



**Facial wrinkles and its treatment**

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**Abstract**

**Background/Objective:** Ageing process and gravity are the mainstay of etiological factor resulting in facial wrinkles. There are two types of wrinkles on the face; dynamic and static. Most of the wrinkles are distributed on the frontal view of the face and neck and treatment options depends on location and types of wrinkles. The face is divided into three parts; upper, middle and lower third. Invariably, the client desire is to treat these wrinkles non surgically, moreover the surgical procedures do not address these frontal, periorbital and particularly glabellar facial wrinkles. This study aim for various types facial wrinkles distributed on the upper face are dynamic i.e forehead area, glabellar or frown wrinkles and periorbital wrinkles including crow's feet, nose (bunny lines) etc. The static wrinkles are distributed over the lower part of face includes nasolabial folds, marionette lines, perioral wrinkles etc (1). The present study therefore aims to evaluate the efficacy and safety and to present results with new innovative office based non surgical cosmetic surgery procedures.

**Material and Methods:** The author have treated 155 clients in Faisal Hospital, Faisalabad with facial wrinkles during three years period from Jan 2015 to Dec 2017. This is a prospective cross sectional randomized observational study.

The treatment modalities applied on these clients includes botulinum toxin, hyaluronic acid dermal fillers. It is quite common in our practice using techniques of platelet rich plasma (PRP), RF microdermabrasion, chemical peelings and photoepilation (LASER/IPL) etc for the facial rejuvenation.

**Results:** The results achieved with these innovative office based techniques are highly satisfactory in the range of 80 - 100%, assessed by visual analogue scoring system by client and doctor.

**Conclusion:** We recommend these techniques for all age group clients either alone or in combination for the treatment of facial wrinkles.

**Keywords;** wrinkles, face, chemical peel, treatment, botulinum toxin, filler

**Introduction**

With maturity skin gradually presents lines, wrinkles, and folds that become more pronounced with time. The main etiological factors are ageing, environmental effect, smoking (1,16,17) .

The patient present with various types of facial wrinkles, mainly dynamic wrinkles also known as active wrinkles, static wrinkles also known as passive wrinkles. Coarse (deep) wrinkles, fine (superficial) wrinkles also classified by Fitzpatrick in 1988, according to location of the wrinkles on the face i.e; periorbital, perinasal, perioral wrinkles, whether superficial or deep (chart 1).

Char 1: Fitzpatrick classification of facial wrinkles

Class	Score	Wrinkling	Degree of Elastosis
I	1-3	Fine wrinkles	Mild (fine textural changes with subtly accentuated skin lines)
II	4-6	Fine to moderate depth wrinkles, moderate number of lines	Moderate (distinct papular elastosis, individual papules with yellow translucency, dyschromia)
III	7-9	Fine to deep wrinkles, numerous lines, with or without redundant skin	Severe (multipapular and confluent elastosis, thickened yellow and pallid cutis rhomboidalis)

Clients presenting for the first time seeking facial wrinkles treatment after the age of 40 have mixture of dynamic and static component (Picture 1). Single treatment modality to treat facial wrinkles may not provide satisfactory results, the combination of treatment modality may provide optimal facial rejuvenation (Chart 1).

In our office based practice, the most commonly used procedures for facial wrinkles includes Botulinum toxins, dermal hyaluronic acid fillers, chemical peel, photoepilation (IPL & LASER), PRP, Fat transfer and combined procedures. The results for these treatment

modalities are temporary in nature either 4-6 months or upto one year. To maintain the desired results, the sessions of these procedures required to be continue lifelong and sun protection with replenishing creams.



Pic. 1 : Upper face wrinkles

**Material and Methods**

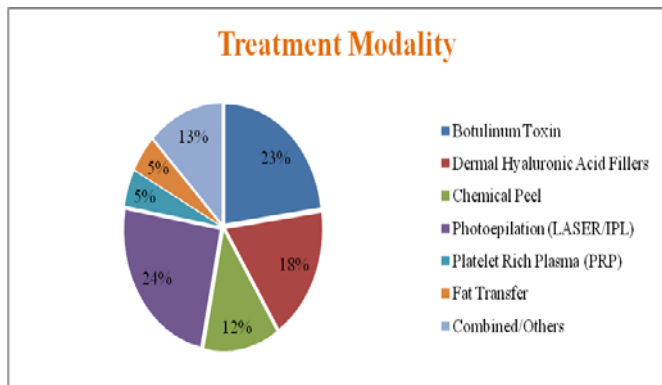
This is a prospective descriptive study of three years from Jan 2015 to Dec 2017 and this study was conducted at Faisal Hospital, Faisalabad, Pakistan. The inclusion criteria was compliant clients with all kind of facial wrinkles of either gender male or female presented in the clinic for facial rejuvenation. The exclusion criteria include non compliance, allergic reaction, pregnancy & breast feeding, neuromuscular disorder, certian medication (aminoglycosides antibiotics, spectinomycin, muscle relaxant, anticoagulant) Etc.

This study include total no of patients 184 and total no of 578 consecutive sessions performed with various treatment modalities (chart 1) . Age distribution ranges from 17 years to 63 Years. There were 39 (19.6 %) male and 148 ( 80.4 % ) female. The written informed consent was obtained and pre / post procedures photographs were obtained where indicated. All the patients were assessed by using visual analogue scoring

system by client and doctor to check post procedure satisfaction level at one week interval.

The detail technique and procedure for each treatment modalities is not the scope of this article.

Chart 1: Treatment modalities



**Results**

With the treatment modalities used Botulinum toxins, Hyaluronic acid dermal fillers, photoepilation ( IPL and LASER), Chemical peel etc (table 1). The satisfaction level of client and doctor achieved in the range of 80 – 100% by using visual analogue scoring system.

Table 1: Treatment Modalities

Treatment Modality	Number of Patients			Total
	2015	2016	2017	
Botulinum Toxin	7	18	17	42 (23%)
Dermal Hyaluronic Acid Fillers	8	11	14	33 (18%)
Chemical Peel	5	6	8	23 (12%)
Photoepilation (LASER/IPL)	20	10	15	45 (24%)
Platelet Rich Plasma (PRP)	2	3	4	9 (5%)
Fat Transfer	2	3	4	9 (5%)
Combined/Others	4	10	9	23 (13%)

The highest level of satisfaction achieved with these non surgical cosmetic surgical procedures with minimal or no complications corroborate evidence to include these techniques for facial rejuvenation in clinical practice.

**Discussion**

Aging is a process that is inevitable. As people get older, their skin gets thinner, drier, and less elastic, and less able to protect itself from damage. This leads to wrinkles, creases, and lines on the skin. The skin lose its elasticity with age and gravity effect and facial skin present with variety of wrinkles (1,18,19).

A number of avoidable, environmental factors also contribute. Exposure to ultraviolet (UV) light, for example, through sunbathing, tanning booths, and outdoor sports increases the chance of developing wrinkles earlier. UV light breaks down the collagen and elastin fibers in the skin. These fibers form the skin's connective tissue. They are located under the surface of the skin and support the skin (1,2). Breaking down this layer causes the skin to become weaker and less flexible. The skin starts to droop, and wrinkles appear. Glogau classified facial wrinkles into four groups table 2 (3).

Table 2: Glogau Classification of Photoaging

GROUP	CLASSIFICATION	TYPICAL AGE	DESCRIPTION	SKIN CHARACTERISTICS
I	Mild	28-35	No Wrinkles	Early photo aging: mild pigment changes, no keratosis, minimal wrinkles, minimal or no makeup
II	Moderate	35-50	Wrinkles in Motion	Early to moderate photo aging; early brown spots visible, keratosis palpable but not visible, parallel smile lines begin to appear, wears some foundation
III	Advanced	50-65	Wrinkles at Rest	Advanced photo aging: obvious discoloration, visible capillaries, visible keratosis, wears heavier foundation
IV	Severe	60 & up	Only Wrinkles	Severe photo aging: yellow/grey skin color, prior skin malignancies, wrinkles throughout - no normal skin, cannot wear make-up because it cracks and cakes

People who work in the sunlight have a higher chance of early wrinkles. Jobs that involve this type of exposure include fishing and farming. Sailors, golfers, beach lifeguards, and gardeners may also be more prone to skin aging.

Regular smoking accelerates the aging process of skin, because of the reduced blood supply to the skin.

Alcohol dehydrates the skin, and dry skin is more likely to wrinkle.

The Botulinum toxin derived from Clostridium Botulinum Type A, B, C. Botulinum toxin type A, commonly known as Botox, Permanently degenerate nerve ending in the muscle ,thereby inhibiting the release of acetylcholine that cause muscles to contract. It is used to treat a number of medical conditions including migraine/headache, as well as wrinkles(4,14,15).

It is injected in small doses into the targeted muscles. If the muscles can no longer tighten, the skin flattens, giving a less wrinkled and smoother appearance.

Botox can decrease the dynamic wrinkles on the forehead, the frown lines between the eyes, and "crow's feet," around the corners of the eyes. It start to have effect after 2 – 3 days of injecting botulinum toxin into the muscle and full effect appears after one week. The effect generally last for 4 – 6 months, so life long repeated injections required to maintain the desired effect of botox.

In most areas of the body, the layers from outside to inside are: epidermis, dermis, fat, fascia, muscle, periosteum, bone. Thus, in most sites, one needs to pass the injection needle through skin, fat, and fascia to reach the muscle. However, the Orbicularis oculi has a unique anatomy. The arrangement from outside to inside is: epidermis, dermis, muscle (orbicularis oculi), fascia (septum), fat. Thus the target muscle in the periocular area is just under the skin, and a very thin skin at that area. Therefore, injections into the orbicularis oculi should be very superficial (4).

The Wrinkle severity rating scale (WSRS) was validated in 2004 by Day *et al.* as a new clinical outcome instrument for quantitative assessment of facial skin folds, in particular the nasolabial folds (3,4).

The treatment for static (passive) facial wrinkles most commonly with the most safe agent hyaluronic acid (HA) dermal filler. The HA is normally present in the skin, loss of this substance give rise to initially fine wrinkles, ultimately with the ageing and gravity result into deep coarse static wrinkles.



Pic 2 (A):Before Dermal filler



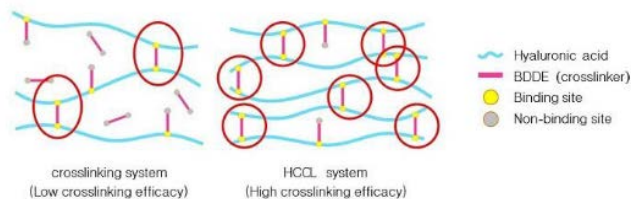
Pic 2 (B):One week after the HA filler

The HA is derived from the natural source streptococcal fermentation process. It is safe as compared to other filler i.e; Collagen, Ca hydroxylapatite. The injected hyaluronic acid gradually reabsorbs and is effective for nine months to one year. The viscosity of hyaluronic acid depends upon the crosslinking system as shown in the diagram 1.

The superficial wrinkles, may be treated more safely with a less viscous hyaluronic acid with lower G-prime

properties hence reducing the risk of the Tyndall effect or the filler being visible or lumpy after injection (5,6,21,22).

Diagram 1: Hyaluronic acid crosslinking system



Chemical peel is a chemical solution is applied to the skin to peel away the dead cells on the surface of the skin. The author have introduced newer formula into the world of chemical peeling according to the depth of peeling agent penetration (table 3).

Table 3: Pakpeel

Superficial	Medium	Deep
TCA 15 gm	TCA 10 gm	TCA 35 gm
Croton oil	Mandelic acid	Septisol
Sesame oil	5 gm	Glycerin
Distill water	Salicylic acid	Croton oil
	15 gm	Distill water
	Sesame oil	
	Croton oil	
	Distill water	

Chemical peels are used to treat fine lines and wrinkles, skin discoloration usually on the face but also on the neck, trunk and hands. A chemical peel can be done alone or in combination with other cosmetic procedures and results are enhanced if the correct pre-treatment and post-treatment products are used (7,8).

Platelet rich plasma (PRP) is defined as a volume of autologous plasma that has a platelet concentration above baseline (9,12). As such, PRP contains not only a high concentration of platelets but also the full complement of clotting factors, cytokines and platelet derived growth factors (10,12).

From last few years, PRP is successfully used in numerous skin care applications including skin rejuvenation ( overall improvement in skin texture and firmness) superficial and deep wrinkles of the face. It may be used in association with other treatment modalities such as laser, radiofrequency or fat grafting to improve clinical outcomes (11).

Photoepilation (LASER & IPL) resurface the skin by removing the superficial layers of skin, hence removing fine lines and wrinkles. The nonablative laser is a novel photoepilation system designed to alleviate facial rhytids without injuring the epidermis (12).

The combined treatment of radiofrequency (RF) microdermabrasion, chemical peel and hyaluronic acid filler provide superior result in selected group of patients (Pic 3) as compared to single treatment modality (12, 20,21,22).



Pic 3 (A):Before Treatment



Pic 3 (B):3 months after treatment

Judicious use of medication, topical retinoids are derived from vitamin A, and they are said to reduce fine wrinkles, some pigmentations, and skin roughness. Home care products help to stimulate skin renewal and sun protection is recommended.

This type of medication can make it easier for the skin to burn sunlight, so the patient needs to use it with a skin-care program to protect the skin. Possible adverse effects include dryness, itching, a burning sensation, tingling, and redness. Slight to modest results may sometimes be obtained from retinol, alpha hydroxy acids, kinetin, coenzyme Q10, copper peptides, antioxidants, hydrolytic enzymes and nutritional supplement (23).

### Conclusion

These non surgical office based cosmetic surgical techniques help lowering biological age to keep younger and fresh looking face by reducing facial wrinkles. These techniques are excellent for all age group clients either alone or in combination for the treatment of facial wrinkles making healthier and happier life, maintaining the younger beautiful face life long and improve the psychology of the client.

**Ethical Approval:**Obtained

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