

## NEW IS NOT STRANGE ALWAYS- 'NOTOX' IN DENTISTRY – A REVIEW.

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### KEYWORDS

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Fillers.

### ABSTRACT

BOTOX has already demonstrated a high success rate in a variety of dental procedures. However, BOTOX also has certain drawbacks. NOTOX fillers have become a key adjunct in dental practice because they provide both therapeutic and aesthetic advantages. The use of NOTOX fillers in dentistry is examined in this article, along with how well they work to improve facial appearance and support dental restorative operations. A thorough search of the electronic literature was conducted using a number of databases, including Google Scholar, Wiley Online Library, Ebscohost, Science Direct, and Medline via Pubmed. With emphasis on papers released between January 2000 and February 2025, we employed the following keywords: NOTOX; Hyaluronic Acid (HA); Poly-Lactic Acid (PLLA); Calcium Hydroxyl Apatite (Ca HA); and NOTOX Fillers. Out of the 22 papers we found, 15 were chosen for this review since they were pertinent to the subject. With an emphasis on their uses, advantages, and clinical considerations, this review seeks to clarify the function of NOTOX dermal fillers in dentistry.

### INTRODUCTION

An injectable dermal filler called NOTOX Filler is intended to revitalize the skin, replenish lost volume, and lessen the visibility of fine lines and wrinkles. NOTOX fillers do not use neurotoxins to relax muscles, in contrast to conventional botulinum toxin-based therapies (like Botox). Rather, biocompatible substances like Hyaluronic Acid (HA) [1], Poly-L-Lactic acid (PLLA) [2], Calcium Hydroxyl Apatite (CaHA) [3], or other bio-stimulating compounds are frequently used to make them. [4]

#### Medical Applications of NOTOX Fillers

1. Wrinkle Reduction: Corrects deep lines and static wrinkles (e.g., marionette lines, nasolabial folds).
2. Lip augmentation: improves the shape and fullness of the lips.
3. Cheek and Chin Contouring: This technique defines facial characteristics and replenishes lost face volume.
4. Under-Eye Rejuvenation: Addresses tear troughs and other hollow areas beneath the eyes.
5. Non-Surgical Rhinoplasty, or nose reshaping, modifies the nasal shape without the need for surgery.

## Therapeutic Uses

- A. Scar Revision: This procedure makes depressed scars, such as acne scars, look better.
- B. Hand Rejuvenation: Reduces apparent veins and tendons by restoring lost volume in the hands.
- C. Jaw line Definition: This technique gives the jaw line greater definition or contour.
- D. Skin Hydration & Collagen Stimulation: Certain NOTOX fillers have substances that promote the formation of collagen, which gradually improves the suppleness and texture of the skin.

Although "NOTOX" is a telescope word, combination of "no" and "Botox," it actually refers to a change in style. It concerns the opposite direction of the pendulum's swing. Although most Notox treatments are not natural, they do improve the tone or texture of the skin by promoting "natural" processes like collagen synthesis or cell turnover. [5]

- 1. Preserves natural face expressions by not paralyzing muscles.
- 2. Offers volume restoration that lasts longer.
- 3. Can promote the synthesis of collagen, providing long-term advantages for soft tissues.

## Considerations:

Selecting the right patients is essential because botulinum toxin may still be more beneficial in specific situations (such as bruxism).

requires an experienced injector who understands the anatomy of the orofacial region.

In many dental and prosthodontic conditions, it is a helpful addition to surgical adjustments rather than a substitute for them.

## Key Advantages of NOTOX Fillers

Immediate visible results.

- \* Neuromodulators are not required, which is great for patients who are avoiding botulinum toxin.
- \* Long-lasting yet transient (effects might range from months to years, depending on the type of filler).
- \* In certain situations, it increases the creation of collagen, which gradually improves the quality of skin. [6]

The overall aesthetics of the orofacial region are also included in the goal of optimal oral health, which goes beyond the functionality of teeth. Dental practice has adopted dermal fillers, which are normally used in cosmetic dermatology to eliminate wrinkles and restore facial volume. They are useful in complete dental treatment because of their capacity to support soft tissue structures and address peri-oral cosmetic problems.

## METHODOLOGY

The use of NOTOX fillers in dentistry was the subject of a thorough literature review. Articles published between January 2000 and Feb 2025 were found using databases such as Google Scholar, Wiley Online Library, Ebscohost, Science Direct, and Medline via Pubmed. Hyaluronic Acid (HA), Calcium Hydroxyl Apatite (Ca HA), Poly-L-Lactic Acid (PLLA), NOTOX, dermal fillers, and NOTOX filler applications in dentistry are the keywords following preferred reporting items for systematic reviews and Meta-analyses (PRISMA) guidelines, a total of 15 articles were included in the systematic review and were included case reports, original studies and reviews, that addressed the use of NOTOX fillers in dental settings. [Figure 1]

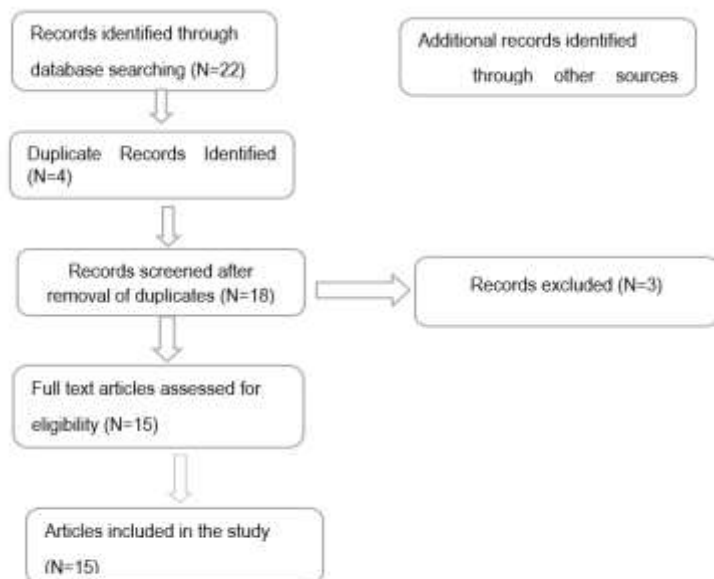


Figure 1. PRISMA flowchart for selection of the articles.

## RESULTS

Several important uses of dermal fillers in dentistry are revealed by an analysis of the chosen literature. By addressing age-related volume loss and asymmetries, NOTOX treatment helps to a harmonious dental appearance. Rejuvenating the lower face area by reducing fine lines and wrinkles around the lips, such as marionette lines and nasolabial folds. To make the gum line around teeth more symmetrical and visually beautiful, thin or receding gum tissues can be augmented. Strengthening the soft tissue base to give dentures more stability and support, which will improve fit and comfort. Only a small number of specialist treatments are covered in the literature that reveals NOTOX's applications in dentistry. These include orthodontic therapies in two papers, prosthodontic treatments in four, oral surgery in four, and aesthetic/cosmetic treatments in five. [Figure-2]

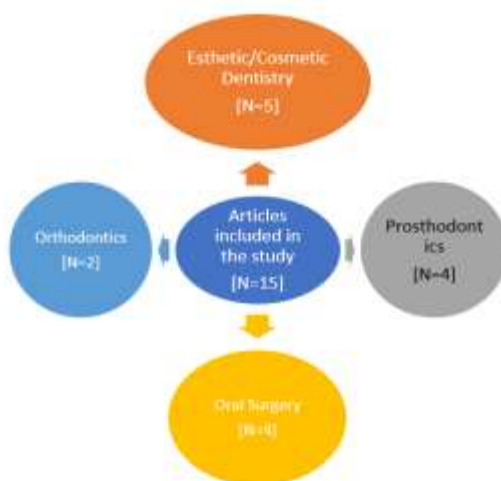


Figure-2: Speciality wise distribution of Articles in Dentistry

## DISCUSSION

Some biostimulatory fillers encourage tissue regeneration and may aid in muscle relaxation, however they are not as effective as Botox for this purpose. Therapeutic uses of NOTOX fillers include TMJ and myofascial pain management. Following oral and maxillofacial surgery, fillers can be utilized to enhance tissue shape and healing, helps lessen scars from trauma or oral procedures. [6]

A neurotoxin generated from *Clostridium botulinum*, commonly known by the brand name "Botox," is used to temporarily paralyze muscles in order to minimize wrinkles on the face. [7] The term "NOTOX" describes non-invasive, non-toxic substitutes for Botox that seek to produce comparable aesthetic effects without the use of toxins or injections.

### Key Differences Between Botox and NOTOX:

Botulinum toxin type A, temporarily paralyzes muscles by blocking nerve signals to them. On the other hand, NOTOX refers to a group of products, most of which are topical, that are made with peptides, retinoids, and antioxidants to make the skin firmer and less wrinkled without compromising muscle function. A trained medical practitioner will inject Botox straight into the targeted face muscles. However, NOTOX can be used topically as serums or creams and integrated into regular skincare regimens without requiring medical treatments.

Botox temporarily relaxes muscles and reduces dynamic wrinkles by blocking the release of acetylcholine at the neuromuscular junction. [7] On the other hand, NOTOX targets the skin's surface and underlying structures to reduce the appearance of fine lines by using active substances to increase collagen formation, improve skin hydration, and increase suppleness. [3]

The effects of Botox usually start to show 3–7 days after injection and last for 3–4 months. [7] Results from NOTOX vary depending on the substance and each person's skin reaction; to see noticeable benefits, regular use over weeks to months is frequently needed. When used by specialists, Botox is usually safe, but it can cause bruising, swelling, and, in rare instances, unintentional muscle paralysis. However, topical NOTOX treatments usually carry a lower risk profile, with the potential for mild skin irritation or allergic reactions contingent on personal sensitivities. [1,2,8]

NOTOX fillers are a useful addition to contemporary dentistry, providing both practical and cosmetic advantages. [6] They are a promising tool for dentists looking to improve patient care because of their biocompatibility, reversibility, and minimally invasive nature. Long-term investigations and additional research are required to confirm their efficacy and standardize clinical procedures for their application in dentistry. [7]

### NOTOX fillers in Prosthodontic & Restorative Applications

NOTOX fillers, which are mostly made of biocompatible substances like hyaluronic acid, have been used extensively in restorative and prosthodontic dentistry. These fillers support both cosmetic improvement and functional rehabilitation. Here are some particular methods:

#### 1. Enhancement of Interdental Papillae ("Black Triangle" Treatment)

"Black triangles" between teeth can be unsightly if interdental papillae are lost or reduced. These regions can be enhanced using injectable fillers, which will enhance both appearance and phonetics. Assess the degree of papillary loss and maintain the health of periodontal tissues. Selecting an appropriate filler based on hyaluronic acid, using a fine-gauge needle to inject the filler into the weak papilla with the least amount of stress possible. Encourage the patient to retain the outcomes by giving them dental hygiene advice. [9]

## **2. Perioral Soft Tissue Augmentation**

Resorption of alveolar bone and surrounding soft tissues might jeopardize denture stability and facial aesthetics in edentulous patients, particularly those who are not candidates for implant therapy. By replacing decreased soft tissue volume, injectable fillers can improve patient confidence and denture support.

Evaluation of the extent of soft tissue atrophy and how it affects the fit of dentures is important. In order to replicate natural tissue, choosing a filler with the right viscosity. Focus on regions like the labial commissures, marionette lines, and nasolabial folds. The subdermal filler can be deposited using a linear threading approach or serial puncture. Keep an eye out for any negative reactions and determine whether touch-ups are necessary. [10]

## **3. Correction of Perioral Wrinkles and Folds**

Both function and appearance may be impacted by the development of perioral wrinkles and deepening nasolabial folds brought on by aging and edentulism. These wrinkles can be reduced with dermal fillers, giving the face a more youthful appearance and enhancing lip function.

Determine whether a wrinkle is suitable for filler treatment by distinguishing between dynamic and static wrinkles. Choose a hyaluronic acid filler that has the right amount of suppleness and durability. Using a blanching approach for superficial lines and a deeper bolus injection for deeper folds. Advise the patient on how to handle any possible swelling and advise against making too many facial motions. [11]

## **4. Lip Augmentation for Improved Esthetics and Function**

Asymmetrical or thin lips might alter the phonetics and appearance of a grin. In order to improve speech and create a beautiful smile line, fillers can increase the volume and contour of the lips. Evaluate the patient's expectations, lip anatomy, and symmetry. Make use of a filler made especially for lip enhancement. Apply methods like serial piercing or linear threading along the lip body and vermillion border. Give advice on using cold compresses and avoiding lip movements for a predetermined amount of time. [12]

## **5. Adjunctive Treatment in Full-Mouth Rehabilitation**

Soft tissue profiles can be improved by using dermal fillers, guaranteeing a balanced and natural appearance after surgery. Examine facial dimensions and predict how they may change after rehabilitation. Inject fillers to enhance dental work in areas such as the lips, cheeks, and perioral region after restoration. To get harmonious outcomes, coordinate with prosthodontic procedures. Plan follow-ups to evaluate patient satisfaction and filler incorporation. [10]

## **6. Denture Support**

Denture wearers can greatly benefit from NOTOX treatments, especially from hyaluronic acid (HA) fillers, which address soft tissue volume loss issues and improve denture stability. A sunken appearance around the mouth and poor denture retention can result from denture wearers' alveolar ridge disintegration and the atrophy of the surrounding soft tissues over time. By the following mechanisms, injectable HA fillers can help allay these worries:

As a result of soft tissue volume loss brought on by prolonged denture use, the mouth may appear sunken. By restoring lost volume, HA fillers can be injected into these areas, enhancing facial aesthetics and giving the appearance of younger skin. Patients can return to their regular activities soon after the procedure thanks to this method's quick outcomes and little recovery period. The fit and retention of dentures can be impacted by volume loss in the gums and surrounding tissues. Dentists can improve denture stability and support by injecting HA fillers into the soft tissues, which will increase patient comfort and functionality.



Soft tissue atrophy and bone resorption can cause alterations in the definition of the jaw line in those who wear dentures. The jaw line can be augmented using HA fillers to restore a more pronounced and attractive contour. This helps to provide greater denture support in addition to improving appearance. Patients must speak with dentists who have received dermal filler training in order to choose the best course of action for their individual needs. [10]

### **NOTOX role in Oral and Maxillofacial surgery**

Dermal fillers, or NOTOX treatments, are important in the field of oral and maxillofacial surgery for both cosmetic and therapeutic purposes. These procedures provide minimally invasive remedies for a range of facial disorders.

a. Management of Temporomandibular Joint (TMJ) problems: By lowering joint tension and offering cushioning, dermal fillers can be used to relieve discomfort and dysfunction related to TMJ problems.

b. Neuropathic Facial Pain Treatment: By regulating nerve activity and offering structural support, injectable fillers may provide alleviation in neuropathic facial pain situations.

c. Correction of Soft Tissue Deficiencies: Fillers can be used to restore facial symmetry and function in cases of post-traumatic or post-surgical deformities.

d. Aesthetic Applications: Dermal fillers are used to improve the overall appearance of the face by reducing wrinkles and fine lines and restoring volume.

e. Lip Augmentation: Accurate filler injections are used to improve the volume and contour of the lips, which enhances both appearance and functionality.

f. Scar Revision: By raising downcast scars, fillers can create a smoother, more attractive skin surface.

Because of their specific understanding of facial anatomy, oral and maxillofacial surgeons are qualified to provide these therapies. For patients seeking such treatments, their experience guarantees that both functional and cosmetic results are maximized. [13,14]

### **NOTOX role in Orthodontics**

In orthodontics, NOTOX procedures specifically, the injection of dermal fillers has been used to improve both functional and cosmetic results. Incorporating dermal fillers can address soft tissue abnormalities that orthodontics alone may not be able to address.

Lip incompetence is a condition in which the lips do not sufficiently seal when at rest. Both aesthetics and dental health may be impacted. By giving the lips more volume, dermal fillers can enhance their function and closure.

The soft tissue contours of the face may occasionally change as a result of orthodontic treatments. By restoring midface volume, dermal fillers can improve facial attractiveness and give the appearance of younger skin.

Patients may worry about their appearance while undergoing orthodontic treatment. Dermal fillers can be utilized to enhance facial attractiveness, enhancing patient confidence throughout the treatment process.

Dermal fillers provide a minimally invasive solution for a number of functional and aesthetic issues in dental practice. Their application in peri-oral rejuvenation and lip augmentation enhances dental restorative procedures and increases patient satisfaction. Additionally, by enhancing the soft tissues that support removable prosthesis, dermal fillers can enhance their fitness and comfort. However, accurate injection procedures, product selection, and a comprehensive understanding of facial anatomy are necessary for optimal results. Additionally, dentists need to be aware of and quickly address any possible side effects, including infection, asymmetry, and allergic responses. [15]

Both dentistry and orofacial aesthetics may benefit from NOTOX procedures, especially with NOTOX fillers. Although conventional botulinum toxin, such as Botox, is frequently used in dentistry to treat diseases like TMJ disorders, implantology, and bruxism. [8] In dental and oral rehabilitation, NOTOX fillers can play complementary or alternative roles. According to Saini RS et al., it is clear that the HA is perfect for treating a variety of dental issues, such as periodontal abnormalities and temporomandibular joint (TMJ) disorders (TMDs), with a low risk of side effects due to its biocompatibility and reversibility. These procedures are essential for improving patient happiness and maximizing the results of dental care. [16]

Kokash M and co-researchers found that in TMDs, HA increased maximum mouth opening, decreased pain, and improved quality of life associated with dental health. [17] Germani Vieira M and colleagues stated that, with little recovery time and results that look natural, HA offers patients a safe, customizable, and successful alternative for treating gummy smiles. [18] As per Miglani A et al., patients and practitioners continue to use HA because of its biocompatibility, long-lasting effects, and low risk of side effects. [19]

According to Aditya Sinha et al., NOTOX Fillers improve lip volume and symmetry for a more balanced smile while reducing mouth wrinkles like smoker's lines, marionette lines, and nasolabial folds. In addition to restoring lost soft tissue volume in edentulous patients and enhancing denture fit and comfort, fillers can be used in conjunction with other treatments to improve the appearance of smiles. aids in re-establishing face proportions following major prosthodontic procedures, particularly in cases of significant tooth loss or chronic edentulism. [20]

### **NOTOX available forms**

Non-surgical cosmetic procedures that are substitutes for conventional Botox injections are frequently referred to as "NOTOX" procedures. Without using botulinum toxin, these procedures seek to improve face attractiveness, minimise wrinkles, and revitalise the skin. There are numerous NOTOX therapy options that use various techniques and ingredients:

#### **I. Dermal Fillers**

**1. Hyaluronic Acid (HA) Fillers** :Injectable gels containing hyaluronic acid (HA) give face tissues volume, reducing wrinkles and fine lines. HA fillers are frequently utilised to improve nasolabial folds, cheekbones, and lips.

**2.Calcium Hydroxylapatite Fillers:** These fillers give the skin structure and volume by promoting the body's natural production of collagen. Deeper wrinkles and facial shaping are two common uses for it.

**3.Poly-L-lactic Acid Fillers:** These fillers provide results gradually and naturally by promoting the formation of collagen. Usually, they are applied to address facial volume reduction.

#### **II. 2. Injectable Moisturizers**

**A.Skin Boosters:** Injectable Moisturisers Hyaluronic acid microinjections are used in these procedures to hydrate and enhance the condition of the skin, giving it a more young and glowing appearance.

#### **III. Fat Grafting**

**Autologous Fat Transfer:** To restore volume and shape to the face, fat is extracted from one area of the body and injected into the affected areas.

#### **IV. Platelet-Rich Fibrin (PRF)**

**PRF Injections:** PRF is made from the patient's own blood and administered to encourage tissue renewal and regeneration; it works especially well for under-eye hollows. [21]

## CONCLUSION

In contemporary dentistry, dermal fillers are an invaluable tool that address both the functional and aesthetic aspects of patient care. They can be used to support dental prosthesis or improve the appearance of the face. Dermal fillers are expected to play a bigger role as the need for full dental and face procedures increases. To guarantee the safe and efficient use of these materials, dental professionals must receive ongoing education and training.

**Conflict of Interest:** NIL

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