Bevel Design and not Needle Length determines the Pain Experience in Patients receiving Injections

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Letter to the Editor:

At the LA Pain Clinic, intramuscular (IM) and subcutaneous (SQ) injections are administered on a daily basis either as part of our therapeutic procedures or during pre-medication in patients who are scheduled to have procedures.

Recently it was observed that patients were complaining consistently of more pain during the SQ injections, even though the SQ needle was a 25G short 5/8 inch, and the IM needle was a 25G long 1 *Vi* inches. We noted that the needles were from different manufacturers. The 25G IM Precisionglide needles were manufactured by Becton, Dickinson and Company (BD), and the 25G SQ needles were manufactured by Terumo Medical Corporation. We then ordered 25G 5/8 SQ Precisionglide needles of the same gauge (internal diameter) and length to compare both the Terumo and the BD needles.

We then compared the intensity of pain perceived by our patients with the 2 types of needles. Our objective was to determine whether needles with a different bevel design but the same size, diameter, and length would result in a different pain experience. We did not see any prior publication of such a study.

At the beginning of this study the assessment of patient's level of pain was based on a 10-point unit numeric scale. The pain level of 0/10 is interpreted as the least amount of pain, whereas the pain level of 10/10 is interpreted as the worst amount of pain.

Twenty patients were studied in all. These patients were selected sequentially, which means that every patient who required a procedure was studied.

Table 1.

Patient No.	*Becton Dickinson Needle, Pain Score*	*Terumo Needle, Pain Score*
1	0	3
2	1	3
3	2	7
4	2	5
5	1/2	7
6	2	5
7	2	5
8	2	6
9	4	5
10	1	5
11	6	10
12	2	5
13	1	7
14	2	5
15	1	4
16	5	5
17	1	8
18	2	5
19	1	8
20	2	3

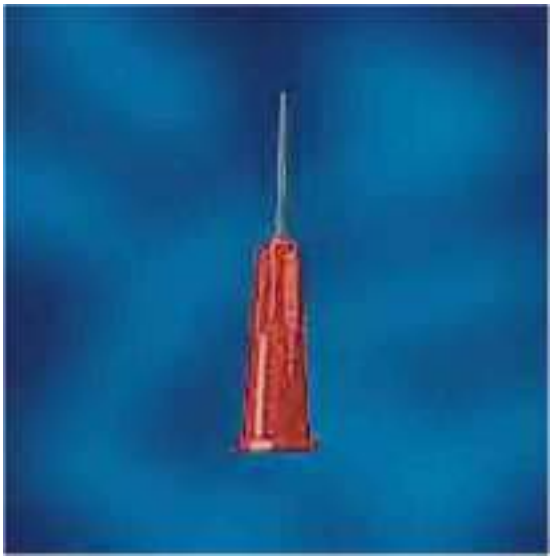

Figure 1. Photograph of BD needle.

Figure 2. Photograph of Terumo needle.

With informed consent, each patient was injected with local anesthetic (lidocaine 0.5%) by using the 25G 5/8 Terumo needle and a 25G 5/8 BD as part of our pre-procedure local anesthetic infiltrations.

For each patient studied, the Terumo needles and BD needles were used alternately to inject anesthetics on different sites of procedure. Care was taken to ensure that the same person carried out the injections for all the patients studied. Care was also taken to start the injections with different needle types on each patient. The selection of needle type was done randomly.

At the time of each injection patients were asked the level of pain they felt at the time the skin was pierced.

After injecting 20 different patients, we observed that in all patients the subjective pain level described was

significantly higherfortheTerumo needle injections (Table 1). Analysis of the data showed that the mean pain score for the BD needle was 1.9, whereas the mean pain score for the Terumo needle was 5.5.

The least pain and highest pain scores experienced for the 2 sets of needles were different. With the BD needle the least pain score was 0, whereas with the Terumo needle the least pain score was 3. With the BD needle the highest pain score was 6, whereas with the Terumo needle the highest pain score was **10.**

It was evident that the pain experience was much better for our patients when the local anesthetic injection was performed with the BD needle. We therefore conclude that the Terumo needle inflicts more pain to our patients.

The Terumo needles incorporate a double bevel design to provide ultra-sharp needles, whereas the BD Precisionglide needles incorporate an advanced low-angle bevel design, a unique polishing process, and a low friction lubricant to improve penetration ease (Figs 1 and 2). **F2**
In conclusion, the pain experience with needles of the same size is determined by the bevel design and not by the length. After changing the type of needle, we continue to observe better patient tolerance and less discomfort during our injection procedures.

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