on 3D CT data. Then design and 3D print surgical templates based on preoperative VSP. The accuracy of the method was analyzed by 3D comparison of VSP and post-op results utilizing detailed computer analysis.

RESULT: All patients had symmetric, natural osteotomy lines, and satisfactory facial ratios in a single-stage operation. The average relative error of VSP and post-op result on the entire skull was 0.41 ± 0.13 mm. The average new left gonial error (Go’-L Error) was 0.43 ± 0.77 mm. The average new right gonial error (Go’-R Error) was 0.45 ± 0.69 mm. The Average pognion error (Pg error) was 0.79 ± 1.21 mm. Patients were very satisfied with the aesthetic results. Surgeons were also very satisfied with the performance of surgical templates to facilitate the operation.

CONCLUSION: Our standardized protocol of VSP and 3D printed surgical templates assisted single-stage mandible contour surgery result in accurate, safe, and predictable outcome in a single-stage.

Conflicts of Interest and Source of Funding

This study was supported by the specialized research fund for the doctoral program of higher education (priority development field). None of the authors were declared.

Nasal Monobloc for Late Nasal and Orbital Asymmetry of Unicoronal Synostosis

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PURPOSE: Patients with unicoronal synostosis may develop asymmetries of the orbits and nasal complex long after fronto-orbital advancement. To address these asymmetries, the nasal monobloc procedure was designed at our institution. A nasal monobloc mobilizes a united nasal and medial orbital segment of bone to perform corrective translational and rotational movement. The purpose of this study was to examine the surgical outcomes of nasal monobloc for orbital and nasal asymmetry related to unicoronal synostosis.

METHODS: A retrospective review of all patients treated with nasal monobloc at our institution was performed. Demographic information was recorded, and relevant imaging (3D and 2D photographs) was utilized for outcome analysis. From imaging, nasal deviation on frontal view, nasal deviation on basal view, and orbital aperture width were assessed. Aperture index (Left aperture width/Right aperture width) was calculated from aperture width measurements to compare orbital symmetry. Patients without imaging were excluded.

RESULTS: Inquiry yielded ten patients treated with nasal monobloc, and of these, six patients (3 males, 3 females) had adequate imaging for analysis. Three patients had 3D images, and in the remaining three patients 2D photographs were utilized. 3D images (n=3) exhibited correction of frontal nasal deviation by 67.24% (5.35 degrees), basal nasal deviation by 62.47% (4.52 degrees), and aperture index asymmetry by 79.95%. 2D images (n=3) revealed improvement of frontal nasal deviation by 53.14% (2.95 degrees), basal nasal deviation by 49.75% (2.40 degrees), and aperture index asymmetry by 59.22%. Follow was 3.5 to 68.1 months (mean=22.6 months). All patients were satisfied with their outcome, and no revisions were undertaken.

CONCLUSIONS: Nasal monobloc is a reasonable surgical treatment to improve the long-term sequelae of unicoronal synostosis, including frontal nasal deviation, basal nasal deviation, and orbital aperture asymmetry.

Osseointegrated Orbital Reconstruction: A 24-Year Experience

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PURPOSE: Osseointegrated implants have been used for craniofacial prosthetic reconstruction since 1979. Since then, they have been used for prosthetic rehabilitation of a variety of facial defects. The authors sought to review long-term results of osseointegrated orbital reconstruction at the Institute for Reconstructive Sciences in Medicine (iRSM).

METHODS: 26 patients have undergone osseointegrated orbital prosthetic (OOP) reconstruction at the iRSM since 1990. A retrospective chart review was performed to determine demographics, skin reactions and implant failures. 7 patients are deceased; therefore a satisfaction survey was sent to the remaining 19 patients. Patient satisfaction was assessed through a questionnaire used in previous osseointegration studies. Multivariate binary logistic regression
analysis was performed to assess the relationship between smoking, age, gender, and prior radiation treatment with the occurrence of a skin reaction and implant failure. A Chi-square test was used to assess the relationship between implant position within the orbit and development of a skin reaction or implant failure.

RESULTS: The most common indication for reconstruction was oncologic, followed by traumatic and congenital. Patients received an average of 5.8 implants during the course of treatment. The average follow-up time was 10.6 years with a range of 6 months to 24 years. A statistically significant correlation was found between skin reaction and age ($p=0.022$), with younger patients more likely to develop a reaction. When assessing implant failure, no variables in our model were significant for predicting failure of osseointegration. Overall, there were 39 failures out of 155 osseointegrated implants, for a success rate of 74.8%. There was no relationship between skin reaction or implant failure compared to implant position within the orbit. Survey responses were received from 11 of 19 patients, for a response rate of 58%. 82% of patients rated their prosthesis as comfortable and 91% reported good self-confidence with the prosthesis. 91% of patients were overall satisfied with their prosthesis, despite 55% of patients who felt that they had a skin reaction.

CONCLUSIONS: There are minimal contraindications for consideration of OOP reconstruction. Patients find the prosthesis comfortable to wear, report increased self-confidence and are happy with their choice to have undergone reconstruction. Prosthetic reconstruction using osseointegrated implants is a good option for reconstruction of the orbit.

REFERENCES:
1. Tjellström A. Osseointegrated implants for replacement of absent or defect ears. Clin Plast Surg. 1990;17:355–366.
2. Korus LJ, Wong JN, Wilkes GH. Long-term follow-up of osseointegrated auricular reconstruction. Plast Reconstr Surg. 2011 Feb;127(2):630–636.

RECONSTRUCTIVE SESSION 3

Multi-site Lymphaticovenular Bypass Using Supermicrosurgery Technique for Lymphedema Management in Lower Lymphedema Cases

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BACKGROUND: The impact of lymphatico-venular anastomosis (LVA) on lymphedema has yet to be defined. The purpose of this study is to investigate clinical evidence on the effectiveness of LVA in lower limb lymphedema.

METHODS: Eighty-four patients (162 limbs, 73 female and 11 male) with lower limb lymphedema who have undergone multi-site LVA procedure in our clinic between August 2010 to May 2014 were included in this retrospective study. Lymphedema was diagnosed using lymphoscintigraphy and ICG lymphography. All LVAs were performed under local anesthesia. The state of the lymphatic vessels identified during LVA were classified using the NECST Classification. Limb circumference, subjective symptoms (Pain, abnormal feeling), and frequency of cellulitis were evaluated.

RESULTS: The average age of the patients was 60-years-old (24–94 years old) and the mean post-operative follow-up period was 18.3 months (6–51 months). The postoperative change rate in limb circumference indicated that 67 limbs (47.7%) were classified as “Improvement”, 35 limbs (27.3%) were classified as “Stable”, and 32 limbs (25%) were classified as “Worse”. Postoperative interview revealed improvement in subjective symptoms in 67 limbs (61.5%), no change in 38 limbs (34.9%), and exacerbation in 4 limbs (3.7%). The postoperative mean occurrence of cellulitis was decreased to 0.13 times/year compared with preoperative 0.89, which was statistically significant ($p=0.00084$). Multiple regression analysis was performed using the post-LVA limb circumference and NECST classification and the following result was confirmed2). Change Rate (%) = $-0.40+(0.30\times N)+(-0.84\times E)+(0.22\times C)+(-0.61\times S)$.

CONCLUSIONS: LVA is effective for lower limb lymphedema, in point of limb circumference, subjective symptoms (Pain, abnormal feeling), and the frequency of cellulitis.

DISCLOSURES: None.

REFERENCES:
1. Mihara M, Hara H, Kikuchi K, et al. Scarless lymphatic venous anastomosis for latent and early-stage lymphoedema using indocyanine green lymphography and non-invasive instruments for visualising subcutaneous vein. J Plast Reconstr Aesthet Surg. 2012 Nov;65(11):1551–8.
2. Mihara M, Hara H, Hayashi Y, et al. Pathological steps of cancer-related lymphedema:histological changes in