

# Continuous Negative Pressure Drain is Associated with Better Outcome: A Randomized Prospective Trial in Plastic Surgery Patients



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To the Editor,

We read with interest the recent article by Jiang et al. [1] regarding the application of negative pressure drains in plastic surgeries. The use of negative pressure drains and/or therapy has evolved over decades because of its remarkable effects on wound healing. The conventional negative pressure therapy adopts a continuous mode where the pressure level is kept at a constant setting. Later on, the intermittent pressure mode that involves repeated switching on and off, alternating between an atmospheric and subatmospheric pressure, shows an increased perfusion level and formation of granulation tissue in the wound bed compared with the continuous mode [2]. Despite the effectiveness of the intermittent mode, it is not often used clinically because the sudden changes in pressure repeatedly stimulate the granulation tissue and cause pain to the patients. The cyclic pressure mode was therefore introduced to provide a certain pressure gradient that oscillates between two preset subatmospheric pressures. In clinical application, the cyclic mode significantly decreased patient discomfort while maintaining superior wound healing effects as the intermittent mode [3].

Although large numbers of preclinical studies suggest that intermittent or variable pressure application has a better effect than continuous application [2, 3], prospective controlled clinical studies are needed to ascertain the effect of various modes on outcomes of medical care. In this randomized prospective trial, the authors randomly applied continuous or intermittent negative pressure drains in different plastic surgeries, observed the postop complications and drainage volume, and concluded that continuous negative pressure drainage was associated with less complications and a better technique in the postop management of plastic surgeries. In the introduction section, the authors stated that continuous negative pressure drains have been shown to be associated with better wound healing than intermittent ones. However, the two reference studies they cited to support their opinion involve no comparison between continuous and intermittent negative pressure drains [4, 5]. In this study, the intermittent mode was set as 0.5 h of negative pressure drainage followed by 3.5–4.5 h of resting phase. That is to say, the actual time for negative pressure drainage was only 2.4–3.0 h per day, which is nowhere near enough to provide sufficient drainage. This may explain why continuous negative pressure application was associated with better outcomes in this study, whereas intermittent negative pressure application had a better effect in most of the other studies where the intermittent mode provided a negative pressure for 5 min and a 2-min resting phase.

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## Compliance with Ethical Standards

**Disclosure** All the authors declare that they have no financial or personal interference with other people or organizations that inappropriately influence their work.

**Ethical Approval** This article does not contain any studies with human participants or animals performed by any author.

**Informed Consent** Informed consent is not required for this type of study.

## References

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