A simple way to monitor the seal in the domestic negative-pressure wound therapy dressing

Dear Editor

Negative-pressure wound therapy (NPWT) has become a key tool in the management of wounds of all aetiologies around the world.[1] In low- and middle-income countries (LMICs) the commercial device is not yet affordable for patients and healthcare institutions. These centres turned to domestic custom-made negative-pressure wound therapy.[2,3] The issue with the domestic NPWT was the way to monitor the seal of the dressing and determine the amount of negative pressure delivered to the wound.

We published the description of how we domestically made the NPWT three years back.[3] The wound was sealed with transparent adhesive dressings and connected to a source of negative pressure that was a suction machine or a wall suction.[3] A tube connected the wound to a fluid collection bottle that was connected to the source of suction. The amount of pressure exerted on the wound was set on a manometer. According to the law of connected vessels, the system totally isolated is supposed to have the same amount of pressure in the bottle and on the surface the wound; assuming there is no leakage, the pressure in the bottle was the one delivered by the source of suction and measured by the manometer.

In such condition, assuming no leakage exists between the manometer and the collection bottle, the only area where a leakage could be seen would be on the wound surface.

We clamped the tube between the fluid collection bottle and the wound. If the wound is totally sealed there is no variation of the pressure seen on the manometer. Conversely, when a leakage existed on the wound surface and, when the tube between the wound and the collection bottle is clamped, the pressure on the manometer rose proportionally to the amount of leakage on the wound surface.

In conclusion, a simple way to track a leakage on the wound surface in a domestic NPWT is to clamp the tube connecting the wound to the collecting bottle. The variation on the manometer shows the amount of leakage on the wound surface. In our practice, 100% seal is ideal but in some difficult sites (joints, extremities, near orifices, presence of orthopaedic fixation bars) we considered a leakage up to 20% to be acceptable in a low to moderately exudative wound.

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How to monitor the seal on the domestic negative pressure wound therapy
A- Manometer was set a 125mm Hg for a negative wound therapy.
B- A clamp is put on the tube connecting the wound to the collecting bottle.
C- The manometer showed a slight increase showing that the seal on the wound was not complete.