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Compression in Place of Medication

A new device that improves blood circulation in the lower limbs by way of pressure may replace anticoagulant drugs administered following limb surgery in order to prevent the formation of blood clots that might be carried to the lungs.

A clinical study conducted in nine US hospitals over the span of two years and encompassing 450 patients, shows that an Israeli development that generates blood flow in the limbs through localized pressure is effective in preventing the formation of blood clot following lower limb surgery, at least as efficiently as preventative drugs.

Lower limb surgery – mainly hip replacement surgery – is very common. Over 2 million such operations are conducted annually in the US and over 7,000 in Israel. According to Prof. Samuel Dekel, head of the Orthopedics B Department at the Tel Aviv Sourasky Medical Center, one of the major dangers in this type of surgery is that a blood clot, formed in a limb following surgical operation, and might be carried to the lungs. Such an embolism might cause death.

As a matter of course, patients undergoing limb surgery are given anticoagulants in the form of tablets or injection. Special sleeves can also be utilized, which are worn over the calves of post-operative patients. These sleeves have several air compartments that inflate in a controlled manner and enable constant blood flow from the leg veins towards the heart, thus reducing the danger of blood clots.

“The advantage of sleeves of this type is that they don’t have the side effects associated with anticoagulant medications (such as bleeding)”, explains Prof. Dekel. “I have been using them since the eighties, but they were big and cumbersome back then. The patient could not get out of bed with them, so they had no continuous affect and they were not very efficient.”

The main innovation in the development by MCS was in the reduction in the dimensions of the device that drives the blood flow in the legs. The first-generation device, which has been in use in Israel for over ten years, is 15X15 cm. It is powered by a battery and is carried on the patient’s belt. The patient is able to walk around freely, whilst other devices have to be removed even when changing posture in bed. The device detects the venous flow pulsatility that is

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pumped into the heart following a breath and inflates the sleeves, which in turn further increases blood flow.

Treatment by the first-generation device was given together with anticoagulant drug therapy. According to Prof. Dekel, "The second-generation device, which has recently been introduced in the US, can even replace drug therapy: "A study conducted in the States by a team headed by Dr. Clifford Colwell, a renowned expert on embolisms, established that it provides a solution for the prevention of blood-clot formation in the deep vein system (DVT) as effectively as drugs, yet in a safer manner.

Prof. Dekel adds that thousands of patients have used the device. A vast majority described pleasant sensations and a decrease in the post-op swelling in their legs. "The device produces a kind of very gentle massage to the legs, almost unnoticeable. It can be used 24/7, except in the shower. There's no problem walking around with it".

"Second-generation devices are smaller and are better synchronized with breathing. Patients feel less threatened as it's a smaller device, and most importantly – they can take it home with them with no need for additional drug therapy. Every patient will receive instructions prior to discharge from the hospital and will be able to walk around the house with the device for about a week following surgery."

MCS's CEO, Adi Dagan, points out that the second-generation device has received FDA approval and is already being used in large medical centers in the US. He hopes the second-generation device will be available in Israel in 2010.

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