




PROPHYLACTIC SURGICAL WOUND MANAGEMENT WITH NEGATIVE PRESSURE THERAPY IN EMERGENCY ABDOMINAL SURGERY: IS IT REALLY USEFUL?

MANEJO PROFILÁCTICO DE HERIDA QUIRÚRGICA CON TERAPIA POR PRESIÓN NEGATIVA EN CIRUGÍA ABDOMINAL DE EMERGENCIA: ¿REALMENTE ES ÚTIL?

Yelson Alejandro Picón Jaimes ^{1,a,b,c}, Samir Alberto Caycedo Assia ^{2,a}, Isabela Zenilma Daza Patiño ^{2,a},
Elicer Enrique Aragon Acosta ^{3,a}, Cindy Stephanie Buitrago Almanza ^{4,a}

Mr Editor:

Infection at the operating site (ISO) is the most common postoperative surgical complication in general surgery. This is more frequent in cases of emergency interventions, compromises the patient's prognosis, causes high health costs, and significantly increases the risk of reintervention. Negative pressure therapy (NPT) is an innovative strategy that was proposed about two decades ago, and has been gradually replicated around the world. This means that there are still many gaps in the evidence when it is used in many diseases and under different contexts. Nevertheless, it allows obtaining conclusive results in the time of healing, reduction of complications (mainly dehiscence and ISO), decrease in hospital stay, among other factors. In Latin America, there is very little evidence on the use of this strategy, and it is null regarding its use in emergency cases without being able to determine its impact on our environment. Recently, Lakhani et al³ conducted a meta-analysis of 7 studies with a total of 1199 patients, where they evaluated the ISO rate in patients undergoing emergency laparotomy in whom NPT was used (n=566) vs. control group (standard care, n=633). The NPT group had a lower infection rate (13.6% vs. 25.1%), with a 57-percentage point reduction in the probability of presenting ISO (OR 0.43; 95% CI: 0.30 - 0.62).

Additionally, the probability of dehiscence when using NPT was found to be 0.36 (7.7% vs. 16.9%; 95% CI: 0.19 - 0.72) times, compared to not using it. Also, the incidence of general complications was significantly lower in the NPT group (15.9% vs. 30.4%; OR 0.41; 95% CI: 0.28 - 0.59)³, unlike the outcomes of hospital stay and readmission. Authors conclude that using NPT is significantly associated with lower incidence of ISO, complications associated with ISO and dehiscence in emergency laparotomy³, therefore, it should be considered as prophylactic management. This may be the only meta-analysis to date that has evaluated these outcomes, although it included both prospective and retrospective studies.

¹ Doctoral Program in Health, Wellness and Bioethics, Universidad Ramón Llul. Barcelona, España.

² Faculty of Medicine, Universidad del Sinú. Cartagena, Colombia.

³ Faculty of Medicine, Universidad Libre. Barranquilla, Colombia

⁴ Faculty of Medicine, Universidad Nacional de Colombia. Bogotá, Colombia.

^a General physician.

^b Magister in Epidemiology and Public Health.

^c Doctoral student.

Cite as: Picón Jaimes YA, Caycedo Assia SA, Daza Patiño IZ, Aragon Acosta EE, Buitrago Almanza CS. Prophylactic surgical wound management with negative pressure therapy in emergency abdominal surgery: is it really useful?. Rev Fac Med Hum. 2023;23(1):145-146. doi:10.25176/RFMH.v23i1.5291

Journal home page: <http://revistas.urp.edu.pe/index.php/RFMH>

Article published by the Magazine of the Faculty of Human Medicine of the Ricardo Palma University. It is an open access article, distributed under the terms of the Creative Commons License: Creative Commons Attribution 4.0 International, CC BY 4.0 (<https://creativecommons.org/licenses/by/4.0/>), that allows non-commercial use, distribution and reproduction in any medium, provided that the original work is duly cited. For commercial use, please contact revista.medicina@urp.pe



Norman et al.⁽²⁾ updated in May 2022 the most recent version of the meta-analysis led by the Cochrane collaboration, on the use of TPN for healing surgical wounds by primary closure. And, although this scenario is completely different from emergency laparotomy, the meta-authors analyzed 68 randomized controlled trials with a total of 13,340 patients, where they found that of 6384 patients in whom mortality was reported, This was lower in the TPN group (0.84%) vs. standard care (1.17%), but with an imprecise estimate (RR 0.78; 95% CI: 0.47 - 1.30). However, the estimate found on the incidence of ISO was statistically significant and, in favor of the use of TPN (8.7% vs. 11.7%; RR 0.73; 95% CI 0.63 - 0.85), in a pool of 11,403 individuals⁽²⁾. Regarding cost-effectiveness analyses, the evidence is very heterogeneous and imprecise, concentrating only in cases of caesarean sections in obese women, arthroplasty, repair of fractures of lower limbs, and vascular surgeries⁽²⁾. Thus, the actual impact of the NPT on cost-effectiveness and cost-utility is not known. Particularly in Latin America, some studies have been carried out, such as that of Lozano-Balderas et al 4, who conducted a randomized controlled trial to evaluate the association between the use of TPN and ISO in 81 laparotomies with class III and IV contaminated surgical wounds undergoing primary, late primary and TPN closure. The incidence of ISO was found to be 0% in the

TPN group, compared with 37% and 17%, for primary closure and late primary closure⁽⁴⁾. In Colombia,

Ordoñez et al.⁽⁵⁾ discussed the use of this therapy in damage control management, where they highlight the progress in wound management in laparotomies, but that there were still gaps such as the lack of primary data in that country⁽⁵⁾. This makes it difficult to reproduce this strategy in the Latin American context, where resources are limited and interventions supported by solid evidence must be used. However, in accordance with the objectives set by global surgery⁶, it is necessary to stimulate and support the development of therapeutic strategies that have a substantial and positive impact on disease indicators, quality of life and functional capacity of surgical patients.

Finally, although the evidence suggests that the usefulness of PND in emergency laparotomy is very clear, there are no Latin American studies that can corroborate the performance of this option, which should awaken the initiative of academic surgeons, with the approach of this research idea. If so, an instrument with the potential to modify protocols and algorithms in acute surgical care is very close, to favor the prognosis of these patients.

Authorship contributions: All authors participated in the generation, collection of information, drafting and final version of the article.

Funding sources: Self financed.

Conflicts of interest: The authors declare that they have no conflicts of interest in the publication of this article.

Received: december 30, 2021

Approved: december 10, 2022

Correspondence: Yelson Alejandro Picón Jaimes.

Address: Calle de José Antonio de Armona Num. 24 Pl 2 Pt E. Barrio Palos de Mogueer, Distrito Arganzuela, 28012 Madrid.

E-mail: colmedsurg.center@gmail.com

REFERENCES

- Hall C, Regner J, Abernathy S, Isbell C, Isbell T, Kurek S, et al. Surgical Site Infection after Primary Closure of High-Risk Surgical Wounds in Emergency General Surgery Laparotomy and Closed Negative-Pressure Wound Therapy. *J Am Coll Surg*. 2019; 228(4):393-397. DOI: <https://doi.org/10.1016/j.jamcollsurg.2018.12.006>
- Norman G, Shi C, Goh EL, Murphy EMA, Reid A, Chiverton L, et al. Negative pressure wound therapy for surgical wounds healing by primary closure. *Cochrane Database Syst Rev*. 2022; 4:CD009261. DOI: <https://doi.org/10.1002/14651858.CD009261.pub7>
- Lakhani A, Jamel W, Riddiough GE, Cabalag CS, Stevens S, Liu DS. Prophylactic negative pressure wound dressings reduces wound complications following emergency laparotomies: A systematic review and meta-analysis. *Surgery*. 2022; 172(3):949-954. DOI: <https://doi.org/10.1016/j.surg.2022.05.020>
- Lozano-Balderas G, Ruiz-Velasco-Santacruz A, Díaz-Elizondo JA, Gómez-Navarro JA, Flores-Villalba E. Surgical Site Infection Rate Drops to 0% Using a Vacuum-Assisted Closure in Contaminated/Dirty Infected Laparotomy Wounds. *Am Surg*. 2017; 83(5):512-514. Disponible en: <https://doi.org/10.1177/000313481708300528>
- Ordoñez CA, Caicedo Y, Parra MW, Rodríguez-Holgún F, Serna JJ, Salcedo A, et al. Evolution of damage control surgery in non-traumatic abdominal pathology: a light in the darkness. *Colomb Med (Cali)*. 2021; 52(2):e4194809. Disponible en: <https://doi.org/10.25100/cm.v52i2.4809>
- Núñez-Gamez JA, Medina-Bravo PA, Piñeros-López NF, Contreras GA, Rosero-Burgos ME, Lozada-Martínez ID, et al. Global outcomes, surgical teams and COVID-19 pandemic: Will the same objectives of global surgery persist? *Ann Med Surg (Lond)*. 2021; 71:103002. Disponible en: <https://doi.org/10.1016/j.amsu.2021.103002>

