

Platysma Thickness Change with Age: A Retrospective MRI Study

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Research Article

Keywords: Platysma muscle, Neck aging, Magnetic resonance imaging, Muscle atrophy, Gender differences, Aesthetic surgery

Posted Date: October 17th, 2025

DOI: <https://doi.org/10.21203/rs.3.rs-7755090/v1>

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Additional Declarations: No competing interests reported.

Abstract

Purpose

Platysma bands are among the earliest visible signs of neck aging, yet the mechanisms underlying their development remain debated. This study aimed to evaluate age-related changes in platysma thickness using axial MRI, with attention to the modifying effects of gender.

Methods

A retrospective review of 200 MRI neck scans from patients aged 18–99 years was conducted at two tertiary centers. Platysma thickness was measured bilaterally at six anatomical levels using standardized radiological protocols. Associations with age and gender were assessed through correlation analysis, group comparisons, and multivariable generalized linear models.

Results

Platysma thickness demonstrated a progressive, statistically significant decline with advancing age across all measured sites ($p < 0.001$), most pronounced at the hyoid and infrahyoid levels. Males consistently exhibited greater muscle thickness than females ($p < 0.001$), a difference that persisted after adjustment for age. Multivariable regression confirmed that both increasing age and female gender were independently associated with reduced platysma thickness.

Conclusion

This study provides MRI-based evidence of age-related platysma atrophy, particularly in regions critical for neck contour. These findings suggest that structural muscle degeneration contributes substantially to neck aging and support incorporating imaging metrics into individualized aesthetic assessment and treatment planning. Consideration of both age and gender may enhance the precision of surgical and nonsurgical rejuvenation strategies.

Background and Significance

The platysma is a thin, sheet-like voluntary muscle innervated by the facial nerve. It originates broadly from the fascia of the upper thorax, including the clavicle, acromial region, and the pectoralis major and deltoid muscles. Its fibers course superiorly and medially in a rostral-caudal direction, inserting into the mandible, cheek skin, commissure of the mouth, orbicularis oris, and in some cases as high as the orbicularis oculi. Notably, the muscle has only a small bony insertion on the anterior third of the mandible [1, 2].

Anatomically, the platysma exhibits several variations. In 75% of individuals, its medial fibers interdigitate below the chin for 1 to 2 cm; in 15%, this interdigitation extends to the thyroid cartilage; and in 10%, no interdigitation occurs. The muscle's striated fibers can vary significantly in thickness depending on age, gender, and nutritional status. In elderly or malnourished individuals, it may be indistinct from overlying adipose tissue. Deep to the platysma lie the sternocleidomastoid and digastric muscles laterally, and the strap muscles medially, covering the larynx and thyroid [1–3].

Platysma fiber arrangement and decussation patterns vary among individuals, influencing neck aesthetics and aging [4]. Contraction of the platysma elevates the neck, accentuates platysmal bands, lowers midfacial tissues, and contributes to facial expressions such as surprise, horror, or disgust. It also assists in mandibular depression, thereby altering neck shape and contour. Physiologic variants include partial or complete absence, unusual termination points, or extension into facial musculature such as the zygomaticus or orbicularis oris [1, 2].

Platysma bands are among the earliest visible signs of neck aging, often becoming apparent after the age of 55 [1]. Prior studies have identified shortening and thinning of the platysma as the predominant age-related changes [2]. However, the etiology of these bands remains debated. While some researchers attribute them to progressive skin laxity and muscle atrophy [5], others emphasize the role of hyperkinetic platysmal activity, suggesting that muscle changes precede and influence skin draping [1].

A more refined understanding of platysma aging is vital, as it informs surgical and nonsurgical rejuvenation strategies. Surgical techniques that preserve the cervical branch of the facial nerve during subplatysmal procedures have been described to reduce morbidity and improve outcomes [6]. Current treatments may either aim to tighten lax tissues or target muscular hyperactivity. However, imaging studies exploring the structural integrity of the platysma with age remain scarce. This study aims to fill this gap by radiologically assessing platysma thickness changes with age and gender.

Methods

Study design, settings, and eligibility criteria

This retrospective observational study was conducted at Lebanese American University Medical Centers—Rizk Hospital and Saint John Hospital. MRI neck scans from 2009 to 2023 were reviewed. Inclusion criteria included patients aged 18 years and older who underwent neck MRI for various clinical indications. Only scans with appropriate imaging protocol—axial T1-weighted sequences with sufficient resolution and no significant motion artifacts—were included to ensure reliable platysma measurements. Exclusion criteria encompassed prior neck radiation, surgeries involving subplatysmal dissection, previous neck or lower face botulinum toxin injections, FNA through the platysma, vocal cord pathology, poor-quality MRI scans with motion artifacts or missing slices at key measurement levels, and cases with abnormal neck anatomy such as congenital malformations or mass lesions impacting the platysma.

Ethical approval

This study was approved by the Institutional Review Board (IRB) of the Lebanese American University. Patient confidentiality was maintained in accordance with institutional and ethical guidelines.

Measurements

Platysma thickness was measured at six preset anatomical sites on axial MRI: suprahyoid level, infrahyoid level, hyoid level, angle of mandible, 4 cm below the angle of mandible, and the most inferior aspect of the orbicularis oris, bilaterally. All measurements were performed by two trained investigators using a standardized protocol. Interobserver agreement was assessed on a random subset of 20 MRIs to ensure reliability. A separate key sheet linking patient MRNs to study-specific IDs was maintained by the principal investigator and stored securely. Only de-identified datasets were used for analysis, and access was restricted to approved study personnel.

Statistical analysis

Descriptive statistics were performed to summarize participants' demographic characteristics and platysma thickness values at different anatomical levels. Continuous variables were expressed as mean $\pm$ standard deviation or median and interquartile range, and categorical variables as frequencies and percentages. Normality was assessed using the Shapiro-Wilk test and complemented by visual inspection of histograms and Q-Q plots.

Associations between platysma thickness and age (both as a continuous and categorical variable) and gender were examined using the appropriate statistical tests. These included Spearman correlation coefficients for continuous age, independent samples T-tests for gender, and ANOVA or Kruskal-Wallis tests for age categories (18–39, 40–59, 60–79, 80–99), depending on data distribution. Multivariable generalized linear models using a gamma distribution were constructed for each anatomical level due to skewed data, allowing simultaneous evaluation of age and gender as independent predictors of platysma thickness. Results from these models were reported as adjusted β coefficients with 95% confidence intervals.

An alpha level of 0.05 was used to determine statistical significance. All analyses were conducted using IBM SPSS Statistics for Windows, Version 29 (IBM Corp., Armonk, NY).

Results

Participants' characteristics

A total of 200 patients were included, evenly distributed across four age groups (18–39, 40–59, 60–79, 80–99), with a mean age $\pm$ SD of 58 ± 23 years. The sample consisted of 49% males and 51%

females (Table 1).

Bivariate associations between age, gender and maximum thickness of platysma

Platysma thickness progressively declined with age at all measured sites. The steepest reductions were observed at the hyoid and infrahyoid levels(). The associations between continuous age and platysma thickness across all anatomical locations are detailed in **Table 2**. The correlation coefficients demonstrated significant negative associations ($p < 0.001$), with the strongest effects noted at the left hyoid ($p = -0.53$) and left infrahyoid ($p = -0.46$) levels.

Comparisons of platysma thickness by age category (18–39, 40–59, 60–79, 80–99) are shown in **Table 3**. Differences in platysma thickness were most prominent between the youngest and oldest age groups across all anatomical sites except the angle of the mandible. These findings highlight a consistent stepwise decline with increasing age.

The association between gender and platysma thickness is outlined in **Table 4**. Males exhibited significantly thicker platysma at all measured points ($p < 0.001$).

Multivariable analysis for the Maximum thickness of platysma at different locations

Furthermore, multivariable regression models at each anatomical level showed that both increasing age and female gender were independently associated with reduced platysma thickness. These models simultaneously adjusted for all included variables simultaneously (**Table 5**).

Discussion

This study presents the first MRI-based evaluation of age-related platysma changes across multiple neck levels, confirming a clear trend of muscular thinning with age. These findings support the theory that structural degeneration of the platysma contributes to visible neck aging, especially in the anterior cervical region.

The most notable changes occurred at the hyoid and infrahyoid levels, regions critical for neck contour and the formation of platysmal bands. This aligns with theories suggesting that platysma changes precede or act independently of skin laxity in producing visible neck aging.

Analyzing by age categories further clarified this trend: each advancing group demonstrated statistically thinner platysma compared to the younger one. This incremental decline in muscle thickness suggests a progressive degenerative process, which carries important clinical implications. From an aesthetic perspective, the stepwise atrophy of the platysma with age contributes significantly to the loss of cervicomenal definition and the appearance of platysmal banding [1,5]. These observations underscore the value of incorporating age-based anatomical changes into personalized rejuvenation strategies, guiding the choice between dynamic treatments in earlier stages and structural reinforcement or surgical interventions in more advanced aging. Clinically, this implies that the degree of platysma

thinning could be used as a radiologic marker for the progression of neck aging. Patients in the younger cohorts may benefit from dynamic treatments targeting muscular hyperactivity, while those in older groups may require structural lifting or reinforcement due to significant muscle atrophy.

Gender-based differences were also significant. Males consistently exhibited greater muscle thickness, which may contribute to delayed or less pronounced neck aging. These findings suggest that sex-specific strategies might be warranted in both aesthetic assessment and treatment planning.

Furthermore, our results are consistent with previous anatomical and aesthetic studies supporting the use of botulinum toxin injections to manage platysmal hyperactivity in the aging neck [7]. However, the application of botulinum toxin in this region requires nuanced understanding of the underlying anatomy and muscular changes. With increasing age and progressive platysma atrophy, injections should be administered superficially within the muscle layer to avoid diffusion into deeper structures such as the laryngopharyngeal muscles. Improper technique or deeper injections risk impairing swallowing and phonation, with reported complications including dysphagia and aspiration. Ensuring a safe plane of injection, particularly in patients with already thinned platysma, is therefore critical. Several authors have advocated for conservative dosing and superficial intramuscular placement to mitigate these risks, especially in elderly patients [7].

In patients with significant age-related thinning or degenerative changes in the platysma, botulinum toxin injections may be insufficient. In such cases, deeper structural interventions such as platysmaplasty or neck lifts are more appropriate, as they address the underlying muscular laxity and volume loss. As the platysma thins with age, cervical platysmal bands often recur after traditional facelift procedures, where the platysma is simply tightened and anchored to the mastoid fascia. The recurrent laxity may be attributed to the inability of the aging, thinned platysma to maintain tension with this method. To address this, resection of central redundant platysma combined with double or triple imbrication techniques and central tightening closure has been proposed to yield more durable and aesthetically satisfying outcomes in cervical contouring [8].

Integrating imaging-based platysma assessment into treatment algorithms can refine decision-making, ensuring that interventions align with each patient's anatomical aging profile and aesthetic goals. This imaging-based approach may guide the threshold for transitioning from minimally invasive to surgical interventions depending on measurable muscle atrophy and structural integrity. Importantly, multivariable analysis confirmed that age and gender exert independent and simultaneous effects on platysma thickness, reinforcing the need to consider both variables when developing individualized treatment plans.

Clinically, the data support a shift in paradigms—beyond skin-focused approaches, practitioners should consider underlying platysma integrity when planning rejuvenation. Younger patients with hypertrophic or hyperactive platysma may benefit more from neurotoxins, while older patients with significant atrophy might require structural lifting.

The clinical relevance of our findings extends across several specialties. Surgeons may use these data to better predict which patients are likely to benefit from more durable surgical approaches such as central platysma imbrication or resection, particularly in older individuals with significantly thinned platysma. Relying solely on lateral platysma fixation may not provide lasting results in such cases. Dermatologists, who often manage early neck aging non-surgically, can utilize platysma thickness data to determine candidacy for neuromodulators or energy-based treatments. Thicker, more hyperactive platysma muscles in younger patients may respond well to botulinum toxin, while thinner muscles in older patients may show diminished returns. Radiologists can contribute meaningfully by incorporating platysma thickness assessment into structured reports, especially when evaluating patients undergoing pre-aesthetic or reconstructive consultation. Routine reporting may offer valuable objective data for multidisciplinary planning.

Strengths and Limitations

This study offers several strengths, including a large sample size spanning a wide age range, standardized radiological measurements across six anatomical levels, and multivariable analysis adjusting for age and gender. To our knowledge, it is among the first to quantitatively evaluate platysma thickness using axial MRI across a full adult lifespan. However, its retrospective nature introduces potential selection bias, and functional correlates such as electromyography or muscle tone assessment were not included. Additionally, MRI scan protocols may have varied slightly across institutions and over the years. Despite these limitations, our findings provide a valuable framework for integrating objective muscle metrics into aesthetic evaluation.

Conclusion

Platysma thickness declines significantly with age, especially at the hyoid and infrahyoid levels. These findings enhance our understanding of neck aging and may refine both surgical and nonsurgical rejuvenation strategies. Multivariable analysis confirmed that age and gender have independent and cumulative impacts on platysma morphology. Future research should integrate functional muscle assessments to further optimize patient-specific treatment protocols.

Declarations

Competing Interests

The authors declare that they have no competing financial or non-financial interests related to the content of this article.

Funding

The authors received no financial support for the research, authorship, or publication of this article.

Ethics Approval

This study was approved by the Institutional Review Board (IRB) of the Lebanese American University

Medical Center–Rizk Hospital. All procedures were conducted in accordance with the ethical standards of the institutional research committee and with the principles of the Declaration of Helsinki.

Consent to Participate

The requirement for informed consent was waived due to the retrospective nature of the study.

Consent for Publication

Not applicable, as no patient-identifiable data are included in this article.

Author Contribution

Keyrouz: Project development, Data collection, Data analysis, Manuscript writing

Ziade: Project development, Manuscript editing

Harb: Data collection, Manuscript writing

Swaidan: Data collection

Saade: Project development, Supervision, Manuscript editing

Semaan: Data collection, Data analysis

El Khoury: Data collection, Data analysis

Akiki: Data analysis, Manuscript editing

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Tables

Table 1. Participants' characteristics

N=200		
Age	Mean $\pm$ SD	58 $\pm$ 23
	Median (Q1; Q3)	59 (39; 81)
	Min – Max	18 - 99
Age categories	18 – 39; n (%)	50 (25%)
	40 – 59; n (%)	50 (25%)
	60 – 79; n (%)	50 (25%)
	80 – 99; n (%)	50 (25%)
Gender	Male; n (%)	98 (49%)
	Female; n (%)	102 (51%)
<i>Maximum thickness of platysma</i>		
Suprahyoid level – right	Mean $\pm$ SD	1.56 $\pm$ 0.48
	Median (Q1; Q3)	1.5 (1.3; 1.8)
	Min – Max	0.5 – 3.6
Suprahyoid level - left	Mean $\pm$ SD	1.60 $\pm$ 0.51
	Median (Q1; Q3)	1.5 (1.3; 1.8)
	Min – Max	0.5 – 4.2
Infrahyoid level - right	Mean $\pm$ SD	1.52 $\pm$ 0.47
	Median (Q1; Q3)	1.4 (1.2; 1.8)
	Min – Max	0.6 – 3.7
Infrahyoid level - left	Mean $\pm$ SD	1.60 $\pm$ 0.54
	Median (Q1; Q3)	1.5 (1.22; 1.8)
	Min – Max	0.7 - 5
Hyoid level - right	Mean $\pm$ SD	1.81 $\pm$ 0.57
	Median (Q1; Q3)	1.7 (1.4; 2)
	Min – Max	1 - 4.7
Hyoid level - left	Mean $\pm$ SD	1.85 $\pm$ 0.63
	Median (Q1; Q3)	1.7 (1.4; 2.1)
	Min – Max	1 – 5.9

Angle of mandible - right	Mean $\pm$ SD	1.20 $\pm$ 0.30
	Median (Q1; Q3)	1.2 (1; 1.4)
	Min – Max	0.5 – 2.5
Angle of mandible - left	Mean $\pm$ SD	1.23 $\pm$ 0.30
	Median (Q1; Q3)	1.2 (1; 1.4)
	Min – Max	0.5 – 2.3
4 cm below angle of mandible - right	Mean $\pm$ SD	1.43 $\pm$ 0.48
	Median (Q1; Q3)	1.3 (1.1; 1.6)
	Min – Max	0.6 – 3.2
4 cm below angle of mandible - left	Mean $\pm$ SD	1.48 $\pm$ 0.48
	Median (Q1; Q3)	1.4 (1.1; 1.7)
	Min – Max	0.5 – 3.1
Most inferior aspect of orbicularis oris - right	Mean $\pm$ SD	1.67 $\pm$ 0.56
	Median (Q1; Q3)	1.6 (1.3; 1.9)
	Min – Max	0.8 – 4.7
Most inferior aspect of orbicularis oris - left	Mean $\pm$ SD	1.72 $\pm$ 0.56
	Median (Q1; Q3)	1.6 (1.3; 2)
	Min – Max	0.8 – 5.0

Min. Minimum; Max. Maximum

Association between age and Maximum thickness of platysma at different locations

Table 2. Association between age and Maximum thickness of platysma

	Age	
	Spearman correlation coefficient ρ	P-value
Suprahyoid level – right	-0.29	<0.001
Suprahyoid level - left	-0.30	<0.001
Infrahyoid level - right	-0.39	<0.001
Infrahyoid level - left	-0.46	<0.001
Hyoid level - right	-0.49	<0.001
Hyoid level - left	-0.53	<0.001
Angle of mandible - right	-0.15	0.04
Angle of mandible - left	-0.18	0.01
4 cm below angle of mandible - right	-0.28	<0.001
4 cm below angle of mandible - left	-0.33	<0.001
Most inferior aspect of orbicularis oris - right	-0.38	<0.001
Most inferior aspect of orbicularis oris - left	-0.42	<0.001

Association between age categories and Maximum thickness of platysma at different locations

Table 3. Association between age categories and maximum thickness of platysma

	Age				P-value
	18-39	40-59	60-79	80+	
	Mean $\pm$ SD	Mean $\pm$ SD	Mean $\pm$ SD	Mean $\pm$ SD	
Suprahyoid level – right	1.80 $\pm$ 0.67	1.58 $\pm$ 0.38	1.46 $\pm$ 0.42	1.39 $\pm$ 0.28	0.002*
Suprahyoid level - left	1.89 $\pm$ 0.72	1.55 $\pm$ 0.37	1.52 $\pm$ 0.42	1.43 $\pm$ 0.27	< 0.001**
Infrahyoid level - right	1.78 $\pm$ 0.56	1.61 $\pm$ 0.44	1.36 $\pm$ 0.38	1.35 $\pm$ 0.35	< 0.001***
Infrahyoid level - left	1.94 $\pm$ 0.74	1.70 $\pm$ 0.41	1.40 $\pm$ 0.38	1.37 $\pm$ 0.30	< 0.001#
Hyoid level - right	2.18 $\pm$ 0.74	1.91 $\pm$ 0.44	1.65 $\pm$ 0.45	1.52 $\pm$ 0.33	< 0.001##
Hyoid level - left	2.31 $\pm$ 0.87	1.93 $\pm$ 0.40	1.67 $\pm$ 0.50	1.49 $\pm$ 0.29	< 0.001###
Angle of mandible - right	1.27 $\pm$ 0.32	1.21 $\pm$ 0.25	1.16 $\pm$ 0.31	1.17 $\pm$ 0.30	0.3
Angle of mandible - left	1.35 $\pm$ 0.35	1.24 $\pm$ 0.29	1.15 $\pm$ 0.28	1.2 $\pm$ 0.26	0.03&
4 cm below angle of mandible - right	1.56 $\pm$ 0.49	1.55 $\pm$ 0.48	1.27 $\pm$ 0.46	1.32 $\pm$ 0.43	< 0.001&&
4 cm below angle of mandible - left	1.68 $\pm$ 0.51	1.58 $\pm$ 0.39	1.31 $\pm$ 0.46	1.35 $\pm$ 0.46	< 0.001&&&
Most inferior aspect of orbicularis oris - right	1.89 $\pm$ 0.76	1.89 $\pm$ 0.50	1.49 $\pm$ 0.38	1.42 $\pm$ 0.29	< 0.001\$
Most inferior aspect of orbicularis oris - left	1.97 $\pm$ 0.72	1.92 $\pm$ 0.55	1.53 $\pm$ 0.41	1.46 $\pm$ 0.28	< 0.001\$\$

Post-hoc analysis using Tukey test

*P =0.002 for “18-39” and “60-79”; P<0.001 for “18-39” and “80-99”

**P=0.003 for “18-39” and “40-59”; P=0.001 for “18-39” and “60-79”; P<0.001 for “18-39” and “80-99”

***P<0.001 for “18-39” and “60-79”; P<0.001 for “18-39” and “80-99”; P=0.03 for “40-59” and “60-79”; P=0.02 for “60-79” and “80-99”.

P<0.001 for “18-39” and “60-79”; P<0.001 for “18-39” and “80-99”; P=0.01 for “40-59” and “60-79”; P=0.004 for “40-59” and “80-99”.

P=0.04 for “18-39” and “40-59”; P <0.001 for “18-39” and “60-79”; P<0.001 for “18-39” and “80-99”; P=0.001 for “40-59” and “80-99”.

P=0.004 for “18-39” and “40-59”; P <0.001 for “18-39” and “60-79”; P<0.001 for “18-39” and “80-99”; P<0.001 for “40-59” and “80-99”.

& P =0.005 for “18-39” and “60-79”

&&P =0.01 for “18-39” and “60-79”; P=0.02 for “40-59” and “60-79”

&&& P<0.001 for “18-39” and “60-79”; P=0.002 for “18-39” and “80-99”; P=0.02 for “40-59” and “60-79”

\$ P =0.001 for “18-39” and “60-79”; P<0.001 for “18-39” and “80-99”; P<0.001 for “40-59” and “60-79”; P<0.001 for “40-59” and “80-99”;

\$\$ P <0.001 for “18-39” and “60-79”; P<0.001 for “18-39” and “80-99”; P=0.002 for “40-59” and “60-79”; P<0.001 for “40-59” and “80-99”;

Association between gender and Maximum thickness of platysma at different locations

Table 4. Association between gender and Maximum thickness of platysma

	Gender		P-value
	Male	Female	
	Mean $\pm$ SD	Mean $\pm$ SD	
Suprahyoid level – right	1.73 $\pm$ 0.52	1.39 $\pm$ 0.37	< 0.001
Suprahyoid level - left	1.82 $\pm$ 0.57	1.38 $\pm$ 0.31	< 0.001
Infrahyoid level - right	1.64 $\pm$ 0.47	1.41 $\pm$ 0.44	< 0.001
Infrahyoid level - left	1.75 $\pm$ 0.59	1.46 $\pm$ 0.44	< 0.001
Hyoid level - right	1.99 $\pm$ 0.66	1.65 $\pm$ 0.41	< 0.001
Hyoid level - left	2.08 $\pm$ 0.75	1.63 $\pm$ 0.40	< 0.001
Angle of mandible - right	1.27 $\pm$ 0.29	1.14 $\pm$ 0.29	0.001
Angle of mandible - left	1.31 $\pm$ 0.31	1.16 $\pm$ 0.29	< 0.001
4 cm below angle of mandible - right	1.61 $\pm$ 0.50	1.25 $\pm$ 0.39	< 0.001
4 cm below angle of mandible - left	1.70 $\pm$ 0.50	1.27 $\pm$ 0.36	< 0.001
Most inferior aspect of orbicularis oris - right	1.78 $\pm$ 0.66	1.57 $\pm$ 0.40	0.008
Most inferior aspect of orbicularis oris - left	1.85 $\pm$ 0.66	1.60 $\pm$ 0.41	0.001

Multivariable analysis for the Maximum thickness of platysma at different locations

	Adjusted β (95% CI)	P-value
<i>Model 1. Suprahyoid level – right as dependent variable</i>		
Male vs. Female	0.21 (0.13; 0.28)	<0.001
40 - 59 vs. 18 - 39	-0.09 (-0.19; 0.02)	0.1
60 - 79 vs. 18 - 39	-0.17 (-0.27; -0.07)	<0.001
80 - 99 vs. 18 - 39	-0.24 (-0.34; -0.14)	<0.001
<i>Model 2. Suprahyoid level – left as dependent variable</i>		
Male vs. Female	0.26 (0.19; 0.32)	<0.001
40 - 59 vs. 18 - 39	-0.15 (-0.25; -0.06)	0.002
60 - 79 vs. 18 - 39	-0.17 (-0.27; -0.08)	<0.001
80 - 99 vs. 18 - 39	-0.25 (-0.35; -0.16)	<0.001
<i>Model 3. Infrahyoid level – right as dependent variable</i>		
Male vs. Female	0.14 (0.07; 0.22)	<0.001
40 - 59 vs. 18 - 39	-0.07 (-0.18; 0.03)	0.2
60 - 79 vs. 18 - 39	-0.25 (-0.35; -0.15)	<0.001
80 - 99 vs. 18 - 39	-0.27 (-0.37; -0.17)	<0.001
<i>Model 4. Infrahyoid level - left as dependent variable</i>		
Male vs. Female	0.17 (0.09; 0.24)	<0.001
40 - 59 vs. 18 - 39	-0.11 (-0.21; -0.008)	0.04
60 - 79 vs. 18 - 39	-0.30 (-0.40; -0.20)	<0.001
80 - 99 vs. 18 - 39	-0.34 (-0.44; -0.24)	<0.001
<i>Model 5. Hyoid level - right as dependent variable</i>		
Male vs. Female	0.17 (0.10; 0.23)	<0.001
40 - 59 vs. 18 - 39	-0.10 (-0.19; -0.005)	0.04
60 - 79 vs. 18 - 39	-0.25 (-0.34; -0.15)	<0.001
80 - 99 vs. 18 - 39	-0.35 (-0.44; -0.25)	<0.001
<i>Model 6. Hyoid level – left as dependent variable</i>		
Male vs. Female	0.22 (0.15; 0.29)	<0.001
40 - 59 vs. 18 - 39	-0.14 (-0.23; -0.04)	0.004

60 - 79 vs. 18 - 39	-0.29 (-0.38; -0.19)	<0.001
80 - 99 vs. 18 - 39	-0.42 (-0.51; -0.32)	<0.001
<i>Model 7. Angle of mandible - right as dependent variable</i>		
Male vs. Female	0.11 (0.05; 0.18)	<0.001
40 - 59 vs. 18 - 39	-0.03 (-0.12; 0.07)	0.6
60 - 79 vs. 18 - 39	-0.08 (-0.17; 0.02)	0.1
80 - 99 vs. 18 - 39	-0.07 (-0.16; 0.02)	0.1
<i>Model 8. Angle of mandible - left as dependent variable</i>		
Male vs. Female	0.11 (0.04; 0.17)	0.001
40 - 59 vs. 18 - 39	-0.07 (-0.16; 0.02)	0.1
60 - 79 vs. 18 - 39	-0.15 (-0.24; -0.06)	0.002
80 - 99 vs. 18 - 39	-0.11 (-0.20; -0.02)	0.02
<i>Model 9. 4 cm below angle of mandible - right as dependent variable</i>		
Male vs. Female	0.25 (0.17; 0.32)	<0.001
40 - 59 vs. 18 - 39	0.03 (-0.08; 0.14)	0.6
60 - 79 vs. 18 - 39	-0.17 (-0.28; -0.07)	0.001
80 - 99 vs. 18 - 39	-0.14 (-0.25; -0.04)	0.009
<i>Model 10. 4 cm below angle of mandible – left as dependent variable</i>		
Male vs. Female	0.28 (0.21; 0.35)	<0.001
40 - 59 vs. 18 - 39	-0.02 (-0.12; 0.09)	0.8
60 - 79 vs. 18 - 39	-0.21 (-0.31; -0.11)	<0.001
80 - 99 vs. 18 - 39	-0.20 (-0.30; -0.09)	<0.001
<i>Model 11. Most inferior aspect of orbicularis oris - right as dependent variable</i>		
Male vs. Female	0.12 (0.05; 0.20)	<0.001
40 - 59 vs. 18 - 39	0.03 (-0.07; 0.14)	0.6
60 - 79 vs. 18 - 39	-0.21 (-0.32; -0.11)	<0.001
80 - 99 vs. 18 - 39	-0.27 (-0.38; -0.17)	<0.001
<i>Model 12. Most inferior aspect of orbicularis oris – left as dependent variable</i>		
Male vs. Female	0.14 (0.07; 0.21)	<0.001

40 - 59 vs. 18 - 39	0.001 (-0.10; 0.10)	0.9
60 - 79 vs. 18 - 39	-0.23 (-0.33; -0.13)	<0.001
80 - 99 vs. 18 - 39	-0.28 (-0.38; -0.18)	<0.001

Figures



Figure 1

Maximum thickness of platysma at suprahyoid level on axial images



Figure 2

Maximum thickness of platysma at infrahyoid level on axial images



Figure 3

Maximum thickness of platysma at the hyoid level on axial images

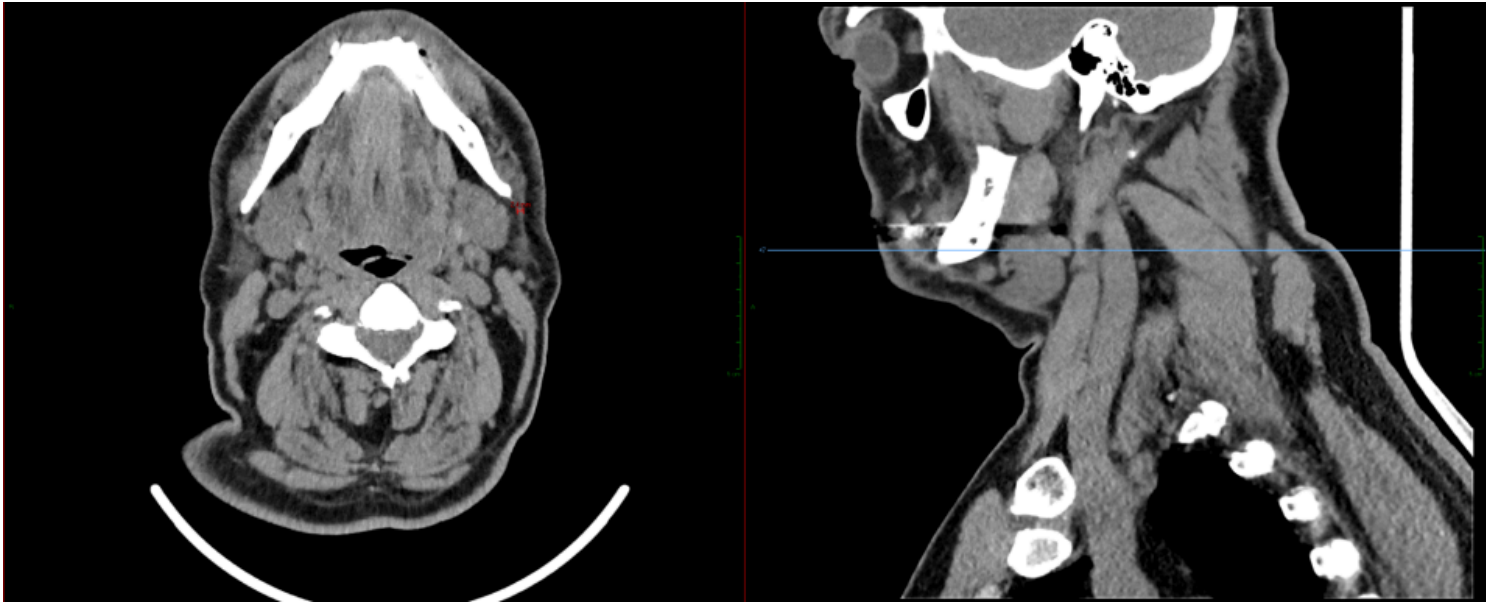


Figure 4

Maximum thickness of platysma at angle of mandible on axial images

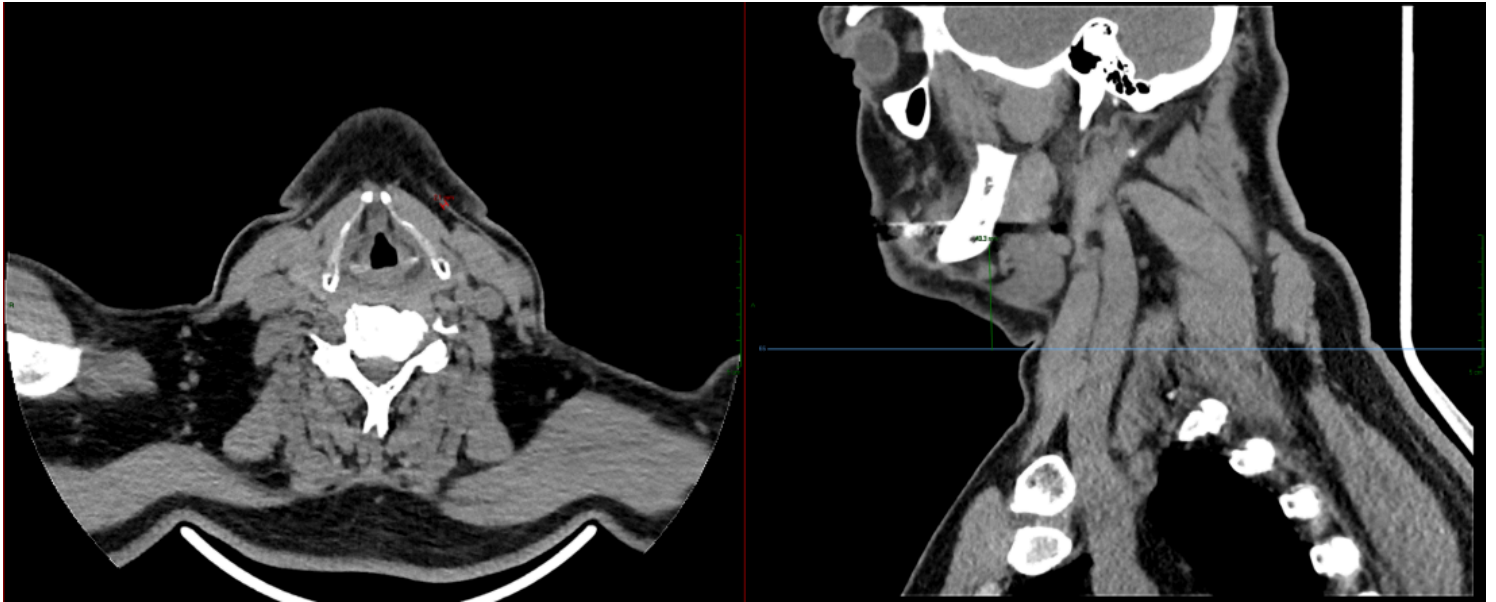


Figure 5

Maximum thickness of platysma 4 cm below angle of mandible on axial images

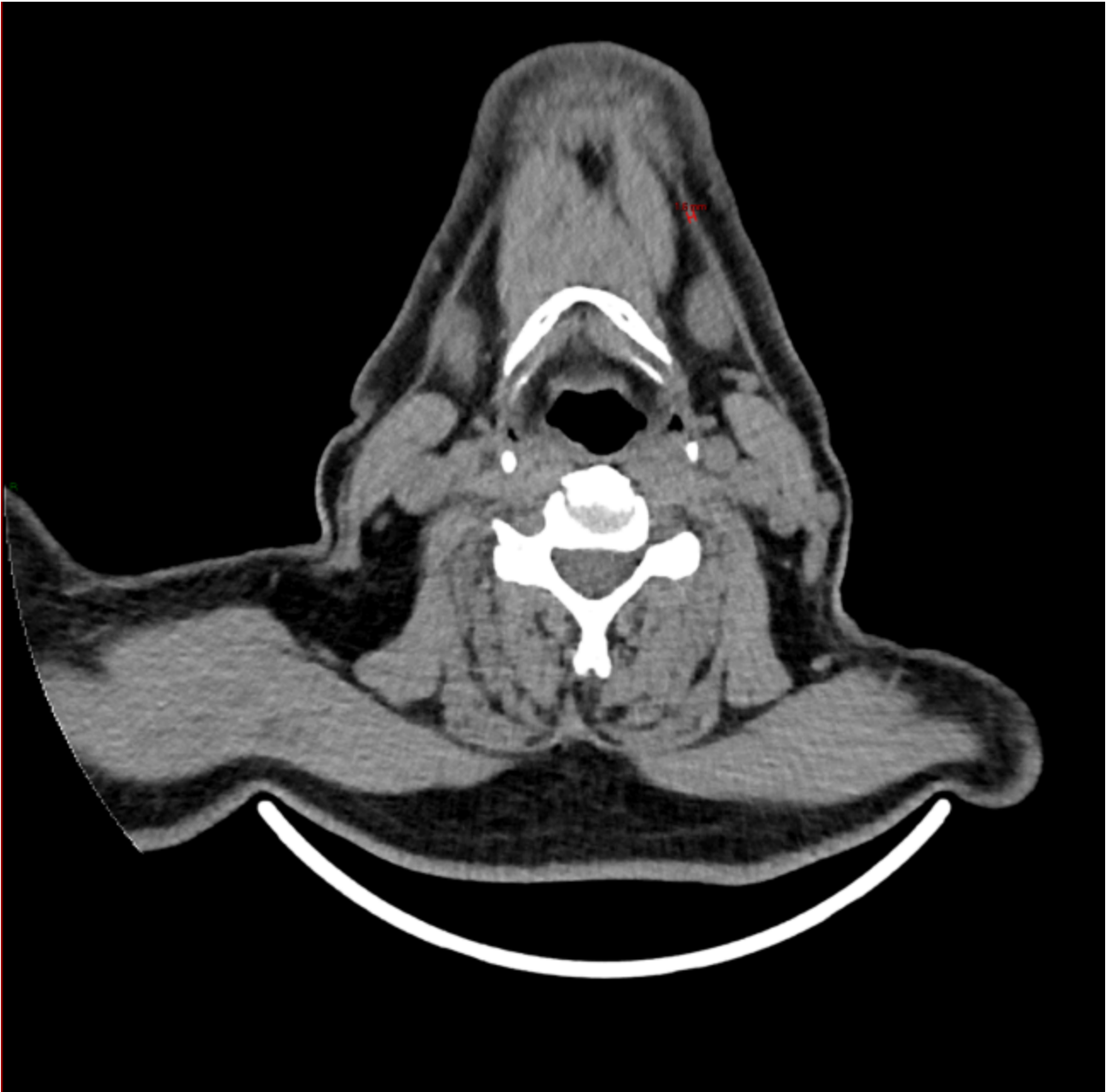


Figure 6

Maximum thickness of platysma at most inferior aspect of orbicularis oris on axial images

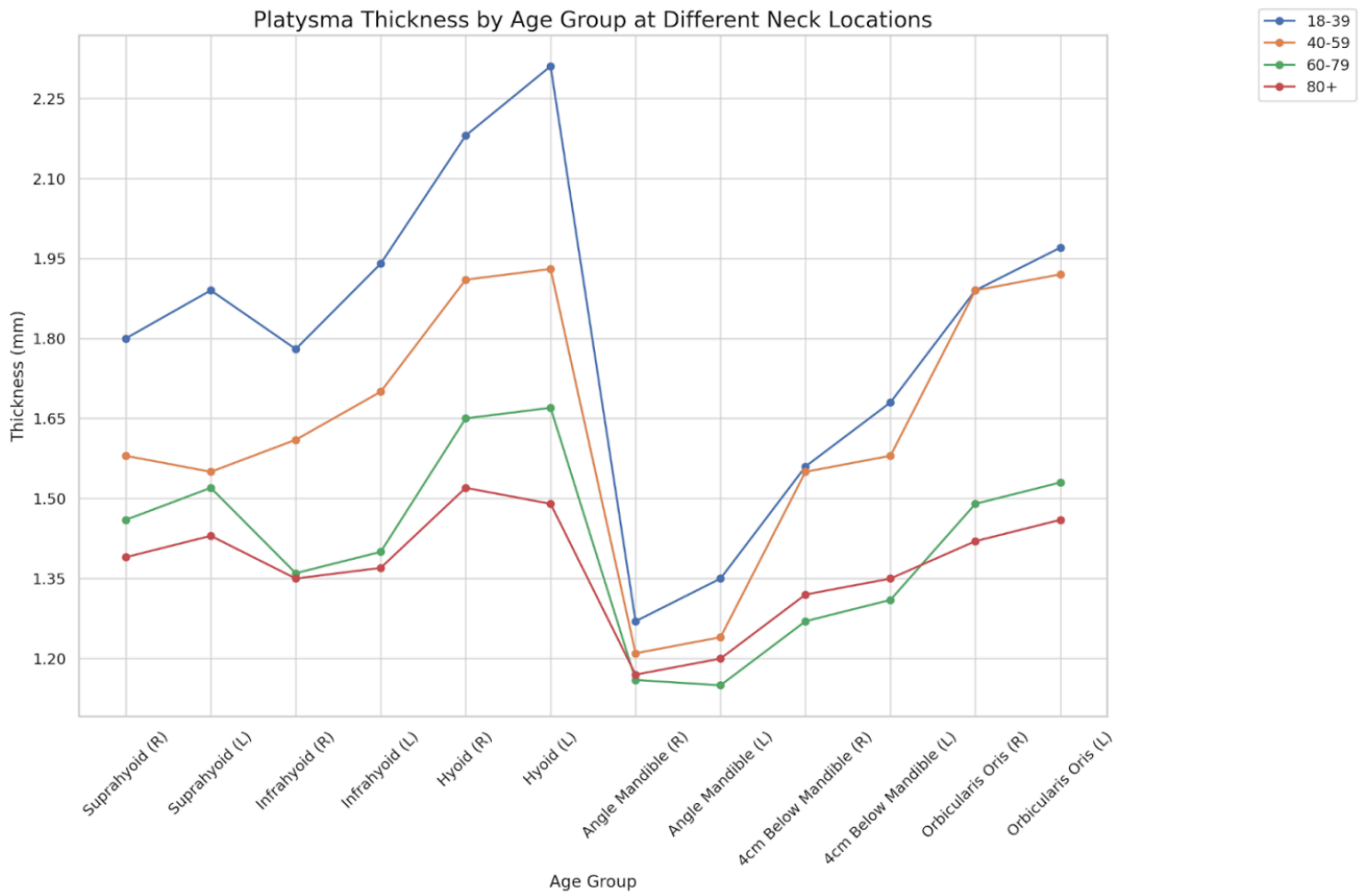


Figure 7

Platysma Thickness by Age Group at Different Neck Locations

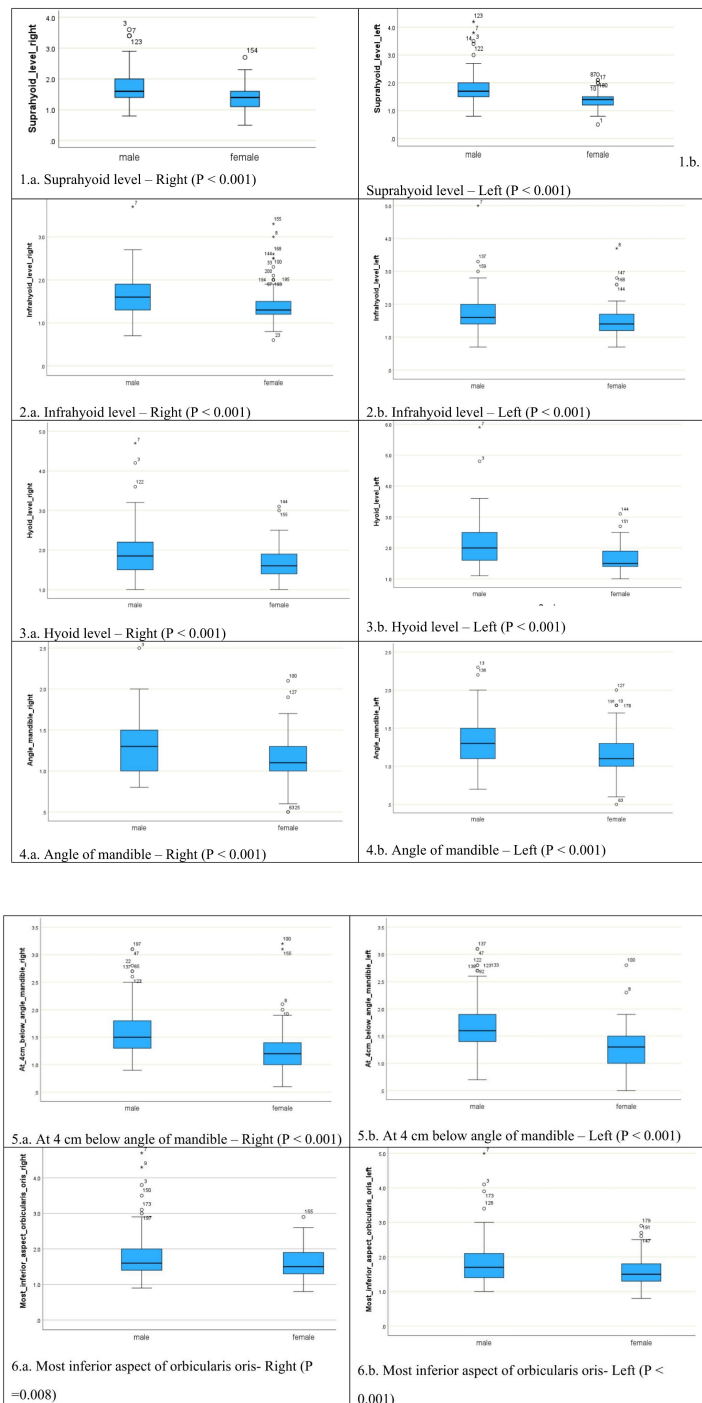


Figure 8

Figure 1. Maximum thickness of platysma at different locations among males and females