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The utility of pathologic evaluation of adult hernia specimens



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Abstract

BACKGROUND: Pathological examination of hernia sac specimens adds additional steps and cost to a surgical procedure but has no proven benefit. Although well studied in pediatrics, there are limited data in the adult literature pertaining to this practice.

METHODS: This is a retrospective analysis from a single institution referral center over a 4-year period (2007 to 2011). All inguinal, incisional, ventral, and umbilical hernia repairs greater than 18 years of age were included.

RESULTS: A total of 1,216 inguinal (55.4%), incisional (11.4%), umbilical (21.5%), or ventral hernia (11.7%) repairs were included. In 246 cases (20.2%), hernia sac specimens were sent to pathology (open 96.7%; laparoscopic 3.3%). There were no cases in which management of the patient changed because of the final results.

CONCLUSION: The rarity of changes in diagnosis and treatment from routine pathologic examination of a hernia sac does not justify this practice and indicates that it may be omitted except in unique circumstances.

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The repair of inguinal and abdominal wall hernias encompasses a substantial portion of a general surgeon's practice. During repair, the herniated contents encased in fibrous tissue are reduced, the defect repaired, and the

hernia sac is excised and often sent to pathology for review. This practice is a remnant from the 1926 Minimum Standard for Hospitals, which was published by the American College of Surgeons, and states that "all tissues removed at operation shall be examined and reports rendered thereon."¹ This was reaffirmed in 1998 by the Joint Commission on Accreditation of Healthcare Organizations with the statement that "specimens removed during surgery need to be evaluated for gross and microscopic abnormalities before a final diagnosis can be made."²

Literature regarding the utility of pathological evaluation of the hernia sac in adult patients is scarce, despite the financial pressures being placed on many institutions to practice cost-effective medicine. It has previously been a standard practice to submit all excised hernia sac specimens

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for pathology evaluation; however, many institutions are beginning to question this practice. In 1998, 413 institutions enrolled in a quality improvement program for the College of American Pathologists, from which 28 institutions had policies that exempted inguinal hernia sac specimens from evaluation, while 98 others allowed for only gross examination.³ Another study evaluated whether results of pathologic evaluation return abnormal findings, and despite reviewing over 800 hernia repairs, only 1 case returned an unexpected result of atypical lipoma, and this ultimately did not change patient management.⁴ Interestingly, there were 3 cases that were judged to carry clinical significance based on their pathologic findings, but review of their operative records showed that there was intraoperative concern for an abnormality. One study reviewed over 2,000 hernia repairs finding that only 34 cases were sent for pathologic evaluation and there were no results that changed patient management.⁵

The aim of this study is to review of all inguinal, umbilical, ventral, and incisional hernia repairs performed at a regional medical center to determine the frequency in which pathologic evaluation of the hernia sac is performed, the incidence of abnormal findings and their implications, as well as the cost effectiveness of this practice.

Methods

A review of all inguinal, incisional, umbilical, and ventral hernia repairs from 2007 to 2012 was performed after approval from the Madigan Army Medical Center Institutional Review Boards (Institutional Review Board number 386562-1). Our institutional operative case log system (ORMA and S3) was searched using key words hernia, herniorrhaphy, inguinal, ventral, incisional, and umbilical to identify potential cases. Patients were included in the study if they were at least 18 years old and underwent repair. Exclusion criteria were those patients under 18 years of age, those undergoing herniorrhaphy with surgical specialties aside from general surgeons, and types of hernia repairs other than those listed above. Operative reports for these patients were reviewed to obtain the type of procedure, surgical approach, use of mesh, and pathologic evaluation of specimen. When the specimen was sent for pathologic evaluation, the operative report was used to determine if this was done routinely or if there were abnormal intraoperative findings that prompted the evaluation. Patient

medical records were then reviewed to obtain the results of the pathologic evaluation as well as to determine if the results led to a change in patient management. A change in care was defined as postoperative evaluation using radiographic analysis, laboratory analysis, or clinical/surgical follow-up for a specific finding based on the hernia sac examination. Statistical analysis was performed using PASW Version 19.0 (SPSS, Chicago, IL). A chi-square test was used to test the significance of specimens being sent from the laparoscopic or open approach. A multivariate logistic regression was used to examine factors such as age, sex, procedure type, and approach to identify the relationship between these factors and whether a specimen was sent. Statistical significance was determined with an alpha level set at .05.

Results

We identified 1,216 cases from 2007 to 2011. These cases were predominately inguinal hernia repairs ($n = 674$, 55.4%), followed by umbilical ($n = 261$, 21.5%), ventral ($n = 142$, 11.7%), and incisional ($n = 139$, 11.4%) locations. The mean age was 45.6 (range 18 to 90) years with 928 men (76.3%) and 288 women (23.7%). Repairs were performed using an open approach ($n = 819$, 67.4%), while laparoscopic procedures accounted for 397 cases.

Hernia sac specimens were sent for pathologic evaluation in 246 cases (20.2%), with a significant amount being sent from open cases ($n = 237$; 96.3%, $P < .001$) and the remaining 3.7% ($n = 9$) of specimens were sent from laparoscopic cases. Overall, the majority of specimens were sent from inguinal hernia repairs ($n = 158$, 64.2%), followed by umbilical hernia repairs ($n = 38$, 15.4%), incisional hernia repairs ($n = 26$, 10.6%), and ventral hernia repairs ($n = 24$, 9.8%). The majority of these specimens were sent from male patients (211, 85.8%). Specimens sent from laparoscopic repairs were from inguinal hernia repairs ($n = 7$), umbilical hernia repairs ($n = 1$), and incisional hernia repairs ($n = 1$). On multivariate logistic regression, male sex and open approach were significant predictors of specimen being sent (Table 1).

The vast majority of specimens ($n = 237$, 96.3%) were sent to pathology on a routine basis. In 9 cases (3.7%), the specimens were sent because of abnormal intraoperative findings (Table 2). Two of these specimens were sent from laparoscopic cases (22.2%). There were no results after

Table 1 Predictors of specimens being sent

Variable	Odds ratio	P value	95% confidence interval
Sex	.428	<.001	.285-.643
Inguinal hernia	1.327	.284	.791-2.225
Incisional hernia	.910	.779	.470-1.762
Umbilical hernia	.273	.715	.393-1.302
Surgical approach	.047	<.001	.023-.097

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