**Purpose:** Autologous fat grafting is an invaluable tool which has revolutionized breast reconstruction. However, there has been limited data on the use of pharmacologic agents to mitigate donor site ecchymosis. Antifibrinolytic medications, such as tranexamic acid (TXA) have been demonstrated to safely mitigate ecchymosis, edema, and intraoperative blood loss in plastic surgery procedures. As such, the authors investigate whether topical TXA safely reduces the degree of ecchymosis at liposuction donor sites following autologous fat grafting in the setting of breast reconstruction.

**Methods:** A single-center, single-surgeon retrospective cohort study was performed to analyze all consecutive patients undergoing autologous fat transfer as part of second-stage breast reconstruction between 2016-2019. In all patients, the donor site was infiltrated with Klein’s tumescent solution. Once lipoaspiration was complete, patients in the intervention group received a total of 75mL of topical TXA (3g in NaCl 0.9%) into the harvest donor sites delivered via a spray applicator, whereas the patients in the historical control group did not receive TXA. The primary endpoint was degree of ecchymosis, which was graded on an ordinal assessment tool previously published by Hunstad et al. (1= no bruising” through 10= extremely bruised”). Secondary outcome measures included hematoma, seroma, and thromboembolic events. A double-blinded randomized assessment of postoperative photographs of the donor sites was performed by senior plastic surgery residents and research fellows. Comparative analysis of continuous variables and categorical variables were performed using the Mann-Whitney-Wilcoxon and Fisher’s exact tests, respectively. A value of p<0.05 was considered significant.

**Results:** A total of 120 consecutive autologous fat grafting procedures for breast reconstruction were reviewed. Overall, 60 patients received TXA, whereas 60 patients did not. Patient demographics and comorbidities were similar amongst the groups. There was no difference between groups with regards to donor site locations. There was no difference in volume of tumescent injected amongst the groups. The median tumescent volume infiltrated in the TXA group was 1600mL (range: 1200-2400mL), and 1750mL (range: 800-2500mL) in the non-intervention group (p=0.86). Median volume of lipoaspirate amongst the TXA and control groups was similar: 317.5mL (range: 45-750) vs. 267.5mL (range: 55-905), p=0.44. A total of 10 blinded evaluators completed the assessment (7 senior plastic surgery residents and 3 research fellows). Average time to postoperative photograph for the TXA group was 14±13 days vs. 10.3±6.2 days for the non-intervention group (p=0.11). The median bruising score of patients who received TXA was significantly lower than the patients who did not (1.6/10 vs. 2.3/10, p=0.01). Postoperative complications, including hematoma, seroma, and thromboembolic events were similar amongst the groups. Adverse effects of TXA were not observed.

**Conclusion:** As the role of TXA in plastic surgery increases, there remains a recognizable gap in the literature with regards to its use in autologous fat transfer procedures. Although, further prospective randomized studies are warranted, the authors demonstrate that patients who received topical TXA into the liposuction donor sites were found to have less donor site ecchymosis compared to patients who did not receive TXA.

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**Endoscopic Versus Open Surgery For Craniosynostosis: Equal Access, Unequal Outcomes**

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**Purpose:** Optimal surgical treatment for craniosynostosis remains controversial. The purpose of this study is to evaluate national differences in inpatient outcomes and predictors of treatment type for endoscopic versus open surgery for craniosynostosis.

**Methods:** The 2016 Kids’ Inpatient Database was queried to identify patients aged 3 years or younger who underwent craniectomy for craniosynostosis. Multivariable regression modeled treatment type based on patient-level (gender, race, income, comorbidities, payer) and facility-level (bed size, region, teaching status) variables, and was used to assess outcomes.

**Results:** The weighted sample included 514 patients, of whom 81.5% were under age 1 year and 13.8% were syndromic. 83.0% of procedures were open and 17.0% were endoscopic. Patients were more likely to be treated open
if they were older (odds ratio [OR] 3.2, p=0.007) or syndromic (OR 9.7, p=0.026). Racial, socioeconomic, and geographic factors were not significantly associated with treatment type. Open repair was associated with more transfusions (23.4% vs. 9.5%, p=0.030), longer inpatient stay (mean 3.0 vs. 1.7 days, p<0.001), and more costly hospitalizations (mean $25,674.8 vs. $14,734.0, p=0.019). Complications did not significantly vary between procedure type, though syndromic patients were more likely to have systemic (OR 4.2, p=0.003) and local (OR 3.7, p=0.016) complications.

**Conclusion:** US national data demonstrate that age and syndromic comorbidities predict method of repair. There were no significant racial, socioeconomic, or geographic disparities in predictors of treatment type. Compared to open, endoscopic surgery showed benefits including lower transfusion risk, shorter hospital stay, and lower costs, without a significant change in postoperative complications.

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**Early Experience Using Magnetic Muscle Stimulation (MMS) Technology On The Abdomen And Buttocks For Non-Invasive Body Shaping**

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**Purpose:** Traditionally, non-invasive body contouring procedures (i.e. energy-based devices) have aimed to improve body shape by reducing subcutaneous adipose tissue. While this approach can achieve aesthetic improvement in some patients, it does not address the underlying musculature- a major contributing factor to overall body shape. Magnetic Muscle Stimulation (MMS) technology (CoolTone™ [Allergan Inc., Westlake Village, CA]) is a novel non-invasive approach to body contouring that aims to improve muscle tone, definition, and strength through the induction of non-voluntary muscle contractions. This study describes early clinical experience with MMS technology for body contouring of the abdomen and buttocks.

**Methods:** A total of 15 consecutive subjects aged 24 to 54 years (mean, 36.2 years) underwent treatment to the abdomen and/or buttocks using MMS device. Protocol consisted of four treatment sessions to the abdomen and/or buttocks over a 2-week period (30-minutes of continuous application per region per session). Stimulation intensity started at 0% and was gradually increased until reaching the subject’s tolerance threshold. Standardized photographs were taken at baseline, immediately following the 4th treatment, and at 1-month follow-up. Subject-assessed outcome and patient satisfaction were evaluated using 5-point scaled-response questionnaires administered prior to treatment, immediately after the 4th treatment, and at 1-month follow-up. Adverse events were recorded.

**Results:** 15 consecutive subjects (73% [11/15] female; 27% [4/15] male) with a mean BMI of 21.5 kg/m² (range, 18.4-25.7) were treated. On average, 12.4 days (range, 9-17) elapsed between the baseline and the 4th treatment, and 30.4 days (range, 27-44) elapsed between the 4th treatment and the follow-up evaluation. Most patients (80% [12/15]) underwent treatment to the abdomen only; one patient (7%) received treatment to the buttocks only, and two patients (13%) received treatment to both the abdomen and buttocks. All patients reached a stimulation intensity of 100% by the first treatment session. On average, the duration of treatment at 100% intensity increased with each subsequent treatment session, with patients tolerating a mean 21.8, 24.8, 26.0, and 26.7 minutes during session 1, 2, 3, and 4, respectively. Higher BMI patients tended to tolerate higher intensity settings than lower BMI patients when treating the abdomen. Mild muscle soreness resolving within 24 hours was the only reported side effect (33% [5/15] patients).

Surveys administered at 1 month follow-up demonstrated that most patients (80% [12/15]) were satisfied with treatment. Patient-assessed outcomes (5-point scale) indicated a mean improved score (from baseline to 1-month follow-up) of 1.06, 0.97, 0.78, and 0.41 in firmness, hardness, strength, and attractiveness, respectively.

**Conclusion:** Early clinical experience indicates that MMS technology is well-tolerated and associated with high levels of patient satisfaction when used for contouring of the abdomen and buttocks. Ideal candidates for MMS are likely lower and medium BMI patients who are not interested in and/or not suitable for customary debulking interventions. Further investigation is needed on the long-term sustainability of tissue changes associated with MMS therapy and on the efficacy of treatment in regions other than the abdomen and buttocks.