Sessile Serrated Adenoma Is Associated With Acute Appendicitis in Patients 30 Years or Older

Andrew A. Renshaw, MD, Richard Kish, MHS, and Edwin W. Gould, MD

Key Words: Surgical pathology; Appendix; Sessile serrated adenoma; Incidence; Age

DOI: 10.1309/BF5KLH7J547AXAA0

Abstract

Sessile serrated adenoma is a relatively recently described entity that can occur in the appendix. The incidence of this finding is unknown. We entirely submitted 100 consecutive appendices sent for acute appendicitis and correlated the histologic findings with clinical parameters and the findings in 100 routinely (partially) submitted cases. In cases submitted routinely, only 1 sessile serrated adenoma was found. In contrast, in cases entirely submitted, 11 adenomas were found, all in patients 30 years or older. All sessile serrated adenomas were present in 3 cross-sections or fewer of the appendix. The incidence of sessile serrated adenoma in patients with acute appendicitis is significantly increased in patients 30 years or older ($P = .001$), and detection is dependent on thorough tissue sampling.

Sessile serrated adenoma is a relatively recently described entity$^{1-10}$ that is more commonly located in the right side of the colon$^2,6,11$ and can occur in the appendix.$^{12}$ The incidence of this lesion in the appendix is unknown. We recently noticed a case of acute appendicitis that was associated with a small sessile serrated adenoma. As a result, we wondered how often sessile serrated adenomas might be found in patients with acute appendicitis when the specimen was thoroughly sampled. To investigate this, we entirely submitted 100 consecutive appendices and correlated the clinical features and compared these with 100 cases that were partially submitted as routine specimens.

Materials and Methods

One hundred consecutive appendices submitted to the department of pathology of Baptist Hospital, Miami, FL, with the clinical diagnosis of acute appendicitis were entirely submitted and examined. For comparison, the previous 100 appendices that were routinely submitted were reviewed. In these cases, only the tip and a representative cross-section of the appendix is submitted unless there is no acute appendicitis, and in that case, the entire specimen was examined.

Sessile serrated adenomas were diagnosed using the criteria most recently outlined by Snover et al.$^8$ The diagnosis is based mainly on architectural features, including branching of crypts, dilatation of the base of the crypts, and a growth pattern in which the crypts seem to grow parallel to the muscularis mucosae, often creating an inverted T- or L-shaped crypt. This growth pattern is often accompanied by the presence of mature cells with a goblet cell or gastric foveolar phenotype at the base of the crypt.
Statistical analysis was performed by using a 2-tailed Fisher exact test.

Results

The results are summarized in Table 1. Acute appendicitis was found in the vast majority of cases, regardless of patient age. Sessile serrated adenomas were found only in patients 30 years or older. When specimens were only partially submitted, the incidence of sessile serrated adenoma in patients 30 years or older was relatively low (2%). In contrast, when entirely submitted, the incidence of sessile serrated adenoma was significantly higher (20%; P = .001). When these cases were examined, the sessile serrated adenoma was found to be present in only 3 or fewer cross-sections of the appendix. Nonneoplastic lesions were more commonly found in appendices in patients younger than 30 years, but there was no significant difference in the rate of these findings between cases that were partially or entirely submitted (P = .68).

Discussion

Acute appendicitis is a very common disease, and the incidence of sessile serrated adenomas in this report is much higher than expected. Because intestinal mucosa can develop hyperplastic and architectural changes in association with inflammation that can mimic sessile serrated adenoma, one may wonder if the changes we describe herein may be reactive rather than neoplastic. However, there are several reasons we do not believe this to be the case. First, although changes mimicking sessile serrated adenomas have been described in solitary rectal ulcer syndrome, these lesions were also found to have genetic changes that have been associated with sessile serrated adenomas, suggesting that, in fact, the lesions may indeed be sessile serrated adenomas. Second, the lesions we identified were always distinct from the surrounding hyperplastic change, which was commonly seen in the rest of the appendix. There were never any areas of transition between the hyperplastic change seen in the inflammation and these lesions. Third, the lesions were strongly age-associated. We can think of no reason why a reactive mucosal change should be found only in patients 30 years or older.

In addition, lesions that are similar to those we describe herein have been reported previously under a variety of names. As early as 1972 “mucosal metaplasias” were reported in the appendix. Some of the illustrations in that report look very similar if not identical to those we report. In that
report, the authors extensively but not entirely submitted 100 consecutive appendices and identified 2 such cases. In contrast with the cases we submitted, their cases included all appendices, not just those submitted for acute appendicitis, and inflammation was absent from many of these cases. Like the cases we submitted, however, they also noted that the lesions they found were often quite small. Finally, they stated that similar lesions have been diagnosed as hyperplastic polyps in the colon and that one of their cases was also associated with a villous adenoma.

Sampling is critical for identification of these lesions, and routine sampling seems to be relatively insensitive for detecting them. The lesions were always present on 3 or fewer cross-sections, suggesting that the lesions are no more than 6 mm in length.

We did not find any other clues to the presence of these lesions, and the section from the rest of the appendix looked similar to the appendices without adenomas. It would seem that if one is interested in detecting these lesions, one is forced to examine the entire appendix.

Should appendices submitted for acute appendicitis in patients 30 years or older be entirely submitted? Sessile serrated adenoma has been shown to be a precursor lesion for some colorectal adenocarcinomas, and, as such, identification of these precursor lesions may be of value in proper follow-up of these patients. However, in general, the lesions associated with carcinoma have been relatively large, and the lesions we identified are all very small and entirely excised. At this point, we do not know whether these patients have a higher risk of sessile serrated adenoma or carcinoma in the rest of the colon. Surveillance colonoscopy may be of value in these patients.

Finally, the presence of sessile serrated adenomas raises the issue of whether the adenoma might be a contributing factor in the onset of acute appendicitis. Although we are suspicious of this, we cannot answer this question from the data in this article. Specifically we do not have a control population of appendices to see if appendices that are resected for other reasons and entirely submitted also have this incidence of disease.

We have shown that in patients 30 years or older with acute appendicitis, there is a relatively high incidence of small sessile serrated adenomas; however, identification of these lesions requires extensive histologic sampling.

References