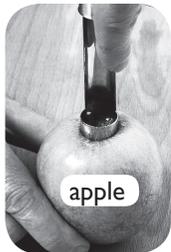


VASCULAR ACCESS CATHETER *TipS*

SHARING INFORMATION TO IMPROVE LONG-TERM VASCULAR ACCESS

Despite over 25 years of use of Vascular Access Ports (VAP's) in laboratory animal research, the reason for using a Huber point needle when accessing a vascular access port remains a question often asked. I hope you find this bit of needle trivia interesting. Pam

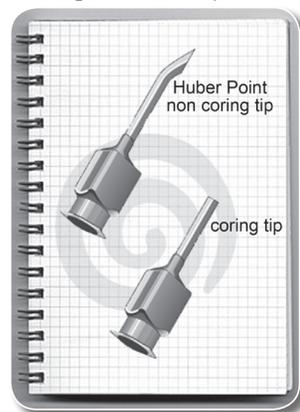
Hear goes, it's the late 1940's..... & there is a dentist living in Seattle. His name is Ralph Huber & he has a flair for invention. During the course of his career he devised many systems but is most widely known for his hypodermic needle - with the long, sharp, directional/curved tip.



When designing a needle tip there are two considerations - **the first is that the tip should require minimal penetration force** - this reduces the pain of the 'prick' & the second is that **it should prevent or at least minimize 'coring'/cutting a plug of skin or tissue.** The phenomenon of coring results when a piece of material the needle has penetrated (tissue or the septum of an injection port) becomes lodged in the needle lumen & a hole is created in whatever the needle penetrated (compare this to coring an apple - the core of the apple gets 'stuck' in the lumen of the corer & the result is a hole in the apple).

Now remember, little is known about Dr. Huber (1890-1953) other than that he was a dentist. There's no mention of him in the medical literature & he was forgotten until recently when it was discovered by Joseph Eldor that Huber had filed a patent for his Huber point in 1946. According to Eldor, Huber should be credited for what we today call the Huber point needle. **His patent (#2,409,979) states that his first objective was to design a needle that resulted in only minor pain on penetration and withdrawal and an additional benefit would be the elimination of plug cutting.** Besides reducing the pain of the injection, Huber's concern was the danger of embolism that could occur from the plug cutting. This is why the design of his needle with an offset point was so important to him.

The story gets more interesting - Huber intended his needle for IV & tissue injections, to lessen the pain of an injection & decrease the risk of depositing plugs of skin into the underlying tissue which he felt were important advantages for his dental patients. It was Edward Touhy (1809-1959) who recognized that the directional or offset point of Hubers' needle might facilitate the placement of spinal catheters. For Touhy, the elimination of coring was even more important. When entering the spinal column, it is extremely



important to create a penetration point that will not leak. Loss of spinal fluid, even just a little, can be painful. As a further embellishment Touhy later added a stylette to the needle. An article by Lubisich in J. Hist. Dent. in 2004 refers to Ralph Huber as the **"Forgotten Inventor of the Touhy Needle"** & suggests that the hypodermic needle popularized for continuous spinal anesthesia has since 1945 been incorrectly called the Touhy needle. **The introduction of vascular access ports & the need to puncture the silicone septum without cutting a plug, has made Dr. Huber's invention even more valuable.** An abstract (Anesth. 2003) **"Touhy: His Needle or Not?"** tells that Touhy himself acknowledged his needle as having a Huber point. I am sure it surprised most of you, as it did me, to learn that the Touhy needle was not his idea at all. How he came to refer to the novel design as the Huber tip is mostly unknown. It seems that prior to Hubers' patent approval many of his novel inventions were offered to the US army. It can only be assumed that Touhy encountered Hubers' needle design sometime during his military service. Regardless of how he came across the design, it is undeniable that he favored chance & extrapolated Hubers' design to the field of regional anesthesia. Even if the tip was not his original design, Touhy pioneered its use in the arduous placement of small catheters in small places.

Yes, we now know for sure, that Ralph Huber was the inventor of the Huber tip & that Touhy can be credited with applying the Huber point design to the epidural needle & with adding a stylette. Dr. Huber, the prolific inventor from Seattle is the **"Forgotten Inventor of the Touhy Needle"**.

Interestingly, the Huber needle is not used as it was originally intended. Hubers' objective of creating a non-coring needle benefits ports & today his name is know widely recognized as the designer of a special needle to access vascular access ports!

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tel. 847-674-7131
fax. 847-674-7066
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email. info@norfolkaccess
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VASCULAR ACCESS CATHETER *Tips*

SHARING INFORMATION TO IMPROVE LONG-TERM VASCULAR ACCESS

NEEDLE TALK

To appreciate the Huber invention and why it is important to vascular access port users, a short discussion of needle point geometry & style may be helpful.

The term bevel refers to the angle surface formed on the needle shaft when sharpened to make the needle point. Bevel length



is the longest distance of the bevel measured from the tip of the needle to the

most proximate area of the grinding behind the heel.

An **“A” bevel needle** has the longest and sharpest point & is used in blood collection as it slides through the skin very easily. The tip is very delicate & can easily be deflected or damaged.

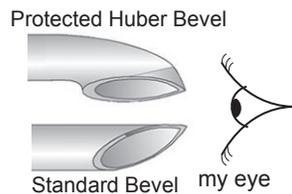
A **“C” bevel needle** does not have a sharp point, & is therefore sturdier & less delicate. It is used in applications such as piercing a rubber stopper.

The **“B” bevel needle** has characteristics in-between the A & C bevels being relatively sturdy & sharp.

Non-coring Huber style needles are “B” bevelled needles with a relatively sharp point. The heel is sandblasted to minimize coring & the point/tip is deflected - the tip is raised above the center line to minimize contact with the tissue or media.

The Access Technologies Huber needles, the 90° PosiGrip®, the Right Angle & Tether infusion sets feature the shorter ‘B’ bevel needle tip. This is often referred to as the ‘protected’ bevel because the cannula is bent over.

The **‘birds eye view’** comparison below of the Huber & the traditional point will allow you to see that the point of the Huber needle is offset or protected, & that the eye lies parallel to the needle shaft. This configuration is key to its ability to penetrate a port septum without coring a plug of silicone.



LOOK FOR YOURSELF!!!

Got something on your mind?

Share it with your colleagues

TipS is a forum for sharing, & your comments are welcome.

email: pwolf@norfolkmedical.com

HOW DO YOU MEASURE A NEEDLES SIZE?

Needle sizes are typically referred to as ‘gauge’ size. A gauge denotes the outside and inside diameter of the stainless tube that is attached to the hub. Gauge sizes have an inverse relationship to their number e.g., a 30G needle (G=gauge) is much smaller than a 20G needle.

Huber needles are available from Access Technologies (sterile in boxes of 12 or in bulk non-sterile) in the following gauges and lengths:

- 3/4” x 19 Gauge
- 3/4”, 1” & 1/4” x 20 Gauge
- 3/4”, 1” & 1/4” x 22 Gauge
- 5/8” x 24 Gauge

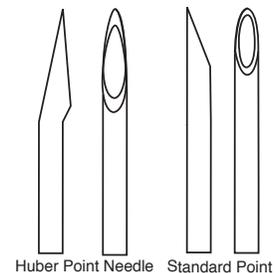


& the newest addition the 1/2” x 25 Gauge PosiGrip

HOW THE HUBER POINT PRESERVES THE SEPTUM

When you access the silicone septum of the port with a Huber needle, a plug of silicone is not cut from the septum as happens with a standard hypodermic needle. **The angle of the “B” bevel Huber causes a parting of the silicone septum as the needle enters the septum.** Because the septum is fitted into

The bevel of the Huber point needle - the ground surface of the needle (the cutting edge) is almost perpendicular to the needle shaft in a Huber point needle.



the port under pressure, it closes up around the needle. Once the needle is removed you see only an impression of where the needle entered, no hole is made. Accessing the septum with a regular needle on a regular basis will result in a loss of integrity of the septum and leakage.

PosiGrip™ & Right Angle Hubers accessing a Vascular Access Port (VAP™)

