INSTRUCTIONS

RIDGES PLUS

These are superb compensating filters, specially designed for digital "run off" (DA) and digital subtraction arteriography (DSA) of the lower extremities, **including the feet**. They make for much more homogeneous density up to a width of 35 cm, thereby avoiding saturated signals that cause halation. Moreover, during bilateral examinations, the central sensors of a large fluoroscope are able to select technical factors that are reliably applicable to the periphery. Finally, these ridges contribute greatly to immobilization. Here are a number of helpful suggestions.

PRECAUTIONS

To become acquainted with these filters, we suggest you fluoroscope them before use. First, check that they are homogeneous. Then their image will give you an indication of the effect they will produce over the anatomy. You will also see an opaque ruler in the main midline filters: rotation will show the depth of the rulers, lying pretty close to the level of adjacent main arteries.

Protect the thin edges of the filters from trauma and tears; folding it over itself and superimposing it on its neighbor may cause artifacts.

DESCRIPTION

The RIDGES PLUS are made of white waterproof silicone rubber, absorbing twice as much as water or muscle. They are **thinner distally**, to match the gradually decreasing size of the legs; they are wedged nearly 45° all around. **The arrows must point toward the direction of the arterial blood flow.**

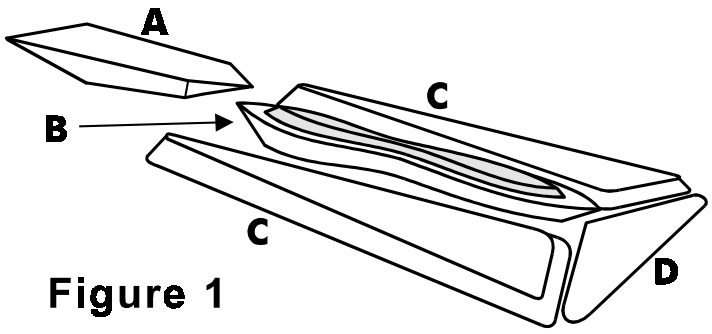

Figure 1

The set consists of six elements **(figure 1)**: **A)** an *inter-thighs pyramidal filter, with its extension*, lies on the surface with its apex downward and its pointed end near the knees; it contains an opaque ruler to help localize lesions and estimate their length and diameter; **B)** two *inter-leg*s bilobed filters that are adapted to the typical medial curved contour of the legs: the *main* one has an extension, is thick and also contains a ruler; its tapering upper end merges with that of the inter-thighs filter to help adapt to variations in length of the lower extremities; the *accessory* one is thinner; together they provide appropriate compensation for the density of the tibia, over which important arteries are superimposed; **C)** two *lateral* right and left adapted filters that also serve as outside supports; wider at their lower end, they match the dorso-lateral curve of the ankles and feet; **D)** one *triangular* filter projecting along the plantar border of the feet.

Disinfection is done with alcohol or Zephiran®. Thin transparent food wrapping is a practical, inexpensive and disposable protection; it may wrap completely the inter-thighs filter, which is exposed to Proviodine® and blood. However, the other filters should only be covered on the surface in contact with the patient, as the opposite surface must remain bare to adhere to the table or to the sheets for immobilization. Such wrapping can also protect the skin and the cushions from adhesive tapes.

POSITIONING

Practicing beforehand on a staff member reduces preparation time, and even improves future examinations.

We suggest you start by placing the Velcro® bands under the legs **(figure 2)**; the felt faces upward and the hooks are away on the other side of the patient; the long strap is near the knees while the short one is above the ankles. Place both heels in contact and maintain this contact with adhesive tape underneath (**arrow)**.

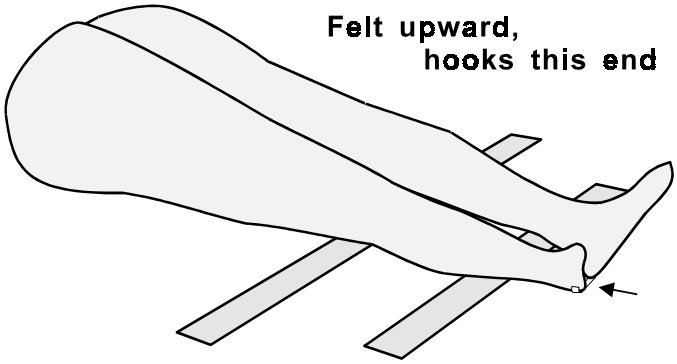

Figure 2

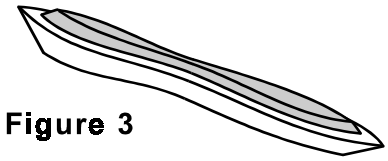

Figure 3

Then the accessory inter-legs filter is placed over the main one **(figure 3)**, **with the thin end near the feet;** deposit the filters between the legs, on the calves. Protect the internal malleoli against undue pressure with foam, absorbent cotton or gauze.

Next, tighten together both filters and legs with the straps **(figure 4)**. The "V" extension will be used if the legs are long **(arrow)**, to avoid halation in this area.

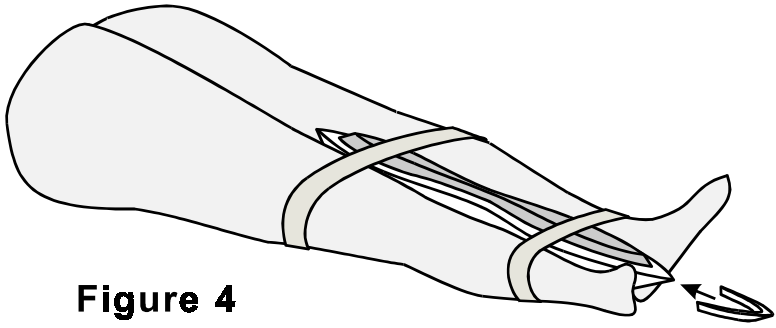

Figure 4

It is very important to verify that the heels are close together to avoid a halo of halation between the Achilles tendons and around the heels.

The RIDGES PLUS are designed for a patient able to simultaneously join his knees and ankles. In cases of angular deformities, if the knees are difficult to bring together, flex them slightly with a foam cushion underneath, or try full extension by raising the heels.

Then lean the *lateral* ridges against the legs (see **figure 5**), with the lower end following the ankle/foot curve.

Finally, place the *triangular* feet filter (as shown on **figure 5**), above the heels, wedges downward, next to the lateral filters, while applying slight pressure against the sole of the feet.

The *inter-thighs* filter may be positioned now, or only after insertion of the catheter, by sliding it under the sterile drape

IMMOBILIZATION

Silicone rubber sticks naturally to the skin, to the table and to a cotton sheet. It slips when dusty (or with an interposed tissue paper), but adhesiveness is restored by washing with water.

Immobilization is usually advisable. Firm downward compression of the legs together and into the grooves against the filters ensures vertical and horizontal immobilization (**figure 5**).); use additional Velcro® bands or adhesive tape anchored from each side of the table for this purpose.

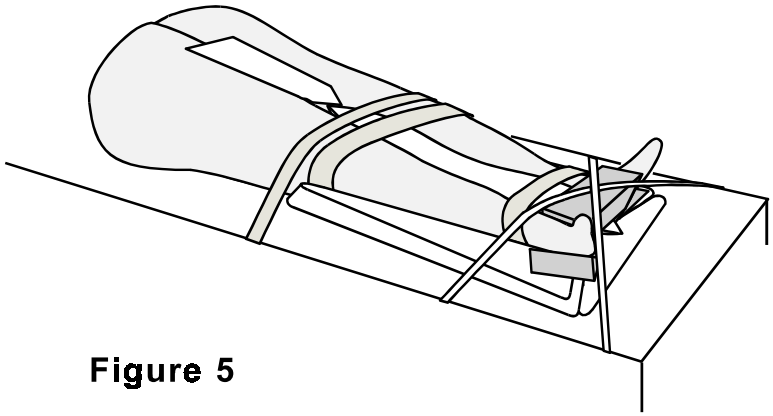

Figure 5

Finally, rotation is prevented by **immobilizing the feet** in external rotation, always **exactly above the space provided for them by the filters.** There are many ways of proceeding, with or without the cushions. The pyramidal cushion pushes the feet comfortably at 45°; adhesive tape solidly immobilizes the feet (see example **figures 6 and 7**). The toes remain free of pressure. The lateral side of the feet may rest on the small prism cushions.

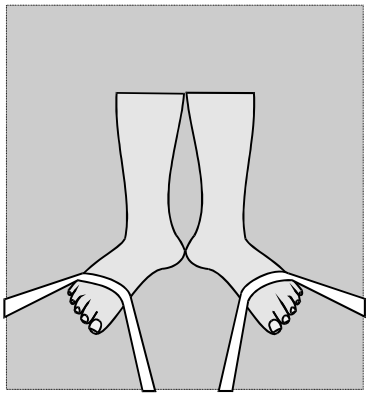

Figure 6

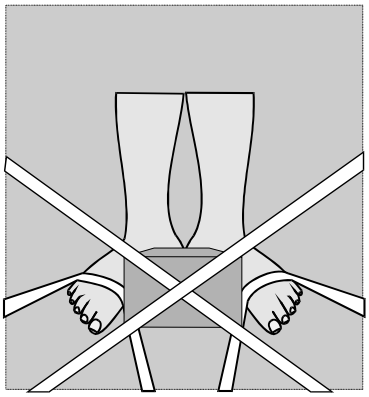

Figure 7

VERIFICATION

Fluoroscopy and/or films before the injection are very important to insure high quality imaging. Immediate correction at this time will produce better results later. Verify satisfactory positioning of patient and filters: mainly knees and heels close together, median filters exactly between the legs and on the midline and feet properly bordered. No corrections should compromise good immobilization. No unfiltered radiation should pass around the surface of the legs. If automatic density control is used, check that the tibia is sufficiently penetrated for proper visualization of the superimposed arteries.

MISCELLANEOUS

Slight oblique views are feasible, but at some point, the shadow of a ruler may overlap an artery and the wedges will not function properly. Full oblique and lateral views can only be made one side at a time, by rotating the patient and the leg. If AP views of the feet and ankles are necessary, "GENTLE SLOPE" filters are a useful option available that can compensate for the reduced thickness of the forefoot.

The set up also suits phlebography. The lateral filters may also be used for angiography of the upper extremity.

It would be worth consulting the supplied educational brochure "THE OCTO*STOP*® FILTERS" by Dr Jean A. Vézina M.D., president and medical advisor of OCTO*STOP*® Inc.

MEASUREMENTS

The opaque rulers allow an estimation of the length of lesions and diameter of arteries, by using a correction factor **F:**

$$\text{Where } \mathbf{F} = \frac{\text{Number of cm available on the ruler near the lesion on one film}}{\text{Length on the film of these cm (in cm)}}$$

NOTES:

1. The higher the number of cm selected, the more accurate factor **F** will be.
2. The level of measurements must be near that of the ruler, otherwise a correction should be estimated.
3. ***Any correcting factor is applicable only to a lesion located on the film from which it originates.*** **A CORRECTION FACTOR REMAINS SPECIFIC TO THE RULER, THE LESIONS AND THE FILM FROM WHICH IT ORIGINATES. IT IS NOT APPLICABLE TO ANOTHER FILM.**
4. Marked catheters are very useful for measurements.

The suggested formula is:

ESTIMATED SIZE of a LESION = F X Measure of lesion on film

Examples:

A. The length of a lesion measures 7 cm on a film. When measuring the adjacent ruler on the *same* film, if nine (9) cm actually measure 6.4 cm on the film, **F** = 9/6.4 = 1.4 The lesion is thus estimated at: 1.4 X 7 cm = 9.8 cm (approximately).

B. The diameter of a narrowing measures 2.5 mm on an enlarged film. When measuring the adjacent ruler on the *same* film, if three (3) cm actually measure 4.6 cm on the film, **F** = 3/4.6 = 0.652 The diameter is estimated at: 0.652 X 2.5 mm = 1.6 mm (approximately).

WARNING

Must be used only by qualified personnel, according to appropriate procedures, and under the responsibility of a physician. OCTO*STOP*® Inc. and its personnel do not assume any liability regarding the use, indications, consequences, or any situation directly or indirectly related to its products.