Surgical stencil: A simple but inventive idea

Dr. Lori Alvord is used to getting attention for being the first woman Navajo surgeon. But she wants to leave a legacy that goes beyond that. “I don’t want to be niched into one corner,” she says. So she’s decided to become an inventor—in addition to her roles as associate dean of student and multicultural affairs at DMS and a general surgeon at DHMC and the DMS-affiliated VA in White River Junction, Vt.

She recently received a patent for her first invention, a sort of stencil for laparoscopic surgery. In laparoscopy, a small incision of less than half an inch is made, usually in the abdomen, and a tunnel is cut through the body to the site in need of surgery. That tunnel, which is lined with a tube, serves as a pathway for the tiny instruments that the surgeon will operate with from outside the body.

While the instruments and tubes are specific sizes, says Alvord, surgeons “just look and guesstimate” how long to make incisions in the skin. “What we should be doing is making them just the right size,” she says.

Seal: If an incision is too small, the surgeon may try to force the instruments through, injuring adjacent tissues. If an incision is too big, that can cause problems, too. “The way we look at everything inside,” Alvord explains, “is we pump carbon dioxide into the abdomen to distend it . . . [so] we have a little place to work.” If there’s not a good seal between the skin and the tube, air can leak out, making the surgeon’s workspace inside the body smaller than is optimal.

Alvord’s stencil design has openings that correspond to specific instruments and sizes. It also has longer slots that can be used for non-laparoscopic incisions, which most surgeons also do freehand. The idea behind the stencil is “so amazingly simple,”

A CUT ABOVE: The Children’s Hospital at Dartmouth is the only medical center in the United States to have two pediatric neurosurgeons who research brain trauma in children, according to the director of the program, Dr. Ann-Christine Duhaime.