- This article focuses on these procedures as they relate to the lower facial third and neck.

INTRODUCTION

Gender dysphoria, quite often referred to as gender identity disorder, as renamed by the American Psychiatric Association in the *Diagnostic and Statistical Manual of Mental Disorders* in 2013, is defined by an individual's persistent discomfort with their assigned sex. Individuals with gender identity disorder have a desire to live as members of the opposite sex and therefore often modify their primary and secondary sex characteristics. Their facial appearance is central to their ability to pursue and maintain social interactions as their desired gender. Although most individuals will ultimately undergo bottom surgery, very few members of society will bear witness to the patient's actual genital modifications. This is unlike their facial appearance, where the dysphoric patient has the challenge of integrating into society as the desired gender, despite difficulty camouflaging the characteristics of their assigned gender.

SEXUAL DIMORPHISMS OF THE ANATOMY

Skin

Skin texture

The skin of the face and neck in female individuals overall looks smoother and softer, with a reduced appearance of pores.[1,2] In comparison, male skin is significantly rougher,[3] with more pronounced pores and evidence of facial hair.[1]

Skin thickness

Throughout the body, male individuals have thicker skin than female individuals.[4] When looking at each layer of the skin, typically the dermis is thicker in male individuals and the epidermis is thicker in female individuals.[4] These

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gender-related differences correlate to the effect that sex hormones have on specific layers of the skin.[4] Epidermal growth is influenced by estrogen, as demonstrated by postmenopausal women experiencing a thinning of their epidermis.[4] However, when looking at the face specifically, Whitton and Everall[5] found male individuals to have thicker epidermis than female individuals, measuring at 55 μm versus 40 μm, respectively.

Rhytids

Rhytids of the face and neck are considered by society to be a more masculine feature.[1] Generally, women tend to have fewer rhytids on the face and neck due to thicker subcutaneous tissue and smaller facial muscles that cause less contraction of the skin and subsequent expression lines.[1] When looking at gender-related differences in rhytids, Tsukahara and colleagues[3] found men to have significantly more inferolateral oral commissure lines in those 21 to 28 years old. However, when looking at the 65-year to 75-year range, postmenopausal women, with decreased circulating estrogen and thinning skin, were found to have significantly higher scores compared with men.[3]

Wound healing

Female skin tends to have superior wound healing and reduced scar formation compared with male skin.[4] This gender discrepancy is also influenced by the differing levels of circulating sex hormones. Estrogen enhances the signal transduction of cytokines that reduce harmful inflammation and promotes protein balance, thus accelerating cutaneous wound healing.[4]

Subcutaneous fat distribution

Overall, female individuals have a thicker subcutaneous fat than male individuals, which serves to obscure the muscular form and produce contours associated with femininity.[1,4] Cervical subcutaneous tissue is significantly more in female individuals.[6,7] Based on compartments described, Bredella[8] found that female individuals have more adipose tissue in the subcutaneous compartment, whereas the male distribution is primarily in the 2 intermuscular compartments (posterior and perivertebral).[9]

Musculature

Masseter

The masseter muscle is sexually dimorphic. The bulkier male masseter yields a more pronounced lower mandibular border and gonial angle, which is regarded by society as a more masculine feature.[2,10–15]

Cervical

Zheng and colleagues[16] and Rankin and colleagues[17] used MRI and ultrasound, respectively, to evaluate the gender-related differences in neck muscle volume. Male individuals were found to have their muscle volume occupy 7% more of the total neck volume compared with female individuals (male: 32%, female: 25%).[16,18] When looking at individual neck muscles as a percentage of total neck muscle volume, the sternocleidomastoid and longus capitis muscles were significantly larger in female individuals, whereas the obliquus capitis inferior muscle was significantly larger in male individuals.[16] However, when normalized for body mass, there was no significant size difference between genders.[17]

Submandibular Salivary Gland

Submandibular salivary glands, part of the mandibular subcutaneous soft tissue structures, can largely influence the contour of the jawline.[1] Scott[18] demonstrated sexual dimorphism in gland size, and Inoue and colleagues[19] supported this finding, where the bilateral summed volume in male individuals was found to be 34.1 cm^3 and in female individuals to be 24.2 cm^3.

Bony and Cartilaginous Architecture

The craniofacial skeleton establishes the architectural gender differences of the face.[20]

Mandible

Visual characteristics of the mandible can be used to determine gender with a high level of certainty.[21] A wider and sharper jaw is regarded as an indicator of masculinity.[1,22,23] The male mandible is 20% larger.[1,23] These features include a thicker external oblique ridge,[1,22] broader and longer ascending ramus,[1,21] larger condyle,[1] more pronounced mandibular flare,[1,11,23] more acute gonial angle,[1,11] and a larger bigonial diameter[21] (**Fig. 1**). In contrast, the female mandible is smaller, with a more obtuse gonial angle and less

Fig. 1. Preoperative Panorex demonstrating wide bigonal distance before angle reduction.