

Pre-op Nerve Damage as Cause Of Post-Herniorrhaphy Pain?

Study Offers Alternative Theory of Post-inguinal Hernia Repair Pain: Neuritis, Not Operative Trauma; Some Experts Skeptical



BY GABRIEL MILLER

SAN FRANCISCO—As many as one-third of primary inguinal hernia repair patients may have preexisting nerve damage, according to a new study presented at the 2011 annual meeting of the American Hernia Society. The study won the Fruchard Award for best poster and was published on the August edition of *Hernia*.

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The finding suggests a significant shift in the cause-and-effect paradigm that has defined post-herniorrhaphy pain, said the study's lead author, Robert Wright, MD, a private practice surgeon at Meridian Surgery Center in Puyallup, Wash. Dr. Wright's results suggest that a fraction of the post-herniorrhaphy pain seen in patients may be the result of preexisting nerve damage, rather than operative trauma.

"We have always considered the pain associated with the hernia as a visceral pinch or a muscular pain; we haven't considered nerve damage," Dr. Wright said, adding that many patients ultimately decide to have their inguinal hernias repaired primarily because of pain. "Consequently all pain that occurs after hernia repair is presumed to be caused by something that the surgeon has done to the patient during the operation."

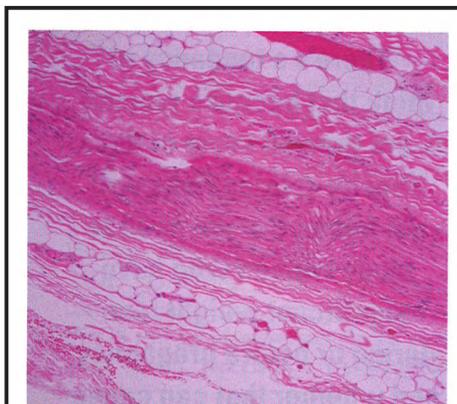
However, not all surgeons are convinced of Dr. Wright's results. A recent meta-analysis was not in favor of prophylactic nerve removal, said Parviz Amid, MD, clinical professor of surgery and director of the Lichtenstein Hernia Institute at the University of California, Los Angeles. Based on the current body of studies, Dr. Amid noted that routine neurectomy, without a preoperative diagnosis of neuropathic pain, was "counterproductive" because the removal of a functioning nerve during a primary operation is "not without consequences," which includes groin numbness and, for women, potential sexual dysfunction. "I have never removed a nerve during the original hernia repair unless the nerve was in the way of the operation and at risk for injury," Dr. Amid said.

In Dr. Wright's study, he retrospectively reviewed 100 consecutive cases of primary inguinal hernia repair. Dr. Wright performed all inguinal hernia repairs using the Lichtenstein technique, but modified the traditional approach and removed the ilioinguinal nerve and occasionally the iliohypogastric and genitofemoral nerves. He bases his technique on the results of a small number of studies showing that prophylactic ilioinguinal neurectomy significantly decreases the

incidence of chronic groin pain after Lichtenstein repair without increasing postoperative complications or morbidities (e.g., *Annals of Surgery* 2006;244:27-33).

In the 100 cases performed on 90 patients, Dr. Wright removed 84 nerves—73 ilioinguinal, nine genitofemoral and two iliohypogastric. Dr. Wright defined neuritis as a degenerative lesion characterized by fragmentation with accompanying fibrosis. In terms of gross appearance, Dr. Wright characterized neuritis as a "fusiform, firm expansion of the nerve for up to a centimeter," which in severe cases felt more like vas deferens.

If Dr. Wright felt that a resected nerve was damaged, it was sent to a board-certified pathologist for examination. Dr. Wright sent 35 nerves to the pathologist, 34 of which were confirmed by the pathologist as having nerve damage defined as neuritis. Of the 34 cases, 30 involved the ilioinguinal nerve and of these, 83% occurred at the external oblique neuroperforatum, which Dr. Wright defined as the site of nerve penetration of the external oblique fascia, frequently the external inguinal ring. Overall, 11% of the potentially affected nerves were characterized as having neuritis and, in the vast majority of cases, the



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surgeon was capable of accurately diagnosing neuritis intraoperatively.

The histological findings in his study dovetail with previous reports that show routine neurectomy during inguinal hernia repair reduces pain, Dr. Wright said.

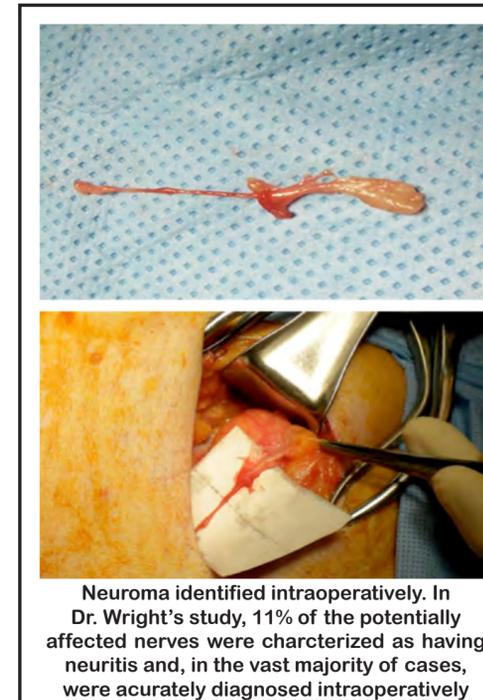
"Frequently these nerves do show significant damage and therefore it's entirely justifiable to take it out. If you leave a [damaged] nerve in an area it will scar because of the mesh," Dr. Wright said. "It makes more sense to take out the damaged nerve while you're there and while you are seeing it. Additionally, you can charge for taking out the damaged nerve, and for a general surgeon that's a complete revelation."

However, the study suffers from a significant limitation: Although patients' anecdotal pain was recorded in their charts, no standardized pain measurement tools were used, making it impossible to correlate preoperative pain with the presence of inguinal neuritis.

Dr. Amid also noted that in his experience, the rate of neuritis seen in the study was extremely high, and the nerve damage seen on histology may have been an artifact of dissecting and handling the nerve during tissue processing for histologic examination.

"Processing a nerve for histological study is a very delicate process and based on my conversations and ongoing work with neuropathologists, these changes are more than likely artifacts," Dr. Amid said. "I have performed more than 15,000 Lichtenstein repairs and in every patient I have carefully identified and observed all the nerves. The fusiform deformity of the nerves that they have seen in 34% of cases is very rare based on my experience. I have seen those in maybe 1% or 2% of the patients I have operated on."

Dr. Amid also said that these nerve deformities are not likely the cause of significant postoperative pain. "I have done at least 500 triple neurectomies for chronic pain, and in each of the 500 patients I've found obvious causes for the pain, such as the nerve being entrapped by a suture, a tack, a staple or a mesh. Even in these 500 patients, if I notice that fusiform deformity, I mark that and send it to pathology, and it's interpreted as traumatic neuroma."



Neuroma identified intraoperatively. In Dr. Wright's study, 11% of the potentially affected nerves were characterized as having neuritis and, in the vast majority of cases, were accurately diagnosed intraoperatively

However, Dr. Wright said that the location of neuritis found in his samples corresponds with typical inguinal hernia anatomy and may represent a source of non-iatrogenic pain similar to Morton's neuroma in the foot, where nerves are also subjected to pressure. When the hernia incarcerates and bowel pushes into the inguinal canal, "with that anatomical distortion, the nerve gets stretched and there also are pressure points on the nerve where the nerve is getting pushed," said Dr. Wright. "The stretch and pressure idea all make sense when you see that it occurs mostly at bifurcation and trifurcation points and at the neuroperforatum, places where you are going to get extra force occurring on the nerve."

Dr. Wright added, however, that his findings need to be substantiated in a prospective study assessing preoperative pain and its relationship to pathologist-confirmed neuritis.