**Co-Authors:** Colton H.L. McNichols, MD; Mehmet Uluer, MD; Dennis Orkoulas-Razis, BS; Yvonne M. Rasko, MD; Michael P. Grant, MD, PhD; Arthur J. Nam, MD, MS

**Affiliation:** R Adams Cowley Shock Trauma Center, Baltimore, MD

**INTRODUCTION:** Patient reported outcomes using the FACE-Q questionnaires have become a useful method to evaluate the effectiveness of aesthetic procedures, such as face lifts, blepharoplasty, and rhinoplasty.\(^1\)\(^-\)\(^3\) Despite these advancements, patient reported outcomes after facial reconstructive procedures are lacking. This study aims to evaluate the satisfaction of patients undergoing reconstructive procedures after facial trauma.

**METHODS:** Patients treated for facial injuries at R Adams Cowley Shock Trauma Center were asked to complete four FACE-Q questionnaires: 1. *Satisfaction with Outcome*, 2. *Psychological Well-Being*, 3. *Social Function*, and 4. *Satisfaction with Medical Team*. Each questionnaire was scored from 0 to 100, with higher score indicating greater satisfaction. The mean score for each questionnaire was calculated. Univariate analysis was used to determine differences in satisfaction between patients with significant facial disfigurement and those with none or minimal disfigurement.

**RESULTS:** One hundred nine patients were analyzed, 79 male and 30 female, with a mean age of 37 years. The average time from surgery to questionnaire completion was 62 days. Fractures treated include: frontal sinus=7, isolated orbit=23, zygomaticomaxillary complex=20, isolated nasal bone=15, naso-orbitoethmoid=7, LeFort=20 and mandible=55. The mean satisfaction of the study population for each questionnaire is as follows: *Satisfaction with Outcome* = 68 ± 23, *Psychological Well-Being* = 79 ± 24, *Social Function* = 72 ± 25, and *Satisfaction with Medical Team* = 94 ± 13. Twenty-seven patients were classified as having disfiguring injuries. These patients were more satisfied with the medical team (99 ± 3 vs 93 ± 14, p=0.023) however did not differ in satisfaction with respect to outcome (68 ± 28 vs 68 ± 21, p=0.947), psychological-well-being (79 ± 26 vs 79 ± 23, p=0.919), and social function (72 ± 25 vs 72 ± 25, p=0.991).

**CONCLUSIONS:** This is the first study using the FACE-Q questionnaire to evaluate trauma patient satisfaction after facial reconstruction. Disfiguring injuries did not correlate with worse patient-reported outcomes which may be indicative of the positive impact that surgical reconstruction had on these patients. The FACE-Q questionnaires can be a valuable tool in assessing patient-reported outcomes in facial reconstruction.

**Reference Citations:**
1. Klassen AF, Cano SJ, Pusic AL. FACE-Q Satisfaction with Appearance Scores from Close to 1000 Facial Aesthetic Patients. *Plast Reconstr Surg*. 2016;137(3):651e-652e.
2. Sinno S, Anzai L, Thorne CH SJ. Face-Lift Satisfaction Using the FACE-Q. *Plast Reconstr Surg*. 2015;136(2):239–242.
3. Schwitzer JA, Sher SR, Fan KL, Scott AM, Gamble L, Baker SB. Assessing Patient-Reported Satisfaction with Appearance and Quality of Life following Rhinoplasty Using the FACE-Q Appraisal Scales. *Plast Reconstr Surg*. 2015;135(5):830e-837e.

**Facial Nerve Regeneration with PGA-Collagen Nerve Conduit in a Rat Model**

**Presenter:** Mari Shimizu, MD

**Co-Author:** Hajime Matsumine, MD, PhD

**Affiliation:** Tokyo Metropolitan Hiroo Hospital, Tokyo

**INTRODUCTION:** Nerbridge™ (Toyobo Co., Ltd., Osaka, Japan) is a resorbable, artificial nerve conduit with polyglycolic acid tubing and a collagenous interior. It is the only such device currently approved in Japan. Nerbridge™ is mainly used in clinical practice to bridge peripheral nerves after traumatic nerve injury, but there are few reports on its application in reconstruction and repair of the facial nerve. In the present study, we evaluated the utility of Nerbridge™ to promote nerve regeneration in a murine model of injury to the buccal branch of the facial nerve.

**METHODS:** Under inhalational anesthesia and microscopic guidance, we exposed the buccal branch of the left facial nerve in 8-week-old Lewis rats and created a 7-mm gap in the nerve. The gap was then bridged with either Nerbridge™ of length 1 cm or with an autologous nerve graft (AG). At 13 weeks after the procedure, tissue samples were collected from both groups of rats and compared using Toluidine blue staining and electron microscopy.
RESULTS: Mean nerve fiber diameter in the central region of the regenerated nerve was not significantly different between AG and Nerbridge™ rats (5.39 ± 2.42 μm vs. 4.88 ± 1.44 μm). However, myelin width differed significantly between both groups (0.82±0.45 μm vs. 0.45±0.12 μm). Also, AG rats showed significantly greater improvement in g-ratio, an index of nerve maturation, (0.70±0.12 mm vs. 0.82±0.04 mm).

CONCLUSION: This study demonstrates the utility of Nerbridge™ for facial nerve reconstruction following nerve injury. However, when used alone, the capacity of Nerbridge™ to promote nerve regeneration was inferior to that of AG. Therefore, future research is needed to investigate the use of Nerbridge™ in conjunction with stem cell and growth factor delivery systems to achieve effectiveness comparable to that of AG.

Treatment of Asymmetries and Sequelae of Facial Paralysis by Using Botulinum Toxin

Presenter: Nuh Evin, MD
Co-Authors: Osman Akdag, MD; Mehtap Karamese, MD; Zekeriya Tosun, MD
Affiliation: Selcuk University, Konya

INTRODUCTION: Facial paralysis (FP) affects the social life of patients as a result of dynamic and static asymmetries. The aim of this study is to evaluate the effect of Botulinum Toxin-A (BTX-A) treatment for facial asymmetries and its long-term sequelae.

METHODS: Sixteen patients with unilateral FP who treated with BTX-A were included in this study. Before injection, patient’s medical records were reviewed for age, sex, etiology and previous treatment. BTX-A was made for the overactive muscle group on the non-paralyzed side (nps) in all patients; the oculo-oral synkinesis, periorcular spasm and mental spasm with dimple on the paralyzed side (ps) in three, two and two patients, respectively. Each injected dose was noted. Synkinesis and facial expressions during resting and voluntary movement of the patients were evaluated with Sunnybrook Facial Grading System (SFGS)² and recorded with digital imagings before and 1, 3, 6 months after the BTX-A injection. Additional doses were given to 5 patients whose asymmetries appeared slightly at 18 weeks in the last two sessions. Visual Analogue Scale (VAS) was used for evaluating of patient satisfaction who were given additional doses or not at third and sixth month.

RESULTS: Ten of the patients were men, six women. Ages of them ranged from 12 to 44 years (mean 27.1). The most common etiology was trauma. In total, 56 sessions of injections were made into 16 patients and ten of them was additional doses. The injected doses were between form 16 to 44IU (mean 28IU) on NPS, 4 to 16IU (mean 7IU) on PS. Additional doses were one-third of the current doses. After BTX-A injection, there was a significant improvement of asymmetries and sequelae in both SFGS and digital imaging during the first 3 months. While this improvement and STSG scores nearly returned to pre-injection values at six months in patients without additional doses, continued in patients with additional doses. Patient satisfaction was higher in patients with additional doses at the sixth months according to VAS.

CONCLUSION: The purpose of the unilateral FP is to reduce spasms and synkinesis on PS and muscular activity on NPS and to equalize each other to obtain facial symmetry at rest and during facial expressions. In this study, asymmetry and sequelae of facial paralysis were treated and this symmetry was maintained with an additional doses.

Reference Citations:
1. Mehta RP, Hadlock TA. Botulinum toxin and quality of life in patients with facial paralysis. Arch Facial Plast Surg. 2008;10:84–87.
2. Coulson SE, Croxson GR, Adams RD, O’Dwyer NJ. Reliability of the “Sydney,” “Sunnybrook,” and “House Brackmann” facial grading systems to assess voluntary movement and synkinesis after facial nerve paralysis. Otolaryngol Head Neck Surg. 2005;132:543–549.
3. Toffola ED, Furini F, Redaelli C, Prestifilippo E, Bejor M. Evaluation and treatment of synkinesis with botulinum toxin following facial nerve palsy. Disabil Rehabil. 2010; 32:1414–1418.
4. Cecini M, Pavese C, Comelli M, Carlisi E, Sala V, Bejor M, Dalla Toffola E. Quantitative measurement of evolution of postparietal ocular synkinesis treated with botulinum toxin type A. Plast Reconstr Surg. 2013 Nov;132(5):1255–64.