101. Subcutaneous Catheters (Insuflon™)

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Q: "I am on long-term Lovenox® injections because I developed a new clot in spite of being on coumadin®. I don't like needle sticks and really dislike that I have to inject myself every day. I have heard that there are some catheters that can stay in the skin for a whole week, into which you can inject the Lovenox®. Where do I get such a catheter?

Some patients need to take heparin shots (Lovenox®, Fragmin®, Innohep®, or unfractionated heparin) under their skin (subcutaneously, or s.c.) for prolonged periods of time, such as for 9 months during pregnancy or indefinitely is they have developed a new clot in spite of warfarin therapy. Once or twice daily injections can be bothersome and uncomfortable for the patient.

The number of needle injections can be decreased by using a subcutaneous port to administer the drug. This device is the same as the one used by individuals with diabetes to administer insulin subcutaneously. Insuflon™ is a small, plastic catheter/port which can be placed subcutaneously with a needle once every seven days, through which Lovenox® and other low molecular weight heparins (Fragmin®, Innohep®) can be injected. The catheter is secured to the body with an adhesive bandage and is small enough to be discrete and not hinder daily activities. These ports have gained a huge acceptance among the diabetes community for injection of insulin.

Unfortunately, no formal studies have been published or performed to investigate whether absorption of drug into the blood stream remains constant when injecting blood thinners into this port over a period of seven days. Therefore, it is not known whether blood drug levels remain satisfactory (i.e. therapeutic) throughout the seven day lifespan of the catheter. One study reported the use of these ports in neonates receiving low molecular weight heparin injections, but the data presented did not allow a conclusion that absorption from the catheters was reliable [reference 2]. An inquiry of the authors of this Q/A with Sanofi-Aventis, the company making Lovenox®, also revealed no unpublished data regarding blood levels over time when using such ports for administration of Lovenox®.

More information on these catheters, including administration instructions and an animated tutorial, can be found at:

- http://www2.uchsc.edu/thrombophilia/docs/Insuflon_lovenox_instructions.pdf
- http://www.intrapump.com/indwelling_cannula/insuflon.htm#

Personal Comment (Dr. Moll):
At this point I do not routinely recommend the use of the Insuflon™ device to patients I treat, because it has not been studied whether reliable blood levels of the injected blood thinners are achieved for the whole 7-day lifespan of the Insuflon™ catheter. However, the concern of absorption and blood levels can fairly easily be dealt with in the individual patient by measuring an anti-Xa level (= low molecular weight heparin level) on day 1 after Insuflon™ placement and comparing it to a level on day 6 or 7.

Some medical colleagues of mine report that, in their clinical experience, blood levels of low molecular weight heparin after Insuflon™ catheter placement have been consistent with prior levels (before Insuflon™ was instituted). Eventually, it would be beneficial to perform a formal study to find out if drug absorption with the use of these ports is reliable. If they are, then these ports could be used more frequently and widely, since they are a nice way to avoid the frequent needle sticks for people who have to take subcutaneous blood thinners long-term. However, some downsides also have to be considered: The wings of the port can rub and irritate the skin, the adhesive comes off with sweating, bathing, swimming and physical activity, and in some patients local infections can be a problem. Finally, insurance companies may be hesitant to pay for these catheters - on top of the already high cost of the low molecular weight heparin. References:

1. http://www.infusion-set.com/Default.asp?ID=118
2. Dix D et al. The use of low molecular weight heparin in pediatric patients: a prospective cohort study. J Pediatrics 2000;136:439-445.

This Q/A was developed in collaboration with Dr. Micah Mooberry, University of North Carolina, Department of Pediatrics, Chapel Hill, N.C.