

Holistic Full-Face Botulinum Toxin: From Wrinkle Treatment to Facial Harmonization

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Abstract

Original Research Article

Background: Botulinum toxin type A (BoNT-A) is commonly utilized for non-surgical facial revitalization by minimizing wrinkles and enhancing facial symmetry. It is typically viewed as safe and effective, though short-term negative effects can arise from incorrect administration. Given the sparse data on full-face BoNT-A treatment in Bangladesh, this study sought to assess its safety and effectiveness in reducing wrinkles and achieving facial harmony in Bangladeshi patients. **Methods:** This observational study was carried out at Dr Lina's Skin & Aesthetics in Dhaka, from October 2024 to March 2026, involving 150 adults receiving full-face botulinum toxin treatment. Results such as wrinkle reduction, facial symmetry, facial balance, jawline definition, patient satisfaction, and side effects were evaluated before and after treatment. Data were examined using SPSS version 26, with $p < 0.05$ regarded as statistically significant. **Results:** In a study with 150 participants, botulinum toxin notably enhanced facial symmetry, defined the jawline, and improved overall facial harmony ($p < 0.001$). The negative effects were minor and temporary, with 95.3% experiencing minimal discomfort (VAS 3–4). Enhancement started on day 5 and reached its highest point by day 15. Facial harmonization resulted in greater satisfaction compared to wrinkle-centered treatment ($p = 0.012$), and aesthetic results were significantly linked to satisfaction ($p = 0.71$, $p < 0.001$). **Conclusion:** Complete facial botulinum toxin therapy greatly improves facial symmetry, facial proportion, and overall aesthetic results with mild, short-lived, and controllable side effects. A holistic facial harmonization method results in increased patient satisfaction compared to a traditional treatment strategy that concentrates on wrinkles.

Keywords: Holistic Full Face, Botulinum Toxin, Wrinkle Treatment, Facial Harmonization.

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INTRODUCTION

Botulinum toxin type A (BoNT-A) is commonly utilized in aesthetic medicine and is now recognized as a minimally invasive option for facial rejuvenation and contouring, originating from its initial application as a neurotoxin [1]. This is a neurotoxic substance generated by *Clostridium botulinum*. Among its seven types, only A and B are utilized in clinical settings, with type A being the most prevalent in cosmetic dermatology [2,3]. BoNT-A blocks the release of acetylcholine at the neuromuscular junction, leading

to temporary, dose-dependent relaxation of muscles. This minimizes dynamic facial wrinkles and, when used appropriately, enhances facial symmetry and overall balance beyond merely correcting wrinkles [4].

OnabotulinumtoxinA received its initial approval from the FDA in 2002 for glabellar lines, with further formulations being approved in Europe in 2006 and by the FDA in 2009[5,6]. The application of BoNT-A has evolved from treating individual wrinkles to achieving overall facial harmonization, emphasizing global balance rather than targeting specific muscles.

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This approach enhances facial proportions and appearance by adjusting coordinated muscle activity across different facial regions [7].

Botulinum toxin improves both functional and aesthetic outcomes in orofacial conditions such as bruxism and temporomandibular disorders (TMD). It reduces masseter hypertrophy, relieves muscle tension, and improves facial contour and quality of life [8]. Intradermal botulinum toxin improves skin quality by reducing sebum production and pore size while enhancing texture and elasticity. It supports “microbotox” and “mesobotox” techniques, which focus on skin rejuvenation rather than muscle paralysis [9]. Botulinum toxin type A provides safe, effective, and temporary improvement of dynamic facial wrinkles, resulting in high patient satisfaction. However, its effects are temporary and improper administration may cause complications such as asymmetry, ptosis, or muscle weakness [10,11].

A global assessment demonstrated that botulinum toxin is effective for facial aesthetic procedures and is generally safe in the short term; however, it also highlighted the limited availability of high-quality evidence and the need for further clinical trials [12]. Systematic reviews have shown that BoNT-A is increasingly combined with dermal fillers and biostimulatory agents for facial rejuvenation. This multimodal approach addresses facial aging by targeting both muscle activity and three-dimensional volume changes [13].

A study conducted in Bangladesh reported that preventive botulinum toxin treatment reduces facial muscle activity, delays wrinkle formation, and improves skin smoothness and facial balance. Patients reported high satisfaction with minimal temporary adverse effects, supporting its safety and effectiveness as an anti-aging intervention [14]. In Bangladesh, evidence regarding comprehensive full-face botulinum toxin treatment remains limited, as most studies focus mainly on upper-face wrinkles and lack data on overall facial harmony, long-term outcomes, and standardized treatment protocols. Therefore, this study aims to evaluate the safety and effectiveness of full-face botulinum toxin treatment for wrinkle reduction and facial harmonization among patients in Bangladesh.

MATERIALS AND METHODS

Study Design and Setting

This prospective observational study was conducted at Dr Lina's Skin & Aesthetics, a private dermatology and aesthetic laser center in Dhaka, Bangladesh. The study was implemented from October 2024 to March 2026. It was designed to evaluate clinical and aesthetic outcomes of holistic full-face botulinum toxin treatment, focusing on wrinkle reduction, facial harmonization, facial balancing, and patient satisfaction.

Study Population

The study population comprised adult patients who presented to the clinic for botulinum toxin type A injections for cosmetic purposes, primarily seeking improvement of facial wrinkles and enhancement of overall facial aesthetics.

Sample Size and Sampling Technique

A total of 150 participants were enrolled in the study. Recruitment was performed using a purposive sampling method in accordance with predefined eligibility criteria and patient consent for participation.

Inclusion Criteria

Participants fulfilling the following criteria were included in the study:

- Adults aged 18 years and above
- Patients seeking aesthetic botulinum toxin treatment for facial rejuvenation or facial harmonization
- Patients willing to participate and provide informed written consent
- Patients available for follow-up assessment after treatment

Exclusion Criteria

Participants were excluded if they had:

- Pregnancy or lactation
- Active facial skin infection or inflammation
- Known hypersensitivity to botulinum toxin
- History of neuromuscular disorders
- Previous facial surgery within the last 6 months
- Incomplete follow-up data

Data Collection Procedure

After obtaining informed written consent, detailed demographic and clinical information was collected using a predesigned semi-structured data collection sheet. Information regarding age, sex, Fitzpatrick skin type, relevant medical history, previous aesthetic procedures, and primary aesthetic concerns was recorded.

Baseline facial assessment was performed by the consultant injector before treatment. Wrinkle severity of the forehead, glabellar, and crow's feet regions was assessed clinically using a standardized dynamic wrinkle severity grading system. Facial balancing assessment, facial symmetry score, jawline definition score, masseter prominence, and lower face tension were also evaluated.

Treatment Procedure

All procedures were performed by consultant-level aesthetic dermatologists experienced in botulinum toxin injection techniques. Two commercially available botulinum toxin formulations (Clostridium Botulinum Toxin) were used according to patient preference and availability. A standardized dilution protocol of 2.5 mL

normal saline dilution per vial was maintained throughout the study.

Holistic full-face botulinum toxin treatment was administered according to individualized facial assessment findings. Injection sites included the forehead (frontalis), glabella, crow's feet, bunny lines, brow lift points, masseter muscles, DAO/marionette down-pull areas, mentalis, lip flip/perioral region, and platysma bands for Nefertiti lift when indicated. Participants were managed using either a wrinkle-focused injection strategy or a facial harmonization approach based on aesthetic requirements and facial balancing assessment.

Outcome Measures

The main results consisted of enhancement in facial symmetry, jawline contour, facial harmony, and reduction in wrinkle intensity following treatment. Improvement in wrinkles was evaluated using a standardized scale for dynamic wrinkle grading. Facial symmetry, jawline definition, and facial harmonization

were assessed through clinician-rated ordinal scoring systems.

Secondary outcomes encompassed patient-reported satisfaction, perceived appeal, social self-assurance, and the naturalness of results, evaluated utilizing structured 5-point Likert-type scales. The Global Aesthetic Improvement Scale (GAIS) was utilized to assess the overall enhancement of aesthetics. Pain during the procedure was evaluated with the Visual Analogue Scale (VAS). Other results comprised the emergence of visible effects, maximum treatment response, necessity for follow-up treatment, and adverse events related to the treatment.

Clinical assessments before and after treatment, along with standardized photographic evaluations, were conducted for all participants.

Pre- and Post-Treatment Clinical Appearance Following Full-Face Botulinum Toxin Injection:



Figure I: Clinical outcome before and after full-face botulinum toxin treatment

Statistical Analysis

Data were entered and analyzed using Statistical Package for Social Sciences (SPSS) software version 26.0. Categorical variables were expressed as frequency and percentage, while continuous variables were presented as mean $\pm$ standard deviation (SD). Pre- and post-treatment comparisons of facial symmetry score, jawline definition score, and facial balancing scores were analyzed using paired t-test. Association between categorical variables was assessed using Chi-square test. Correlation between facial harmonization outcomes and patient satisfaction variables was evaluated using Spearman's rank correlation coefficient (ρ). A p-value of less than 0.05 was considered statistically significant.

Ethical considerations

Approval for ethical considerations was secured prior to the study. Informed consent in writing was secured from all participants, and the confidentiality of patient information was upheld during the entire study. The study was carried out in line with the guidelines of the Declaration of Helsinki.

RESULTS

Table 1 shows a total of 150 participants were included in this study evaluating the role of holistic full-face botulinum toxin treatment in facial harmonization and aesthetic enhancement. The majority of the participants were female (94.7%), while males constituted only 5.3% of the study population.

Fitzpatrick skin type IV was the predominant skin type (72.0%), followed by type III (28.0%). Most participants had no significant medical comorbidity (90.0%),

whereas diabetes mellitus, hypertension with diabetes mellitus, and PCOS with obesity were each present in 3.3% of participants.

Table 1: Sociodemographic Characteristics of the Participants (n=150)

Variable	Category	Frequency (n)	Percentage (%)
Sex	Male	8	5.3
	Female	142	94.7
Fitzpatrick Skin Type	III	42	28.0
	IV	108	72.0
Relevant Medical History	None	135	90.0
	Diabetes mellitus	5	3.3
	Hypertension with diabetes mellitus	5	3.3
	PCOS with obesity	5	3.3

Table 2 presents previous exposure to aesthetic procedures was common among the study population. Prior botulinum toxin treatment had been received by

63.3% of participants, while previous filler procedures and thread procedures were reported by 29.3% and 16.7% of participants, respectively.

Table 2: Previous Aesthetic Procedures Among Participants

Procedure	Yes n (%)	No n (%)
Previous botulinum toxin treatment	95 (63.3)	55 (36.7)
Previous Fillers	44 (29.3)	106 (70.7)
Previous thread procedures	25 (16.7)	125 (83.3)

Table 3 shows regarding primary aesthetic concerns, wrinkle reduction was the most common indication for treatment, reported by 65.3% of

participants. Facial rejuvenation/lifting was desired by 18.0%, while 9.3% sought a more lifted appearance and 7.3% prioritized maintenance of a natural appearance.

Table 3: Primary Aesthetic Concerns of the Participants

Concern	Frequency (n)	Percentage (%)
Wrinkles reduction	98	65.3
Natural appearance	11	7.3
Facial rejuvenation/lifting	27	18.0
Desire for lifted appearance	14	9.3

Table 4 shows baseline wrinkle severity assessment demonstrated that mild forehead wrinkles were present in 80.0% of participants, whereas moderate forehead wrinkles were observed in only 3.3%. In the

glabellar region, mild wrinkles were identified in 49.3% of participants, while severe glabellar wrinkles were rare (0.7%). Most participants demonstrated very mild crow's feet wrinkles (73.3%).

Table 4. Baseline Wrinkle Severity Assessment

Variable	Category	Frequency (n)	Percentage (%)
Forehead wrinkles	Very mild	25	16.7
	Mild	120	80.0
	Moderate	5	3.3
Glabellar wrinkles	None	35	23.3
	Very mild	35	23.3
	Mild	74	49.3
	Moderate	5	3.3
	Severe	1	0.7
Crow's feet wrinkles	None	10	6.7
	Very mild	110	73.3
	Mild	30	20.0

Table 5 presents among the treatment characteristics; Allergan formulation was used in 53.3% of cases and Neuramis in 46.7%. Wrinkle-focused injection strategy was utilized in 54.0% of participants,

whereas a facial harmonization approach was applied in 46.0%. Lip flip/perioral injection was performed in 88.7% of participants, while platysma Nefertiti lift was performed in 18.0%.

Table 5: Treatment Characteristics

Variable	Category	Frequency (n)	Percentage (%)
Botulinum toxin formulation	Neuramis	70	46.7
	Allergan	80	53.3
Injection Strategy	Wrinkle-focused	81	54.0
	Facial harmonization	69	46.0
Lip Flip/Perioral Injection	Yes	133	88.7
	No	17	11.3
Platysma Nefertiti Lift	Yes	27	18.0
	No	123	82.0

Table 6 presents procedure-related outcomes revealed favorable tolerability. Most participants reported mild procedural pain, with VAS scores of 3 and 4 reported by 51.3% and 44.0% of participants, respectively. Visible onset of treatment effect occurred

most commonly by day 5 (48.7%), while peak treatment effect was most frequently observed by day 15 (44.0%). Touch-up treatment was required in 45.3% of participants.

Table 6: Procedure-related Outcomes

Variable	Category	Frequency (n)	Percentage (%)
Procedure pain score (VAS)	3	77	51.3
	4	66	44.0
	5	7	4.7
Time to visible onset (days)	5	73	48.7
	7	55	36.7
Peak Effect (days)	7	57	38.0
	15	66	44.0
Need for Touch-up	Yes	68	45.3
	No	82	54.7

Table 7 shows significant improvement was observed in post-treatment facial harmonization outcomes. The mean facial symmetry score improved from 4.9 ± 1.2 at baseline to 7.3 ± 0.8 following treatment. Similarly, jawline definition score improved

from 5.0 ± 1.0 to 7.4 ± 0.9 . Facial balancing scores of both the upper and lower facial thirds also demonstrated statistically significant improvement after treatment ($p < 0.001$ for all comparisons).

Table 7: Post-treatment Facial Harmonization Outcomes

Variable	Baseline Mean $\pm$ SD	Post-treatment Mean $\pm$ SD	p-value
Facial symmetry score	4.9 ± 1.2	7.3 ± 0.8	<0.001
Jawline definition score	5.0 ± 1.0	7.4 ± 0.9	<0.001
Facial balancing score (upper third)	2.4 ± 0.8	7.1 ± 1.0	<0.001
Facial balancing score (lower third)	2.6 ± 1.1	6.9 ± 1.1	<0.001

Paired t-test done; p-value <0.05 considered significant

Table 8 presents patient-reported outcomes demonstrated high levels of satisfaction. Overall, 52.7% of participants were very satisfied and 47.3% were satisfied with treatment outcomes. All participants

expressed willingness to repeat treatment, and 91.3% stated that they would recommend the procedure to others. According to the Global Aesthetic Improvement Scale (GAIS), 39.3% of participants were rated as “very much improved,” while 56.0% were rated as “much improved”.

Table 8: Patient Satisfaction and Patient-reported Outcomes

Variable	Category	Frequency (n)	Percentage (%)
Overall Satisfaction	Satisfied	71	47.3
	Very satisfied	79	52.7
Willingness to Repeat Treatment	Yes	150	100
Willingness to Recommend	Yes	137	91.3
Global Aesthetic Improvement Scale (GAIS)	Very much improved	59	39.3
	Much improved	84	56.0
	Improved	7	4.7

Table 9 shows a significant association was observed between injection strategy and overall satisfaction. Participants treated with the facial harmonization approach demonstrated significantly

higher rates of being very satisfied compared with those treated using a wrinkle-focused approach (63.8% vs 43.2%, $\chi^2=6.24$, $p=0.012$).

Table 9: Association Between Injection Strategy and Overall Satisfaction

Injection Strategy	Satisfied n (%)	Very Satisfied n (%)	χ^2 value	p-value
Wrinkle-focused (n=81)	46 (56.8)	35 (43.2)	6.24	0.012
Facial harmonization (n=69)	25 (36.2)	44 (63.8)		

Table 10 shows correlation analysis demonstrated significant positive relationships between facial harmonization outcomes and patient satisfaction. Improvement in facial symmetry showed a strong positive correlation with overall satisfaction ($p=0.62$, $p<0.001$). Jawline definition improvement was positively correlated with attractiveness improvement

score ($p=0.58$, $p<0.001$), while perceived naturalness of outcome demonstrated significant positive correlation with improvement in social confidence ($p=0.54$, $p=0.002$). Furthermore, GAIS score showed a strong positive correlation with overall satisfaction ($p=0.71$, $p<0.001$).

Table 10: Correlation Between Facial Harmonization Outcomes and Patient Satisfaction

Variables	Spearman's rho (ρ)	p-value
Improvement in facial symmetry vs overall satisfaction	0.62	<0.001
Jawline definition improvement vs attractiveness improvement score	0.58	<0.001
Perceived naturalness of outcome vs social confidence improvement	0.54	0.002
GAIS score vs overall satisfaction	0.71	<0.001

DISCUSSION

The study population was predominantly female, with most participants being healthy individuals seeking elective botulinum toxin treatment for aesthetic enhancement. Fitzpatrick skin type IV was the most common, and 90% of participants had no significant comorbidities. This demographic profile is consistent with previous reports showing that cosmetic botulinum toxin procedures are more frequently sought by women due to aesthetic goals and psychosocial factors related to facial appearance and self-confidence [15]. Previous experience with aesthetic procedures, including botulinum toxin, fillers, and thread-based treatments, was common, reflecting the increasing trend of repeated or combined minimally invasive procedures to optimize facial outcomes [16].

Wrinkle reduction was the leading aesthetic concern, followed by facial rejuvenation and lifting goals. The predominance of mild baseline wrinkle severity (mild forehead wrinkles in 80.0%, mild glabellar wrinkles in 49.3%, and very mild crow's feet in 73.3%) supports the role of botulinum toxin in early facial aging management and preventive aesthetic interventions [17,18].

The treatment approach showed balanced use of wrinkle-focused and facial harmonization strategies, with commonly performed procedures targeting upper and mid-face regions, while lower-face and neck applications were less frequent. Mild procedural discomfort, early onset of effect within 5–7 days, and

peak improvement by 1–2 weeks were consistent with the established pharmacological profile of botulinum toxin. The requirement for touch-up procedures reflects the need for individualized dose adjustment and optimization of aesthetic outcomes [19,20].

Post-treatment assessment demonstrated significant improvement in facial symmetry, jawline definition, and overall facial balance, supporting the broader role of botulinum toxin beyond isolated wrinkle reduction [21]. High patient satisfaction and improved GAIS scores indicate favorable perceived outcomes, consistent with previous studies reporting strong patient acceptance of botulinum toxin treatment [22].

Facial harmonization strategies achieved higher satisfaction compared with wrinkle-focused approaches, suggesting that comprehensive assessment and treatment of facial balance may provide superior aesthetic outcomes. The strong correlation between aesthetic improvements and satisfaction highlights the importance of natural facial proportions and overall harmony as key determinants of treatment success [23,24]. Overall, botulinum toxin demonstrated favorable safety and effectiveness for facial aesthetic enhancement, particularly when applied using a holistic harmonization approach.

CONCLUSION

Comprehensive botulinum toxin therapy greatly enhanced facial symmetry and cosmetic results, resulting in high patient satisfaction and few side effects. A facial

harmonization method yielded higher satisfaction than a wrinkle-centered approach, emphasizing the significance of thorough facial evaluation for the best aesthetic outcomes.

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