Portable Topical Negative Pressure: its hypothetical application in the prevention of surgical site infection. Pilot study.

Ferdinando Campitiello, Angela Della Corte, Vincenzo Padovano, Silvestro Canonico

Introduction.
In the data provided by the Italian NHS, the frequency of surgical site infections show a prevalence of about 7% of all patients receiving a surgical incision. Probably this data is understated, but it is clear however that infection risk increases significantly in presence of surgical operations classified as "contaminated" or "dirty". On the other hand, it is shown that minor complications such as post operative hematomas and seromas, that may be possible in all surgical incisions, are a pabulum that greatly favors bacterial growth and subsequent septic complications.

Objectives.
Our aim was to preliminarily verify, whether the use of medications connected to a new portable instrument for the application of topical negative pressure therapy (PICO, Smith & Nephew) may reduce the risk of surgical site infections or at least the formation of seromas and / or hematomas in the wound.

Methods.
After the development of a specific patient data sheet (including photos), we applied PICO on 6 patients whose conditions made them eligible for an operation at risk of surgical-site infection. We applied the topical negative pressure (NPWT) after the surgical suture in the operating room. Each patient had the dressing changed every three days, until the removal of surgical sutures. Follow up inspections have been scheduled at day 14 and at one month after operation.

Selected patients: three patients operated for cancer of the colon through abdominal incision (xipho-navel-pubic incisions), three patients operated for bilateral breast cancer. In these cases, the bilaterality of the disease has made it possible to apply PICO on one side while treating the other side with traditional dressings, in order to obtain a direct comparison of outcomes.

Results.
In the three large laparotomies for operations in contaminated areas, the healing has been fast, with no complications and with good scarring and esthetic appearance (Figs. 1a and 1b)

Referring to patients operated for bilateral breast cancer (1 bilateral mastectomy and 2 bilateral quadrantectomy ), in two of these cases there were no significant differences in the outcome of the two sides. In the third case (Figs. 2a, 2b and 2c; patient receiving anticoagulant therapy) we found a hematoma in the postoperative side with traditional medication, compared with an absence of complications in the wound medicated with PICO.

In none of the six patients, however, surgical site infections were recorded.

Conclusion.
We consider this method worthy of considerable attention. Although our study is preliminary and the case series too small to make any statement, first impressions lead us to believe that the application of NPWT in the treatment of surgical sites can be a useful defense to reduce the risk of septic complications, or at least hematoma and / or post-operative seromas.