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Use of Jett Plasma Lift **Medical** device in ophthalmology

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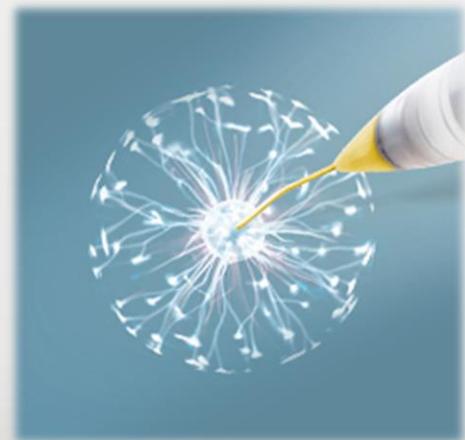
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Physical background

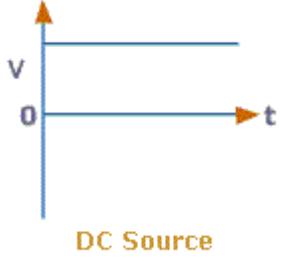
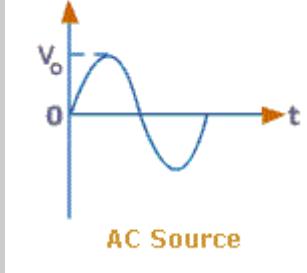
What is Jett Plasma Lift Medical device?

- Operates on the basis of plasma discharge
- Direct current technology
- 1 device = 8 intensities
 - 0,6 – 1,8 W
- 220 V
- Portable
- Contactless
- Patented technology





Differences with other devices

Jett Plasma Lift Medical	Alternating current devices
 DC Source	 AC Source
High voltage 5500 V	Lower voltage (ca 2000 V)
Spark beam (spot \varnothing 0,1 mm)	Spark shower (spot \varnothing 4 mm)
	
Intelligent system with bargraph for intensity	Without any computer or intelligent system
Safe controls and sensors	Without sensors



Differences with other devices

Jett Plasma Lift Medical	Alternating current devices
Spark starts 4 mm above the skin – you can easily see treated area	Spark starts only 1 mm above the skin
Very soft scanning of sensitive areas around eyes and mouth	Scanning method is not possible
Many applicators for various use	Only one applicator



Physical background

Advantages of treatment with Jett Plasma Lift **Medical**:

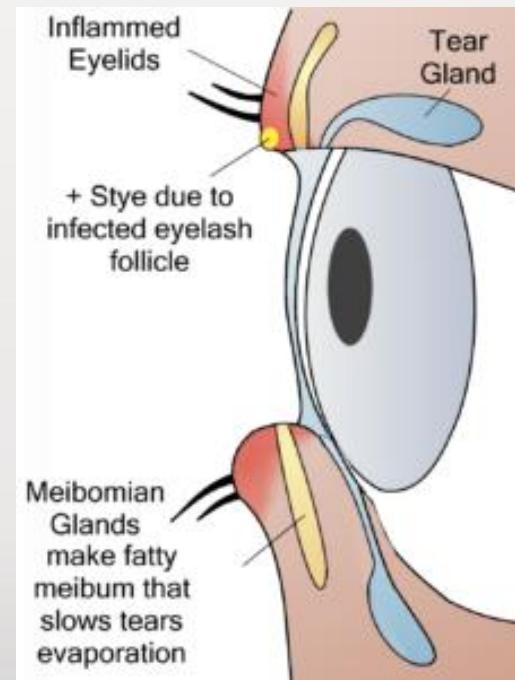
- Very precise spark beam
- No long-term therapy is needed (blepharitis)
- No surgical excision is needed (stenosis puncti lacrimalis)
- No repeated epilation or thermocouter is needed (trichiasis)

Indications in ophthalmology

- Eye diseases
 - Blepharitis
 - Stenosis puncti lacrimalis
 - Trichiasis
- Ophthalmic cosmetic indications
 - Xanthelasma
 - Fibroma around eyes
 - Verruca
 - Wrinkles

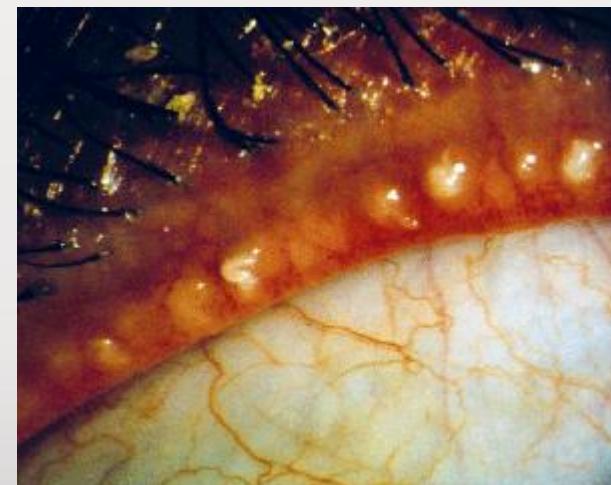
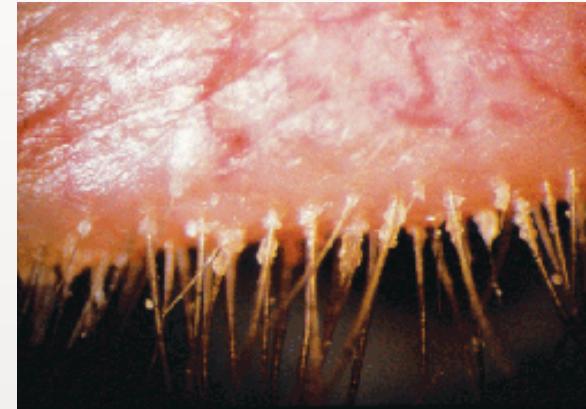
Blepharitis - Entity

- Chronic blepharitis, which is a chronic ocular inflammation that involves the eyelid margin primarily and is a common cause of chronic ocular irritation.
- Blepharitis, which may include entities with the following classifications (US):
 - Blepharitis, unspecified (373.00)
 - Ulcerative (373.01)
 - Angular (373.01)
 - Squamous (373.02)
 - Sty (373.11)
 - Meibomitis (373.12)
 - Abscess of eyelid (373.13)
 - Parasitic infestation of eyelid (373.60)



Adult blepharitis

- Anterior
 - Ulcerosa
 - Squamosa
- Posterior
 - Meibomitis



Blepharitis - Entity

- Blepharitis can be classified according to anatomic location:
 - anterior blepharitis affects the base of the eyelashes and the eyelash follicles
 - posterior blepharitis affects the meibomian glands and gland orifices.
- Blepharitis has traditionally been clinically subcategorized as staphylococcal, seborrheic, Meibomian gland dysfunction (MGD), or a combination thereof. Staphylococcal and seborrheic blepharitis involve mainly the anterior eyelid and can each be referred to as anterior blepharitis. Meibomian gland dysfunction involves the posterior eyelid margin

Blepharitis - Entity

- There is considerable overlap of symptoms of all types of blepharitis e.g., redness, irritation, burning, tearing, itching, crusting of eyelashes, loss of eyelashes, eyelid sticking, contact lens intolerance, photophobia, increased frequency of blinking
- Unilateral or bilateral presentation

Examination

Skin

- Changes consistent with rosacea
- Dermatitis
- Rash

Eyelids

- Abnormal eyelid position (i.e., ectropion and entropion)
- Loss, breakage, or misdirection of eyelashes
- Vascularization or hyperemia of eyelid margins
- Abnormal deposits at base of eyelashes
- Ulceration
- Vesicles
- Scaling, hyperkeratosis
Chalazion/hordeolum
Scarring

The slit-lamp biomicroscopy should include evaluation of the following:

Tear film

- Tear meniscus
- Quality of mucus and lipid
Foamy discharge
- Debris in the tear film

Anterior eyelid margin

- Hyperemia
- Telangiectasia
Scarring
- Pigmentary changes
Keratinization
Ulceration
Vesicles
- Blood-tinged debris
- Pediculosis palpebrarum (Phthirus pubis)
- Presence of mass

Posterior eyelid margin

- Abnormalities of Meibomian orifices (capping, pouting, retroplacement, metaplasia, and obliteration)
- Character of Meibomian secretions (expressibility, thickness, turbidity, and color)
- Vascularization; keratinization; nodularity
- Thickening
- Scarring

Tarsal conjunctiva (everting eyelids)

- Appearance of Meibomian glands and ducts such as dilation and inflammation
- Chalazia
- Erythema
Scarring
- Keratinization
- Papillary/follicular reaction
- Lipid exudation/inspissation

The slit-lamp biomicroscopy should include evaluation of the following:

Eyelashes

- Malposition or misdirection
- Loss or breakage
- Pediculosis palpebrarum (Phthirus pubis) nits
- Encrustations such as cosmetic deposits and collarettes

Bulbar conjunctiva

- Hyperemia
- Phlyctenules, follicles
- Punctate staining with fluorescein, rose bengal, or lissamine green

Cornea

- Epithelial defect, punctate staining with fluorescein or rose bengal
- Edema, infiltrates, ulcers, and/or scars
- Vascularization, including pannus
Phlyctenules

Description of clinical features of blepharitis by category

Feature	Anterior Eyelid			Posterior Eyelid
	<i>Staphylococcal</i>	<i>Seborrheic</i>	<i>Meibomian Gland Dysfunction</i>	
Eyelash loss	Frequent	Rare	(—)	
Eyelash misdirection	Frequent	Rare	May occur with long-standing disease	
Eyelid deposits	Matted, hard scales/collarettes	Oily or greasy	Excess lipid, foamy discharge	
Eyelid ulceration*	With severe exacerbations	(—)	(—)	
Eyelid scarring	May occur	(—)	May occur with long-standing disease	
Chalazia	Rare	Rare	Occasional to frequent, sometimes multiple	
Hordeolum	May occur	(—)	(—)	
Conjunctiva	Mild to moderate injection; phlyctenules may occur	Mild injection reaction of tarsal conjunctiva	Mild to moderate injection; papillary	
Aqueous tear deficiency	Frequent	Frequent	Frequent	
Cornea	Inferior punctate epithelial erosions, peripheral/marginal infiltrates, scarring, neovascularization and pannus, thinning, phlyctenules (typically at 10, 2, 4, or 8 o'clock)	Inferior punctate epithelial erosions	Inferior punctate epithelial erosions, fine infiltrates superiorly and inferiorly, scarring, neovascularization and pannus, ulceration	
Dermatologic disease	Atopy rarely	Seborrheic dermatitis	Rosacea	

* Also consider herpes simplex virus.

Treatment of Chronic Blepharitis

- There is insufficient evidence to make definitive recommendations for the treatment of blepharitis, and the patient must understand that a cure is not possible in most cases.
- Treatments that are helpful include the following:
 - Warm compresses
 - Eyelid hygiene
 - Antibiotics (topical and/or systemic)
 - Topical anti-inflammatory agents (e.g., corticosteroids, cyclosporine)



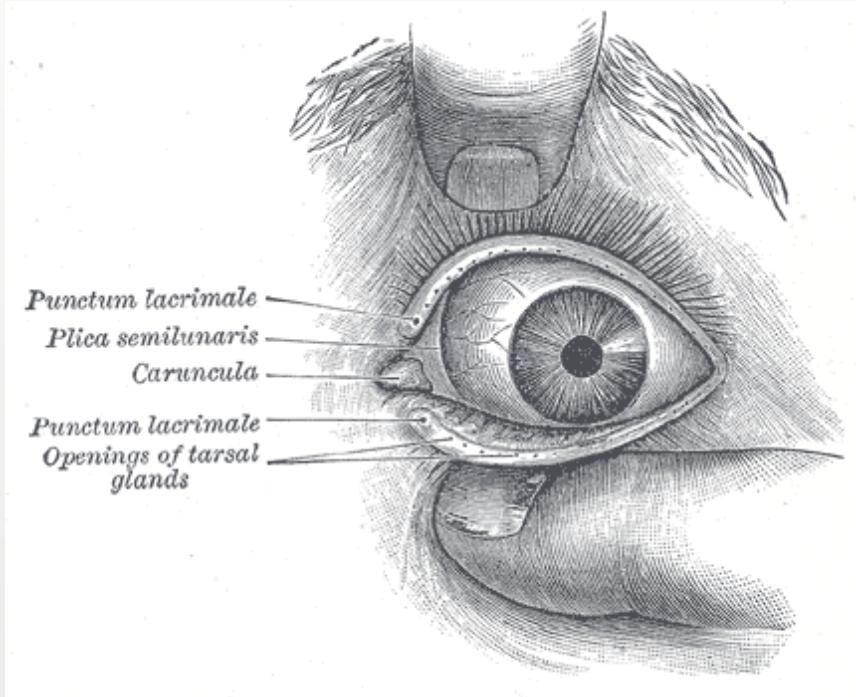
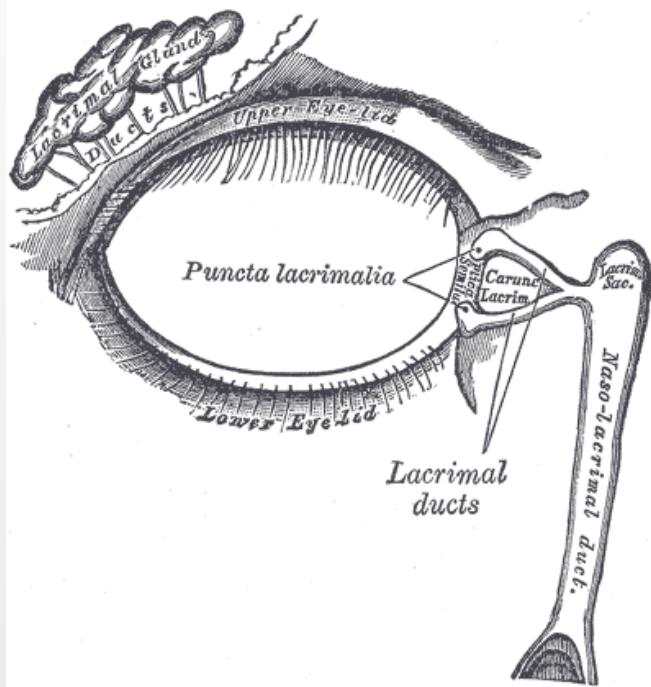
Treatment of Chronic Blepharitis

- These treatment options are often used in combination.
- Eyelid hygiene is especially useful for anterior blepharitis
- Warm compresses are especially helpful for posterior blepharitis.
- The optimal treatment regimen often requires a trial and error approach. An initial step in treating patients with posterior blepharitis is to recommend warm compresses and eyelid hygiene.
- Treating of anterior ulcerosing blepharitis antibiotic therapy after bacterial culturing is advised, in squamous one additon of corticosteroids is recommended.
- Curing of all potentially provoking factors / exacerbating eye diseases (refractive defects, dry eye, forbid smoking, examine by an allergist, disable eye makeup, contact lenses, alcohol, stay in air-conditioned and dry environment, retinoids, non-irritating diet)
- For resilient cases, use **Jett Plasma Lift Medical** device!

Jett Plasma Lift **Medical** effect

- Mouth of the glands are released
- Sebaceous plug is loosened, sebum is poured out and and afterwards leaked from the gland
- Adtringent effect
- Disposal of bacterial flora at the application site
- Use of DC discharge increases the elasticity of the connective fibers around the glands and their outlets
- Rapid healing after application

Stenosis puncti lacrimalis



By Henry Vandyke Carter - Henry Gray (1918) Anatomy of the Human Body (See "Book" section below)Bartleby.com: Gray's Anatomy, Plate 1199, Public Domain, <https://commons.wikimedia.org/w/index.php?curid=564811>

The puncti are positioned medially, near the medial canthus. They are located within the papillae. This complex opens into the tear layer. The puncti are located within an elevated structure referred to as the lacrimal papilla.

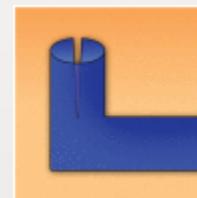
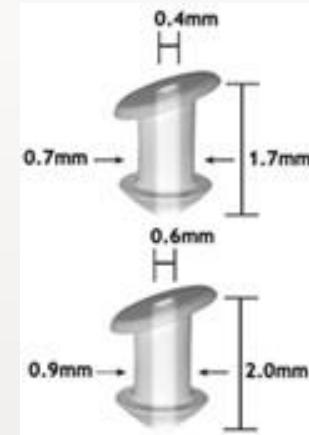
They are considered to be 0.2–0.3 mm in diameter and are surrounded by a fibrous ring. The papillae are surrounded by the muscle of Riolan, and are pulled medially and posteriorly by the muscle fibers. The tears are collected through the puncti and into the canaliculi.

Stenosis puncti lacrimalis

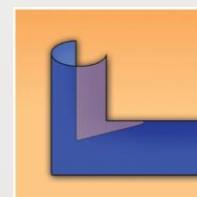
- Punctal stenosis represents a punctal diameter of less than 0.3 mm or the inability to intubate the punctum with a 26 G cannula (outer diameter 0.47 mm) without dilation.
- Incidence of punctal stenosis is still unknown, with reported rates ranging from 8% to 54.3%
- Etiology: ageing, chronic lid inflammation, especially chronic blepharitis, longstanding treatment with several topical agents, chemotherapy, radiotherapy, eyelid malposition, eyelid trauma etc.

Stenosis puncti lacrimalis

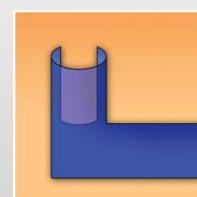
- In general, a few methods are currently used in the management of punctal stenosis.
 - The most simple method involves use of perforated punctal plugs, which is a reversible procedure.
 - Minor surgical techniques require incision of the puncta and punctoplasty.



Jones' one-snip punctoplasty



Three-snip punctoplasty



Two-snip punctoplasty

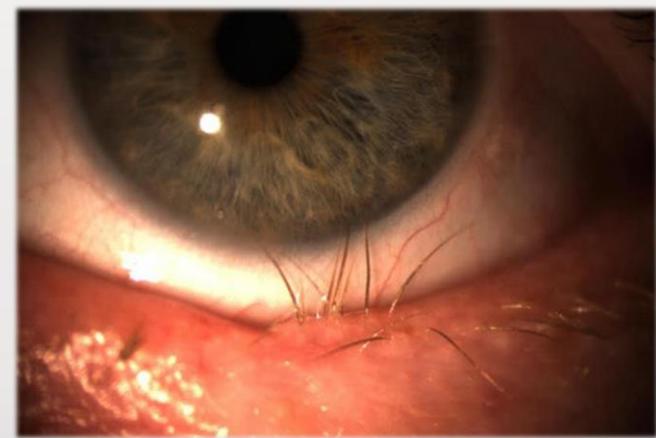
Jett Plasma treatment



- Adstringent effect
- Use of DC discharge increases the elasticity of the connective fibers around the glands and their outlets
- Rapid healing after application

Trichiasis

- Trichiasis is a common eyelid abnormality in which the eyelashes are misdirected and grow inwards toward the eye.
- Trichiasis can be caused by an eye infection, inflammation of the eyelid, autoimmune conditions and trauma.
- Trichiasis treatment involves removing the eyelash, follicle or both, or redirecting eyelash growth



- Gentle complete destruction of algae
- Fine long-term destruction of the hair follicle

Potential indications

- Pterygium
- Ulcus cornae
- Cicatrical (mucous membrane) pemphigoid

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