

Comparison of Patient's Preference, Pain Perception, and Usability between Micro Fine Plus[®] 31-Gauge Needle and Microtapered NanoPass[®] 33-Gauge Needle for Insulin Therapy

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Abstract

Background:

How smoothly insulin is injected is one of the major concerns when patients commence insulin injection therapy. Improving its usability may be important in initiation therapy and adherence, resulting in clinical benefits to the patient.

Methods:

In a single-center, open-label and randomized two-period crossover trial, the effect of the tapered needle of NanoPass[®] (33 gauge, 5 mm) on usability in comparison with the standard needle of Micro Fine Plus[®] (31 gauge, 5 mm) was examined using a questionnaire. Patients with insulin-dependent diabetes ($n = 40$, self-injecting insulin four times daily for more than 3 months) were randomized to use NanoPass or Micro Fine Plus needles for 1 week and then use the alternative for 1 week. Patients completed the questionnaire before and after each test week. Each evaluation was scored from -100 (worst) to +100 (best) by a visual analogue scale. A higher score indicated a more favorable outcome compared with the other needle.

Results:

The NanoPass needle was significantly less painful to insert and caused less bruising than the Micro Fine Plus needle. However, there was no significant difference in the overall patient satisfaction score between the two needles. Meanwhile, the NanoPass needle, which had less resistance in insertion with a new lubricant coating method, had a significantly superior ($P < 0.001$) overall patient's satisfaction score, including less frightening use, less bleeding, and less dribbling of injected insulin in comparison with the former evaluation.

Conclusions:

For overall patient satisfaction in using an insulin needle, developing a thinner needle and improving other factors, such as lubricity coating the needle, are important.

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Abbreviations: (BMI) body mass index, (HbA1c) glycated hemoglobin, (IAC) integrated area under curves

Keywords: insulin, lubricant, microtapered needle, overall satisfaction, pain and bleeding

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