NEW YORK REGIONAL SOCIETY OF PLASTIC SURGEONS

2018 RESIDENTS' NIGHT ABSTRACT

Abstract Submission: M4 (Group 1)

Title*: A National Longitudinal Comparison of Strip Craniectomy and Whole Vault Cranioplasty*

Authors: Robin T. Wu, MD; Michael Alperovich, MD MSc; John A Persing, MD; Blake N Shultz, BS; Kyle S Gabrick, MD; Paul F Abraham, BS; Raysa Cabrejo, BA

Institution: Yale

PURPOSE: Nonsyndromic craniosynostosis can be treated with strip craniectomy or cranial vault remodeling (CVR). Patients who undergo treatment prior to three months of age can be offered strip craniectomy. After six months, the cranium begins to ossify and CVR yield the most predictable outcomes. Given dichotomous preferences, we conducted a large-scale database comparison of socioeconomic, cost, and complications between treatments.

METHODS: Nonsyndromic craniosynostosis patients were identified in the Kids' Inpatient Database for years 2000, 2003, 2006, and 2009. To isolate strip craniectomies, patients were limited to those less than 3 months of age with a primary procedure code of 02.03. In order to isolate patients with CVR, patients were limited to those greater than 6 months of age with a primary procedure code of 02.06. Demographics, socioeconomics, charges, hospital characteristics, outcomes, and complications were collected. Univariate and multivariate analyses were performed to compare variables between surgeries and across years.

RESULTS: A total of 251 strip craniectomy and 1,811 CVR patients were captured. More strip craniectomy patients were White and more CVR were Hispanic and Black ($p<0.001$). Primary insurance payer was significantly different spanning all years ($p<0.001$; Table 2), with more strip craniectomy patients using private insurance (70.13%) and more CVR patients using Medicaid (35.02%). Over the years, CVR trended towards treating Hispanic and Medicaid patients, however, Strip craniectomy cases did not experience any change. CVR charged hospitals $27,962 more than strip craniectomies, with $11,001 independent of payer, income, bedsize, and LOS ($p<0.001$). Strip craniectomies were performed more frequently in the West and Midwest, while CVR were done in the South ($p=0.001$). Strip craniectomy patients were discharged on average 2.44 days postoperatively while CVR were discharged after 3.83 days. LOS was longer in CVR but not significantly. Outcomes were largely equivocal, with increased accidental puncture ($p=0.025$) and serum transfusion ($p=0.002$) in the CVR.

CONCLUSIONS: Our national longitudinal comparison shows widening socioeconomic disparities between strip craniectomies and CVR. CVR is proving to be a progressive procedure. Not only are they increasingly being performed on under-represented populations, reflecting geographic changes and natural progression over time, but our data also presents evidence supporting improvements in cost and short-term outcomes for CVR. Though we still report lower costs and short-term complications, strip craniectomies are less available to racial minorities and those with Medicaid, with change trending slowly. Future efforts should focus on equilibrating these socioeconomic gaps with emphasis on early diagnosis, permitting a choice between procedures.