recurrence. Treatment of locally advanced or recurrent HN-SCC often involves neoadjuvant chemotherapy and/or radiation. However, a knowledge gap exists regarding the interplay of toxicities from prior oncologic treatments on successful reconstruction. The aim of this study was to evaluate the effect of prior oncologic treatment, including chemotherapy, radiation, and/or surgery, on long-term outcomes and functional status after head and neck free flap reconstruction utilizing a prospectively maintained database modeled on the American College of Surgeons National Surgical Quality Improvement Program (NSQIP).

METHODS AND MATERIALS: This is a retrospective review of all head and neck free flap reconstructions at our institution from 2012 to 2019. Data were retrieved from our database, which utilizes NSQIP methodology modified to track major head and neck oncologic reconstructive outcomes. In contrast to the NSQIP, which limits prior treatment to 3 months before the index procedure, our database includes any prior oncologic treatment.

RESULTS: One thousand seven hundred fifty-one patients were identified, 1093 of whom received prior oncologic treatment before the principal operative procedure for tumor extirpation and immediate free flap reconstruction. Patients without prior treatment were more likely to be active smokers (25% versus 18%; \( P < 0.0001 \)) and have body mass index ≥25 (67% versus 53%; \( P < 0.0001 \)), hypertension (55% versus 47%; \( P < 0.0001 \)), and diabetes (18% versus 12%; \( P < 0.001 \)). Patients receiving prior treatment had higher rates of steroid use (8% versus 5%; \( P = 0.019 \)) and preoperative G-tube placement (15% versus 3%; \( P < 0.0001 \)). On multivariate analysis, prior treatment did not increase the risk of postoperative complications including: flap loss, fistula, infection, hematoma, seroma, reoperation, or readmission (\( P > 0.05 \)). However, there was a significant increase in the risk of transfusion (odds ratio \( [OR] \), 2.01; 95% CI, 1.60–2.53), death within 12 months (OR 1.43; 95% CI, 1.05–1.95), G-tube dependency at 3 months postoperative (OR, 1.42; 95% CI, 1.11–1.81), and poor speech scores (OR, 1.40; 95% CI, 1.01–1.95). When comparing prior surgery versus chemotherapy versus radiation, multivariate analysis indicated that chemotherapy was associated with the highest risk of: transfusion (OR, 2.51; 95% CI, 1.96–3.22), death within 12 months (OR, 1.67; 95% CI, 1.20–2.33), and G-tube dependency at 3 months postoperative (OR, 1.78; 95% CI, 1.37–2.32). Prior radiation as associated with the highest risk of poor postoperative speech scores at 3 months (OR, 1.82; 95% CI, 1.27–2.61).

CONCLUSIONS: The goals of HN-SCC treatment and reconstruction include disease stabilization, prolonging survival, and improving quality of life. This study demonstrates prior oncologic treatment is not associated with flap loss or postoperative wound-healing complications, after controlling for confounding factors. It is associated with higher mortality and worse functional outcomes, which may reflect disease burden. Our results demonstrate that free flap head and neck reconstruction is a reasonable choice for well-selected patients with advanced and recurrent HN-SCC, even in the setting of multiple prior treatments, and has the potential to improve quality of life and reduce functional deficits.

Retinal Changes With Craniosynostosis: How Long Does It Take for Microscopic Retinal Thickening to Resolve After Surgery?

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BACKGROUND: Papilledema has been traditionally used as a surrogate for increased intracranial pressure, but its sensitivity remains poor. Optical coherence tomography (OCT) is emerging as a useful adjunct for quantitative assessment of thickened retinal nerve fiber layers. It is unclear how long it takes for elevated intracranial pressure to elicit these morphologic changes, and similarly it is unclear how long it takes for these changes to resolve after achieving restoration of normal intracranial pressure with surgical expansion of the cranial vault. Pediatric patients with craniosynostosis undergoing distraction osteogenesis returning to the operating room for distractor hardware removal provide an opportunity for repeat assessment of the retina under anesthesia. The purpose of this study is to
determine how these retinal parameters change after surgery for craniosynostosis.

METHODS: Pediatric patients undergoing cranial vault expansion for craniosynostosis from September 2014 through December 2019 were prospectively enrolled through an institutional review board–approved protocol to obtain spectral-domain OCT, which was performed preoperatively after induction of anesthesia. RNFL thickness was measured with the iVue software (Optovue, Fremont, CA) along a peripapillary circumference with radius of 1.725 mm centered on the optic disk. AvgRNFL was defined as the mean thickness of all circumferentially obtained values. Maximal quartile RNFL was defined as the greatest thickness in any quadrant. Retinal parameters from the index procedure to the repeat procedure were compared using related samples Wilcoxon signed rank test. Scan quality index scores below 45 were excluded.

RESULTS: During the study interval, 25 patients underwent OCT scanning during index surgery for craniosynostosis and repeat OCT scanning during a subsequent procedure. Eighteen patients met inclusion criteria. Age at the index procedure was 7.85 months (Q1 3.8, Q3 17.2), and subsequent procedures for distractor removal were performed at a median interval of 105 days (Q1 91–132). AvgRNFL was significantly ($P = 0.001$) higher at the initial procedure (median, 96.5 μm; 95% CI, 87.0–111.0) than the subsequent procedure (median, 90.3 μm; 95% CI, 84.5–99.0). Maximal quartile RNFL was significantly ($P = 0.007$) higher at the initial procedure (median, 122.5 μm; 95% CI, 113.0–148.0) than at the subsequent procedure (116.5, μm; 95% CI, 112.0–130.0). Similarly noteworthy, many retinal parameters failed to normalize after multiple months of resolved intracranial pressure, including optic nerve head cup volume ($P = 0.441$), optic disc area ($P = 0.092$), maximal retinal thickness ($P = 0.721$), and maximal anterior retinal projection ($P = 0.919$).

CONCLUSIONS: In pediatric patients with craniosynostosis, retinal nerve fiber layer thickening secondary to elevated intracranial pressure demonstrated significant resolution after cranial vault expansion. Further vigilance ensuring appropriate cranial growth continues throughout childhood. This study demonstrates promise of this technology to longitudinally follow patients to ensure maintained resolution of intracranial hypertension. Further research is needed to understand the pathophysiology at the micron level allowing this remodeling to occur, as well as factors that may alter the time course of these changes.

Four- to Seven-Year Aesthetic Outcomes of 2 Bilateral Fronto-orbital Advancement and Reshaping Techniques for Nonsyndromic Metopic Craniosynostosis: Can We “Overcorrect” Our Way Out of Aesthetic Deterioration?

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BACKGROUND/PURPOSE: In 2012, the senior authors modified their previously published technique for bilateral fronto-orbital advancement and reshaping (BFOAR) to more radically “overcorrect” the transverse forehead constriction seen in metopic craniosynostosis. The purpose of this study is to compare the 4- to 7-year aesthetic outcomes of the newer “overcorrected” patients to a similar cohort of patients treated in the years preceding “overcorrection” in an effort to determine whether overcorrection can overcome the aesthetic deterioration of these results over time.

METHODS: A retrospective chart review was performed of patients treated with BFOAR for isolated metopic synostosis between June of 2002 and December of 2014. Patients with 4–7 years of follow-up and complete medical records were included. Patient demographics, operative technique, Whitaker classification as indicated by a senior craniofacial surgeon, and postoperative clinical outcomes were collected. Two-sample t tests, chi-square and Fisher’s exact tests, as well as multiple regression analyses were performed using STATA 13.0 (StataCorp, College Station, TX). Both groups underwent similar operations from a technical standpoint—open BFOAR with nasofrontal interpositional bone graft, superior-lateral orbital strut grafts, reshaping of the bandeau into a more “boxy” configuration, particulate cranial bone grafting of osteotomy sites and bony defects, repositioning of the temporalis muscles—with the primary difference in the current technique being a concentration on more radical overcorrection.

RESULTS: One hundred twenty-eight patients underwent BFOAR during this time period, and 53 patients met...