Your laser therapy advantage.
Podiatry Applications - Warts

- Overview
- Treatment Classification
  - Non contact
  - Contact
- Carbonization
- Coagulation
- Excision Treatment Basics
Warts Overview

- Common methods of removing warts are: Cutting, Freezing, Drying, Burning and even Injecting with a cancer drug Bleomycin.

- CO2 laser is the most common laser for warts removal, using evaporation, followed by KTP laser (Green/532nm laser).

- The FOX Diode Laser is perfectly capable to treat warts by Coagulation method, as well as by Excision. It has a limited ability to Carbonize warts, and is less effective than the CO2 and KTP lasers.

- Local anesthetic is always required, as well as post treatment care according to the clinician practice.
Warts Overview

Verruca vulgaris; Verruca plantaris; Verruca senilis

Caused by Human Papilloma virus (HPV). HPV attacks the skin forcing the skin cells to overgrow. The infection results due to rapid multiplying of this virus.

Plantar warts generally develop in the bottom of the foot, where the plantar region is.
Treatment Classification

Non contact

• Carbonization
• Coagulation

Contact

• Excision

Fitzpatrick classification of skin types.
The FOX laser can effectively coagulate small blood vessels without noticeably affecting the epidermis; Two factors contribute to this ability:

1. Laser radiation between 800nm-1200nm wavelengths absorbs very little in water, meaning the laser beam can pass through the tissue without losing much energy and not heating up its surrounding.
2. Laser radiation between 980nm-1064nm absorbs very well in Hemoglobin and Oxyhemoglobin.
Pulsed laser radiation target the blood vessels sustaining the wart; upon intense laser irradiation, a wart should dry out and its entire capillaries chains fully coagulated. This will appear as a color transformation from pink to light grey.

Same amount of energy delivered in different ways, can lead to completely different results:

- Increased vaporization
- Increased coagulation
PATIENT ASSESSMENT
- Obtain a medical history and signed consent.
- Contraindications for this treatment are Pregnancy and Skin Cancer.

TREATMENT PARAMETERS

<table>
<thead>
<tr>
<th>Handpiece</th>
<th>Skin Type</th>
<th>Power (W)</th>
<th>Pulse ON (ms)</th>
<th>Pulse OFF (ms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red (HS11009)</td>
<td>I-IV</td>
<td>8-10</td>
<td>160-200</td>
<td>200</td>
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<tr>
<td></td>
<td>V-VI</td>
<td>6-8</td>
<td>140-180</td>
<td>200</td>
</tr>
<tr>
<td>Blue (HS11008)</td>
<td>I-IV</td>
<td>7-10</td>
<td>120-160</td>
<td>200</td>
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<tr>
<td></td>
<td>V-VI</td>
<td>5-7</td>
<td>100-140</td>
<td>200</td>
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WARTS - COAGULATION - FOX 980

<table>
<thead>
<tr>
<th>Handpiece</th>
<th>Skin Type</th>
<th>Power (W)</th>
<th>Pulse ON (ms)</th>
<th>Pulse OFF (ms)</th>
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</thead>
<tbody>
<tr>
<td>Red (HS11009)</td>
<td>I-IV</td>
<td>8-10</td>
<td>160-200</td>
<td>220</td>
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<tr>
<td></td>
<td>V-VI</td>
<td>6-8</td>
<td>120-160</td>
<td>220</td>
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<tr>
<td>Blue (HS11008)</td>
<td>I-IV</td>
<td>7-10</td>
<td>120-160</td>
<td>220</td>
</tr>
<tr>
<td></td>
<td>V-VI</td>
<td>5-7</td>
<td>80-120</td>
<td>220</td>
</tr>
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</table>
Non Contact – Coagulation

PREPPING THE PATIENT

1. Clean skin.
2. Take pre-treatment photographs for future reference.
3. Warts may need to be debrided prior to treatment.
4. Target area should be clearly marked with a medical marker pen.
5. Topical anesthetic is often required (refrigerant such as Gebauer’s “Pain Ease”);
   * ALL people in the treatment room must wear safety goggles. *

TREATMENT

1. Mark the superior horny layer.
2. Hold the handpiece perpendicular to skin’s surface with slightly touching the skin.
3. Irradiate the entire wart area, using a spiral motion.
4. Pulses can be overlapped slightly by 10-20%
5. Do not treat outside the wart marked border.
6. The wart may become ashen or dusky immediately after treating.
7. Use cooling (frozen gel pack, etc.) periodically to help with patient comfort.

POST TREATMENT

• Warts usually have a grey crusty appearance within 24 hours after treatment and usually slough off in 1-2 weeks.
• Use ointment of choice and non-stick dressing for patient comfort.
• If a blister develops, treat as a wound.
• More than 1 treatment may be necessary (3-4 weeks apart).
Carbonization is ablative treatment, achieved by applying laser radiation that result in burnt tissue (carbonized).

The burned tissue will separate from the healthy tissue underneath and fall off during the following days.

In this method, the continuous laser radiation removes the whole wart as well as some of the surrounding tissue to make sure the wart, its roots and blood supply are completely eradicated.

The ablative treatment is comparable with electric cauter.
Non Contact – Carbonization

PATIENT ASSESSMENT

- Obtain a medical history and signed consent.
- Contraindications for this treatment are Pregnancy and Skin Cancer

TREATMENT PARAMETERS

### SUPERFICIAL CARBONIZATION - FOX 980/1064

<table>
<thead>
<tr>
<th>Handpiece</th>
<th>Skin Type</th>
<th>Power (W)</th>
<th>Pulse ON (ms)</th>
<th>Pulse OFF (ms)</th>
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<tbody>
<tr>
<td>Red (HS11009)</td>
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<td>140-230</td>
<td>180-300</td>
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<tr>
<td>Blue (HS11008)</td>
<td>I-VI</td>
<td>9 max</td>
<td>120-200</td>
<td>150-300</td>
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### DEEP CARBONIZATION - FOX 980/1064

<table>
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<th>Handpiece</th>
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<tr>
<td>Blue (HS11008)</td>
<td>I-VI</td>
<td>8-12</td>
<td>CW</td>
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</table>
**Non Contact – Carbonization**

**PREPPING THE PATIENT**

1. Clean skin.
2. Take pre-treatment photographs for future reference.
3. Warts may need to be debrided prior to treatment.
4. Target area should be clearly marked with a medical marker pen.
5. Local anesthetic is usually required;
   - Superficial targets can be done with topical anesthetic skin refrigerant (such as Gebauer’s “Pain Ease”);
   - Deeper targets may require Lidocaine injections.
* ALL people in the treatment room must wear safety goggles. *

**TREATMENT GUIDELINES**

Warts are burned out on the surface, resulting in a carbonized surface. The burned tissue will separate from the healthy tissue underneath and fall off during the following days.

Use a medical marker pen, to fully cover the target surface. This will increase laser absorption and will both shorten the treatment time as well as minimize unnecessary deep tissue over heating.

Always start with lowest laser settings and gradually increase when necessary.

Smoke evacuator and laser plume masks (filters to 0.1 microns) are recommended.
Carbonization Treatment Guidelines

- Applying cooling post treatment (e.g. frozen gel pack), may help with patient comfort.
- Within a few days the area will transform to eschar neoplasm.
- Tissue will slough off in 1-2 weeks post treatment.
- Clinician may prescribe ointment of choice and non-stick dressing.
- If a blister develops, it should be treated as a wound.
- More then 1 treatment may be necessary (3-4 weeks apart).
Contact - Excision

Surgical Handpiece

- Allow a direct fiber – tissue contact, which maximize energy transfer.
- Laser setting is always cw, and output should be adjusted based on the conditions.

3 mm distance must be kept between the fibre end and the cannula end.
Surgical Handpiece

- Use bare fiber LL13003 (200microns) or LL13001 (300microns).
- Use SS cannula (several options available: bent and straight, with several lengths).
### Contact - Excision

Continuous mode causes more haemostasis and more extended collateral damage (higher effective power, faster, more efficient cutting)

<table>
<thead>
<tr>
<th>Handpiece</th>
<th>Model</th>
<th>Power (W)</th>
<th>Pulse ON (ms)</th>
<th>Pulse OFF (ms)</th>
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<td>Surgical (HS11018) SS cannula</td>
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<tr>
<td></td>
<td>980</td>
<td>9-12</td>
<td>CW</td>
<td>--</td>
</tr>
<tr>
<td>Surgical (HS11018) Plastic cannula</td>
<td>1064</td>
<td>7-9</td>
<td>CW</td>
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<tr>
<td></td>
<td>980</td>
<td>9-10</td>
<td>CW</td>
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The innovation using the Jazz knife is that the knife has a link to the FOX laser via fiber cable which transports laser energy to the knife.

The laser radiation is transmitted through the sapphire blade and exits the blade at the tip and coagulate in addition to the cutting process.
Jazz Handpiece

Common use is with laser power of 6-8W and CW-mode (continuous) for the desired coagulation level.

<table>
<thead>
<tr>
<th>Handpiece</th>
<th>Model</th>
<th>Power (W)*</th>
<th>Pulse ON (ms)</th>
<th>Pulse OFF (ms)</th>
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<tbody>
<tr>
<td>JAZZ (LL13020)</td>
<td>1064</td>
<td>6-8</td>
<td>CW</td>
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<tr>
<td></td>
<td>980</td>
<td>6-8</td>
<td>CW</td>
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* Up to 10W is allowed