Background: Arteriovenous malformations (AVMs) are incompletely understood complex vascular lesions that can cause significant deformity and morbidity. This study reviews our experience with AVMs at a quaternary care teaching hospital.

Methods: All patients treated for AVMs in our vascular anomaly clinic from 1991 to 2018 were reviewed. Data extraction included demographics, clinical presentation and course, radiology reports, and treatments. Progression was defined as advancement to a higher Schobinger stage (1 through 4) before treatment. Recurrence was defined as expansion following embolization or resection.

Results: 58 patients met inclusion criteria. 60.3% lesions were located in the head and neck, 10.3% on the trunk, and 29.3% on the extremities. 60% patients were female, and average follow up time was 2.9 years. 18.9% patients presented at Stage 1, 54.7% at Stage 2, 24.5% at Stage 3, and 1.9% at Stage 4. 98% of lesions progressed to a higher Schobinger stage without intervention. 124 interventions, including surgery and embolization, were performed on our cohort. Patients treated with embolization alone had a per treatment recurrence rate of 59%, and patients treated with surgical resection had a per treatment recurrence rate of 33%. Advanced lesions had higher rates of recurrence (Stage 2 60%, Stage 3 83%, Stage 4 100%). More advanced lesions also recurred more quickly. 3 lesions treated at Stage 1 did not show evidence of recurrence.

Conclusions: AVMs ultimately progress without intervention. We are not doing well at treating later stage AVMs as these lesions require a tremendous amount of resources and have a high rate of recurrence despite treatment. Our data suggests surgery had lower recurrences versus embolization alone. Treatment of lower-staged lesions may provide longer recurrence-free disease control.

Prioritizing Native Breast Skin Preservation Or Scar Symmetry In Autologous Breast Reconstruction? Using Crowdsourcing To Assess Laypersons' Preference

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Purpose: Bilateral autologous breast reconstruction has many approaches, resulting in many possible scar and flap patterns. Recent literature suggests that factors such as scar symmetry and skin paddle size impact patient preferences more than preservation of native breast skin, despite traditional reconstructive surgical principles. Since patient satisfaction with plastic surgery procedures is also largely influenced by conventional beauty standards set by the general public, we utilize a novel crowdsourcing method to evaluate laypeople’s aesthetic preferences for different bilateral autologous reconstructions to determine the relative importance of scar/skin paddle symmetry and preservation of native breast skin.

Methods: Using Amazon’s Mechanical Turk crowdsourcing marketplace, participants ranked images of bilateral autologous breast reconstructions based on overall aesthetic appearance. Images were digitally modified to reflect four types of reconstruction: immediate (IR), delayed symmetric (DS), delayed asymmetric (DA), or mixed (MR). Participants also compared IR and DA reconstructions before and after nipple areolar complex reconstruction (NACr) using a five-point Likert scale based on various aesthetic factors.

Results: A total of 132 subjects were included in this study. DS was ranked most favorably (1.74), followed by IR (1.95), DA (2.93), and MR (3.34). Friedman rank sum (X²(3) = 219.6, p < 0.001) and Pairwise tests (p < 0.001) showed statistical significance between all four reconstructions. Likert ratings were higher for IR when compared to DA reconstructions for skin quality (p = 0.002), scar visibility (p < 0.001), scar position (p < 0.001), and breast symmetry, shape, and position (p < 0.001). Ratings increased for all aesthetic factors when the same breast was shown after NACr (p < 0.001).

Conclusion: In bilateral autologous breast reconstruction, more symmetric breast scars are rated higher aesthetically than nonsymmetric scarring. Our findings also suggest that subjects preferred maintaining scar symmetry over preservation of native breast skin. Individual breast aesthetic factors were consistently rated higher after NACr than without NACr. These findings are consistent with previous studies utilizing non-crowdsourced participants, which
demonstrates the potential for online crowdsourcing to be used as a powerful and reliable tool to assess the general public’s preference and subsequently improve patient satisfaction in plastic surgery.

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Autologous Fat Grafting And The Occurrence Of Capsular Contracture In The Reconstructed Irradiated Breast

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Purpose: Capsular contracture following prosthetic breast reconstruction is known to occur at higher rates in patients who have received radiation therapy. Autologous fat grafting (AFG) has been demonstrated to reverse radiation induced tissue fibrosis, however its effects on the occurrence of capsular contracture has not been well studied. Here, we explored the effect of AFG on the occurrence of capsular contracture in the setting of two-stage implant based reconstruction and postmastectomy radiation therapy (PMRT). The primary aim of our study was to determine if AFG at the time of second stage reconstruction prevented the occurrence of capsular contracture in previously irradiated breasts. The secondary aim was to determine if AFG had an effect on the occurrence of other post-operative complications.

Methods: A retrospective chart review of patients who underwent immediate tissue expander (TE) placement followed by PMRT and eventual second stage implant-based reconstruction at our institution between January 2012 and December 2016 was performed. Patients were divided into two cohorts based on whether or not AFG was performed at the time of second stage surgery. The occurrence of capsular contracture as well as other post-operative complications, including surgical site infection, wound dehiscence, skin necrosis, reoperation and implant loss was recorded.

Results: Overall 57 patients were included, 25 (43.9%) of whom underwent fat grafting at the time of second stage reconstruction with the remaining 32 receiving only TE implant exchange. All patients underwent submuscular implant placement and acellular dermal matrix was used in 34 breasts (59.6%). The mean post-operative follow up was 1.64 years. There was no significant difference in the prevalence of medical comorbidities between the two cohorts. The observed complication rate following second stage reconstruction was 38.6%, with no significant difference noted between the two cohorts (p = 0.641). The most prevalent complication was capsular contracture, occurring in 16 patients (28.0%), 10 of whom had received fat grafting. Surgical site infection (8.7%) and wound dehiscence (3.5%) were the only other complications observed, neither of which varied significantly by study cohort. Multivariate logistic regression analysis demonstrated that fat grafting did not significantly influence the occurrence of capsular contracture in this patient population.

Conclusion: Implant based reconstruction of the irradiated breast is associated with high post-operative complication rates, particularly capsular contracture, surgical site infection and implant loss. It is well understood that AFG reduces radiation induced dermatitis but there is currently insufficient clinical data reporting the effect of AFG on the occurrence of capsular contracture. The results of our study did not demonstrate a protective effect of AFG on the development of capsular contracture in previously irradiated breasts. The next stage of our study is to increase our study population to better examine the relationship between AFG and the development of capsular contracture following PMRT.

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The Synostosis Research Group (SynRG) Outcomes Study: Preliminary Results From A Multi-center, Prospective Consortium For The Study Of Craniosynostosis Diagnosis And Treatment

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