

Current Research Report

Peter Ferrigno

In Private Practice, Melbourne, Australia

EXAMINATION OF SURFACE CONDITIONS AND OTHER PHYSICAL PROPERTIES OF COMMONLY USED STAINLESS STEEL ACUPUNCTURE NEEDLES

Once upon a time when acupuncture needles were not sterilised single-use needles, they were autoclaved by practitioners for re-use. The question of how sharp, strong, flexible, and indeed how long they would remain relatively sharp, was often discussed. In fact some acupuncturists devised ways of keeping their needles sharp. From memory, single-use sterile needles were introduced into Australia during the early to mid 1980s emanating from Japan, Korea and Europe. From experience practitioners seemed to agree on which were the better needles at the time.

Thirty years later, we are now in receipt of an Australian study exploring the same issue: this time by applying technologically sophisticated instrumentation. According to the authors, their study is one of four offerings giving attention to the acupuncturists' principal tool of use.

The study aims to examine the surface conditions of needles manufactured by two of the leading suppliers to Australia. Both are manufactured overseas: one from China and the other from Japan. No prizes for guessing the needle manufacturers, particularly when the authors designated the needles as 'H' and 'S'. Microscopy pictures of the shafts and tips of ten needles of the same gauge and length from each of the manufacturers are supplied. At a magnification index

of 5000x, the images provided clear indication of needle tip sharpness, lumps and alien matter on the needles. No doubt practitioners have seen images of this kind supplied by manufacturers as part of advertising materials. However, magnification levels have usually been around 100x to 400x.

The needles were inserted into gel type material meant to be a surrogate human tissue. After insertion the needles were manipulated by an experienced practitioner in two ways: lifting and thrusting, and rotation. Needle manipulation was also measured using a needle sensor instrument which attempted to calibrate both the movement and force applied to needle and the extent to which foreign materials were left in situ or indeed whether bits of gel material were found on the shaft or tip.

In addition to providing pre- and post-needling images of each of the needles the authors also attempted to identify the alloy composition, providing a detailed description of needle constituents.

What did they discover and say?

The most telling aspect of this paper are the images of the needle tips. We see them before and after being used. Needle tip images pre and post use are especially revealing, indeed disturbing to view especially for one group of needles known as 'H' in the study.

The second group of needles, the 'S' group fared better. However, we also need note that at a magnification level of 5000x one will without doubt discover all manner of debris and deformities whether inspected pre or post use.

If there is such a difference in needle quality between two of the worlds leading acupuncture needle manufacturers one wonders what the condition of other commercially available needles are like. Given that both groups of needles have been in use for around thirty years, one would think that the tally of adverse reactions such as haematomas and bruising would be especially high. Perhaps what does matter is how practitioners have managed to work with remarkably deformed needles. Nevertheless, one simple question arises. How would one determine a minimum standard for needle production, sharpness, deformities and composition? Whether this is achieved through self regulation among manufacturers, legislation or by other means is an open question.

Acknowledging that the researchers clearly specified their intention to examine surface characteristics of acupuncture needles, they also form part of a larger category of sharps implements used in a medical context. What would be useful know is how acupuncture needles compare with, for instance, needles used for injections in other medical or dental settings. A base comparison would be useful.

The issue of adverse effects from acupuncture is also raised by the authors which takes the discussion into new territory. The main adverse effects appear to be haematoma/bruising, pain experienced on needling or skin reactions usually due to alloy composition of the needles.

To venture into territory suggesting that bruising and/or needle pain is essentially

caused by using poorly manufactured needles is somewhat gratuitous. One can also cause bruising or pain by using better quality needles. What we don't know is the extent to which poorly manufactured needles in and of themselves will more likely cause bruising or pain.

The authors also raise the idea of fear of pain related to the needling experience. A notion such as this forms part of a much larger and complex issue and goes beyond the scope the paper. Yet

the authors suggest that if needles were made sharper, improving the needle tip quality, needle shy patients would somehow be more inclined to present for acupuncture.

If as is being suggested there is substantial variance in needle quality, composition and by implication quality control during manufacture between two of the largest suppliers, the challenge to the profession is not only medical but also social and political. According to

this paper the profession may need to demand that suitably produced needles become the norm.

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Xie, YM, Xu, S, Zhang, CS and Xue, CC. Examination of surface conditions and other physical properties of commonly used stainless steel acupuncture needles. Acupunct Med 2014;0:1-9