

Team designs innovative 'Smart Scar-Care' pad to create a 'scar-less' world

April 26 2017



The "Smart Scar-Care" pad designed by Professor Cecilia Li-Tsang in the Department of Rehabilitation Sciences, PolyU, serves the dual functions of reinforcing pressure and occlusion. Credit: The Hong Kong Polytechnic University

An innovative "Smart Scar-Care" pad which serves the dual functions of

reinforcing pressure and occlusion has been designed by The Hong Kong Polytechnic University (PolyU) to treat hypertrophic scars from burns, surgeries and trauma. Compared with the traditional pressure pads and silicone gel sheets, "Smart Scar-Care" pad has the advantages of both.

It showed good performance in reducing pigmentation and vascularity, improving elasticity and preventing dehydration in a clinical trial. It is more durable and user-friendly compared with the traditional pad (polyethylene foam) as reported by the patients. This innovative design has won the Grand Award and Gold Medal with the Congratulations of Jury at the 45th International Exhibition of Inventions of Geneva, 2017.

Burns, surgeries and trauma will create open wounds to the human skin. Delayed wound healing can result in formation of hypertrophic scar, which will cause aesthetic problems, and induce severe deformities, thus causing dysfunctions. Pressure therapy is the first line non-invasive treatment for hypertrophic scars. Pressure garment and pressure pads made with polyethylene foam are generally used by the local therapists. However, they are uncomfortable to wear and often non-durable to sustain the pressure on the scar. The commercial [silicone gel](#) products are used to manage hypertrophic scar but they could mainly moisturize the hypertrophic scar.

The "Smart Scar-Care" pad designed by Professor Cecilia Li-Tsang in the Department of Rehabilitation Sciences, PolyU, is developed to combine the effect of pressure therapy and [silicone](#) gel on scar management. It is composed of silicone stiffener and medical grade silicone gel sheet. The silicone stiffener is made of silicone rubber. Its smooth side is attached to the silicone gel sheet which serves to moisturize the scar. The other side of the silicone stiffener is characterized by the circular silicone studs which could easily be adjusted to shape the curved or flat skin surfaces to provide even pressure under elastic bandages or pressure garment.

The "Smart Scar-Care" pad has been designed with different stud height, diameter and gel thickness. If applied to flat or concaved areas, such as chest, dorsal hand and abdomen, higher studs will be used to create a larger curvature. In addition, thicker gel sheets may be applied to thicker scars whereas thinner gel sheets may be applied to thinner scars.

The "Smart Scar-Care" pad has a number of advantages over the traditional polyethylene foam. It can be easily trimmed to fit into the size of the scar and body contours while the fabrication of the polyethylene foam sheets is time consuming and has to be made by the occupational therapists. Besides, the "Smart Scar-Care" pad is more durable, and can last for two to three months while the polyethylene foam may last only a few weeks.

Case studies with longer follow up showed that, the "Smart Scar-Care" pad demonstrated its effect to improve hypertrophic scars as well as patients' quality of life.

Patients are advised to start applying [pressure](#) pad as soon as the wound is healed, and to use until the scar is mature completely, which normally take at least six months. Some may need longer time for [scar](#) to become mature.

Provided by Hong Kong Polytechnic University

Citation: Team designs innovative 'Smart Scar-Care' pad to create a 'scar-less' world (2017, April 26) retrieved 2 May 2024 from <https://medicalxpress.com/news/2017-04-team-smart-scar-care-pad-scar-less.html>

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