

Improving post-operative pressure relief and stability with a customized Vicair Vector O2

Background

Josué Fabricio Rueda is a 27-year-old wheelchair user from Argentina. In April 2022, he was involved in a severe motor vehicle accident resulting in multiple traumatic injuries, including cervical (C3-C4) and thoracic (T3, T4, T6, T7 and T8) spinal fractures. As a result of these injuries, he sustained a high-level spinal cord injury resulting in the diagnosis quadriplegia.

Following the accident, Josué was transferred to the Central Military Hospital in Buenos Aires, where he was admitted to the intensive care unit. In June 2022, he continued his rehabilitation at ALPI, specializing in motor and respiratory rehabilitation. After nearly two years of inpatient rehabilitation, he transitioned to day rehabilitation in May 2024.

The problem

In November 2024, Josué injured his left buttock during a transfer from his wheelchair to a shower chair, this resulted in a stage IV pressure injury. The wound progressed to the bone and was complicated by recurrent infections.

In August 2025, a musculocutaneous flap reconstruction was performed. During the post-operative recovery, a fistula developed, causing the wound to reopen. A second flap reconstruction was therefore performed in April 2026.

Following the second surgery, preventing recurrence of the pressure injury became the primary seating goal. At the same time, maintaining sufficient sitting stability was equally important, as Josué had previously experienced considerable instability on an interconnected air-cell cushion. Because the air moved freely throughout the interconnected cells in the cushion, he constantly had to reposition himself to maintain a stable sitting position.

A stable seating solution was therefore required that could effectively offload the surgical area while allowing him to remain functional throughout the day.

Optimizing the seating system

As part of the seating intervention, Josué trialed a Vicair Vector O2 wheelchair cushion. The compartment design of the Vector O2 provided greater postural stability compared with the interconnected air-cell cushion he had previously used. To further protect the surgical site, SmartCells were removed from the compartment underneath the affected ischial region, allowing the cushion to be customized specifically to his seating needs while maintaining support throughout the remainder of the cushion.

During the ten-day trial period, Josué monitored his skin closely. Throughout this period, no redness or skin discoloration was observed around the reconstructed area. In addition to the clinical advantages, he appreciated the practical benefits of the cushion, including its washable design and the ability to individually adjust the SmartCell filling when required.



Figure 1. Josué Fabricio Rueda



Figure 2. Surgical wound at the start of the Vicair Vector O2 trial.



Figure 3. Surgical wound after 10 days of using the customized Vicair Vector O2 (7 June 2026, approximately 8–12 hours of daily use).



Figure 4. Surgical wound during follow-up after continued use of the customized Vicair Vector O2 (19 June 2026).

Conclusion

Following the customized adjustment of the Vicair Vector O2, Josué experienced a clear improvement in sitting stability compared with his previous cushion. Because the SmartCells are divided into separate compartments, the cushion provided a stable seating base while simultaneously allowing local pressure offloading around the surgical area.

Throughout the trial period, no signs of increased pressure or skin redness were observed around the flap reconstruction. The improved stability also reduced the need for continuous repositioning, allowing Josué to remain comfortably seated for longer periods. Although he noted that the increased stability made it more difficult to slide forward for intermittent catheterization, he considered this a minor disadvantage compared with the substantial improvements in comfort, stability and confidence in protecting his surgical wound.

This case demonstrates how a customized compartmental wheelchair cushion can successfully combine post-operative pressure management with high levels of positioning and stability, providing an effective seating solution for wheelchair users following complex pressure injury reconstruction.

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