Peer Review File

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Reviewer A: The authors present a review of 3D analysis of the periorbital area. The following changes should be make prior to acceptance:

Comment 1: As a review article, there should be a Methods section which details how articles were included and excluded from the analysis. The authors should use PRISMA guidelines to identify and classify the articles with an assessment of bias. As of now, the search terms are not provided and the study not reproducible.
Reply 1: I am so grateful to the reviewer for the positive and valuable comments! We fully agree that the search terms should be provided so that the manuscript will be more reproducible. Since this is not a systematic review, we did not include a separate Methods section, which is consistent with the format of publications in this journal's past issues. Therefore, we added the search algorithm in the Introduction section, marked in red as follows.

- In this study, a PubMed database search was performed to identify relevant publications using the search algorithm ((photogrammetry) AND (three-dimension*)) AND ((eye) OR (face)). We also screened relevant research missed in this search algorithm from the reference lists of specific full-text papers. After looking through these papers, we summarized the landmarks when measuring the periorbital region three-dimensionally and included the typical studies. (Pages 3 - 4, lines 35 – 42, in Introduction section)

Comment 2: Two references published in 2020 are missing, for example -- Plast Reconstr Surg. 2020 Apr;145(4):921-928. doi: 10.1097/PRS.0000000000006711. and Aesthet Surg J. 2020 Jan 24:sjaa021. doi: 10.1093/asj/sjaa021.
Reply 2: Thank you so much for your kind suggestions. After looking through both references, we added the first reference, Plast Reconstr Surg. 2020 Apr;145(4):921-928. doi: 10.1097/PRS.0000000000006711, focusing on aging, as reference 13. We also added the second reference, Aesthet Surg J. 2020 Jan 24:sjaa021. doi: 10.1093/asj/sjaa021, focusing on volume measurement, as reference 11, marked in red.

- Besides, they can quantify various parameters, including linear distances, curvatures, angles, volumes (11), and surface areas. In contrast to laser scanning technique, stereophotogrammetry captures high-resolution 3D surface images at a quicker speed, which is especially beneficial for young children and patients with insufficient compliance. In previous studies, it has

been applied to assess morphological alterations with aging (13), record characteristics of healthy subjects, and evaluate the conditions of impairment or malformation such as the cleft palate (Pages 6, lines 68 – 76)

Comment 3: Few grammatical mistakes throughout.
Reply 3: Thanks a lot for your conscientious review! We have looked through the manuscript again and checked the grammar with professional software, hoping that the revised manuscript is now suitable for publication.

Reviewer B
Comment 1: The authors do a wonderful job describing the periorbiatal model. Would be curious as to how this could be used for orbital pathology with intraconal and exrtaconal fat or if this is a limitation of the technology that should be addressed.
Reply 1: Three-dimensional photogrammetry can only capture the facial surface anatomy and measure the topography of the facial soft tissue. It might be possible to indirectly infer the alterations in the orbital volume based on the changes in the periorbital surface volume and area. We have proposed a new protocol for measuring the the eyelid area and volume, which is currently being reviewed by another journal. So far, as I know, there are no reports on 3D imaging studies of eye diseases. We also cited an article in this manuscript that measured the eyelid volume accuracy on pages 24 - 25, lines 352 - 368, as follows.

- Hyer et al. conducted a cross-sectional study to assess the accuracy and inter-observer reliability of 3D stereophotogrammetry for volumetric measurements in the periorbital region. They also proposed a protocol for acquiring volumetric data using 3D systems in this region. Exactly, they took 3D photographs of 58 adult subjects on two independent occasions and then performed 40 different measurements of volume for each side. Subsequently, they calculated the mean periorbital volume alterations between different methods, i.e., two registration methods (facial landmarks tool and surface area paint tool), open or closed eyes, separate or integrated upper and lower eyelids, lower eyelid with or without mid-face (tear trough and palpebromalar groove). A significant difference was indicated between different methods of measurement. The most accurate method showed the mean alteration in volume of 0.11 ± 0.13 ml. The highest agreement between two independent observers was 0.63 for ICC. As a conclusion, they claimed that the 3D imaging system is accurate and suitable for assessing periorbital volumetric alteration in clinical practice, with good inter-observer repeatability. (Pages 24 - 25, lines 352

- 368)

Comment 2: Line 140 - 141 these terms are not used in oculoplastics. the endocanthion, exocanthion, pupillary center, medial corneoscleral limbus, and the lateral corneoscleral limbus). Would consider simplification of medial limbus, lateral limbus, pupillary center, medial canthus and lateral canthus.

Reply 2: Thank you very much for your careful and responsible review and professional comments. We have replaced "endocanthion, exocanthion, pupillary center, medial corneoscleral limbus, and the lateral corneoscleral limbus" with "medial canthus, lateral canthus, pupillary center, medial limbus, and lateral limbus" in the main text, marked in red.

- They located the periorbital landmark of lateral canthus and measured the inclination of the palpebral fissure versus the horizontal plane. (Page 7, lines 84 - 86)
- The medial canthus and lateral canthus were set as periorbital landmarks. (Page 7, lines 89 - 90)
- They defined several landmarks, including palpebral superius and palpebral inferius (the highest and lowest points of the free margin of upper eyelid), medial canthus and lateral canthus (the soft tissue point at the inner and outer commissure of the palpebral fissure), as well as upper lid crease superius (the highest point of double lid crease). (Pages 7 - 8, lines 94 - 99)
- Subsequently, a series of linear and angular anthropometric parameters between these landmarks were measured, i.e., palpebral fissure length and height, inter- and outer-canthal width, crease height, angles of the medial canthus and lateral canthus, as well as the axis of the palpebral fissure. (Pages 8, lines 99 - 103)
- They then measured a series of linear distances (intercanthal witdth, biocular width, eye fissure height, and eye fissure length) between several anthropometric landmarks (palpebrale superius, palpebrale inferius, lateral canthus, and medial canthus) identified on these digital 3D images. (Pages 8, lines 107 – 111)
- They are pupillary center (Pc), the intersection point of the medial or lateral limbus and the horizontal line passing through the pupillary center (Lm or Ll), medial canthus (En), and lateral canthus (Ex). (Pages 10, lines 136 - 138)
- Specifically, a positive association with the aesthetic assessment was found in palpebral fissure height and eyebrow-palpebral margin distance (medial limbus); and a negative in canthal tilt, eyebrow-medial canthus distance, and eyebrow length. (Page 11, lines 152 - 155)

- Guo et at. measured the distances between the eyebrow (at inferior, middle, and superior margin points, respectively) and the upper palpebral margin (at landmarks corresponding to the above-mentioned prime points, i.e., the medial canthus, lateral canthus, pupillary center, medial limbus, and the lateral limbus). Kokubo et al. 27 adopted three landmarks, i.e., the medial canthus, the pupillary center, and the lateral canthus, to assess the eyebrow height on 2D photographs. They drew a horizontal plane between the right and left endocanthi. The pupillary center and lateral canthus were reflected on this plane. (Pages 12, lines 161 - 169)
- Five prime points are located on 3D surface models, including the medial canthus, lateral canthus, pupillary center, as well as the medial and lateral limbus (horizontal to the pupillary center). (Pages 31, lines 521 - 524)

Comment 3: There is no mention of marginal distance reflex, palpebral fissure, inferior or superior scleral show, lateral canthal angle curvature as part of this protocol?

Reply 3: We are so grateful for your professional and constructive comments. We only emphasized the landmarks in the main text, since all the distances and angles are based on these landmarks. Palpebral fissure width, palpebral fissure height, and lateral canthal angle are introduced in table 2, marked in red as follows. (Pages 36, 39)

- Definition Abbreviation Landmarks
  Palpebral fissure width PFW En-Ex
  Palpebral fissure height PFH Ps-Pi
  Lateral canthal angle LCA Ps-Ex-Pi
  Lateral canthal angle (medial) LCAm Ul-Ex-Ul'

Furthermore, so far, marginal distance reflex and inferior or superior scleral show have not been studied and measured by 3D photogrammetry. However, both indicators have been measured in our unpublished paper, and the paper is also under review now.