forehead, the frontalis muscle, in addition to its primary role of elevating the eyebrow during facial expression, serves a secondary role in eyelid elevation. In patients with ptosis or dermatochalasis of the upper eyelid, greater frontalis activation is thought to compensate to help restore the visual field. This compensatory mechanism has increasingly been implicated in the development of both transient and fixed horizontal forehead lines.\(^3\)

**Purpose:** In the present study, we examine the correlation between ptosis, brow ptosis, and blepharodermatochalasis, with the presence of forehead lines, in a facial rejuvenation patient population.

**METHODS:** Photos of patients presenting to the senior author (B.G.\(^\text{\textregistered}\))’s practice for facial rejuvenation between July 2015 and July 2017 were retrospectively reviewed for the presence of forehead lines, ptosis, brow ptosis, and blepharodermatochalasis. Patient age, gender, and race were also included for analysis. Inclusion criteria were patients over age 50 with high-quality frontal facial photographs. Patients with previous eyelid or forehead surgery, congenital abnormalities, or post-traumatic deformities were excluded. Ptosis was defined as more than 1.5mm of overlap between the upper eyelid and the iris. Brow ptosis was judged through a review of patient photographs by the senior author (B.G.), an experienced facial aesthetic Plastic Surgeon. Blepharodermatochalasis was defined as the presence of redundant upper eyelid skin that drapes over the lash line. Patients were divided into a group with fixed forehead lines and a group without fixed forehead lines for purposes of comparative analysis. A two-tailed Fisher’s exact test was used to evaluate statistical significance for categorical variables, and a two-tailed t-test was used for continuous variables. Significance was assessed at P<0.05.

**RESULTS:** One hundred sixty patients met inclusion criteria for the study, including 100 patients with fixed forehead lines and 60 patients without fixed forehead lines. Patients with forehead lines were statically more likely to be older (age 61.56±8.93 vs. 58.58±7.59; P=0.0337), to be male (36% vs. 11.67%; P=0.0008), to have ptosis (90% vs. 76.67%; P=0.0377), and to have blepharodermatochalasis (20% vs. 5%; P=0.0097). All 28 patients with unilateral fixed forehead lines (17 left, 11 right) were noted to have ptosis on the ipsilateral side. No correlation was found between the presence of forehead lines and patient race or presence of brow ptosis.

**CONCLUSION:** These findings suggest that ptosis and blepharodermatochalasis may contribute to the development of fixed forehead lines through compensatory frontalis activation, with the implication that upper eyelid blepharoplasty and ptosis repair may be important adjuncts that can increase the longevity of the results of surgical forehead rejuvenation.

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**Lifting and Supporting Method of Lower Eyelid Edge by a Bridge-like Thread Spacer**

**Presenter:** Murad Tsintsadze, MD

**Co-Authors:** Marlen Sulamanidze, MD, PhD; Konstantin Sulamanidze, MD; George Sulamanidze, MD, PhD

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**INTRODUCTION:** Because of certain diseases of the periorbital region, there are possible the manifestations of retraction of the lower eyelid edge, its distancing from the eyeball, hypotension, lagophthalmus and ectropion. In these cases, such operations as canthopexy and canthoplasty, transplantation of cartilage or tendons, and also the eyelid edge lifting by plastic spacers, are usually applied.

Operations on the lateral canthus and with transplanted tendons are not always predictable, existing plastic and cartilaginous constructions are cumbersome, often contoured and do not give desired aesthetic results. And in respect of this, we were tasked to develop a more delicate and effective intervention method that could be.

**MATERIALS AND METHODS:** In 2015, we developed and created a device (spacer) made of prolene thread 2/0, of the bridge-like form, and which is strengthened by several nodular sutures to the costal cartilage of the edge of the upper eyelid and the periosteum of the arcus marginalis, below. Spacer is elastic, light and do a delicate, stable
lifting of the edge of the lower eyelid on all along. Production of such spacers is usually done on manufacturing sites, but also it can be manufactured in a clinic space.

RESULTS: The application of the proposed method is quite effective: the edge of the lower eyelid strengthens, rises cranially to the required level, its sagging and scleral lumen is eliminated.

CONCLUSION: The 2-year experience of using of the bridge-like thread spacers in 22 patients showed that this technique is quite effective to obtain desired aesthetic and therapeutic results. In some cases, it can quite effectively replace the classical methods.

Case Series of Minimal Invasive Tanongsak Technique for Reduction Malarplasty in 411 Patients

Presenter: Tanongsak Panyawirunroj, MD

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BACKGROUND: Southeast Asian women prefer oval shape facial contour. To achieve this goal, there are a lot of procedures to reshape the facial skeleton. Reduction malarplasty is a common operation. Although multiple technique have been developed for reduction malarplasty. This study presents a new less invasive TANONGSAK technique for reduction malarplasty.

METHODS: Between January 2015 and December 2017, we applied TANONGSAK technique for reduction malarplasty inconsecutive 411 patients. TANONGSAK technique was performed by only one surgeon and all 411 patients have same procedure. Technique was performed by osteotomy site at zygomatic arch with 12 mm in length preauricular incision and at zygomatic body with 25 mm in length intraoral incision by a reciprocating saw. Out site-in Closed reduction was performed to reposition of malar bone complex. Internal fixation was not required.

RESULTS: The patients were followed up for 5 to 183 days postoperatively (mean 33 days). 97.8% of patients (402 patients) had satisfactory aesthetic results. The facial contour reduction was accomplished 0.1%-13.79% (mean 2.46%) in size reduction by photograph measured. The operative time in most case was less than 60 minutes (mean 41 minutes, 20-90 minutes). The mean hospital stay was 1.06 day (1–2 day) and patients required recovery period 2–14 days (mean 8.7 days). 8% of patients developed temporary inferior orbital nerve injury. 1% of patients developed delay union of zygomatic arch. No facial nerve injury and no any other postoperative complications.

CONCLUSION: Minimal invasive TANONGSAK technique reduction malarplasty is a preferable technique. This technique provides multiple advantages, including simple manipulation, less invasive, short incision, no internal fixation, good stability, achieved aesthetic results, short operative and recovery time, and less complications.

Precision Rhinoplasty Using Virtual Surgical Planning and Departmentally-Manufactured, 3D-Printed, Sterilizable, Patient-Specific Anatomic Models

Presenter: Samantha G. Maliha, BA

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GOALS/PURPOSE: Rhinoplasty relies on clear patient communication and precise execution of a three-dimensional (3D) plan to achieve optimal results. 1 3D printing is becoming more popularized in the medical field as an aid to technical planning, patient communication, and the performance of this challenging operation. 2,3 The current price of an individual set of commercial 3D-printed guides or models may reach upwards of several thousand dollars and is often prohibitive to the patient. We have developed an affordable, reproducible protocol for rapid in-house virtual surgical planning and subsequent manufacture of 3D-printed rhinoplasty models using departmentally available resources.

METHODS/TECHNIQUES: 3D digital photographic images (3dMD, Atlanta, GA) of a patient’s face are taken and converted to steralithography (.stl) files. The images are uploaded to a freely available 3D imaging platform, Blender\textsuperscript{TM} (Version 2.78, Amsterdam, The Netherlands). Utilizing functions available within Blender, we perform