CHAPTER 11

Gastric Smooth Muscle, Nerve Sheath, and Related Tumors

Smooth Muscle Tumors

Small gastric smooth muscle tumors are common in adults at autopsy. Meissner in 1944 observed them in almost 50% of such cases by careful manual examination of the stomach wall. More recently, microleiomyomas of 5 mm or less diameter were detected in 16.4% of resected stomachs, mostly in the upper half. Thus, the larger leiomyomatous tumors of the stomach must, in current parlance, be suspected of possessing increased receptor activity for certain undefined growth factors. Platelet-derived growth factor (PDGF), a smooth muscle growth stimulant, might be involved. Estrogens, of course, stimulate uterine leiomyoma growth, which ceases in their absence, but estrogens do not appear to affect similar gastric tumors that are equally common in men and women. Clinically, gastric smooth muscle tumors, benign or malignant, are asymptomatic when small unless they ulcerate and bleed. Larger solid intramural stomach tumors are spheroidal and may bulge into the lumen, stretch the serosa, or both. The classic radiologic and endoscopic appearance of gastric leiomyoma or leiomyosarcoma is a protrusive hemispherical mass in the fundus or body of the stomach, which stretches the mucosa and has an apical central volcano-like cratered ulcer that bleeds.

Weight loss, upper abdominal pain, and an epigastric mass are less common presentations. Obstruction may develop if the tumor is antral, a more common site for bizarre leiomyomas (leiomyoblastomas). Endoscopic biopsies may be insufficiently deep to identify viable tumor tissue. Frozen-section and gross pathologic diagnoses are generally not totally reliable in discriminating between a benign gastric leiomyoma and a sarcoma.

Unlike uterine leiomyomas, which have been reported to be monoclonal, gastric smooth muscle tumors may represent either hyperplasias or genuine neoplasms. Modern investigative methods have evidently not yet been applied to determine their clonality. Also, in both these sites and elsewhere in soft tissues, either the arterial or venous smooth muscle or the visceral muscularis propria of diverse sites may develop tumors. In the stomach, the muscularis mucosae is not considered a tumor source, but any of the three coats of gastric muscularis propria may be involved.

A caveat discovered by ultrastructural and immunohistochemical studies is that all spindle-celled gastric tumors are not leiomyomas. The controversy of nerve sheath versus smooth muscle origin is an old one, now sometimes resolved by finding immunohistologic markers of Schwann cells in occasional gastric neurilemmomas or neurofibromas, as considered further below.

Leiomyoma

The typical, clinically evident tumor, said to constitute up to 10% of gastric resections for tumor, is bulky and protrudes as a smooth
mass into the gastric lumen, with an apical, 0.5- to 2.5-cm, ulcerated mucosal crater that bleeds (Fig. 11-1). On cutting it, the mass has a whorled, solid, pinkish gray surface comparable with that of the ordinary uterine fibroid. There are typically dull glassy regions of hyaline degeneration and cystic foci with clear fluid contents. Necrosis in these benign tumors typically is rather limited, in contrast to the more massive necrosis and hemorrhage found in gastric sarcomas. Red degeneration is practically unknown.

Some gastric leiomyomas protrude endogastrically so that on x-ray examination, they appear polypoid. Others are pedunculated subserosal tumors with only a plaque-like base involving the peripheral gastric muscularis propria. Occasional leiomyomas are composed of multiple, closely adjacent, lobulated masses (Fig. 11-2). A few stomach leiomyomas are calcified or subtotally necrotic (Fig. 11-3).

Microscopically, four different growth patterns characterize gastric leiomyomas: 1)