



Sustainability of Preventive Botox for The Anti-aging Process

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Abstract

Background and aim: Botulinum toxin injection is the most popular aesthetic procedure performed worldwide. This cosmetic treatment is used to reduce the appearance of wrinkles and fine lines. Our study aimed to identify the pros and cons of Botox for the anti-aging process. Also, identify the immediate complications and satisfaction level of the patients.

Methodology: We conducted the study in the Department of Dermatology and Venereology, VitaSkin Clinic, Dhaka, Bangladesh. The time period was April 2023 to September 2023. The study design was descriptive cross-sectional. All patients who have come to do Botox in various areas of their body parts at the Department of Dermatology and Venereology of VitaSkin Clinic, Dhaka, were enrolled in the study by purposive sampling. Thereafter, they were scrutinized according to eligibility criteria and 100 patients were finalized. A pre-tested, observation-based, peer-reviewed data collection sheet was prepared before the study. Data regarding clinical, biochemical and surgical profiles were recorded. Data were compiled, edited, and analyzed by SPSS 25.

Results: According to the analysis, this study was conducted by 57 women and 43 men. The number of patients who did their upper face Botox 45, mid face 23 and lower face 32. The level of immediate complications after taking Botox. By doing multivariate (cross-table) analysis, the study revealed significant values of complications. The results show that bruising (n=13, 22.2%; chi-square- 8.58, p=0.01), dizziness (n=11, 18.7%; chi-square- 6.54, p=0.01), headaches (n=5, 9.6%; chi-square- 7.04, p=0.01), swelling (n=9, 20.6%; chi-square- 5.28, p=0.01), temporary Muscle weakness (n=7, 18.7%; chi-square- 8.12, p=0.01), tears or hollowness under the eyes (n=5, 7.4%; chi-square- 6.89, p=0.01) are the immediate complications after doing Botox. Above 93% of patients were satisfied with their treatment.

Conclusion: Botulinum Toxin (Botox) is the most effective anti-aging treatment, where complication is less and satisfaction is high.

Keywords: Botox, Pros and cons, Immediate complications, Satisfaction

Introduction

Skin aging is part of the natural human "mosaic aging" imitation, which becomes evident and follows different paths in different organs, tissues, and cells over time. The circle "eyes" hide the signs of internal organ aging, but the skin is the first point of connection for time^[1]. Skin aging is a complex biological process influenced by a combination of endogenous or internal factors (genetics, cellular metabolism, hormones, and metabolism) and exogenous factors or external (long-term exposure to light, pollution, ionizing radiation, chemicals, toxins)^[2]. Together these factors lead to cumulative structural and physiological changes as well as progressive changes in each layer of the skin as well as changes in the appearance of the skin, especially in areas of the skin exposed to sunlight^[3-6]. Unlike thin, atrophied, wrinkled, and dry skin that is already aging, prematurely photoaged skin often exhibits thickened epidermis, discolored spots, deep wrinkles, sagging, dullness, and roughness^[7, 9]. The gradual loss of skin elasticity leads to sagging^[10].

Botulinum toxin (Botox) is a medication made from a toxin produced by the bacteria *Clostridium botulinum*. In large barrels, this toxin can cause botulism, an affection that affects the nerves. Botox has been used since the 1970s in the field of ophthalmology, and over the past 20 years, its use has expanded into many different health areas, including dermatology^[11, 12]. Botox contains 7 types of neurotoxins; however, only toxins A and B are used clinically. Botox A is used for several disorders in the major- medical field,

particularly dermatology, for cosmetic purposes^[13]. The first type of Botox introduced to the market was on a botulinum toxin A.

Botulinum toxin injection is the most popular aesthetic procedure performed worldwide. This cosmetic treatment is used to reduce the appearance of wrinkles and fine lines. It makes a common component of anti-ageing regimens. Botox works on targeting the repetition of muscle contractions. In 2002, the US Food and Drug Administration (FDA) recommended its use as a cosmetic treatment for wrinkles^[14]. Botox is a neurotoxin that temporarily paralyzes the muscles it is injected into. Wrinkles and fine lines often develop due to repeated muscle contractions, such as when you smile or frown. Botox injections block the signals between nerves and muscles, reducing muscle activity in the treated area. This results in smoother skin and diminished wrinkles, particularly in areas like the forehead, between the eyebrows, and around the eyes (crow's feet). It is injected directly into the specific facial muscles responsible for the formation of dynamic wrinkles.

Dynamic wrinkles are wrinkles that appear when you make facial expressions such as smiling, frowning, or squinting. This toxin works by blocking the release of acetylcholine, a neurotransmitter that signals muscles to contract. This results in temporary relaxation of the treated muscles. Once the treated muscles are relaxed, they can no longer contract as strongly or as frequently. As a result, the skin covering these muscles becomes smoother and wrinkles that are often

caused by muscle contractions are reduced or eliminated. Areas commonly treated with Botox include the forehead, between the eyebrows (glabellar lines), and around the eyes (crow's feet).

In 1994, a study reported the effectiveness of Botox A in reducing the appearance of facial wrinkles; it has been used as a cosmetic treatment [15]. It can be used to treat glabellar frown lines, wrinkles around the lips (smoker's lines) and marionette lines, platysmal bands in the neck, strabismus, blepharospasm, cervical dystonia, hyperhidrosis and synkinesis by facial surgery [16].

The study aims to identify the pros and cons of Botox for the anti-aging process. Also, identify the immediate complications and satisfaction level of the patients. Many articles have been published on Botulinum toxin. But few of these fill the knowledge gaps. So this study aimed to address the issues that would be helpful to fill in some of the gaps that are not addressed by other articles. More studies on this topic are required to update which will help the treatment protocol. In addition, national and local regulations or guidance should be documented and followed where appropriate.

Methodology

Place of study

Department of Dermatology and Venereology, VitaSkin Clinic, Dhaka, Bangladesh.

Period of study

April 2023 to September 2023.

Study population

During the study period, patients who have come to do Botox in various areas of their body parts at the Department of Dermatology and Venereology of VitaSkin Clinic, Dhaka.

Study design

Descriptive cross-sectional study.

Sample size

The sample size was 100 for this study.

Sampling Methods

Non-randomized prospective sampling.

Main outcome variables

Immediate complications, Mental Satisfaction after treatment, Pros and cons of Botox.

Procedures for collecting data

Data was collected through face-to-face interviews and from Clinic records. Data was recorded in a questionnaire. Information was collected by taking a medical history and clinical examination [12].

Procedures of data analysis and interpretation

Data was analyzed by computer with the help of SPSS with 25 software packages. Statistical significance was set at 0.05 level and confidence interval at 95% level. The level of significance was measured by using appropriate procedures like the chi-square test (X²), relative risk (RR) measurement, t-test, proportion (d) test, ANOVA tests, and others where applicable.

Ethical implication

Before the commencement of this study, the aims and objectives of the study along with its procedure, alternative methods, risks, and benefits, were explained to the patients in an easily understandable local language and then informed written consent was taken from each patient. The patients were explained that they have the right to refuse or accept to participate in the study and they did not receive financial benefit from this study. The patients were assured that all information and records were kept confidential and the procedure was helpful for both the dermatologists and the patients in making a rational approach to case management.

Results

Sex distribution

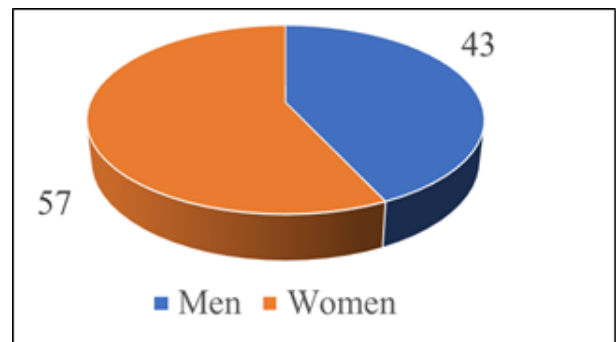


Fig 1: Total sex distribution of the respondents. (n= 100). This is the Fig. 1 legend.

Figure 1 shows the total sex distribution. The result represents that among 100 respondents, 43 were men and 57 were female. (fig. 1)

Area distribution of taken Botox

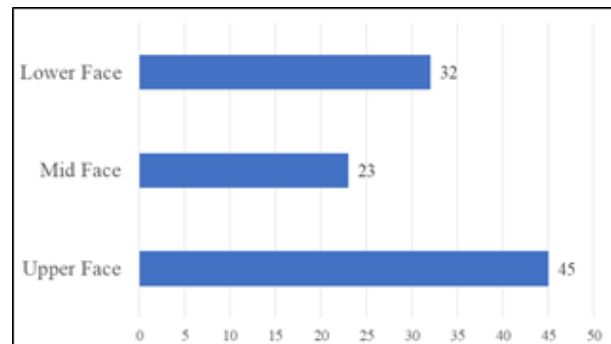


Fig 2: Total number of respondents who have taken Botox in different areas of the face. (n= 100). This is the Fig. 2 legend.

Figure 2 represents the number of respondents who have taken Botox on their face in particular areas. The maximum number (45) of the clients took upper-face Botox. (fig. 2)

Immediate complications

Table 1: Level of immediate complications from Botox

Complications	Total n (%)	X ² /p-value (≤0.05)
Bruising	13(19.2%)	8.58/0.01*
Dizziness	11(18.7%)	6.45/0.01*
Headaches	5(9.6%)	7.04/0.01*
Swelling	9(20.6%)	5.28/0.01*
Temporary Muscle weakness	7(18.7%)	8.12/0.01*
Tears or hollowness under the eyes	5(7.4%)	6.89/0.01*

Data are presented as frequency (n), percentage (%); and statistical significance at p-value ≤ 0.05 . A chi-square test was used to observe the association at 95% CI. Logistic Regression Analysis was used to identify the factors.

***Statistical significance at p-value ≤ 0.05 ; reference category was considered the level of complications.**

Table 1 presents the level of immediate complications after taking Botox. By doing multivariate (cross-table) analysis, the study revealed significant values of complications. The results show that bruising (n=13, 22.2%; chi-square- 8.58, p=0.01), dizziness (n=11, 18.7%; chi-square- 6.54, p=0.01), headaches (n=5, 9.6%; chi-square- 7.04, p=0.01), swelling (n=9, 20.6%; chi-square- 5.28, p=0.01), temporary Muscle weakness (n=7, 18.7%; chi-square- 8.12, p=0.01), tears or hollowness under the eyes (n=5, 7.4%; chi-square- 6.89, p=0.01) are the immediate complications after doing Botox. (Table-1)

Level of satisfaction

Table 2: Level of satisfaction from Botox

Satisfied in one setting	93.2%
Satisfied after retouch	6.8%
Completely dissatisfied	0%

Table 2 represents the satisfaction level of the respondents. Statistical analysis shows that the patient's satisfaction level is above 93%. There has been no dissatisfaction among the patients. (Table-2)

Discussion

As this study demonstrated, immediate complications are less than 20% in Botox. The mental satisfaction rate is above 93% after treatment among our patients. The majority of the respondents, in this case, were women, married and between the age of 38-45. The type of education required varied by job status.

According to the study, the maximum number of respondents (n=45) were taken upper face Botox and the number for mid-face was 23. Regarding the immediate complications, bruising occurs in 13 respondents, about 19.2% and the chi-square is 8.58. 18.7% of respondents complained of dizziness. About 9.6% suffered from headaches, where the chi-square is 7.04. Swelling occurs in 9 respondents, about 20.6% and the chi-square is 5.28. The complication level of temporary Muscle weakness and tears or hollowness under the eyes were 18.7% and 7.4%. It should be mentioned that all the values were considered at a significant level (≤ 0.05).

Regarding the level of satisfaction, 93.2% were completely satisfied after Botox. 6.8% needed retouching for their desired look. The most important that there is no dissatisfaction (0%) in this respect.

Pros of Botox

Reduced Wrinkles: Botox is highly effective in reducing the appearance of facial wrinkles and fine lines, especially those caused by muscle movement.

Non-Surgical: Botox is a non-surgical cosmetic procedure, making it a less invasive option compared to surgical alternatives like facelifts^[4].

Quick Results: The effects of Botox are often noticeable within a few days, and the treatment itself is usually quick, providing a relatively rapid improvement in the appearance of wrinkles.

Versatility: Botox is used for various medical conditions beyond cosmetic purposes, including treating migraines, excessive sweating (hyperhidrosis), and certain muscle disorders.

Minimal Downtime: Patients typically experience minimal downtime after a Botox treatment, allowing them to resume normal activities shortly after the procedure.⁷

Cons of Botox

Temporary Results: The effects of Botox are not permanent and usually last for about three to six months. Regular treatments are required to maintain the desired results^[12, 14].

Potential Side Effects: While uncommon, Botox injections can cause side effects such as bruising, swelling, pain at the injection site, and in rare cases, drooping eyelids or eyebrows.

Cost: Botox treatments can be relatively expensive, especially when considering the need for repeated sessions to maintain the desired results^[15].

Allergic Reactions: Although rare, some individuals may be allergic to Botox or experience an adverse reaction to the injection.

Frozen Appearance: Overuse of Botox or improperly administered injections can lead to a frozen or unnatural facial appearance, where facial expressions are limited^[2].

Not Suitable for Everyone: Certain medical conditions or medications may make individuals unsuitable candidates for Botox treatments. Pregnant or breastfeeding women are generally advised to avoid Botox.

Conclusions

Botulinum Toxin (Botox) is the most effective anti-aging treatment, where complication is less and satisfaction is high. Though there are some pros and cons, but still immediate complications are still less than 20% in Botox. The mental satisfaction rate is above 93% after treatment among our patients.

Recommendations

We propose a multicenter study in secondary/tertiary clinics across Bangladesh. Study time must be long. Also, a multidisciplinary approach to research work can make a study more precise and authentic in this respect.

Limitation

As this was a cross-sectional study, it was single-blinded and, due to time constraints, it was a single-center study. Furthermore, the sample size is small and does not reflect the general situation of the whole country.

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